

# Electrical Defects

## Information about defect types and defects in existing installations

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### What is a defect?

Defects are regarded as electrical installation and service installation works that do not comply with AS/NZS 3000 Wiring Rules, the Service and Installation Rules of NSW or Ausgrid's requirements and Network Standards that apply at the time of installation.

Where electrical installation defects are found within a customer's electrical installation by Ausgrid, the customer and the electrical contractor will each be given a copy of the **inspection 'Defect' report**. ASPs will be given a copy of a similar report covering any defects found in contestable service work.

**Electrical contractors and ASPs** are required to **rectify all defects** without delay and within the **maximum time** specified by Ausgrid on the inspection 'Defect' report.

### Defects in existing installations

Electrical contractors who observe existing electrical defects when working on customers' installations and equipment have a legal duty of care to advise the customer and to ensure defects that are immediately dangerous are disconnected or made safe as soon as possible.

- For customers that have other defects that do not present a safety hazard, electrical contractors should advise the customer that the defects must be **rectified within a reasonable period**.

Where the contractor has reasonable grounds to believe that the customer may not disconnect the defective equipment or installation, or may reconnect it without having arranged for suitable repairs performed, the contractor should notify Ausgrid of the details of the defective installation. Information for customers about electrical installation defects is available in Safety at Home [Electrical Install Defects](#).

- Contractors **will not be charged inspection fees** for defects that are **not** associated with their work.

## Major defects

Major defects are defects that Ausgrid considers present a high risk safety hazard to life, health or property. Electrical installation and service work containing major defects must not be connected to the network.

- If major defects are encountered during an inspection, the inspecting officer may **isolate and appropriately label** the section of the installation containing the major defect if possible. If this is not possible, the entire electricity supply to the installation or the service line may need to be disconnected.
- Disconnection of the complete installation will only be carried out as a last resort if the situation cannot be made safe by other means. Any work carried out by Ausgrid in these situations to make them safe will be temporary and must be rectified by the installing electrical contractor or ASP.
- A new notification form (and/or a [Certificate of Compliance for electrical work](#) (CCEW) or [Notification of Service Work](#) (NOSW) must be submitted notifying Ausgrid that defects have been rectified.
- During an inspection, if an electrical appliance, fitting or apparatus is found to present a **high risk safety hazard to life, health or property**, the equipment will be **disconnected** and a label attached indicating that the equipment is considered to be dangerous and must not be used until it is repaired.
- **Ausgrid is required to ensure defective electrical installation and contestable work defects are rectified.** It is illegal for a person to use any electrical installation or equipment which has been disconnected by Ausgrid due to defects until the defects have been rectified and Ausgrid notified.

## What are major defects?

The following are considered major defects:

### Exposed live parts

1. **Exposed LIVE terminals** on equipment that are accessible by unauthorised persons, without the use of a tool or key. This does not include vacant lampholders and fuse bases.
2. **Exposed conductors** of unterminated or damaged cables, which can be energised by the operation of a switch, circuit breaker or insertion of a fuse. This includes cables with open circuits, which cannot be readily located.
3. **Bare aerial conductors** in accessible positions without the use of a ladder.

## Earthing system

1. **Open circuit or high resistance** from any point on the installation that is required to be earthed to the neutral conductor of the supply system.
2. **Unearthed exposed metal**, which is in an earthed situation.

## Insulation resistance

1. **Insulation resistance less than 1 Mega Ohm** between the **circuit conductors** and between circuit conductors and **earth** on new circuits and 250,000 Ohms on other circuits (no appliances connected).
2. **Insulation resistance less than 10,000 Ohms between live parts and earthed parts** of appliances which incorporates a heating element.
3. **Insulation resistance less than 1 Mega Ohm on other low voltage equipment.**

**Note:** Service mains require higher insulation resistance properties than above and are called out within Ausgrid Network Standards. The minimum safety requirement for insulation resistance between live conductors and earth is 1 Mega Ohm as per the current version of AS/NZS 3000 Wiring Rules.

## Overloaded equipment

1. **Socket outlets, switches, switchboard equipment, cables and accessories operating in excess of 125% of current rating.** The current rating is determined by the maximum demand of the portion of installation or equipment supplied by the protective device, cable or accessory.
2. **Appliances and cables**, which may **overheat** to such an extent that **serious damage or fire** could be expected to occur or has occurred.

## Overcurrent protection

No **overcurrent (or RCD) device** provided where required.

## Polarity

1. **Incorrect connection of active, neutral and earthing conductors** at socket outlets, lampholders, switchboard equipment and appliances.

2. **Isolating device not operating** in active conductor(s).

### Unsuitable equipment

1. **Equipment exposed to the weather** or other damp situation, which is **not adequately protected against the direct ingress of water**.
2. Electrical **equipment installed in a hazardous area** that does not meet the appropriate requirements of relevant Australian Standards current at the time of installation of that equipment.
3. Equipment used in an **immediately dangerous** manner. E.g., Equipment installed for the supply of fire and smoke control equipment and lifts, which does not provide the required level of protection against fire and mechanical damage.

### Failed fault loop impedance

Failure to carry out any **mandatory tests** is considered a major defect.

### Minor defects

Minor defects are defects that are not considered to be major defects in the list above. These will be categorised by reference to the section or clause of the current version of AS/NZS 3000 Wiring Rules, Service and Installation Rules of NSW or Ausgrid Network Standard which is in force.

### More information

[Ausgrid publication ES4 – Accredited Service Provider Authorisation](#) provides further details concerning defects or safety breaches associated with contestable service and distribution work.