

# Electrical Focus

## Shocks and tingles campaign

Building and Energy, Western Power and Horizon Power recently launched a public safety campaign urging Western Australian's to report immediately any electric shocks or tingles to their network operator.

The key message of the campaign is to call your network operator immediately if you experience an electric shock or tingling sensation from a metal object, such as a tap.

Shocks and tingles can be warning signs of a degraded or broken neutral connection, resulting in a voltage rise in the earthing system, causing metal objects in and around a building to become live at dangerous voltages. The campaign features a shower and kitchen tap, however any exposed metal surface can cause a shock or tingle.

The three-month campaign across television, online and billboard media highlights the invisible nature of electrical hazards by reminding consumers that “you can't see an electrical fault, but you can feel one”.

Incidents involving a neutral fault account for a quarter of reported shocks in Western

Australia. This is a serious concern and must be investigated as a priority by network operators.

The State Government is also working with Western Power on the roll-out of an advanced form of meter that detects degrading neutral connections.

Horizon Power has already fitted these advanced meters at its customers' homes and businesses in regional Western Australia.

The advanced meters can detect changes in the neutral resistance within a circuit and send an alert signal to the network operator.



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## Building and Energy releases Beldon electrical accident report

In September 2019, Building and Energy released its report into the electrical accident that seriously injured a 12-year-old girl at a property in Beldon in March 2018.

The report outlined findings into the cause of the accident. The investigation included on-site inspections and testing at the house and at nearby properties. It also included independent expert assessments of the earthing at the property and equipment involved in the accident.

The report found:

- the accident resulted from the failure of a neutral conductor that formed part of the aerial service cable supplying electricity to the property;
- the 'open circuit neutral' fault occurred inside the mains connection box (MCB) attached to the roof of the property;
- the failure of the neutral conductor caused metallic parts connected to the electrical earthing system, including a garden tap, at the property to become electrically live, up to 230 volts; and
- the neutral conductor of the aerial service cable failed after it was subjected to prolonged heating.

Due to the damaged condition of the MCB, the investigation could not determine the cause of the heating and whether it started on the aerial

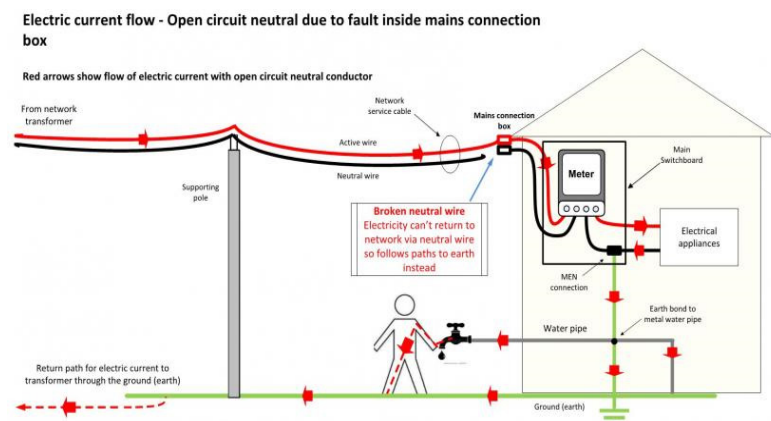
service side or the consumer side of the MCB. The open circuit neutral fault caused the electrical earthing system within the property to become live and dangerous, as well as the metallic water pipes connected to the earthing system.

The reason for the failure of the Western Power aerial service neutral conductor could not be determined as the evidence was destroyed by the heating.

Actions now under way to ensure early detection will stop these rare events from occurring by initiating repairs before a neutral fault becomes a neutral failure.

A faulty neutral will cause a voltage rise on the building's earthing system, which can cause electric shocks from taps, pipes or appliances at home. These are warning signs that the wiring system may be faulty.

[Building and Energy's Electrical Accident Report is available online](#)



*Electric current flow - open circuit neutral due to fault inside mains connection*

## Renewable energy systems The Regulations – a reminder

Installing solar photo-voltaic (solar PV), battery or wind turbine equipment is electrical installing work in most cases. The Electricity (Licensing) Regulations 1991 (ELR) define electrical installing work as 'the work of assembling and fixing in place, altering or adding to any electrical installation or maintaining, enhancing, repairing, removing, or connecting to fixed wiring, any electrical equipment'. Electrical equipment means any component or part of an electrical installation operating above extra-low voltage (ELV).

Under ELR Regulation 19, a person carrying out such work commits an offence unless he or she is authorised by a licence. Further, Regulation 33 requires that a person must not carry on business as an electrical contractor or hold himself out as carrying on business as an electrical contractor, unless the person holds an electrical contractor's licence.

All work on the wiring, wiring enclosures, switch gear, protective gear, inverter and switchboard of a solar PV, battery or wind turbine installation is electrical work.

Installing the mechanical/structural components of a PV, battery or wind turbine installation is not electrical work. For example, installing foundations, fixing solar arrays to brackets, assembling arrays, securing brackets to roof-structures or installing battery mounting racks is not electrical work.

However, installing and connecting the associated cabling, including the interconnection of the solar panels and battery cells themselves, is electrical work requiring a licence. Attaching bonding conductors to metallic structures supporting solar panels, battery racks and related equipment is electrical work.

### Responsibilities of installers

The onsite installation of all associated wiring and equipment (for voltages above 50Vac or 120 V ripple-free DC) must be carried out by a licensed electrician working for a licensed electrical contractor.

Providers and installers not holding an electrical contractor's licence must subcontract all electrical installing work to a licensed electrical contractor.

### Responsibilities of electrical contractors

Under the ELR, an electrical contractor must ensure that the PV, battery or wind turbine systems on which work was performed is safe to use and that the work has been completed to a trade finish. It is notifiable work.

Electrical contractors carrying out such work must submit the prescribed Preliminary Notice and Notice of Completion to the relevant network operator (Regulations 51 and 52). Additionally, electrical contractors, within 28 days of completing the work, must provide an Electrical Safety Certificate to the person for whom the work was carried out (Regulation 52B(1)).

## Solar and battery installations - Notices are required

Installing solar photo-voltaic and battery systems connected to electrical installations is notifiable work. Licensed electrical contractors are required to submit Preliminary Notices, Notices of Completion and Electrical Safety Certificates for such jobs.

Where these installations are performed under sub-contracts, it is the electrical contractor performing the actual installation work who is responsible for the installation's safety and to submit these notices and the certificate.

### What is notifiable work?

'Notifiable work' means all electrical installing work other than -

- a) maintenance work, unless that work requires the disconnection and reconnection of the supply of electricity to the electrical installation concerned or the replacement of service apparatus; or
- b) the addition or alteration of one final sub-circuit including the addition or alteration of its protective device; or
- c) the alteration of one or more final sub-circuits.

As a guide, the following table gives an indication of how the new definition will operate in practise. The table also shows when Electrical Safety Certificates (ESC) are required.

	Notifiable	Not Notifiable	ESC
Addition of one single final sub-circuit including its protective device		✓	✓
Addition of two or more final sub-circuits including their protective devices	✓		✓
Addition of one (or more) socket outlets (or light points) to the same existing final sub-circuit		✓	✓
Addition of one (or more) socket outlets (or light points) to different final sub-circuits		✓	✓
Addition of one RCD to protect one existing final sub-circuit		✓	✓
Addition of one RCD to protect more than one existing final sub-circuit		✓	✓
Addition of two or more RCDs to protect two or more existing final sub-circuits	✓		✓

	Notifiable	Not Notifiable	ESC
Addition of one smoke alarm to an existing final sub-circuit		✓	✓
Replace one fuse with a circuit breaker		✓	✓
Upgrading of one or more submains	✓		✓
Addition of one or more submains	✓		✓
Replace one circuit breaker with one RCBO (combination RCD/MCB)		✓	✓
Replace two or more circuit breakers with RCBOs (combination RCD/MCB)	✓		✓
Replace more than one fuse with circuit breakers	✓		✓
Installation of solar panels and inverter system	✓		✓
Replace a defective main switch, lighting switch, socket outlet or lighting point		✓	
Replace a defective hot water system, air conditioner, cook top or oven with an item of equivalent specification		✓	
Replace one or more socket outlets or lighting points on one or more final subcircuits		✓	
Installation of battery and inverter system	✓		✓
Installation of wind turbines	✓		✓

## Wiring Rules Amendment 1 now applies

In the Government Gazette of Friday, 14 February 2020 the Director of Energy Safety published a Notice confirming that Amendment 1 of AS/NZS 3000:2018 will apply from 15 February 2020, except for Clause 7.3.2(c) which will become mandatory six months later on 15 August 2020.

Clause 7.3.2(c) calls up the recently published AS/NZS 5139:2019 – Electrical Installations – Safety of Battery Systems for Use with Power Conversion Equipment. The usual six-month notice period will apply to this new Standard to allow licensed electrical contractors and electricians to familiarise themselves with its requirements before becoming mandatory.

While the new standard will not be in force until 15 August, licensed electrical contractors are encouraged to comply with its requirements immediately to ensure safety for battery installations.

The remainder of Amendment 1 corrects editorial errors in the 2018 Wiring Rules but does not add any new requirements or increase the scope of the clauses affected. For this reason, it has been adopted immediately.

## AS/NZS 3012:2019 – Electrical Installations – Construction and demolition sites

The revised construction and demolition Standard was published by Standards Australia on 4 November 2019. The main changes from the previous 2010 edition are:

- updated requirements to reflect AS/NZS 3000:2018;
- a reference to AS/NZS 61439.4 for switchboard compliance for Assemblies for Construction Sites;
- additional figures and references to AS/NZS 3010:2017 for connection of generators;
- new requirements to prevent unauthorised disconnection of emergency lighting with detachable connections;
- Clause 3.3 has been deleted and reference to personnel requirements to be a qualified person or a competent person have been included; and
- inspection tags for complying equipment to include the name of the person (and the company if applicable), and the test and re-test date.

AS/NZS 3012:2010 will continue to apply in the following circumstances:

- Construction wiring installed prior to but remaining in use beyond the publication date of the new standard.

- Construction wiring included in work quoted for prior to the publication date of the new standard that has been awarded a contract.

Building and Energy will arrange to have AS/NZS 3012:2019 added to Schedule 2 of the Electricity (Licensing) Regulations 1991, after which a six-month transition period will apply to give electrical contractors and workers time to become familiar with the changes to this Standard. Construction wiring installed after the transition period will need to comply.

However, during the transition period we encourage electrical contractors and workers to comply with the 2019 edition wherever possible.

## Restricted Electrical Licences Licence Conditions reminder

Holders of Restricted Electrical Licences (RELs) should bear in mind the conditions applicable to them. RELs:

- Are an adjunct to a person's principal trade or calling, enabling the holder to perform limited essential electrical steps associated with his or her main occupation.
- Are not a licence to perform general electrical work. RELs do not authorise the installation of low voltage wiring or equipment or alterations to existing electrical installations.
- Remain valid only while the holder is employed by his or her employer at the time of application and granting of the licence. A new REL application must be made if the holder changes employer.
- Authorise only the scope of electrical work specified in the original approved application

for the licence. A new application is required if the holder wishes to alter the REL's work scope.

- Are not transferable to another person.

## Restrictions on working on or near energised electrical equipment

In nearly all cases, REL holders must not work on or near energised electrical equipment.

Additional safety requirements for working on or near energised electrical equipment came into force from 14 May 2018, under Regulation 55 of the Electricity (Licensing) Regulations 1991 and a new Code of Practice for persons working on or near energised electrical equipment (the Code).

The Code applies to all electrical licence holders, including RELs, and to all electrical work on low-voltage installations. It does not apply to work on extra-low voltage electrical equipment.

The Code prescribes additional requirements for those persons authorising or carrying out electrical work on or near energised electrical installations. It is to be read in conjunction with the Occupational Safety and Health Regulations 1996 (OSHR), in particular Part 3 Division 6.

The OSHR require de-energising electrical installations before entering roof spaces of domestic buildings to perform any paid work (Class 1, Class 2 or Class 10a) (Regulation 3.59B). A copy of the OSHR can be downloaded by visiting the [Western Australian legislation website](#).



RELs held by Refrigeration and Air Conditioning tradespersons may authorise fault-finding, which may involve working on or near energised equipment. When doing so, these tradespersons must comply with the Code.

Before work commences, a risk assessment must be completed, risk control measures must be documented in a Safe Work Management Statement (SWMS) and workers must be appropriately trained and wear the required PPE. Before proceeding with the fault maintenance work, the equipment involved must be isolated and verified as de-energised.

No other REL categories authorise such work on energised equipment under any circumstances. Holders of these RELs must first isolate the equipment to be worked upon and verify it is de-energised before proceeding.

Isolation must be achieved by switching off the electricity supply to the equipment to be worked on from the main switchboard or relevant distribution board to render the work site completely de-energised. It is not sufficient simply to operate a switch located on the equipment itself since its incoming terminals will remain energised. Isolation may be achieved if there is a lockable isolating switch adjacent but external to the equipment to be worked on.

All REL holders, including Refrigeration and Air Conditioning tradespersons, also must ensure they will not be working near other energised equipment.

Building and Energy has [prepared a letter \(available to download\)](#) signed by the Director of Energy Safety to inform customers about

the laws, which strictly limit work on or near energised electrical equipment. REL holders are encouraged to provide a copy of this letter to their customers when quoting and performing work requiring isolation of electrical supply.

Further information is available on the [Building and Energy website](#).

## Horizon Power fined \$40,000 for unsafe work in Kununurra

Horizon Power was fined \$40,000 by the Perth Magistrates Court on 4 February 2020 for incorrect work in Kununurra that caused a fire and the telecommunications equipment at various properties to become potentially unsafe.

Horizon Power was also ordered to pay \$1,516.40 in costs, after earlier pleading guilty to breaching the Electricity Regulations 1947.

The court heard that when Horizon Power personnel were replacing a network transformer pole on Weaber Plains Road, Kununurra in October 2017, a linesperson incorrectly re-connected an aerial bundled cable active conductor to a neutral conductor for unmetered supply equipment, causing a nearby Telstra communications node to be supplied with 415 volts rather than the usual 230 volts.

With the connection not properly tested before work was completed, the error was only discovered when a fire broke out at Telstra equipment that had become live on a private property six kilometers away.

Building and Energy conducted a thorough investigation, which has led to a successful prosecution. Any person or company working in a regulated industry must ensure there are adequate checks in place so safety procedures are followed correctly to ensure their own safety or that of their staff and the safety of the general public.

## Penalty for illegal electrical adaptor – PC Master Pty Ltd trading as iTech

A Cannington retailer has been fined \$5,000 following a prosecution by Building and Energy for selling an unapproved and potentially dangerous travel adaptor.

PC Master Pty Ltd representatives did not attend the Perth Magistrates Court on 9 October 2019, when the business was found guilty of breaching the *Electricity Act 1945* and also ordered to pay costs of \$766.

The court was told that in May 2018, inspectors from Building and Energy (formerly EnergySafety) attended PC Master's iTech mobile phone repair and accessory store at Westfield Carousel shopping centre.

The inspectors identified an international travel adaptor for sale that did not have the electrical safety certification required for it to be sold in Australia. It also had uninsulated pins, which are banned in WA for almost all electrical appliances and equipment.

Outlet devices such as this adaptor are classed as high-risk equipment and must have an official certification mark and approval number showing they have been approved for sale in Australia.

The purpose of the approval process is to ensure that manufacturers, sellers or hirers of electrical appliances provide evidence to customers that these items are safe from the dangers of electric shock.

The significant penalty in this case shows the seriousness of this offence and why retailers must take responsibility for ensuring the electrical appliances they supply are safe.

See the [Building and Energy website](#) for more information on the safe use of electrical appliances, or visit the [Electrical Equipment Safety System website](#) to check the certification of particular appliances or equipment.



*Non-complying international travel adaptor*

## Changes to temporary disconnections and reconnections

Western Power perform temporary disconnections at a customer's premise so that Electricians or other tradespersons can safely perform their work. Sometimes the disconnection is for planned work, requested by the customer and in other cases it is because a fault has been identified at the property.

Western Power has made some changes to the steps required after the electrical work is complete. The aim is to implement these changes in late March 2020.

### What this means for you

1. Western Power are introducing a new Temporary Disconnection tag. All the fields on the tag must be completed in full by the electrician before the power can be reconnected. The notice number must be included on the tag. Note: you do not have to have submitted the Notice of Completion to get the notice number. It can be located by saving a draft notice and the notice number will be in the top left hand corner.
2. You must submit a Notice of Completion. Under the Electricity Licensing Regulations 1991, you need to submit a Notice of Completion within 3 working days of completing the work.
3. Requesting a reconnection. This process has not changed. For reconnection after a fault, contact 13 13 51. For disconnection requested through a service request, contact the crew direct on the number on the temporary disconnection tag. For major projects you will continue to work with your Project Network Officer (PNO) to arrange disconnection and reconnection.

If you have any questions regarding the changes, please contact Western Power on 13 10 87 referencing the changes to the disconnection/reconnection process.

**Before contacting Western Power for a reconnection, ensure that the Notice number relating to your work is provided here**

**Carefully read the above certification. Once satisfied, print your name and provide a signature to confirm the property is safe to reconnect**

**If the property has been disconnected so that electrical work can be undertaken at the premise, then the work is notifiable, so tick "yes"**

**Make sure you provide your workers licence and the contractor licence and the contractors name in this section**

**Western Power**

### Temporary disconnection

Power to these premises has been disconnected by Western Power so that essential electrical work can be safely undertaken. Power will only be reconnected if all required information has been completed in the appropriate section of this tag by the Electrician doing the work.

The Electrician is still required to submit a Notice of Completion for any notifiable work undertaken.

**\*\*\*For Non-Electrical work, please complete the reverse\*\*\***

**Western Power to complete:**

Location \_\_\_\_\_  
 Meter no. \_\_\_\_\_  
 Employee or contractor name \_\_\_\_\_ ID no. \_\_\_\_\_  
 Phone no. \_\_\_\_\_ Date & time \_\_\_\_\_  
 Reason \_\_\_\_\_

**Electrical Contractor to complete:**

Is the work you have undertaken notifiable? Yes  No

Notice number: \_\_\_\_\_

The following work has been completed and is safe to be reconnected:  
 \_\_\_\_\_  
 \_\_\_\_\_

**Certification of electrical installation work**

I am not aware of any parts of the electrical installation that do not meet the requirements of the Electricity (Licensing) Regulations 1991.

- I am not aware of any parts of the electrical installation that are unsafe.
- The electrical work completed fully complies with the Wiring Rules.
- The electrical installing work completed is safe and ready to be energised.
- I confirm that I have carried out the checks and tests of this electrical installation as required by the Electricity (Licensing) Regulations 1991
- The connection and energisation of the premises is unlikely to cause any consumers' electric installations to become unsafe.
- I will ensure that a duly completed Notice of Completion for the electrical work is produced to Western Power within 3 working days. (Any breach of this regulation will be reported).
- I am aware that making a false statement may result in the suspension or cancellation of my electrical contractor's/worker's licence or other penalty.

Name (print) \_\_\_\_\_ EW licence# \_\_\_\_\_  
 Signature \_\_\_\_\_ Phone \_\_\_\_\_  
 EC name \_\_\_\_\_  
 EC licence# \_\_\_\_\_ Date \_\_\_\_\_

## New requirements for an electrical workers licence

The Electrical Licensing Board has adopted a new 'Fit and Proper' Guideline for Electrical Workers, that will come into effect as of Monday 4 May 2020.

The guideline requires all new applicants for an electrician's, electrical training or restricted electrical licence to provide a statutory declaration confirming that they have not been convicted of any offences under Australian law, excluding motor traffic offences.

Should an applicant disclose criminal convictions, then they must also provide a National Police Clearance, no more than three months old, in support of their application.

The requirements do not apply to a person who holds an electrical worker's licence applying for a renewal.

For further information please visit [www.dmirs.wa.gov.au/building-and-energy](http://www.dmirs.wa.gov.au/building-and-energy)

## Product Recall Horizon Power - WireAlert Plug in device

A recall has been issued for a Horizon Power WireAlert plug in device that detects broken neutral electrical faults, in which event the device emits an electronic alarm.

### What are the defects?

A component inside the unit energised at 240 volts is accessible via a hole in the device.

If a metal object is inserted into the hole from which the alarm noise emanates, while the device is plugged in, the metal object may come into contact with 240 volts, causing electric shock or potential electrocution.

### What are the hazards?

Risk of electric shock or electrocution.

### Where were they supplied?

The devices were supplied free of charge to households and businesses in the Esperance, Norseman and Hopetoun areas in Western Australia.

### What should consumers do?

Consumers should immediately cease using the device, unplug and return it to Horizon Power at 143 Sims St, Esperance or any other Horizon Power office or depot.

For further information contact Horizon Power on 1800 267 926 or email [enquiries@horizonpower-reply.com.au](mailto:enquiries@horizonpower-reply.com.au)



*Recalled WireAlert plug in device*

# Prosecutions and Infringements

## Prosecutions between 1 July 2019 and 31 January 2020

Name and suburb of residence at time of offence	Licence number	Legislation and Breach	Offence	Date of offence	Fine (\$)	Court cost (\$)
PC Master Pty. Ltd. (Cannington)	NLH	Electricity Act 1945s. 33B(2)	Selling or hiring, or exposing or advertising for sale or hire, prescribed appliance without approval	9 May 2018	5,000.00	766.60



### Licensing announcement

Electrical Contractors please note that the employers names will no longer be included on an electrical workers licence as there are no statutory requirements to include the employer's details and as many licence holders change employers during the term of their licence this results in their licence card showing incorrect employer details.