

energy

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• In this issue...

- New WA Electrical Requirements now published 1
- National Occupational Licensing Scheme (NOLS) 2

Electrical Focus 3

- Electrical safety on construction and demolition sites 3
- Prosecutions: petty persecution or a pertinent, pragmatic practice? 5
- Caring for apprentices – too many contractors and supervising electrical workers fail 7
- Unlicensed Todd Ovens receives \$36,000 penalty for using two electrical licence numbers as his own 8
- Electricity Compliance Directorate's latest recruit 8
- Stall owners infringed for selling prescribed appliances at the Perth Royal Show 8
- Overhaul of existing exemptions for electrical contractors and in-house licence holders 9
- Prosecutions for breaches of electricity legislation 10
- Summary of infringements for breaches of electricity legislation 11

Gas Focus 12

- Supervision of gas fitters, apprentices and trainees 12
- AS 3814 for public comment 12
- Mungullah Power Station and GRE pipework 12
- Gas engine powered multi-split air-conditioners 13
- Clean power project at Carnarvon Power Station 14
- Proposed amendments to the regulations (GSR 1999) 15
- Prosecutions for breaches of gas legislation 16
- Summary of infringements for breaches of gas legislation 16

New WA Electrical Requirements now published

EnergySafety wishes to inform electrical contractors that a comprehensive review of the WA Electrical Requirements (WAER) has been completed and the new (revised) WAER was published on 28 February 2014.

The new WAER will apply to all new electrical installation designs commenced after 1 July 2014.

Designs started before 1 July 2014, and projects under construction or for which building contracts are signed at that date, may comply with the July 2008 version of the WAER. The application of amendments to the WAER is not retrospective.

The revisions are extensive and the document has been completely rewritten. Electrical contractors are urged to familiarise themselves with the changes.

The new version has been appropriately re-focussed on technical safety compliance requirements and includes the following material changes:

- Removal of much of the detailed information on network connection arrangements, which is now covered by network operators' connection and technical requirements.
- Removal of matters which are now contained in other new or revised statutory instruments or technical standards (such as the Wiring Rules).

As a consequence, the 2008 version has been significantly modified as follows:

- Numerous changes have been made to the definitions in Chapter 2.
- Many of the detailed requirements in Chapters 3, 4 and 5 have been revised.
- Much of the content of Chapter 6 has been removed and, in particular, technical requirements for Service Protection Devices have been modified, including the exclusive use of HRC fuses for direct connected meters.
- Chapter 7 has been extensively modified by removal of much of the detail required in High Voltage Submissions but important new provisions have been added in relation to ongoing safe operation and maintenance of HV installations.
- The content of Chapter 8 has been deleted with the exception of matters related to Shared Bore Pumps (see new Chapter 9).
- Chapters 9 and 10 have been removed in entirety.
- New Chapters 9 and 10 replace old Chapters 11 and 12 respectively.

EnergySafety sought and received significant input from industry during the review, including all network operators, the National Electrical and Communication Association (NECA), the Master Electricians Association

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Continued from previous page

(MEA), consulting engineers, WorkSafe and electrical training service providers.

The consultation process included:

1. initial canvassing of stakeholders' views on potential amendments;
2. publication of proposed draft amendments, an issues paper and invitation for submissions on 2 September 2013;
3. receipt of formal submissions by 13 October 2013 and subsequent publication on EnergySafety's website; and
4. formation of an industry working group for further advice on key issues raised in submissions – the first and only meeting took place on 20 November 2013.

Copies of the new WAER may be obtained:

- for free by downloading from EnergySafety's website at www.energysafety.wa.gov.au; or
- by purchasing a printed copy from EnergySafety's licensing office on 9422 5282 – a fee of \$40 per copy applies.



KEN BOWRON
DIRECTOR OF ENERGY SAFETY

National Occupational Licensing Scheme (NOLS)

At its 13 December 2013 meeting, the Council of Australian Governments (COAG), comprising the Prime Minister, all state Premiers and territory chief ministers, decided to end the National Occupational Licensing Scheme (NOLS) and to abolish the National Occupational Licensing Authority (NOLA). The following is the relevant extract from the official COAG communique from the meeting:

“National Occupational Licensing Scheme

COAG noted that, following the outcome of extensive State-based consultation, the majority of States decided not to pursue the proposed National Occupational Licensing Scheme reform. Most jurisdictions identified a number of concerns with the proposed NOLS model and potential costs. States instead decided to investigate approaches that would increase labour mobility and deliver net benefits for businesses and governments.

To this end, States agreed to work together via the Council for the Australian Federation (CAF) to develop alternative options for minimising licensing impediments to improving labour mobility and to manage the orderly disestablishment of the National Occupational Licensing Authority from early 2014.”

Developing ‘alternative options’ is likely to involve minor amendments to the existing Mutual Recognition Acts of the states and Commonwealth. Progress with this will be reported in future Bulletins as the work proceeds during 2014.

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electrical focus

Electrical safety on construction and demolition sites

EnergySafety has received several enquiries about the requirements for electrical installations on construction and demolition sites.

The installation or relocation of switchboards and of construction wiring is electrical work and must be undertaken by licensed electricians. Under Regulation 52 of the Electricity (Licensing) Regulations 1991, an electrical contractor who carries out any notifiable electrical installing work or causes any notifiable electrical installing work to be carried out, commits an offence if upon completion of the electrical installing work, a notice of completion is not prepared in respect of the work and sent to the relevant network operator.

Electrical installations on construction and demolition sites must be carried out in accordance with the Wiring Rules AS/NZS 3000:2007 and with the applicable additional requirements of AS/NZS 3012:2010. Some of the key requirements are:

- All construction wiring, including switchboards, fixed RCDs and transportable structures, shall be verified (inspected and tested) in accordance with AS/NZS 3000 following initial installation (Clause 3.4.1).
- Cables and fittings used in construction wiring shall be selected such that they comply with the requirements of AS/NZS 3000 (Clause 2.5.1).

- Cables shall be installed in accordance with AS/NZS 3000 except as varied in Clauses 2.5.3 to 2.5.8 of AS/NZS 3012:2010. Construction wiring shall not be tied, bundled or grouped with permanent wiring (Clause 2.5.2).
- Construction wiring includes:
 - a) consumers mains and sub-mains supplying site switchboards;
 - b) sub-mains to site facilities in which electricity is used, such as sheds or transportable structures; and
 - c) final sub-circuits connected at circuit-breakers on a site switchboard, supplying plant, construction equipment such as temporary construction lighting, auxiliary socket outlet panels, hoists, and personnel lifts.
- Construction wiring does not include flexible cords or a flexible cable used to connect appliances or luminaires to a socket-outlet, but does include flexible cords or flexible cables used for items (a), (b) or (c) above. Construction wiring and equipment is normally intended to be removed at the completion of construction work and is not intended to form part of the permanent installation.
- A risk assessment should be undertaken, prior to the installation of cables or whenever a change occurs, as to the likelihood of the cables being exposed to mechanical damage.

Where the risk assessment identifies a risk of damage to cables, and the cables cannot be relocated to an alternative position, they must be protected by a suitable enclosure or barrier (Clause 2.5.3).

- Unarmoured cables shall not be installed on metallic roofs or similar structures unless suitably protected against mechanical damage (Clause 2.5.5).
- Cables from switchboards to auxiliary socket-outlet panels are construction wiring and shall be a minimum cross-sectional area of 4 mm² for active and neutral conductors and corresponding 2.5 mm² earth conductors (Clause 2.6.11(d)(i)).
- Portable socket-outlet assemblies (PSOAs) are declared articles and must comply with the relevant requirements of AS/NZS 3190 and have regulatory approval. They shall comply with the requirements of Clause 2.6.10.

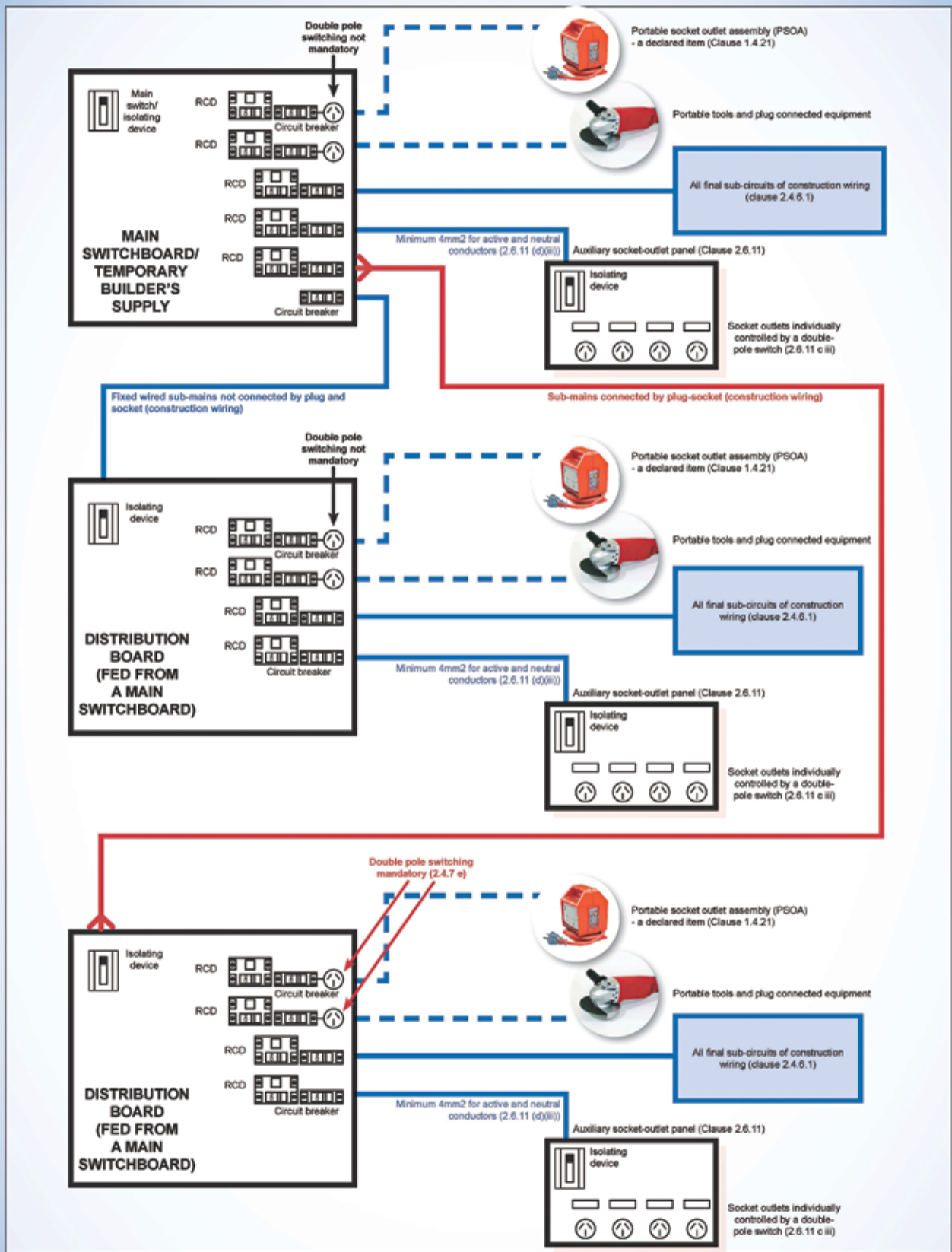


Figure 1: Portable socket-outlet assemblies

- Auxiliary socket-outlet panels must be of robust construction to withstand mechanical

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Double-pole switching and RCD requirements on construction sites (interpretation of AS/NZS 3012:2010)



- NOTES**
- All solid lines are construction wiring and must be installed by licensed electricians.
 - Broken lines are flexible cords and do not require installation by licensed electricians.
 - Wherever double-pole switches are required, one upstream combined RCD/ACB(RCBOs) alone controlling a series of socket-outlet does not meet the requirement for double-pole switching. The use of combined RCD/ACB(RCBOs), if dedicated, to one per socket outlet is permissible.
 - Double-pole switching of single-phase socket outlets is not mandatory on the main switchboard, irrespective of the number of socket-outlets on the switchboard.

Figure 2: Requirements on construction sites

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- damage, have a minimum IP23 rating, be securely mounted to a fixed structure or a structure designed for that purpose and supplied by an RCD protected circuit at the switchboard from which it originates (Clause 2.6.11).
- All final sub-circuits of construction wiring shall be protected at the switchboard where the final sub-circuits originate by residual current devices, with a maximum rated residual current of 30 mA, that operate in all live (active and neutral) conductors (Clause 2.4.6.1).
 - All appliances, luminaries and other electrical equipment must be supplied from an RCD protected circuit that is fixed at the switchboard or incorporated into the socket-outlet or incorporated into a portable socket-outlet assembly (Clause 2.4.6.2).
 - All switchboards shall be installed in accordance with AS/NZS 3000. All switchboards shall be readily accessible and shall be protected from damage during the course of the construction or demolition work. Every switchboard or part of a switchboard that is supplied from a separate source of supply shall be legibly and indelibly marked to identify the source of supply from which it originates (Clause 2.3).
 - Switchboards shall be securely attached to a pole, post, wall, floor or other structure unless of a stable, freestanding design that takes into account any external forces that may be exerted on the switchboard, for example, by flexible cords (Clause 2.3.3).

- Each switchboard must be provided with one marked isolating switch which, if switched off, will interrupt supply to all final sub-circuits and sub-mains originating from the switchboard, including socket outlets mounted on the switchboard (Clause 2.4.1).
- Main switchboard isolating switches must be marked 'MAIN SWITCH' and the distribution board isolating switches must be marked 'DISTRIBUTION BOARD ISOLATING SWITCH' (Clause 2.4.3).
- The following requirements apply to switching of single-phase socket-outlets (Clause 2.4.7):
 - Double-pole switching of single-phase socket outlets is not mandatory on the main switchboard irrespective of the number of socket-outlets on the main switchboard.
 - It is NOT mandatory for single-phase socket-outlets on a distribution board (fed from a main switchboard) to be individually controlled by double-pole switches if the distribution board is supplied through a fixed-wired (not connected by plug & socket) sub-mains.
 - It is mandatory for single-phase socket-outlets on a distribution board (fed from a main switchboard) to be individually controlled by double-pole switches if the distribution board is supplied through a sub-mains which incorporates a plug-socket connection ie not fixed-wired.
 - Wherever double-pole switches are required, one upstream combined RCD/ACB (RCBOs) alone

controlling a series of socket-outlet does not meet the requirement for double-pole switching. The use of combined RCD/ACB (RCBOs), if dedicated, to one per socket outlet is permissible.

- Construction wiring (including switchboards and transportable structures) shall be visually inspected to verify the integrity of the installation at intervals not exceeding those specified in Table 3 of AS/NZS 3012:2010.

Please refer to AS/NZS 3010:2012 for all the requirements for the design, construction and testing of electrical installations that supply electricity to appliances and equipment on construction and demolition sites. The Standard is available from Standards Australia on www.saiglobal.com.au.

Prosecutions: petty persecution or a pertinent, pragmatic practice?

EnergySafety is responsible for the technical and safety regulation of the electrical and gas industry in Western Australia. The licensing of electrical workers and contractors and enforcing the minimum prescribed technical standards and safe work practices for their electrical installing work falls within the realm of EnergySafety.

Our commitment to keeping consumers and electricians safe from the inherent dangers of electricity is our number one priority. One important way in which EnergySafety ensures this is by prosecuting offenders whose

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work practices have endangered the lives of others by carrying out unlicensed electrical work, not providing adequate levels of supervision or leaving defective installations in an unsafe condition.

The current defect rate for electrical work inspected is at 17%, which is still alarmingly high considering this is an industry where a fatality can result from a careless oversight such as the omission of an MEN connection in a switchboard or leaving a “live” unterminated wire exposed. Bringing this defect rate down to a level below 10% is a figure we are striving to attain in the forthcoming years.

EnergySafety believes that the prosecutions are acting as a good deterrent and, through the lessons learned, help to change work practices in the industry for the better since the number of repeat offenders is very low. Prosecution is usually only considered when a serious defect may put the life of the consumer at risk.

There are those in the industry who claim that EnergySafety has a “prosecution at all cost” mentality, which is surprising given the rate of our prosecutions for electrical contractors breaching the Regulations is a mere 0.4% for our 4,595 registered electrical contractors. To say that EnergySafety over-regulates the industry, is not justified.

It was recently suggested that prosecution fines are driving up costs as contractors factor these fines into their future jobs and also, that prosecuted individuals will not improve their work standards. Fines are not driving up costs throughout the entire industry. Supposed increased pricing is only relevant to the tiny proportion of contractors penalised. The remainder of the

industry remains very competitive. Prices are affected far more by normal supply/demand considerations in the electrical contracting market.

While the electricity legislation prescribes the maximum fine amounts as a result of an offence (\$50,000 for an individual and \$250,000 for a corporation), it is always up to the discretion of the Court’s Magistrate to impose the fine amount.

As for degradation of work standards as a result of a prosecution, we have found this to be the contrary, as offenders have demonstrated improved work practices. The number of repeat offenders is at an all time low.

Some may argue that an Infringement Notice would be more appropriate to cover all prosecutable offences. Given the severe nature of some offences, a modified penalty under an infringement notice is certainly not fitting.

Would a \$1,000 penalty be sufficient for an electrician who transposed the active and neutral conductors from a main switchboard, which resulted in a child being fatally electrocuted when touching bath taps while taking a bath?

Infringements are for less serious offences where it is deemed inappropriate for an offender to be brought before a Magistrates Court. The low penalties reflect the lesser gravity of such offences.

EnergySafety has gradually veered away from prosecuting contractors for administrative oversights such as failing to display an electrical contractor’s licence number on advertising material and the non-submission of “Notices” and has focused on the offences which may put the life of the consumer or electrician at risk.

Most contractors have come to realise that it is in their best interest to display their electrical contractor’s licence number and to submit “Notices” promptly.

While the omission of an electrical contractor’s licence number on an advertisement can be seen as petty, it provides consumers with a way of ensuring that the electrical contractor they have engaged holds the required licence to carry out the electrical work competently and safely. It also discourages unlicensed individuals from advertising for electrical work.

When the requirements for advertising were introduced, there were initially some electrical contractors who refused to comply and were prosecuted. Since then, the number of non-complying advertisements is almost non-existent. The last time a contractor was prosecuted for such an offence was in 2011.

In the past year, the majority of electrical contractor prosecutions were for carrying out unsafe and substandard work. There were no prosecutions for administrative errors.

EnergySafety regularly conducts reviews of the electricity legislation to ensure its relevancy and effectiveness for supporting industry standards and to safeguard consumers. The last such review was held in April 2012, where electrical contractors, industry organisations, businesses and consumers were duly consulted on proposed changes to the legislation.

Caring for apprentices – too many contractors and supervising electrical workers fail

EnergySafety is still very concerned about the number of electric shocks suffered by electrical apprentices. The issue was last highlighted in the “Energy Bulletin” Issue No. 56 October 2011 but there has not been any drop in the number of such accidents. Last year, twenty one electrical apprentices received electric shocks in the workplace.

Electrical contractors and supervising electrical workers are reminded of their responsibility to ensure that their apprentices are provided the correct level of supervision (ie general or direct) and to devote adequate time and care to ensure safe working conditions for apprentices. As detailed in EnergySafety’s “Safety Guidelines for Electrical Workers”, the level of supervision must reflect regular assessments of the individual apprentice’s experience, their level of competence and the nature of the task delegated.

When an electrical apprentice receives an electric shock, it can be inferred that the level of supervision was inadequate.

Recently, a second-year electrical apprentice received an electric shock while assisting in the installation of a generator for an uninterruptable power supply unit. The apprentice had been instructed by his supervising electrical worker to remove an RCD located on an outlet at the generator. While carrying out this task, the apprentice received an electric shock from the neutral load (UPS) side of the RCD.

Because he was in his second year of training, the apprentice was required to have direct and general supervision. The supervising electrical worker had a responsibility to ensure that correct isolation procedures were followed so that the apprentice would not come into contact with “live” parts or work with “live” equipment.

In another incident, a first-year electrical apprentice received an electric shock when he was working on the renovation of a retirement premise. During the testing of the installation, a sweep fan was found to be not working. The supervising electrical worker had instructed the apprentice to enter the ceiling space and trace the cabling for the fan and to connect the fan circuit to one of the spare light switches.

While terminating a conductor that was connected to a power circuit, the apprentice received an electric shock when the metallic parts of the pliers he was using came into contact with the “live” copper conductor.

It was evident that the supervising electrical worker had failed to ensure effective supervision was provided for the apprentice. He did not ensure checks and tests were carried out in the ceiling space to determine if the circuit the apprentice was working on, was not “live”. First-year apprentices must be directly supervised at all times. Also, the electricity to the roof space should have been disconnected while the work was carried out.

These matters are still under investigation by EnergySafety.

Before an apprentice commences any electrical work, the supervising electrician must ensure they have addressed the following safety criteria, listed in EnergySafety’s

“Apprentice Safety Guidelines”:

- There are no exposed “live” parts in the vicinity of the work area and that the equipment is safe, isolated, tagged and tested as required.
- The apprentices must be assessed as competent if they are to carry out all, or part of the isolation.
- Apprentices are not to carry out any “live” work.
- Apprentices must be made fully aware of what tasks they can and cannot do.
- Ensure an apprentice clearly understands all instructions provided.
- Regular monitoring of apprentices’ work must be carried out. The frequency of direct supervision may decrease when the supervisor is confident the apprentice can carry out required tasks safely.

EnergySafety regards supervision of apprentices to be a crucial safety issue and will seek to prosecute contractors or supervising electrical workers who have been found negligent in their duty of care.

The “Safety Guidelines for Electrical Workers” and “Apprentice Safety Guidelines” booklets are available to download from EnergySafety’s website www.energysafety.wa.gov.au

Unlicensed Todd Ovens receives \$36,000 penalty for using two electrical licence numbers as his own

In October 2013, Todd Ovens pleaded guilty in Perth Magistrate's Court to seventeen breaches of Regulation 19(1) of the Electricity (Licensing) Regulations 1991 for carrying out electrical work without holding an electrical worker's licence and one breach of Regulation 33(1) for contracting without an electrical contractor's licence.

EnergySafety was first alerted to Ovens' activities when the Licensing Office received an application for an apprentice "Electrician's Training Licence", in which Ovens purported to be the electrical supervisor of the applicant.

A licensing search on Ovens revealed the electrical worker's licence number provided by Ovens in the application, had been issued to another electrician and that Ovens did not hold an electrical worker's licence. The electrical worker whose licence number Ovens was using had previously worked with Ovens at another company.

At a later date, Ovens also submitted an "Application to Change Details for an Electrical Contractor's Licence or In-house Installing Work Licence", in which he provided his name as the existing legal name of the company, the management representative and the nominee.

The electrical contractor's licence number which Ovens used in this application, had been issued to another company that Ovens had worked for as a sub-contractor two years earlier.

Subsequent investigations found that between July 2010 and November 2011, Ovens had held himself out to be an electrical contractor without an electrical contractor's licence and had also carried out various electrical installing work (including mine sites) without holding an electrical worker's licence.

Ovens had not provided the network operator, Western Power, with Preliminary Notices or Notices of Completion for the electrical work he carried out, therefore the quality of his work could not be inspected for any defects. Copies of Electrical Safety Certificates also were not supplied to any of his customers.

For these offences, Ovens entered an endorsed plea of guilty and was convicted and fined \$36,000 with court costs of \$690.

If you are aware of an individual who may be carrying out unlicensed electrical work, please immediately report their activities to your relevant network operator or EnergySafety as these people are a serious risk to community safety.

Electricity Compliance Directorate's latest recruit

EnergySafety's Electricity Compliance Directorate is pleased to welcome our new metropolitan-based Senior Electrical Inspector, Jamie Reinhardt.

Jamie has worked within the domestic, construction, mining and network industries over the past twenty years. He has spent the last ten years as a designated electrical inspector with Rio Tinto and BHP Billiton servicing the Pilbara

regional areas and associated mine sites. Jamie now looks forward to the new challenges of working with EnergySafety.

Stall owners infringed for selling prescribed appliances at the Perth Royal Show

EnergySafety's appliance compliance inspections carried out at the 2013 IGA Perth Royal Show discovered stall holders selling prescribed items which were not approved. Prescribed items are a class of electrical appliances requiring approval by the Director of Energy Safety, an interstate regulatory authority or a designated agency, before they can be sold, hired, advertised for sale or hire or imported into Western Australia.

Some imported appliances have only been tested to the differences between Australian standards and the standards at the manufacturer's country of origin and have not undergone rigorous testing in an authorised testing laboratory, as is required before an appliance is sold in Australia.

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Avantree Magic Universal Travel Plug Adaptor

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Four part USB A/C power adaptor

Three stall operators were found displaying such appliances, including Avantree Magic Universal Travel Plug Adaptors, four-part USB A/C power adaptors as well as generic USB chargers. Selling unapproved appliances is a breach of the *Electricity Act 1945*, Section 33B(2).

As these appliances did not exhibit any approval markings and were found not to be approved items, they should not have been displayed for sale or sold.

The stall operators found selling these unapproved electrical appliances were issued with Infringement Notices with penalties of \$1,250 for the two sole traders and \$5,000 for the company.

Further information on prescribed items can be found on EnergySafety's website at www.energysafety.wa.gov.au.

Overhaul of existing exemptions for electrical contractors and in-house licence holders

The Electricity Compliance Directorate recently reviewed all standing exemptions held by electrical contractors and in-house licence holders at mine sites and non-mine sites.

On 17 May 2011, the Electricity (Licensing) Regulations 1991 were amended so exemptions were no longer required in many instances for the requirement to submit a Preliminary Notice or Notice of Completion to the network operator for specific types of work.

Due to these amendments, in many instances (eg mine sites) an exemption was no longer required from the submission of "Notices" as some electrical work is exempt under the Regulations.

Regulation 52(1) of the Electricity (Licensing) Regulations 1991 states that subject to subregulation (2) and (2AA), an electrical contractor who carries out any notifiable work, or causes any notifiable work to be carried out, commits an offence unless, within the period of three days after the completion of the notifiable work, a notice of completion, in a form approved by the Director and duly completed, is prepared by the electrical contractor in respect of the notifiable work and delivered to the network operator.

Subregulation (1) does not apply to notifiable work carried out or caused to be carried out, by an electrical contractor exempted in writing by the Director from the requirement to prepare and deliver a Notice of Completion, subject to any conditions that are imposed in respect of the exemption.

Regulation 52 (2AA) Subregulation (1) does not apply to notifiable work carried out at a mine if:

- a) the work does not involve an initial connection to distribution works or a private generating plant;
- b) the work does not –
 - require an alteration to a main switchboard; or
 - require an alteration to service apparatus or distribution works; or
 - consist of the installation or removal of a private generating plant; or
 - alter the capacity of a private generating plant.

and

- c) the electrical contractor who carried out the work, or causes it to be carried out, makes a record of the work in a form approved by the Director (ie the mine site Electrical Log Book).

Due to the above changes to the Regulations, all previous exemptions for mine site installations have been cancelled as of October 2013.

For other installations (non-mine sites), the exemptions were reviewed and reissued where applicable.

For those with newly granted exemptions, you are reminded that all electrical installing work (ie new works, alterations and additions) and other essential information is to be recorded in an Electrical Log Book which is issued to, and under the control of the site manager. These Log Books are available from our Licensing Office.

If an external, non-exempted electrical contractor is working on an exempted site, they are not permitted to use the Electrical Log Book and are required to submit

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Preliminary Notices and Notices of Completion to the relevant network operator or EnergySafety.

For electrical contractors whose site exemptions have been cancelled, Preliminary Notices and

Notices of Completion are now required to be submitted to the relevant network operator.

For further information on what work is exempt from the submission of "Notices", refer

to Regulations 51 and 52 of the Electricity (Licensing) Regulations 1991. A copy of the Regulations is available to download from the State Law Publisher website www.slp.wa.gov.au

Prosecutions for breaches of electricity legislation

Between 1 October and 31 December 2013

Name (and suburb of residence at time of offence)	Licence No.	Legislation and Breach	Offence	Date of Offence	Fine (\$)	Court Costs (\$)
Todd James Ovens (Huntingdale)	NLH	Regulation 19(1) E(L)R 1991 (17 breaches)	Carried out electrical work while not authorised by licence or permit	Between 16/05/11 and 16/11/11	36,000.00	771.15
		Regulation 33(1) E(L)R 1991	Carried out electrical contracting work while not holding an electrical contractor's licence			
John Timms (Leonora)	EW128824	Regulation 49(1) E(L)R 1991	Carried out unsafe and substandard electrical work	04/08/11	7,500.00	656.15
Stephen Villier (Wonthella)	EW109737	Regulation 49(1) E(L)R 1991	Carried out unsafe and substandard electrical work	Between 01/10/11 and 10/11/11	4,000.00	771.15
S & K Electrical Contracting Pty Ltd (Wonthella)	EC007134	Regulation 52A(5)	Falsely stating that the electrical work had been checked and tested	10/11/11	15,000.00	771.15
		Regulation 52C(1)(b)(i) E(L)R 1991	Failing to check and test the electrical work after completion to ensure it was safe and complied with AS/NZS 3000:2007 "Wiring Rules"			

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Name (and suburb of residence at time of offence)	Licence No.	Legislation and Breach	Offence	Date of Offence	Fine (\$)	Court Costs (\$)
Barry Allen Electrical Services Pty Ltd (Bunbury)	EC002579	Regulation 52(3) E(L)R 1991	Submitting a Notice of Completion to the network operator for notifiable work that had not been completed	21/04/11	7,000.00	886.15

Summary of infringements for breaches of electricity legislation

Between 1 October and 31 December 2013

Legislation and breach	Offence	Number of Infringements	Fine (\$)
EA33B(2)	Selling or hiring, or exposing or advertising for sale or hire, prescribed appliance without approval	4	12,500.00

Legend NLH No Licence Held
 EA Electricity Act 1945
 E(L)R Electricity (Licensing) Regulations 1991
 * Global Fine or Costs issued

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focus

Supervision of gas fitters, apprentices and trainees

In Western Australia, Gas Standards (Gasfitting and Consumer Gas Installations) Regulations 1999 provide that gasfitting work can only be carried out by persons with an appropriate gasfitting permit, certificate of competency or authorisation issued by the Director of Energy Safety.

Gasfitting work is defined as an operation, work or process in connection with the installation, removal, demolition, replacement, alteration, maintenance or repair of a gas installation. There are however some exceptions including the replacement of LP Gas cylinders and some automotive applications.

Every apprentice or trainee carrying out gasfitting work, even under supervision must hold a permit. Apprentices and trainees must obtain a gasfitting permit from EnergySafety before they commence any gasfitting work. The permits usually remain current for the duration of their apprenticeship.

EnergySafety has produced a fact sheet, which provides guidelines for the obligations of employers and supervisors of apprentices who carry out gasfitting work.

Further information is available in the fact sheet "Restricted Gasfitting Permit – Apprentices and Trainees" which is available on the EnergySafety website at www.energysafety.wa.gov.au and is free to download.

An apprentice or trainee can only work under the supervision of a registered gas fitter licensed to carry out gasfitting work, not submit notices of completion or fix stickers/ labels (the supervising gas fitter must carry this out) and only carry out gasfitting work for which they and their supervisor are licensed.

It is the responsibility of the supervising gas fitter and the apprentice or trainee to ensure that the gasfitting work is not carried out without the appropriate permit or authorisation.

Employers must maintain a register

The regulations require employers to keep a register of their gas fitter employees, including apprentices and trainees. The register must include details of the gas fitter's name, address and licence, including any restrictions on that licence such as working under supervision. Where an apprentice is hired through a group training organisation, the group trainer and the host employer must both maintain a register of the apprentice's details.

What is the penalty for working without a permit or not maintaining a register?

A person who carries out gasfitting work without an appropriate permit or fails to maintain a register, could face a penalty of up to \$50,000 for an individual and up to \$250,000 for a body corporate. Recently a high profile plumbing company received a modified penalty of \$1,250 for failing to keep records of employed gas fitters in the required manner.

You can find further details on the requirements of record keeping in Regulation 34 of the Gas Standards (Gasfitting and Consumer Gas Installations) Regulations 1999.

AS 3814 for public comment

A draft of AS 3814 industrial and commercial gas-fired appliances has been released for public comment. Significant changes have been made to the 2009 edition of this standard particularly in regard to gas engines and turbines. Copies of the draft can be accessed free of charge (you will be required to register) from the Australian Standards web site <http://www.standards.org.au/Pages/default.aspx> under Draft standards open for Public Comment.

Comment on the draft must be made via the Australian Standards web site no later than the 16th of March.

Mungullah Power Station and GRE pipework

The new 18 megawatt (MW) Mungullah Power Station is being built by Horizon Power to replace the existing 45 year old Carnarvon Power Station (Iles Rd). The new station will use both diesel and gas generating technology to enhance security of the town's power supply and meet future needs.

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Underground GRE to above ground steel pipeline transition

There are 10 generators to be installed at the new station: five diesel fuelled and five gas fuelled generators. The gas fuelled generators will provide the majority of the power supply to Carnarvon. The diesel fuelled generators will provide peak load generation to assist the gas units when there is high demand during the hotter months of the year. Once the new power station is in service, power will cease to be generated from the existing Carnarvon Power Station.

Glass filament reinforced epoxy (GRE) consumer gas piping is being used underground at the new Mungullah Power Station. GRE is also known as Reinforced Thermosetting Resin Pipe (RTRP) or Fibreglass Reinforced Thermosetting Pipe (FRTP) or Fibre Reinforced Plastic Piping (FRP).

GRE piping has widespread use in industry (onshore and offshore) handling corrosive and aqueous liquids, such as water, seawater, bore water and waste products. Examples of these installations in Western Australia are the Barrow Island 60 km lines used in remediation, the Ravensthorpe Nickel Project for waste water and the Burrup Fertilizer plant

for seawater cooling. There are also some instances interstate where GRE piping has been used underground for conveying fuel gas.

The Mungullah Power Station uses steel pipe in extending a natural gas lateral from the Dampier to Bunbury Natural Gas Pipeline to the Brown's Range gate station and then on to the Mungullah Power Station site gas receiving station. The GRE underground consumer piping is connected to an underground steel dropper via a flange from the gas receiving station.

The GRE piping is run below ground adjacent to the power station plant where it connects to a steel pipe riser. The steel rises to an exposed steel pipe header and then below via a steel pipe routed to each of the gas engine isolating valves.

The main reason for the application to use GRE piping is Horizon Power's preference to avoid compromising buried steel pipework cathodic protection systems with the power station's buried copper electrical earthing system and transmission mains.

The design and construction of the consumer gas pipework was done in accordance with the

requirements of Appendix AA of AS 2885.1: Gas and liquid petroleum, Part 1 Design and construction and parts of ISO 14692: 2002 Petroleum and natural gas industries, Glass reinforced plastics (GRP) piping; Part 3: System design and Part 4: Fabrication, installation and operation.

The pipework is physically protected as it is entirely underground and not exposed to impact damage; fire, ultraviolet light degradation or external interference. Access to vehicles will be limited within the vicinity of the above ground steel pipework with protection provided against vehicular impact.

Risks posed by the GRE pipework have been satisfactorily mitigated to a low residual risk by Horizon Power in installing it underground with only steel pipework exposed above ground.

Gas engine powered multi-split air-conditioners

Four gas powered air-conditioners are to be used in ATCO Gas Australia's newly constructed premises at Jandakot.

The gas-engines are used to drive the refrigeration compressors inside the condensing units of the gas powered air-conditioners. Each gas engine has a natural gas consumption of 220 MJ/h (65kW).

Advantages of using gas powered air-conditioners include a reduction in CO₂ emissions, major energy savings and environmental friendliness due to the extended time between oil changes; and use of ozone friendly refrigerant which generates lower levels of NO_x, SO_x and CO₂. The refrigeration system also uses a hydrocarbon refrigerant (R410A).

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Gas Power Air Conditioning Unit

The gas powered air-conditioners are manufactured in Japan by Yanmar (Model AFZP850J) and are supplied and installed by Turner Engineering.

For the installation, the gas fitter proposed not to conduct a pre-purge of the gas-engines in the condensing units of the air-conditioners. An application was made to EnergySafety for a variation/exemption to the requirement that an appliance be pre-purged unless certain conditions apply. After review, EnergySafety approved the submission and subsequently issued an exemption to the requirement for pre-purging. This was based on effective combustible mixture control at start up and the operation of the engine and exhaust systems. Specific conditions of the exemption included the following:

- Be proprietary packaged units suitable for installation in a Plant Room with exhaust terminating above the roof and wall louvres providing adequate free open area for ventilation.

- Incorporating a zero gas governor, only permitting fuel gas flow if the engine is rotating.
- Incorporating an engine control unit that allows for normal start up the first time, or if the engine fails to start for the first time, initiates an on/off sequence of the starter up to the third time within two hours, with the unit then shutting down and an alarm energised.

During the off phase and standby modes it was considered that there may be a remote possibility of some combustion mixture entering the unit exhaust pipe if the engine had failed to start. It was considered unlikely for there to be a source of ignition from the engine backfiring since the fuel supply is constant (that is, not running lean or timing is too advanced or running rich).

It is also unlikely that there would be any combustible mixture remaining in the exhaust pipe after the controlled engine off and standby modes have elapsed, since the mixture is lighter than air and would readily dilute and disperse into the atmosphere through the exhaust terminating above the roof.

Clean power project at Carnarvon Power Station

The clean power project by Enerji Limited at Horizon Power's Carnarvon (Isles Road) Power Station uses a waste heat recovery system utilising Organic Rankine Cycle technology to convert discarded heat energy from the exhausts of gas engine-generators to produce additional emission free electrical power.

The heat recovery units have been trialled with power station owner/operator (Horizon Power), agreeing to use the technology until the Carnarvon Power Station is decommissioned after the new Mungullah Power station commences operation early in 2014.

The Organic Rankine Cycle unit is rated for 700 kW but due to the imminent decommissioning of the Carnarvon Power Station it has only been connected to sufficient heat sources to trial the plant up to an output of 300 kW of electrical power. The process uses refrigerant gas to convert the waste heat from the engine exhaust into electrical power by driving another turbine and generator. Reducing reliance on gas and/or diesel fuel, improving efficiency and reducing the carbon footprint.

Three of the gas engine-generators (each with 17.9 GJ/h natural gas consumption) exhaust systems were modified to accommodate the heat recovery units.



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The modifications were considered to be relatively minor, involving integration of a safety management system with the engine control systems and the interlocking of the exhaust system bypass and position monitoring valves.

EnergySafety granted an exemption to the installation from the existing gas engines having to be upgraded to meet current requirements at the time of modification. The modifications were not considered complex and only the modifications required certification.

Proposed amendments to the regulations (GSR 1999)

Gasfitting on consumer gas installations in Western Australia is regulated by the *Gas Standards Act 1972*. The requirements of this act are implemented by the Gas Standards (Gasfitting and Consumer Gas Installations) Regulations 1999 [GSR 1999]. It is now over thirteen years since the GSR 1999 commenced. Over that time advances in technology and work practices have changed the industry. To ensure that the industry remains safe and the GSR 1999 is relevant to the needs and practices of the industry, the GSR 1999 has been from time to time amended. EnergySafety is again proposing to amend the GSR 1999.

Class G permit scope of work

The connection from an LP Gas container (cylinder or tank) valve to the first regulator is in Western Australia part of the consumer gas installation. As such any work on this connection must be carried out by a registered gas fitter who holds an appropriate authorisation.

The connection operates at the LP Gas container pressure; this is dependant on the temperature of the liquid in the container and commonly exceeds 200 kPa. The installation and maintenance of pipework with an operating pressure greater than 200 kPa falls in the scope of work of a Class I permit.

EnergySafety has assessed the gas fitting work associated with the installation and servicing of the connections between the LP Gas container and the first regulator and determined that where proprietary fittings are employed, this is in the competencies of a Class G gas fitter. Consequently it is proposed to amend the GSR 1999 to include this work in the scope of work of a Class G gas fitter.

High pressure piping

Clause 401 of schedule 6 in the GSR 1999 specifies standards that are acceptable for the design construction and installation of pipework operating at pressures greater than 200 kPa. This clause limits above ground pipework to comply with AS 4041 Pressure Piping and be manufactured from steel.

The connection between an LP Gas container and the first regulator operates at a pressure in excess of 200 kPa and as such is required to comply with clause 401. EnergySafety believes that AS/NZS 1596, a standard that deals specifically with the storage and handling of LP Gas, is more appropriate for this application than AS 4041.

Clause 401 limits above ground pipework to steel. There are alternative pipe materials (metallic) that EnergySafety believes are suitable for this application.

EnergySafety does not believe that current polymer based materials are suitable for above ground use because of their susceptibility to UV degradation.

EnergySafety proposes to add AS/NZS 1596 to clause 401 for LP Gas pipework over 200 kPa and amend the reference to AS 4041 to metallic for above ground pipework.

Definition of commencing gas supply

Gas suppliers must ensure that a consumer gas installation is compliant before they can commence gas supply to that installation. However there has been some variance in the understanding of when, for the purposes of the *Gas Standards Act 1972*, that gas supply is deemed to have been commenced. To clarify this EnergySafety proposes to amend the GSR 1999 by adding "commencing gas supply" as a defined term.

Public comment

Before changing legislation that may have significant implications for stakeholders; EnergySafety is required to seek public comment on the proposed changes from those stakeholders. To fulfil this requirement EnergySafety has published a discussion paper on the proposed amendments to the GSR 1999. The discussion paper "Amendments 2014 Gas Standards (Gasfitting and Consumer Gas Installations) Regulations 1999" is available at the EnergySafety website www.energysafety.wa.gov.au.

Please return comments by 31 March 2014, marked as 'GSR 1999 Amendments 2014' to:
Email: energysafety@commerce.wa.gov.au
Mail: EnergySafety
PO Box 135
CANNINGTON WA 6987

Prosecutions for breaches of gas legislation

1 July 2013 to 31 December 2013

Name (and suburb of residence at time of offence)	Licence No.	Legislation and Breach	Offence	Fine (\$)	Court Costs (\$)
Paul De Beaux	4336	GSR 1999 18(A)(2)	Failing to ensure gas installation complies with prescribed requirements.	3,000.00	690.00

Summary of infringements for breaches of gas legislation

1 October to 31 December 2013

Legislation and Breach	Offence	Number of Infringements	Fine (\$)
GSA S13A(2)	Engaging in an operation or carrying out work or process, of a kind prescribed to be nature of gasfitting work otherwise than in a prescribed capacity without a permit of certificate of competency	1	1,000
GSR R7(1)	Failing to ensure LPG supplied to consumer satisfies quality standards	1	10,000
GSR R18(2)	Failing to ensure gas installation complies with prescribed requirements	4	2,400
GSR R28(2)	Failing to attach approved badge or label on completion of work	3	1,200
GSR R28(3)	Failing to give notice of completion of gasfitting work within required time	3	1,200
GSR R30	Failing to rectify defects and give notice of rectification within required time	1	600
GSR R34(1)	Failing to keep records of employed gas fitters in required manner	2	1,500
GSR R35(1)	Supplying gas to Type A appliance without notice of completion	1	2,000
GSR R37	Failing to ensure prescribed activity is carried out in accordance with accepted safety case	1	10,000
	Total:	17	29,900

Legend NLH No Licence Held

GSA Gas Standards Act 1972

GSR Gas Standards (Gasfitting & Consumer Gas Installations) Regulations 1999