

# eNERGY bulletin



Government of Western Australia  
Department of Commerce  
EnergySafety

## In this issue

# Private power poles and lines

In October 2014, a public awareness campaign was launched to inform property owners with private power poles and overhead lines of their responsibilities in maintaining assets on their property in a safe condition.

As part of the campaign, the following information was published by EnergySafety:

- The brochure *Private power poles and lines – Owner’s safety and responsibility*. This was mailed or emailed to all residential and small business electricity customers in their electricity bill.
- The booklet *Private overhead power lines – guide for electrical contractors*, available on EnergySafety’s website.
- An article ‘Private Power Pole and Lines Campaign’ in Energy Bulletin No. 68.

The Government’s policy position on this matter was stated as follows:

1. Any hardwood poles older than 25 years and any poles made from sawn timber should be replaced.
2. All new or replacement private power lines should be:
  - underground cables (preferred); or
  - if overhead, restricted to the use of steel poles and insulated conductors.

Before proceeding to mandate these requirements, EnergySafety decided to conduct some further research to ensure the effectiveness of the new policy and consider

its impact on electricity customers and industry. In particular, the likely performance of steel poles over time and in different environmental conditions was further investigated.

In reviewing the relative merits of different pole options, EnergySafety sought and considered:

- an updated assessment of bushfire prone areas of the State;
- technical advice from Curtin University on corrosion of galvanised steel poles in different environmental conditions and options for extending service life;
- mapping of relevant key soil characteristics across the State by the Department of Agriculture and Food;
- the experience of network operators and electrical contractors in the use of steel poles and related corrosion issues;
- the practices of other utilities in the use of steel poles and management of corrosion; and
- the relative costs of different pole types and treatments.

In May 2015, EnergySafety published a Consultation Paper outlining its proposals and inviting feedback from Industry members. Thirteen written submissions were received, providing much useful information.

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Following the consultation process, the policy has now been revised to allow the use of treated wood poles.

It was concluded that timber poles, when chemically treated with wood preservative such as CCA, can have a service life comparable with galvanised steel.

Consequently, the WAER, Guidelines for contractors and the private power poles brochure have been amended to reflect this new position.

### Amendment of the WA Electrical Requirements (WAER)

The WAER has been amended by adding new requirements for private power lines and private poles. Please refer to the article on page 5 for details.

### New guidelines published

EnergySafety has published new *Guidelines for the safe management of private power poles and lines (Guidelines)* to replace the current *Private overhead power lines – guide for electrical contractors*. The Guidelines recommend a range of practices but are non-binding.

The Guidelines provide:

- additional information for owners and electrical contractors about the effective inspection and maintenance of overhead low voltage power lines; and
- a guide to selection of the appropriate pole types and treatment option(s) in different areas of the State, as summarised in the map and table on the following page.

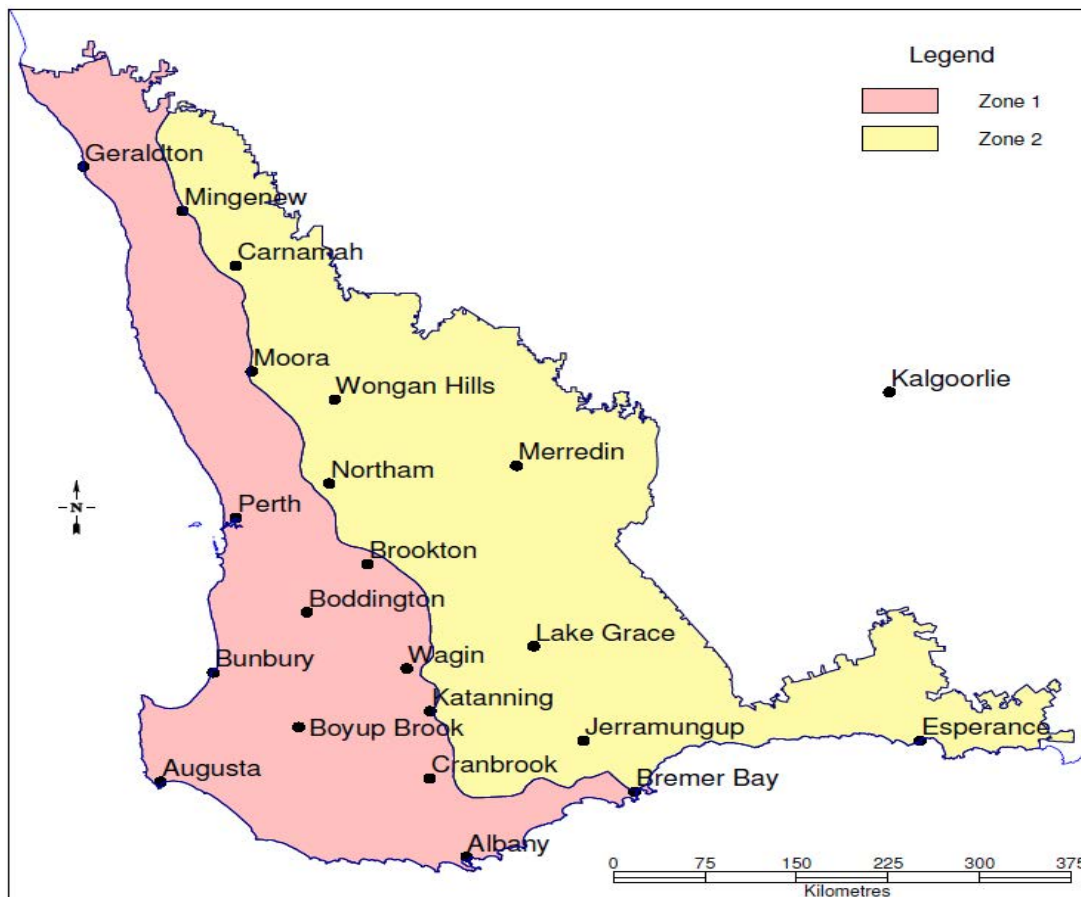
### Brochure amended

The brochure *Private power poles and lines – Owner’s safety and responsibility* has been amended and now states that either galvanised steel or treated timber can be used for private overhead low voltage lines.

Copies of the WAER amendment details, new WAER, new Guidelines and revised brochure can be downloaded from EnergySafety’s website at [www.energysafety.wa.gov.au](http://www.energysafety.wa.gov.au).



Ken Bowron  
**DIRECTOR OF ENERGY SAFETY**



*Recommended pole application zones*

LOCATION	LOCAL GROUND CONDITIONS	RECOMMENDED POLE TYPES		
		Galvanised steel	Galvanised steel with corrosion protection coating	CCA treated timber with fire protection sleeve
ZONE 1	Well drained soil	✓		✓
	Saline soil or low lying area subject to seasonal flooding		✓	✓
ZONE 2	All soils		✓	✓
REST OF THE STATE	Well drained soil	✓		✓
	Saline soil or low lying area subject to seasonal flooding		✓	✓

Table: Recommended pole application guide

## Licensing of overseas trained electricians

The pathway to gain an Electrician's Licence for an overseas trained electrician has changed.

An overseas electrician is required to undertake the Australian Context Training through a Western Australian Registered Training Organisation (RTO) to obtain a Certificate III in Electrotechnology Electrician qualification.

A Certificate III in Electrotechnology Electrician will only be obtained once they have completed:

- off-the-job units of competency with an approved RTO;
- on-the-job experience with a licensed electrical contractor; and
- theory and practical assessments.

To allow completion of the training and on receipt of a completed application form, EnergySafety will issue an Electrician's Provisional Licence, which enables the overseas electrician to gain up to 12 months on-the-job experience in electrical installing work under Australian conditions. It is not restricted to an employer or supervisor.

The supervising electrician must attend the work place before the holder of an Electrician's Provisional Licence (EPL) commences any electrical work. They must also monitor the progress of the work being undertaken. The frequency of face-to-face contacts between the supervisor and the worker may gradually decrease as the supervisor becomes

confident the worker is competent to perform the required tasks safely.

An overseas electrician will be issued an Electrician's Licence when the off-the-job and on-the-job experience with a licensed electrical contractor has been completed and the Certificate III in Electrotechnology Electrician has been issued by an RTO.

## Online Licensing

Updating your contact details, renewing, restoring and declaring lost, stolen or damaged licences or permits is now quicker and easier by using the online licensing gateway.

To use the online gateway, you must enter your licence or permit number which can be found on the front of your licence. You will also need to have an email address or mobile telephone number registered with EnergySafety so when prompted, we can SMS or email your personal one-time security access code.

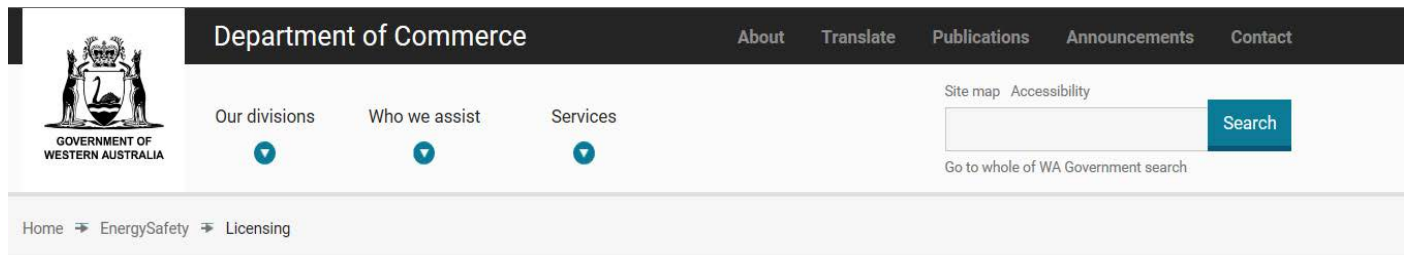
Once you enter the gateway, you are able to confirm or update your contact details, make a payment via the BPOINT payment gateway and if required, attach the relevant documents needed to complete your application.

Once the transaction is complete, you will receive an electronic copy of your receipt and the application will be processed by the Licensing Office the following work day.

To access the online licensing gateway go to the Licensing section of the Energy Safety website ([www.energysafety.wa.gov.au](http://www.energysafety.wa.gov.au)), select electrical licence or gasfitting permit, then under services choose one of the following:

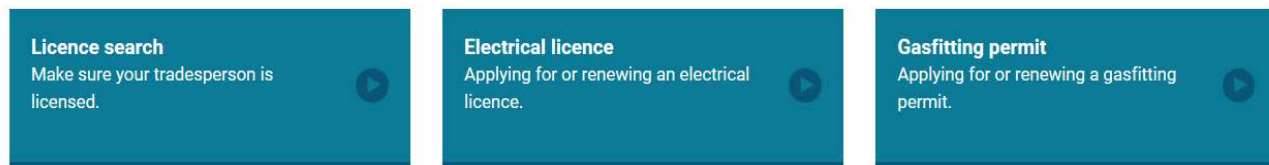
- How to pay your electrical licence fees or gasfitting permit fee.
- Change of contact details.
- Restorations of expired electrical licenses or gasfitting permit.
- Declaration of lost, stolen, damaged electrical licence or gasfitting permit.

To support the online licensing services, you will receive an SMS or email alert eight weeks prior to the expiry of your licence or permit. The alert includes a link to renew your licence or permit via the online payment gateway. Licence holders who have not renewed their licence or permit four weeks prior to expiry, will receive a renewal notice in the mail.



The screenshot shows the top navigation bar of the Department of Commerce website. On the left is the Government of Western Australia logo. The main header contains the text 'Department of Commerce' and navigation links for 'About', 'Translate', 'Publications', 'Announcements', and 'Contact'. Below the header are three menu items: 'Our divisions', 'Who we assist', and 'Services', each with a dropdown arrow. On the right side, there are links for 'Site map' and 'Accessibility', a search input field with a 'Search' button, and a note to 'Go to whole of WA Government search'.

## Licensing



Three teal-colored service tiles are displayed horizontally. Each tile has a play button icon in the bottom right corner. The first tile is titled 'Licence search' and describes ensuring a tradesperson is licensed. The second tile is titled 'Electrical licence' and describes applying for or renewing an electrical licence. The third tile is titled 'Gasfitting permit' and describes applying for or renewing a gasfitting permit.

*Licensing section on the EnergySafety website*

## Amendments to WA Electrical Requirements

EnergySafety wishes to inform electrical contractors that an updated version of the WA Electrical Requirements (WAER) was published on 29 October 2015.

The new WAER will apply to all new electrical installation designs commenced after **1 January 2016**.

Designs started before 1 January 2016, and projects under construction or for which building contracts are signed at that date, may comply with the January 2014 version of the WAER. The application of amendments to the WAER is not retrospective.

Electrical contractors are urged to familiarise themselves with the changes.

This latest version contains various editorial changes and corrections to the January 2014 edition. It also includes the following material amendments:

- Addition of a new section in Chapter 6 providing two methods for safe earthing of remote metering enclosures (Section 6.4); and
- New requirements for privately owned low voltage power lines and power poles (Sections 3.7 and 4.6), the key requirements being:
  1. Any hardwood poles older than 25 years and any poles made from sawn timber should be replaced.
  2. All new or replacement private power lines:
    - Should be underground cables (preferred); or
    - If overhead, are restricted to the use of galvanised steel or treated timber poles and insulated conductors.
  3. Details of concrete pole footings for steel poles, as required by the Wiring Rules.

EnergySafety sought and received significant input from industry on these two matters during their development.

Both the October 2015 and the superseded January 2014 versions of the WAER are available from EnergySafety's website [www.energysafety.wa.gov.au](http://www.energysafety.wa.gov.au), along with detailed descriptions of all the amendments.

Any queries about the new edition of the WAER may be directed to EnergySafety on telephone 6251 1900 or email [energysafety@commerce.wa.gov.au](mailto:energysafety@commerce.wa.gov.au).

## Reminder - Completing Notices of Completion for work done on private power lines

The technical requirements for privately owned low voltage power lines and power poles are also the subject of a related new publication *Guidelines for the safe management of private power poles and lines*. Please refer to the cover article, Private power poles and lines for further information about these new Guidelines.

Whenever you complete any electrical installing work involving private power lines, please remember that you are required to lodge a Notice of Completion (for all notifiable work) to the relevant network operator. It is essential that you provide adequate details of the work you have undertaken.

The following instructions are provided to assist electrical contractors with completing the Notice for this type of work: (*note: current form of Notice shown*)

Government of Western Australia  
Department of Commerce  
EnergySafety

### Notice of Completion

 No. 2981702

This Notice must be completed and sent to the relevant network operator at the required time, as prescribed in the Electricity (Licensing) Regulations 1997.

**1 Details of installation, network operator and retailer**

Contractor name		Subsidiary name		Meter No. of reading	
Lat. No.	Lat. No.	Street No.	Street name	Suburb/Village	Post code
Directions (please provide sufficient information)					
Network operator (Name)	Ref. No.	Electricity retailer (if new connection)	Ref. No.		

**2 Details of completed electrical work (indicate number of items in each category unless indicated otherwise)**

Water heaters	Lighting poles	10 amp socket outlets	Socket outlets <=15 amps	RCDs	Cable maximum demand (amp)
Streetlights/foot plates	Meters	Postage equipment	Air conditioning/refrigerator equipment	Smoke alarms	Consumer meter size (sq mm)
Are there electrically supply? (tick if yes and provide description in comments)	Is there equipment in hazardous areas? (tick if yes)	Other fixed electrical equipment (show full rating)			
For new connection (tick if cable, details in "comments")	Single phase HV	Single phase LV	Three phase	TT CT metering	HW connection
For existing connection (tick)	Single to multiphase	Subs to meters	New consumer meters	Temp. consumer meters	Subs./Temp. Supply
Comments:	Commercial	Shopping centre	Light industrial	Mining	Underground
For multiple connection (No. of points of supply (WLR 6.3.7))	No. of earths	No. of certain services			
Comments: <i>Description of the work done e.g. replace overhead powerline with underground cable. Install new steel PA pole</i>					

1. Write the letter 'P' under 'Other fixed electrical equipment' (see label 1 in figure above).
2. Insert a tick next to 'Overhead' (see label 2 in figure above).
3. Provide the details of the work you have completed under the 'Comments' section of the Notice (see label 3 in figure above).

## Testing and tagging electrical equipment in the workplace

EnergySafety regularly receives queries about the requirements for testing and tagging of electrical equipment and residual current devices (RCDs) in the workplace.

These requirements are prescribed under the *Occupational Safety and Health Act 1984* which is administered by WorkSafe.

Under this legislation, all portable plug-in electrical equipment including RCDs in the workplace are to meet the following requirements:

- they are safe to use and do not expose workers to any hazards; and
- they have been inspected, tested and maintained by a person deemed competent.

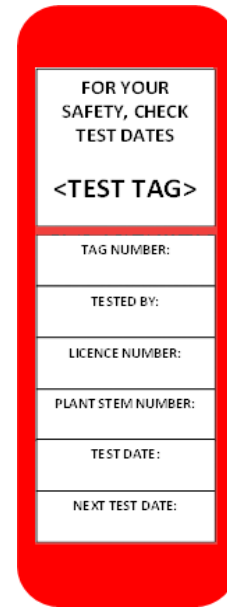
The competent person under this legislation must have the required knowledge, training, experience or qualifications to be able to test the equipment. They can be either:

- a licensed electrician using electrical test instruments to obtain technical readings that require interpretation; or
- an unlicensed individual using a portable appliance tester (PAT) that does not yield a technical reading as the tester provides a pass or fail result. This person would still require training by completing a competency assessment on testing and tagging with a PAT.

Electrical equipment or an RCD on a construction or demolition site should be inspected, tested and tagged by a competent person to ascertain whether it complies with AS/NZS 3012:2010; Electrical installations – Construction and demolition sites.

For all other workplaces, electrical equipment is to be subjected to the relevant checks, tests and inspections to ensure there is a reduced risk of injury or harm to employees in their workplace. RCDs are to be maintained and tested regularly to ensure they are operating safely.

For further information on testing and tagging, contact WorkSafe on 1300 307 877 or visit their website [www.commerce.wa.gov.au](http://www.commerce.wa.gov.au).



Appliance test tag

## Crackdown on Gumtree advertisements

EnergySafety reminds all electrical contractors and their electricians that it is an offence to advertise for electrical work without displaying their EC Licence number. This applies to advertisements on websites such as Gumtree or similar.

A recent compliance inspection found several advertisements on Gumtree which did not have the licence details of the electrical contractor. This is a clear breach of the Electricity (Licensing) Regulations 1991.

In addition, EnergySafety also found that some advertisements for electrical contracting work were placed by:

- electrical contractors with expired or suspended licences;
- overseas trained electricians (without a WA EC licence);
- air-conditioner installers;
- Provisional Electrical Licence holders and sole traders of an engineering consultancy business;
- licensed electricians (without a WA EC licence) looking for weekend work;
- Restricted Electrical Licence holders; and
- interstate electricians.

Regulation 45(1) of the Electricity (Licensing) Regulations 1991 stipulates:

“The holder of a licence shall ensure that his or her licence



documents and certificate of registration is **conspicuously** displayed at his or her principal place of business and that the number of his or her licence is conspicuously displayed in **any advertisement** advertising his or her electrical contracting business."

Any advertisement includes:

- websites;
- stationery - business cards, invoices, quotations, letterhead;
- signs and posters - vehicles and place of business;
- print media - pamphlets, newspapers, magazines, business and community directories (e.g. Yellow Pages™); and
- radio and television.

As for the definition of 'conspicuously displayed', the font size is dependent on the size of the advertisement but as a guideline, the licence number should **not be less than 50%** of the largest font size used in the advertisement.

For further information on advertising for electrical contractors, EnergySafety's *Guidelines for the Inclusion of Licence Numbers on Advertising as an Electrical Contractor* is available on our website [www.energysafety.wa.gov.au](http://www.energysafety.wa.gov.au).

## 2015 Installation Inspectors' Conference

EnergySafety's annual Electrical Installation Inspectors' Conference was held at Technology Park Conference Centre, Bentley on 21 July 2015.

Attendees to this year's conference included representatives from network operators and other government agencies (WorkSafe and Department of Fire & Emergency Services).

The topics covered included solar installations with battery storage systems, occupational safety and health in the industry, updates on legislation amendments, changes to Australian Standards, the new Code of Practice for inspectors and the new accident and property damage reporting forms. The conference provided an ideal opportunity for inspectors throughout Western Australia to network with others working in the electrical industry.

## Standards update

An amendment to AS/NZS 3004.2: 2014; Electrical installations - Marinas and Boats - Boat installations was published by Standards Australia on 17 July 2015.

The amendment affects:

- Clause 1.4.3 - requires the text in Clause 8.2 to be deleted and replaced with Clause 7.1.2.
- Clause 4.1 - requires the text in Clause 8.1.1 to be deleted (applicable to the first paragraph) and replaced with Clause 7.1.1.

## Defects found in imported portable ablution blocks

A recent inspection by EnergySafety inspectors at a manufacturing business in Malaga revealed several portable ablution blocks commonly referred to in the industry as 'Little Kennys' and 'Super Kennys' did not comply with the legislation. The units which feature a toilet, shower and wash basin, are commonly found on mine sites, rural properties and remote communities.



Exterior of a 'Little Kenny'

The 'Kennys', which have been on the market since October 2014, were manufactured in China and failed to meet Australian standards (AS/NZS 3000: 2007; Wiring Rules and AS/NZS 3001: 2008; Electrical installation - Transportable structures and vehicles including their site supply).

Defects identified included:

- a luminaire installed in the proximity of a shower (classified Zone 2);

- a socket outlet installed in the proximity of a sink (classified Zone 2) ;
- a main switchboard installed in the proximity of a shower (classified Zone 3) and inadequate protection for cables entering the switchboard;
- no IP rating on the plastic enclosure for the main supply connection box and the absence of an entry point for the supply cable; and
- inadequate protective earth connection to the conductive (metallic) structural framework of the units.



*Socket outlet installed in a wet area*

Two Inspector's Orders were issued for the defects. The manufacturer has been requested to arrange for remedial work to be carried out prior to offering them for sale. Network operators and other state regulators have also been alerted about the issue.

The manufacturer has contacted the buyers to arrange for the remedial work on the 145 units which have already been sold.

If requested to connect a Little Kenny or Super Kenny, please ensure you check that it complies with AS/NZS 3000: 2007; Wiring Rules and AS/NZS 3001: 2008; Electrical installations – Transportable structures and vehicles including their site supplies and is safe.

## Multiple earthed neutral (MEN) defects

Two electrical contractors have been prosecuted for submitting Notices of Completion to Western Power after failing to carry out adequate checking and testing on completion of the electrical work. In both cases, it resulted in the omission of a multiple earthed neutral (MEN) at the main switchboard.

Electricity had been supplied to both installations at the time Western Power Inspectors identified these serious safety defects. The inspectors made the installations safe and issued Inspector's Orders for the defective work to be rectified.

At interview, one of the electrical contractors admitted to being the only person responsible for the checking and testing of the installation and that he did not have a checking and testing test sheet, testing method or procedure in place.

The Installation Test Certificate had also been completed and signed by the electrical contractor, confirming that the checks and tests had been carried out as per the Electricity (Licensing) Regulations 1991.

Having carried out work at the main switchboard and meter panel at a property in Narngalu, an electrician employed by the second electrical contractor failed to carry out the required tests on completion of the work. The electrician stated that this was due to him awaiting confirmation from a Western Power contractor (Service Connect accredited) that the electricity from a uni-pillar was supplied before the remaining tests could be carried out. This confirmation was never received and the Western Power contractor proceeded to energise the untested and therefore unsafe installation.

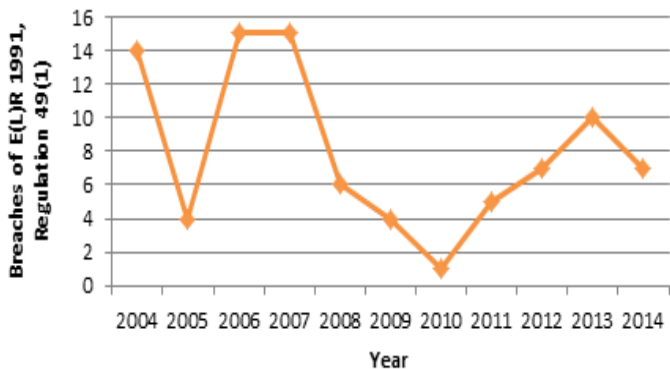
One of the electrical contractors received a penalty of \$15,000 with court costs of \$7,000 while another received a penalty of \$3,000 with court costs of \$625.

While there is a pleasing downward trend in the number of EnergySafety prosecutions for MEN omissions as reflected in the chart over the page, it is concerning that the number of breaches is still substantial.

EnergySafety has highlighted the importance of the MEN earthing system in previous issues of the Energy Bulletin (Issues No. 67, 66, 57, 35, 26, 17).



## EnergySafety prosecutions - Failure to install an MEN connection



Prosecutions for failure to install an MEN connection

The electrical contractor had provided the electrician with a testing and commissioning sheet for the distribution board however, the mandatory tests from AS/NZS 3000: 2007; Wiring Rules that would have identified the transposed conductors, had not been included on the sheet.

The electrician who had carried out the substandard electrical work pleaded guilty in the Magistrates Court and received a fine of \$4,000 with court costs of \$719.30.



Distribution boards located within the warehouse



Kiosk pad mounted substation located outside the warehouse

## Failure to re-test results in transposition

An electrical contractor has been convicted and fined \$30,000 with court costs of \$719.30 in the Perth Magistrates Court for submitting a Notice of Completion to the network operator (BHP Billiton Iron Ore) for work that was left unsafe. The electrical installing work was carried out at a new hub warehouse on the Mount Whaleback mine site in Newman.

One of the electrical contractor's electricians had installed five low-voltage three-phase underground sub main cables from a main switchboard at a kiosk pad mounted substation. This sub station fed five distribution boards in the hub warehouse as well as 'fitting out' the lighting and power circuits within the warehouse and the car park lighting circuit.

On inspection of the notifiable work, a BHP Billiton Iron Ore Inspector identified that the active and neutral conductors of the sub mains had been transposed at the main switchboard. It was fortunate that the installation had not yet been connected to the electricity supply for an employee at the mine site or the BHP Inspector may have received an electric shock if the exposed conductive parts of the installation had become 'live'.

This serious error occurred because after testing the work, the electrician removed the sub-main cable ends for a distribution board at the main switchboard to fit cable gland boots. After completing this work, he did not retest the installation (work carried out) to ensure it was safe.

## Horizon Power's meter replacement project

WA's regional and remote network operator Horizon Power has commenced a roll out of its 34.1 million dollar state funded Advanced Metering Infrastructure (AMI) meter replacement project in the Kimberley region.

The project, which will be completed next year, has already seen 14,000 old legacy meters replaced with advanced meters since July 2015 in towns such as Port Hedland and now Derby and Broome. The meters operate in both credit mode (resulting in bi-monthly bills) or pre-payment mode. About 1,000 old pre-payment meters (PPM) are installed in Aboriginal communities throughout WA and the AMI project involves replacing those with new AMI PPMs following a successful trial last year. The new meters in pre-payment mode were installed in 45 houses in a remote Aboriginal community.

Advanced meters, remotely record consumers' energy usage and consumption at thirty minute intervals with the data relayed instantly to a central system. The advanced meters being installed include the Landis & Gyr U1300 electronic meter for single phase and the Landis & Gyr U3300/3400 electronic meter for three-phase.

The project, which fulfils the requirements of the *Electricity Industry Metering Code 2005* contributes to a primary Horizon Power strategic objective, being a saving to taxpayers of \$100 million per annum for 2017 and 2018.

Benefits afforded from this project include:

- Cost savings - there is no expenditure required from consumers for the meter replacement. These meters no longer need to be physically read but can be read through computer systems.
- Timelier and more accurate billing as there will no longer be a need for estimated bills in the vast majority of cases.
- Faults - allows for quick and rapid identification of faults within a house or on the grid.
- Customer convenience as Horizon Power will rarely need to attend customer premises.

Benefits of the new PPMs include:

- Convenience - estimates for energy usage and consumption will now only be required in some very remote areas. The physical readings lead to time delays in receiving bills. Where there are access issues, meter readings are usually estimates
- Efficiency - the meters allow for quicker reconnections and disconnections. Tariffs, rules, concessions and

entitlements can be adjusted by Horizon Power at any time without having to attend the meter.

Electrical contractors engaged to carry out rectification work associated with a Horizon Power advice or fault notice, are reminded to complete the form before returning it to the network operator (Horizon Power), as well as providing the customer who required the work to be carried out with an Electrical Safety Certificate within twenty eight days of completing the work.

For the latest updates on the project, visit Horizon Power's website [www.horizonpower.com.au](http://www.horizonpower.com.au)



Single phase and three phase Landis and Gyr electronic meter

## Retailer charged for selling unapproved USB chargers

A Derby retailer has been found guilty in the Magistrate Court for offering for sale unapproved USB chargers and mini laser stage lights which were purchased via the internet.

The non-approved items were discovered during a series of compliance inspections prompted by the fatality of a young woman in NSW. The young woman was electrocuted after using an unapproved 230 V ac USB charger to charge her mobile phone while listening to music via headphones plugged into her laptop.

Some months later in Western Australia, another woman received an electric shock while removing an iPhone lead from a similar USB charger that had been purchased from a temporary stall at Thornlie Shopping Centre.



*Unapproved USB adapter (note the uninsulated pins)*

The EnergySafety compliance inspection was coordinated with inspections carried out by Consumer Protection. Out of 144 retail inspections, Consumer Protection identified 20 retailers (stockists of mobile phones, novelties and gifts) in Western Australia that were selling the unapproved USB chargers.

While the USB chargers for sale in Derby were not the same as the unsafe model which caused the death and electric shock, they were not approved and therefore, may present a safety hazard for the public.

When questioned by an EnergySafety inspector, the retailer claimed to have been unaware of the approval and construction requirements of the items as having purchased them on the internet, he incorrectly assumed they could be resold. A quick search of Electrical Regulatory Authorities Council's (ERAC's) National Equipment Registration System would have revealed the items to have been unapproved.



*Unapproved mini laser light and adapter*

## Australian first battery storage trial

Residents in the new residential suburb of Alkimos Beach, 40 km north of Perth, are being invited to participate in a four year trial that aims to integrate renewable energy generation and storage into the Western Power electricity grid.

The 6.7 million dollar trial, which is the first of its kind in Australia, is being run in partnership with LandCorp, Lendlease and Synergy. The trial is partially funded by the Australian Government run Australian Renewable Energy Agency (ARENA), who are contributing 3.3 million dollars.

ARENA provides affordable sustainable energy options for communities as well as promoting renewable energy technology and usage Australia wide.

Alkimos Beach has undergone an assessment by the Green Building Council Australia and has been awarded a six green star Communities rating. This rating enables categorisation of the sustainability of a community development based on the criteria of space use, timing of certification, conditional requirements and distinct boundary.

The trial will test a number of initiatives including at least three electricity retail models and various Synergy tariff options. It is anticipated to reduce peak electricity demands, costs and carbon emissions in the environmentally, economically and socially sustainable community.

Along with a supportive educational program on renewable energy usage and consumption, a minimum of one hundred residents will receive an Energy Smart Home Package, which include benefits such as rebates (between \$4,500 and \$6,000) towards a mandatory gas boosted solar hot water system and energy efficient air-conditioners, a solar photovoltaic system which feeds into a centralised 1.1 MWh lithium ion battery storage device and a 'real time' display unit electricity monitor.

It is expected that the storage system will be connected by December 2015.

Data to be evaluated from the trial is expected to show how the battery storage affects network grid demands within the community and how consumers adapt to new technology, with comparisons to be made with consumers using non-renewable energy sources.

For more information on the trial visit [www.synergy.net.au](http://www.synergy.net.au)



## WorldSkills Australia Competitions

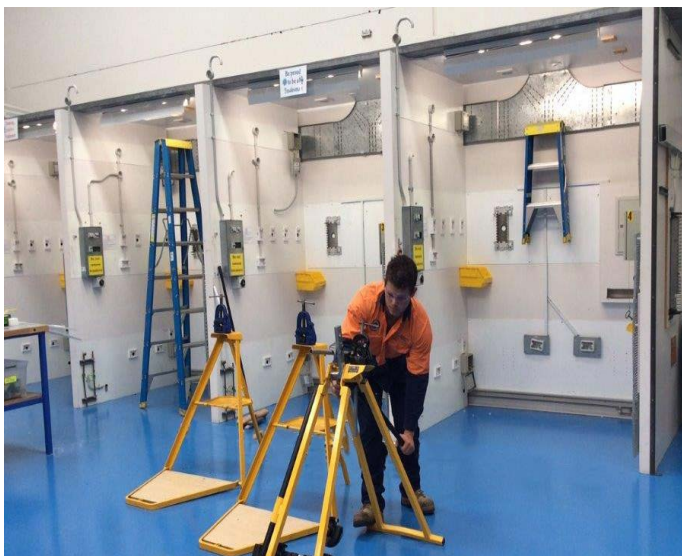
The 2015 WorldSkills Australia Regional Competition for Electrical Installation Systems was conducted at the College of Electrical Training, Jandakot Campus, during August 2015.

WorldSkills Australia is the nation's premier platform for showcasing skills in over 60 trades through regional and national competitions.

At the biennial regional competitions, Electrical Group Training trainee electricians pitted their installing and testing skills in the category of Electrical Installation Systems.

They were assessed against a rigorous framework aligned to national training packages, standards and industry benchmarks. Trainees were vying for the opportunity to compete at the national competitions, planned to be held in Melbourne in August 2016, for a chance to win the coveted title of Australia's best young talent in their field.

National finalists may be invited to represent Australia at the 44th WorldSkills International Competition, to be held in Abu Dhabi in 2017, where over 70 member countries' best talents will compete.



*Competitor at the WorldSkills Australia Competition*

EnergySafety's Chief Electrical Inspector Compliance Harry Hills acted as Chief Judge for the regionals, assisted by CET's Jan Loots and Greg Morgan.

Harry commented that he was particularly impressed with

the skill level and work maturity of the competitors at the regionals. He also noted that, anecdotally, there is not enough emphasis being placed on checking and testing completed electrical work.

The winners of the regionals were announced recently:

### **Perth North Winners**

GOLD – Daniel Evans

SILVER – Jason Dickinson

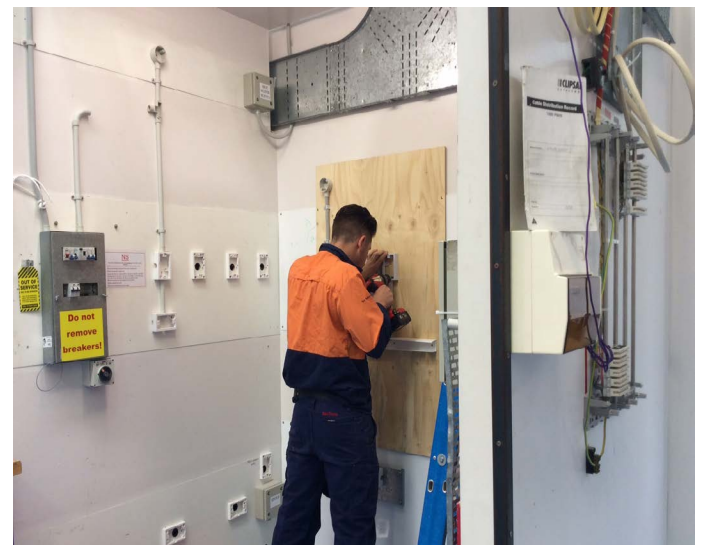
BRONZE – Miki Niceski

### **Perth South Winners**

GOLD – Jack Ladiges

SILVER – Jack Nyenhuis and Sebastian Short

BRONZE – Matt Collins



*Competitor at the WorldSkills Australia Competition*

## New electrical Notices of Completion

EnergySafety will shortly release amended Preliminary Notices and Notices of Completion to replace the current versions which have been in use for some years.

Changes to the forms became necessary to reflect changes in technology and allow for better data submission and capture.

### Background

EnergySafety consulted with industry in developing the new forms. All network operators, the National Electrical and Communication Association (NECA), the Master Electricians Association (MEA) and experienced regulatory staff were consulted. The consultation process included publication of draft amendments, invitation for comments and a meeting of company representatives in March 2014 to consolidate industry's views.

Implementation of the new forms has been delayed to enable Western Power to make the necessary changes to its IT systems for electronic submission of the new Notices.

### Overview of changes made

The changes made to the Notices are as follows:

1. 2 new boxes have been added in the top right corner to allow both electrical contractors and network operators to clearly differentiate between new connections and alterations to existing installations.
2. A new field has been added to record the GPS location of remote sites.
3. New fields to better describe the scope of work have been added e.g. number of switchboards, sub-circuits, etc.
4. New fields have been added to provide basic information about generators.
5. The 'Comments' section has been re-named 'Work Description & Comments' and additional space is now provided to enable electrical contractors to provide more information about the nature of the work undertaken.
6. The 'yes/no' options in sections 3 and 4 have been re-ordered.
7. Email contact details for the electrical contractor/in-house electrical installer are now required.

These changes are highlighted in yellow in the diagram on the next page, as numbered above.

### Transitional arrangements

#### Hard copy Notices

Electrical contractors can continue to use their books of existing forms until 30 June 2016. Network operators will accept submission of either the current or new Notices up to this date.

EnergySafety will continue to issue books of existing Notices up to 31 December 2015 or until stocks are exhausted, whichever is the earlier. From this time, only the new Notices will be issued in book form.

From 1 July 2016, the new Notices must be used exclusively i.e. the old ones will no longer be accepted beyond this date.

Electrical contractors are encouraged to use their existing books first before ordering the new ones.

#### Electronic submission of notices (ETIC)

Western Power will implement changes to ETIC to use electronic notices in the new form only.

### Implementation

It is important that both electrical contractors and inspectors familiarise themselves with the imminent changes to the Preliminary Notice and Notice of Completion.

A copy of the new notice, provided for information only, can be downloaded from EnergySafety's website [www.energysafety.wa.gov.au](http://www.energysafety.wa.gov.au)

Please note that the contact details for network operators in the new Notices booklets will also be updated as shown in the table on the next page. Electrical contractors should commence using these new contacts immediately (if they aren't already).

Electrical contractors are reminded that the Preliminary Notice and Notice of Completion are legal documents and must contain sufficient relevant information to fully describe the electrical work undertaken.



Government of Western Australia  
Department of Commerce  
Energy Safety

## Notice of Completion

No. \_\_\_\_\_

This Notice must be completed and sent to the relevant network operator at the required time, as prescribed in the *Electricity (Licensing) Regulations 1991*.

**1. Tick one of these boxes**

**1 Details of installation, network operator and retailer**  New Installation (tick)  Alteration/Addition (tick)

Owner/occupier Name: \_\_\_\_\_ Telephone: \_\_\_\_\_ Builder Name: \_\_\_\_\_ Telephone: \_\_\_\_\_ Meter No. (if existing) \_\_\_\_\_

Lot No. \_\_\_\_\_ Unit No. \_\_\_\_\_ Street No. \_\_\_\_\_ Street name \_\_\_\_\_ Suburb/Town \_\_\_\_\_ Post code \_\_\_\_\_

Directions to location (please provide sufficient information) \_\_\_\_\_ GPS location (where remote) \_\_\_\_\_

Network operator (name) \_\_\_\_\_ Ref No. \_\_\_\_\_ Electricity retailer (if new connection) \_\_\_\_\_ Customer Ref No. \_\_\_\_\_

**2 Details of completed electrical work** (Circle installation type; indicate number of items in each category unless indicated otherwise)

Domestic	Commercial	Industrial	Mine site	Construction/ demolition site	Unmetered supply	Other	Single phase 240v	Single phase 480v	Three phase LV	LV CT metering	High Voltage	Overhead supply	Underground supply						
<b>Work scope</b>																			
Substations		Consumers mains		1		Main switchboards		1		Distribution boards		Sub-mains		1		Final sub-circuits		5	
No. of units		Hazardous areas? (Y/N) (details in comments)		No. of points of supply (OWES/ESU)		Alternative supply? (e.g. generator, PV)		No. 1		Type Solar PV		Rating		5kw					
Lighting points		10 amp socket outlets		>=15 amp socket outlets		Water heaters		Stoves/ovens/ hotplates		Motors (No., kW)		Calc. maximum demand (amps)							
Pool/spa equipment		Air conditioning/ refrigeration equip		RCBs		Smoke alarms		Other fixed electrical equipment		Type, kW		Consumers mains size (sq mm)							
<b>Work description &amp; comments:</b>																			
Additional details to fully describe the work undertaken																			

**3 General information** (Please circle. If "Yes" to any of the questions, provide details)

Is there any electrical work for which you are not responsible?  Yes  No If "Yes", provide details: \_\_\_\_\_

Is network operator attendance at site required?  Yes  No

**4 Certification of electrical installing work** (Please circle)

a) Are you aware of any parts of the electrical installation that do not meet the requirements of the *Electricity (Licensing) Regulations 1991* or are unsafe?  Yes  No If "Yes", provide details: \_\_\_\_\_

b) Does the installation fully comply with Part 2 of the "Wiring Rules" (and therefore a "Part 1 solution" has not been used)?  Yes  No If "No", provide details: \_\_\_\_\_

c) Has the electrical installing work subject to this Notice been connected to the electricity supply?  Yes  No If "Yes", provide date installation connected and energised: \_\_\_\_\_

d) If not connected to electricity supply, is the electrical installing work subject of this Notice safe and ready to be connected?  Yes  No If "No", provide date work completed and why it cannot be connected: \_\_\_\_\_

e) The electrical installing work subject of this Notice has been checked and tested and found to comply with the *Electricity (Licensing) Regulations 1991*, by the following electrician:  
Name (please print): \_\_\_\_\_ EW \_\_\_\_\_ Date tested: \_\_\_\_/\_\_\_\_/\_\_\_\_

f) I certify that:  
i) this Notice has been duly completed;  
ii) the electrical installing work subject of this Notice has been completed; and  
iii) any such electrical installing work carried out by an electrical worker or workers complies with the *Electricity (Licensing) Regulations 1991*.

**For submission of Preliminary Notice:**  
Nominee Name: \_\_\_\_\_  
Nominee Signature: \_\_\_\_\_  
Date: \_\_\_\_\_

**Details of Nominee**  
Surname: \_\_\_\_\_  
Please Print: \_\_\_\_\_  
Signature: \_\_\_\_\_  
EW Licence No: EW \_\_\_\_\_  
Date (Notice of Completion): \_\_\_\_\_

**Details of electrical contractor / in-house electrical installer**  
Business Name: \_\_\_\_\_  
Business Address: \_\_\_\_\_  
Phone Number: \_\_\_\_\_  
Email Address: \_\_\_\_\_  
Facsimile Number: \_\_\_\_\_  
EC/WH Licence No \_\_\_\_\_  
Show EC or WH Prefix: \_\_\_\_\_

VERSION 2  
Notice of Completion - Duplicate - Licence Holder Copy  
ESWA E001 0915

### Changes made to the Electrical Notices of Completion

Network Operator	Email	Address	Phone No.	Fax No.
BHP Billiton Iron Ore- Attn: Electrical Inspector	<a href="mailto:supplyauthority@bhpbilliton.com">supplyauthority@bhpbilliton.com</a>	PO Box 601, Newman WA 6753	9175 3303	
BHP Billiton Nickel West - Attn: Senior Electrical Inspector	<a href="mailto:NiWNLNMaintenanceEngineering@bhpbilliton.com">NiWNLNMaintenanceEngineering@bhpbilliton.com</a>	PO BOX 22, Leinster WA 6437	9026 5673 0438 935 629	9026 5395
Rio Tinto - Inspectorate Inland -Inspectorate coastal	<a href="mailto:electrical.inspectors@riotinto.com">electrical.inspectors@riotinto.com</a> <a href="mailto:electrical.inspectors@riotinto.com">electrical.inspectors@riotinto.com</a>	PO Box 22, Tom Price WA 6751 PO Box 21, Wickham WA 6720	9143 3233 9159 2623	9143 3260 9143 3260
Horizon Power	<a href="mailto:electricalnotices@horizonpower.com.au">electricalnotices@horizonpower.com.au</a>	PO Box 1066, Bentley DC WA 6983	6310 1923	6310 1044
Western Power	<a href="mailto:energise.notices@westernpower.com.au">energise.notices@westernpower.com.au</a>	Locked Bag 2520, Perth WA 6001	13 10 87	9225 2643
EnergySafety	<a href="mailto:energysafety@commerce.wa.gov.au">energysafety@commerce.wa.gov.au</a>	Locked Bag 14, Cloisters Square WA 6850	6251 1905	6251 1903

Table: Network Operator contact details

## Product recalls

### Atom Lighting Pty Ltd 200VA Trailing Edge LED Dimmer

The affected model No.AT9300/A was sold nationally between 7 July and 30 November 2014.

These products were manufactured with an internal metal shaft instead of a plastic shaft and the internal clearances have not been increased as per AS/NZS 61347.2.11: 2003; Lamp control gear - Particular requirements for miscellaneous electronic circuits used with luminaires.

In the event that the external plastic knob is removed and the switch has been internally damaged or incorrectly installed, an individual may be at risk of receiving an electric shock

Contact Details:

Telephone: (07) 5537 1022

Fax: (07) 5537 1055

Email: [sales@atomlighting.com.au](mailto:sales@atomlighting.com.au)

Website: [www.atomlighting.com.au](http://www.atomlighting.com.au)

### Schneider Electric (Australia) Pty Limited Meter Boxes – 230DRAS1MI and 230DRAS-2MI

The affected models with date codes between S12014480001 and S12015252308 for 230DRAS1MI and S22014480001 and S22015100570 for 230DRAS2MI were sold between January and July 2015.

These products were manufactured with the 4CB163/6 meter isolator fitted with the incorrectly sized screw on the lockout plate which causes contact between the screw on the side of the meter isolator and metal bobbin assembly.

Should contact me made with the screw which is 'live', there is the risk of an individual receiving an electric shock.

Contact Details:

Telephone: 1300 369 223 or 1300 202 525

Website: [www.clipsal.com](http://www.clipsal.com)

## Q & A's - Management Representatives

	Question	Answer from EnergySafety
1.	Why does an electrical contractor require a Management Representative?	Regulation 36 of the Electricity (Licensing) Regulations 1991 requires that the electrical contractor or at least one employee of the electrical contractor who is concerned with the management or conduct of the business, fully understand the duties and obligations imposed by the regulations, the <i>Electricity Act 1945</i> and the <i>Energy Coordination Act 1994</i> and has successfully completed the modules of the electrical contractor training program as listed below.
2.	What training am I required to undertake to become a Management Representative?	The Management Representative would have undertaken the following modules from the Electrical Contractor Training Program: <ul style="list-style-type: none"> <li>• General Legislative Requirements (EA103B); and</li> <li>• Establishing a Contracting Business (EA102)</li> </ul>
3.	Can I apply for an exemption from completing the modules?	Yes. Interstate applicants can be granted an exemption if they hold an electrical contractor's licence in another State or Territory

4.	How do I apply to be a Management Representative?	<p>Along with an application fee of \$85, you are required to provide the following to the Licensing Office:</p> <ul style="list-style-type: none"> <li>• A completed 'Application to Register as a Management Representative for an Electrical Contractor's Licence' available from our website <a href="http://www.energysafety.wa.gov.au">www.energysafety.wa.gov.au</a></li> <li>• Evidence of having successfully completed the required modules.</li> <li>• Proof of identification.</li> <li>• For interstate applicants (Australia or New Zealand), a clear copy of both sides of your electrical contractor's licence registration.</li> <li>•</li> </ul>
5.	At what training institutions can I undertake these modules?	<p>The Western Australian registered training organisations that offer these modules are:</p> <ul style="list-style-type: none"> <li>• College of Electrical Training 5 Avior Avenue, JANDAKOT WA 6164 Telephone: (08) 9417 8166 Fax: (08) 9417 8766 or 20 Injune Way, JOONDALUP WA 6027 Telephone: (08) 9301 1560 Fax: (08) 9301 5059</li> <li>• Combined Skills Training Association 1<sup>st</sup> Floor, Unit 24/257 Balcatta Road BALCATTWA WA 6021 ph: (08) 9440 3600</li> <li>• Polytechnic West Thornlie Campus Burslem Drive, THORNIE WA 6108 ph: (08) 9267 7504</li> </ul>
6.	How do I remove myself as the Management Representative for a company?	Written notification is required from the electrical contractor and is to be submitted to the Electrical Licensing Board
7.	If our Management Representative has ceased employment with the company, can our business continue operating without one?	No. Your electrical contractor's licence will be suspended up to the time a new Management Representative is appointed and the Licensing Office is notified of the change

## Prosecutions for breaches of electricity legislation

Between 1 July and 30 September 2015

Name (and suburb of residence at time of offence)	Licence Number	Legislation and Breach	Offence	Date of Offence	Fine (\$)	Court costs (\$)
Michael Perrotta (Royal Park)	EW177818	Regulation 49 (1) E(L)R 1991	Carrying out, or causing or permitting to be carried out, electrical work contrary to AS/NZS 3000:2007; Wiring Rules which was unsafe	24 June 2013	4,000.00	719.30
Glenn & Helen Finnigan T/As D.K.L Electrical (Karrinyup)	EC005198	Regulation 52 (3) E(L)R 1991	Sending notice of completion of notifiable work in relation to uncompleted work which was unsafe	26 June 2013	3,000.00	719.30
Midwest Electrical Service Pty Ltd (Geraldton)	EC004963	Regulation 52 (3) E(L)R 1991	Sending notice of completion of notifiable work in relation to uncompleted work which was unsafe	10 September 2012	15,000.00	7,000.00
Tip Top Electrical Services Pty Ltd (Walkerville)	EC008374	Regulation 52 (3) E(L)R 1991	Sending notice of completion of notifiable work in relation to uncompleted work which was unsafe	24 June 2013	30,000.00	719.30

Name (and suburb of residence at time of offence)	Licence Number	Legislation and Breach	Offence	Date of Offence	Fine (\$)	Court costs (\$)
Boab Traders Pty Ltd T/As Sound Plus (Derby)	NLH	Section 33B(2) EA 1945	Selling or hiring, or exposing or advertising for sale or hire, prescribed appliance without approval	25 August 2014	1,500.00	719.30

### Legend

- NLH No Licenece Held  
 EA *Electricity Act 1945*  
 E(L)R *Electricity Licensing Regulations 1991*  
 \* Global fine or costs issued

## Summary of Infringements for breaches of electricity legislation

Between 1 July and 15 September 2015

Legislation and breach	Offence	Number of Infringements	Fine (\$)
Regulation 53 (2) E(L)R 1991	Employing, engaging or instructing an unlicensed person to carry out electrical work for which a licence is required	1	1,000.00



## Non-compliant piping system installations

EnergySafety has recently become aware of several non-compliant piping system installations where Polyethylene, UPVC and proprietary piping systems have been installed. It is fortunate these installations were discovered and rectified prior to them being commissioned and being placed into service.

In the case of the copper piping system installations, some non-gas approved press-fit type water fittings had been installed on the copper pipe intended for gas service. For use in gas systems the fittings must have Hydrogenated Nitrile Butadiene Rubber (HNBR) O-rings that have yellow markings on the fittings and in most cases the word GAS also stamped on the fittings. The sealing O-rings used in the water system fittings are made from EPDM rubber (Ethylene Propylene Diene Monomer [M-class] rubber). These O-rings are not compatible with Hydro Carbon Fuels, including Natural Gas and LP Gas.

Composite pipe installations were discovered that had plastic fittings, approved for water service installed to join sections of the piping system together and also to form branches in the piping system. There was another installation with a mismatch of brands of composite pipe and the fittings used. In another installation, the crimping ferrule used was of one brand and the actual fitting was of another brand.

In another installation a Polyethylene (PE) piping system had been installed in a five storey multi-residential building still under construction. The PE piping had been installed through the undercover section of the carpark attached to the soffit and up five floors of the complex in the service riser duct shaft. Another installation used UPVC piping discovered above ground in the ceiling space and in a wall cavity that was to be bricked in.

EnergySafety would like to remind gas fitters that all piping systems must be installed in accordance with the requirements of AS/NZS 5601.1:2013 Section 4 and Table 4.1.

EnergySafety's policy on the use of proprietary piping systems is that, a gas fitter must be trained and certified in the use of proprietary piping systems before the gasfitter commences using these systems. If a gas fitter wishes to use both composite and press-fit compression piping systems then the gas fitter must have had training and certification in the use of both types of systems.

The proprietary system manufacturers and/or distributors do offer training packages in the use of their piping systems. At the conclusion of training a certificate is given and the participants name is recorded on a register.



*Samples of fittings removed*



*Non-compliant PE riser prior to replacement*



*Non-compliant PE riser prior to replacement*



*Non-compliant UPVC pipe installed in wall cavity*

## Replacement of existing Type A appliances

Many gas fitters have received Notices of Defect after replacing gas appliances on existing installations.

It appears that because it's existing the appliance installation and location is assumed to be compliant.

The highest percentage of such instances involve the replacement of domestic gas water heaters, followed by domestic cookers and cook tops.

Common installation defects associated with gas water heater replacement are:

- insufficient clearances to corners, return walls, openings into buildings, combustible surfaces, downpipes or other obstructions;
- failing to ensure minimum inlet gas pressure. (e.g: pipe size too small); and

- no isolation valve.

Common installation defects associated with cook top replacement are:

- insufficient clearances to combustibles lateral and overhead; and
- insufficient clearances to range hoods.

Common installation defects associated with the replacement of upright cookers are:

- incorrect high level hose assembly connections;
- insufficient clearances to combustibles lateral and overhead; and
- insufficient clearances to range hoods.

Always remember that the existing appliance may not have been compliantly installed and that requirements change as do manufacturer's installation instructions.

The replacement appliance must be installed in accordance with current requirements.



When installing any Type A gas appliance on a new gas installation, an existing installation or as a replacement the minimum inlet pressure to that gas appliance must be available at the appliance inlet. Failure to do so will result in a Notice of Defect and also voids some manufacturer's warranties.

When you are about to carry out a replacement of any appliance, remember to apply the current requirements as detailed in the Regulations and AS/NZS 5601.1:2013. Both of these documents include references to the manufacturer's instructions.



*Non-compliant gas hot water system installed too close to return wall and downpipe*



*Non-compliant gas hot water system installed too close to window*



*Non-compliant gas hot water system installed too close to window*



*Non-compliant gas hot water system installed too close to window*

## Amendment to AS/NZS 5601.1:2013 published

Standards Australia has released an amendment to AS/NZS 5601.1:2013. The amendment corrects an editing error in clause 5.11.5.9 Vent terminal location. This clause requires that when there is an obstruction in the exclusion zone in front of the vent terminal the exclusion zone is redefined as a sphere centred on the vent terminal. The clause originally indicated an incorrect radius of the sphere which has been corrected as follows:

Diameter of vent terminal	T factor	Radius of exclusion zone sphere	
		Incorrect value (m)	Correct value(m)
Up to 50 mm		0.5	1.5
Greater than 50 mm	$\frac{\text{Diameter of vent terminal}}{50}$	0.5T	1.5T

The amendment AS/NZS 5601.1:2013/Amdt 1:2015 was published on 27 August 2015 and became effective in Western Australia from that date. The amendment is available free of charge from the SAI Global web site at <http://infostore.saiglobal.com/store/>

## Vipac appliance certification adopted

On 28 August 2015 the Director of Energy Safety adopted the Vipac Engineers and Scientists Type A gas appliance and gas components certification scheme. The adoption of the scheme means that gas appliances marked with the Vipack certification mark can now be sold, hired, advertised for sale or installed in Western Australia. This is the fifth certifying body adopted by the Director. Details of all the adopted bodies and their certifying marks follow:

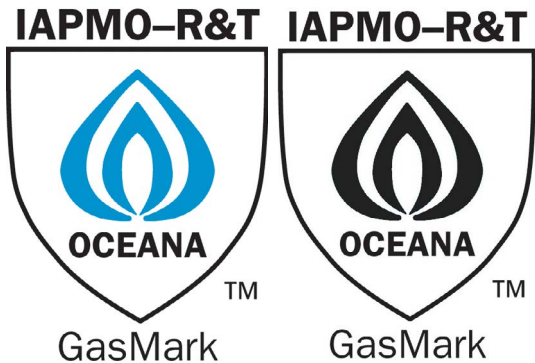


Australian Gas Association  
[www.aga.asn.au/product\\_directory](http://www.aga.asn.au/product_directory)



Global-Mark

<http://register.saiglobal.com/default.aspx?styp=power>



IAPMO ReT Oceana

<http://forms.iapmo.org/ocna/Listing/>



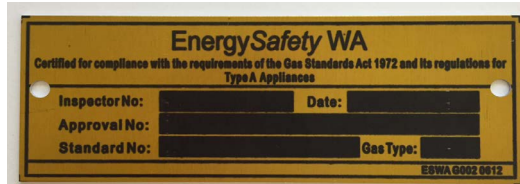
SAI Global

<http://register.saiglobal.com/default.aspx?styp+power>



Vipac

<http://gascertification.vipac.com.au/>



Gas Technical Regulators Committee

<http://equipment.gtrc.gov.au/>

## Caution near flammable materials

A recent incident reported to the MPGA highlights the need to ensure that flammable materials are identified, safety data sheets are reviewed and plumbers and gasfitters take care when using welding equipment or any tools that generate heat or sparks.

### The incident

A plumber repairing damage to a copper pipe passing through the cavity wall of a new double brick residential building, accidentally set fire to the insulation material that was installed within the cavity during construction. On this occasion, the plumber and another tradesperson on site were able to extinguish the fire and limit the damage to the property. A review of the material safety data sheet (MSDS) for the cavity insulation material revealed the following information; *May evolve toxic gases (carbon oxides, hydrocarbons) when heated to decomposition. Conditions*

*to avoid include; heat, sparks, open flames and other ignition sources.*

### Precautions

Caution must be observed when carrying out hot works in the vicinity of any flammable materials, particularly in circumstances like these where the initial fire could be difficult to extinguish and has the potential to expand into the roof space of the building.

Before carrying out any hot works, Plumbers and Gasfitters must identify any flammable, or potentially flammable, materials in the vicinity of the work area and remove them where possible. Suitable firefighting equipment must be on hand; a serviceable fire extinguisher being the minimum requirement.

For more information, please do not hesitate to contact the MPGA on 9471 6661 or [technical@mpawa.asn.au](mailto:technical@mpawa.asn.au).

Article kindly supplied by the MPGA.

## Summary of infringements for breaches of gas legislation

Between 1 July and 30 September 2015

Legislation and breach	Offence	Number of Infringements	Fine (\$)
GSR R18(2)	Failing to ensure gas installation complies with prescribed requirements	4	2,400.00
GSR R26(1)a	Failing to ensure gas installation is gas-tight	1	600.00
GSR R28(2)	Failing to attach approved work badge or label on completion of work	2	800.00
GSR R28(3)	Failing to give notice of completion of gasfitting work within required time	1	400.00
GSR R34(1)	Failing to keep records of employed gas fitters in required manner	1	250.00
	<b>Total</b>	<b>9</b>	<b>4,450.00</b>

### Legend

GSA Gas Standards Act 1972

GSR Gas Standards (Gasfitting and Consumer Gas Installatons) Regulations 1999