P101Q1

**2 Types of Emergency Lighting: Maintained vs. Non-maintained**

Do you remember your school fire drills? What about your yearly occupational safety and hazard employee training? Have you ever had to exit a building because of a valid emergency? A fire? A gas leak? A power outage? Another kind of threat? Was there panic? Were you in a familiar place where you knew what to do and where to go? Was it somewhere unfamiliar?

You probably took note of your entry and exit routes as well as subconsciously observing the exit signs. Whether you are aware of it or not, [emergency lighting](http://fire-safety.typepad.com/fire_safety/2015/01/walk-to-the-light-5-things-to-know-about-emergency-lighting.html) is also there to guide you to safety in the event of an emergency.

Emergency lighting is divided into two main categories.

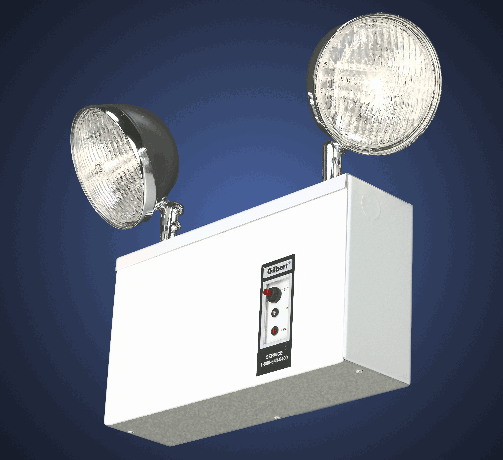
**Maintained Emergency Lighting**

When emergency lights are on all the time, they are known as maintained emergency lighting. Maintained lighting is often found where large numbers of individuals congregate. Preventing complete darkness, maintained lighting is designed to continue to work even when there is a power outage. Maintained lighting is occasionally used as standard lighting as well. You may be subconsciously aware of maintained emergency lighting in movie theaters, auditoriums, shopping malls, hospitals, airplanes, and windowless offices and classrooms.

[](http://fire-safety.typepad.com/.a/6a01a3fd21d25e970b01b8d279603e970c-pi)

**Non-maintained Emergency Lighting**

If maintained lighting is on 24/7, then non-maintained lighting is definitely not on all of the time. In fact, non-maintained lighting is only engaged when there has been a power outage. Often battery-operated, non-maintained lighting regularly charges itself through its own power supply to ensure that it will activate when the power has gone out.

[](http://fire-safety.typepad.com/.a/6a01a3fd21d25e970b01b7c8ef026c970b-pi)

Exit signs, though [different](http://fire-safety.typepad.com/fire_safety/2016/04/exit-signs-emergency-lighting-whats-the-difference.html) from emergency lighting may also be used as emergency lights, and therefore should be maintained or non-maintained depending on the building needs. They serve a double function of providing light and direction for escape routes from the building.

[](http://fire-safety.typepad.com/.a/6a01a3fd21d25e970b01bb09921f4f970d-pi)

Both maintained and non-maintained emergency lighting require regular testing to ensure the safety of the building occupants in the event of an emergency. According to [regulations](https://www.nationalfireinc.com/inspection-testing/emergency-exit-light.html), emergency lighting should illuminate the building for a minimum of one-hour to assist evacuees. Reentry and reoccupation of the building may require these lights to stay on longer.

The type of emergency lighting system needed is determined by the type and layout of the building, the type of business, and the kind of occupancy.

Contact the experts with [Pye Barker Fire Safety](http://www.pyebarkerfiresafety.com/home.aspx) to install or test your emergency lighting today.

P101Q2

See P101Q2.pdf

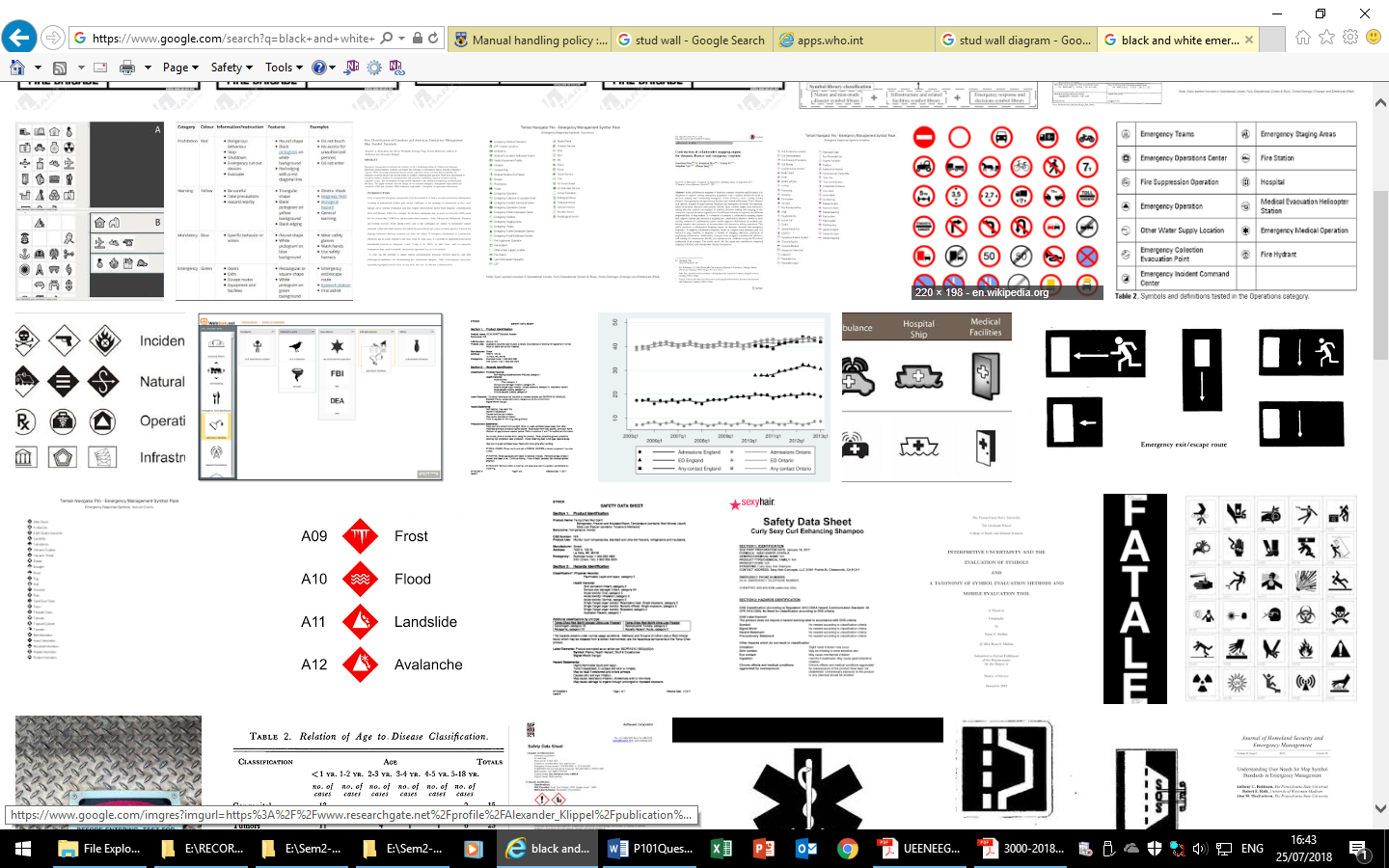
P101Q3

See P101Q3.pdf

P101Q4

A fully charged battery in good condition should power an emergency light for at least **90 minutes** as mandated by UL (Underwriters Laboratories). If the battery cannot last for **90 minutes**, it must be replaced. The UL 924 Listing is only featured on batteries that meet or exceed UL's rigorous testing procedures. 5 lx

P101Q5



P101Q6

Non-**maintained** emergency **lighting** is a luminaire made solely for emergency use. It is designed to come on in the event of a mains power failure, making sure all emergency exit routes are clearly illuminated, but will not be active as your normal day-to-day **lighting** system.

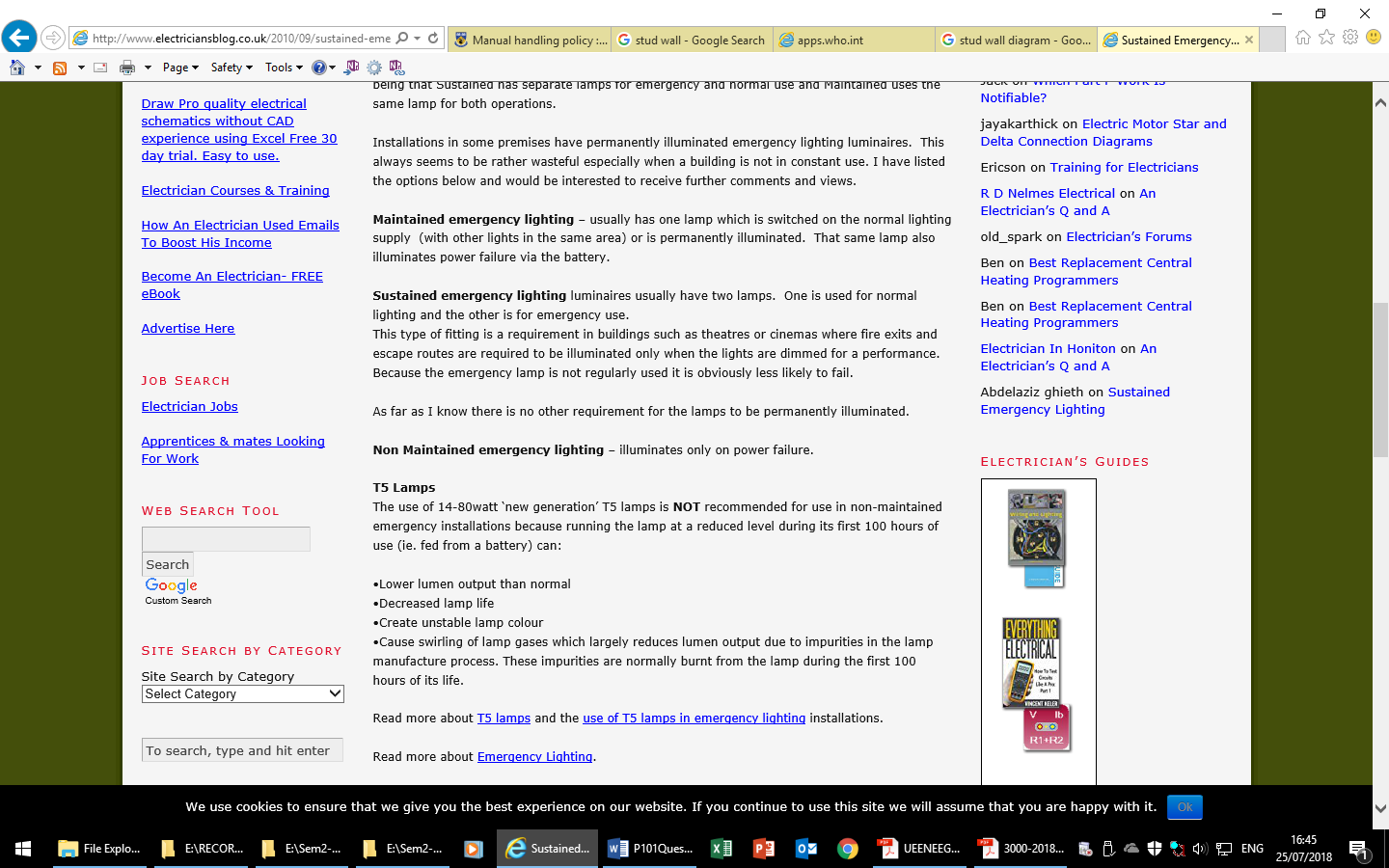
A common question from customers buying emergency lighting is: *What is the difference between maintained and non-maintained emergency lighting?* New commercial or public buildings have [emergency lighting](https://www.safelincs.co.uk/emergency-lighting/) installed as standard, but if you are looking to install or renew a system this issue may need clarifying.

Luckily the answer is really quite simple.

Non-maintained emergency lighting is designed to turn on in the event of a power failure. It is linked into the building’s lighting circuitry and reacts to a power failure ensuring emergency exit routes remain illuminated. This type of emergency lighting is mostly found in the workplace, such as offices and factories, where people are familiar with the escape routes.

Maintained lighting is designed to be lit continuously and will continue to work even in the event of a power failure. This allows the unit to double as a standard light fitting but still supply the necessary backup in the event of a power outage. This type of emergency lighting is suitable for public places such as theatres, shopping malls and cinemas.

[Emergency exit signs](https://www.safelincs.co.uk/illuminated-fire-exit-signs/) can also be lit to act as an emergency light. Again they can be maintained or non-maintained, with non-maintained signs reserved for areas where occupants are familiar with the layout of the escape routes.

A full range of both types of emergency lighting is available on our website. If you are unsure which type best meets your needs then please feel free to contact our customer service team for more information about specific models. 

P101Q8

See P101Q8.pdf

P101Q9

### *E4.2 Emergency lighting requirements*

***An emergency lighting system must be installed -***

1. *in every fire-isolated stairway, fire-isolated ramp or fire-isolated passageway; and*
2. *in every storey of a Class 5, 6, 7, 8 or 9 building where the storey has a floor area more than 300 m2 -*
   1. *in every passageway, corridor, hallway, or the like, that is part of the path of travel to an exit; and*
   2. *in any room having a floor area more than 100 m2 that does not open to a corridor or space that has emergency lighting or to a road or open space; and*
   3. *in any room having a floor area more than 300 m2; and*
3. *in every passageway, corridor, hallway, or the like, having a length of more than 6 m from the entrance doorway of any sole-occupancy unit in a Class 2 or 3 building or Class 4 part of a building to the nearest doorway opening directly to -*
   1. *a fire-isolated stairway, fire-isolated ramp or fire-isolated passageway; or*
   2. *an external stairway serving instead of a fire-isolated stairway under D1.8; or*
   3. *an external balcony leading to a fire-isolated stairway, fire-isolated ramp or fire-isolated passageway; or*
   4. *a road or open space; and*
4. *in every required non fire-isolated stairway; and*
5. *in a sole-occupancy unit in a Class 5, 6 or 9 building if -*
   1. *the floor area of the unit is more than 300 m2; and*
   2. *an exit from the unit does not open to a road or open space or to an external stairway, passageway, balcony or ramp, leading directly to a road or open space; and*
6. *in every room or space to which there is public access in every storey in a Class 6 or 9b building if?*
   1. *the floor area in that storey is more than 300 m2; or*
   2. *any point on the floor of that storey is more than 20 m from the nearest doorway leading directly to a stairway, ramp, passageway, road or open space; or*
   3. *egress from that storey involves a vertical rise within the building of more than 1.5 m, or any vertical rise if the storey concerned does not admit sufficient light; or*
   4. *the storey provides a path of travel from any other storey required by (i), (ii) or (iii) to have emergency lighting; and*
7. *in a Class 9a health-care building -*
   1. *in every passageway, corridor, hallway, or the like, serving a treatment area or a ward area; and*
   2. *in every room having a floor area of more than 120 m2 in a patient care area; and*
8. *in every Class 9c aged care building excluding within sole-occupancy units; and*
9. *in every required fire control centre.*

In addition, the BCA also details the deemed-to-satisfy requirements for Exit Signs;

### *E4.5 Exit signs*

***An exit sign must be clearly visible to persons approaching the exit, and must be installed on, above or adjacent to each -***

1. *door providing direct egress from a storey to -*
   1. *an enclosed stairway, passageway or ramp serving as a required exit; and*
   2. *an external stairway, passageway or ramp serving as a required exit; and*
   3. *an external access balcony leading to a required exit; and*
2. *door from an enclosed stairway, passageway or ramp at every level of discharge to a road or open space; and*
3. *horizontal exit; and*
4. *door serving as, or forming part of, a required exit in a storey required to be provided with emergency lighting in accordance with E4.2.*

**About the Building Code of Australia**  
The Australian Building Codes Board (ABCB) publishes the Building Code of Australia as part of the National Construction Code, and is a joint initiative of Australian Governments and including representatives of the building industry. You can purchase a subscription to the Building Code of Australia from the ABCB by visiting their web site: [http://www.abcb.gov.au](http://www.abcb.gov.au/)

Maintenance Essentials provides inspection, testing, maintenance and surveys of essential safety measures including emergency lighting and exit signs. For more information speak to a member of our team by calling 1300 30 88 22.

P101Q11

Exit sign requirements

**NFPA's Exit Sign Requirements**

* They are approved existing **signs**.
* They are existing **signs** having the required wording in legible letters not less than four inches (100 millimeter (mm)) high.
* They are **signs** that are in accordance with **Exit** Door Tactile Signage (7.10.1.3) and Floor Proximity **Exit Signs** (7.10.1.6).

P101Q12

**How often should an Emergency Lighting system be tested?**

The following minimum inspection and tests should be carried out at the intervals recommended below.

Daily Emergency Lighting Inspection

This interval specifically applies to [central battery source emergency lighting systems](https://www.luxintelligent.com/technical-support/faq/posts/2015/are-there-different-types-of-emergency-lighting-systems.aspx).  In this case a visual inspection of the indicators on the central power supply to identify that the system is operational.  No test of the system operation is required.

Monthly Emergency Lighting Testing

All emergency lighting systems should be tested monthly.  This is a short functional test in accordance with BS EN 50172:2004 / BS 5266-8:2004.

The duration of the test should be sufficient to ensure that the luminaire operates correctly, whilst minimising any damage to the system components, e.g. Lamps, Battery.

It is important to note that the entire system doesn't have to be tested at the same time.  The system can be tested in sections, over a testing schedule, so long as each luminaire is tested each calendar month.

Annual Emergency Lighting Testing

The annual test should be a full rated duration test to ensure that the emergency lights are still working and producing the acceptable level of light at the end of the test.  So for example if a luminaire is rated for a 3 hour duration, then after 3 hours in an emergency situation the light should still be lit.

It is worth noting that this full duration test should be completed at a time of low risk of an emergency situation so that the batteries have sufficient time to recharge.

P102Q13

See P102Q13.pdf

P101Q14

# Electrical and lighting requirements – public buildings

Electrical installations

All electrical installations must comply with the supply authority or Office of Energy requirements, Australian Standard (AS/NZS) 3000, AS/NZS 3002 plus the unique  requirements of the [Health (Public Buildings) Regulations 1992 (external site)](http://www.slp.wa.gov.au/legislation/statutes.nsf/main_mrtitle_1569_homepage.html).

Eelectrical contractors performing work in a public building must submit a Form 5 certificate of electrical compliance to the local government, to certify that permanent and temporary electrical installations are compliant with the unique requirements of the regulations and other statutory obligations.

Note: A copy of the Form 5: certificate of electrical compliance can be found in [Guidelines for Concerts, Events and Organised Gatherings (PDF 3.12MB)](https://ww2.health.wa.gov.au/~/media/Files/Corporate/general%20documents/Environmental%20health/Concerts%20and%20Mass%20Gathering%20Guidelines.pdf).

What is important to know for events?

* the use of single phase generators 10 kva or less is discouraged electrical equipment should be supplied from reticulated supplies originating at supply authority mains or large generators.
* electrical leads must not create trip hazards
* electrical outlets must be protected by residual current devices (RCDs)
* leads and RCDs must be tested and tagged every 12 months
* joints and connections must not be  accessible to the public or exposed to damp conditions
* installations must comply with AS/NZS 3002 Electrical Installations for shows and carnivals.

Electrical leads and portable outlet devices

All electrical outlets must be protected by a RCD (also known as a safety switch). The Health (Public Buildings) Regulations 1992 require that a licensed electrical worker must test the RCDs every 12 months. A tag to identify the item, test date and the electrical worker should be fixed to the tested equipment.

See information on [testing of electrical leads and residual current devices (RCDs)](https://ww2.health.wa.gov.au/Articles/S_T/Testing-of-electrical-leads-and-residual-current-devices-RCDs).

Double adaptors or ‘piggy back plugs’ are not permitted, although those on existing stage lighting effects are generally accepted by relevant authorities. New equipment requires a tag to define when it was brought into service.

Temporary electrical installations

All electrical outlets and electrically operated equipment in areas available to the public must be protected by RCDs. Installations and generators must comply with all relevant Australian Standards.

Requirements for RCDs

For RCDs to be effective, the neutral and earth conductors must be bonded together at the point of supply. All town supplies are connected this way but generators may not be. AS/NZS 3010.1 (Electricity Generating Sets) requires neutral connections to be earthed at the generator frame. It is recommended that this connection be made via a removable link.

* Each generator must be connected to its own earth electrode driven into the ground.
* All electrical outlets and supplies must have circuit breakers to protect against overload.
* All final subcircuits must have RCD protection.

Typical temporary installations consist of submains, subboards and electrical leads. It is recommended that for typical installations:

* outlets at generators that are specifically required for the use of electrical equipment and tools etc. must have RCD protection
* outlets that are solely for connection of submain cables supplying a distribution board should only have over current protection
* RCD protection of final subcircuits should only be provided at the switchboard where those final subcircuits originate.

This type of protection will minimise the disruption to major sections of the lighting installations in the event of a current leakage to earth.

Typical electrical installation for temporary installations

Switchboards **must**:

* be in weatherproof enclosures
* have no access to live parts
* have doors that are able to be fully closed and locked with all cables connected or be located so that they are only accessible to authorised people
* have a main switch
* have over current circuit breakers to protect outlets for submains
* have RCD protection to protect final subcircuits
* have all components and their functions clearly identified.

Where electrical outlets are provided, there should be a tie bar to allow electrical cords to be secured, to prevent tension on the electrical outlet.

Residual current devices – RCDs

The preferred leakage tripping current is 30 milliamps and they must be tested every 12 months in accordance with the requirements of AS 3760. For information see testing of electrical leads and residual current devices (RCDs).

Electrical cables

Because cables are continually being rolled up and moved, they must be flexible. Standard multicore cables used in static installations are not appropriate.

Electrical cables should not be accessible to members of the public. Where this cannot be avoided, they must be either buried or suspended so that they are out of reach of the public.

Submain cables must have integral earth and neutral conductors.

Electrical supplies

Electrical outlets should only be supplied from a reticulated power supply. Supplies may originate from a supply authority or an on-site generator. Small individual generators 10 kva or less should not be utilised.

AS/NZS 3010.1 requires neutral connections to be earthed at the generator frame and recommends that this connection be made via a removable link. Each generator must be connected to its own earth electrode driven into the ground.

The [Health (Public Buildings) Regulations 1992 (external site)](http://www.slp.wa.gov.au/legislation/statutes.nsf/main_mrtitle_1569_homepage.html) requires electrical contractors to certify electrical installations including reticulated supplies by completing a Form 5.

Leads

Temporary electrical leads must be flexible cables. TPS cables are not permitted.

All electrical leads must be tested and tagged every 12 months in accordance with AS/NZS3760.

For new extension cords  a date of purchase tag in lieu of testing is acceptable

Leads must notbe placed on the ground in areas where there is pedestrian traffic.

Cord junctions shall not be exposed to the weather or in damp situations.

Luminaires

Luminaires must be out of reach of the public and not located where heat may ignite adjacent materials.

Extra low voltage equipment

Extra low voltage devices must be clearly identified and have plug tops and bases that cannot be inadvertently connected to higher voltage supplies.

Testing electrical leads and RCDs

The testing of electrical extension cords and RCDs is a requirement of the Health (Public Buildings) Regulations 1992.

See [Testing of electrical leads and residual current devices (RCDs)](https://ww2.health.wa.gov.au/Articles/S_T/Testing-of-electrical-leads-and-residual-current-devices-RCDs)

Lighting

All permanent venues and egress paths must be able to be illuminated to 40 lux by lighting that is:

* independent of  event production lights
* controlled from a central position
* able to reach the required illumination within three seconds of being energised
* supplied from the supply authority mains or a generator approved by the local government.

Bare lamps must not be able to be touched by the public.

### Area lighting

Temporary areas available to the public at night, including concert areas, should always be illuminated.

For general areas, illumination to an average as low as 10 lux at ground level with no area less than 5 lux is acceptable. Lighting should be energised approximately 1 hour before sunset to allow time for any unserviceable lights to be repaired before sunset.

For crowded areas, especially for concerts and areas licensed to consume alcohol, there must be a system in place that will allow areas to flood light instantaneously in the event of an emergency. The supplies and controls for these lights should be independent of theatrical or production lights and controlled from a location attended at all times by a designated person. They should not be controlled at the mixer desk.

### Emergency lighting

Enclosed venues must have emergency lighting that will operate if the main electrical source fails. For buildings, it must comply with AS/NZS 2293. For outdoor venues, there must be at least 2 alternative power supplies. Two generators or a supply authority supply, plus another generator, are acceptable alternatives provided that the venue lighting supplies are distributed between both.

### Safety lighting

For events where lighting will be dimmed or extinguished, stairs, ramps and egress paths must be illuminated by safety lighting. Safety lighting must be a separate supply to normal or emergency lighting and must not be dimmed or modulated.

For permanent facilities, the safety and emergency lighting should be interconnected so that in the event of a failure of the safety lighting circuit, the emergency lighting will be automatically energised.

### Exit signs

These must be installed in compliance with AS/NZS 2293. They must be illuminated and clearly visible whenever the venue is occupied by the public. For outdoor events, large signs illuminated by two light sources, and large enough to make the exit location obvious to patrons must be used.

The following information specifies the following relationship between viewing distance and sign size has been extracted from AS/NZS 2293.1.

| **Maximum viewing distance** | **Minimum pictorial element height (mm)** |
| --- | --- |
| 16 | 100 |
| 24 | 150 |
| 32 | 200 |

P101 Q10

See P101 Q10.pdf