

energy

Bulletin

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The Gas Appliance Rectification Programme

The Gas Appliance Rectification Programme was undertaken to ensure the introduction of lower quality gas could be achieved safely. This entailed checking pre-1980 appliances to ensure they were fitted with the necessary safety devices and would operate safely on the lower quality gas. Those appliances that could not meet these requirements were replaced under the programme.

The Gas Appliance Rectification Programme is now complete and resulted in approximately 8,000 pre-1980 domestic natural gas appliances being replaced. The programme commenced in 2010 and during the appliance registration phase which closed on 1 January 2013, more than 24,000 appliances were registered, assessed and underwent an installation gas tightness test.

The programme has not been without its challenges. The project team established within EnergySafety to manage the programme has worked diligently with the contractor appointed to undertake the inspection and appliance replacement work to ensure all the aims and objectives of the programme were achieved.

A major success of the programme has been the increase in the safety of the older gas installations and the replacement of a number of domestic gas appliances that were converted from town gas to natural gas in the early 1970s. The safety inspections undertaken as part of the programme found a number of old un-flued gas water heaters installed in bathrooms despite their banning in the early 1990s.

A realistic picture of the condition of older gas appliances and domestic gas installations including leakage and unsafe installation practices has also been gained. A large number of gas installations have been made safer through the replacement of old appliances, defective pipework and improvement to ventilation and appliance location.

The overall advantage to the State has not only been to increase competition in the gas supply market but also has had the tremendous effect of lifting the safety of gas appliances and installations across the State.

The gas installation inspections also highlighted a number of safety issues with gas installations in multi-storey dwellings. A separate project has been established to identify in detail the safety issues and what action needs to be taken.

This project has identified more than 900 multi-storey dwellings which are being evaluated and risk assessed with the highest risk buildings being tackled first. This project is expected to take more than five years to complete and will further increase the level of safety of gas installations in Western Australia.

To ensure all appliances are identified in the future, I have published an order prohibiting the sale, hire and use of all pre-1980 domestic natural gas appliances (for more information on the order, refer to the article in the Gas Focus).



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Licensing overseas electricians

All overseas electricians must obtain a Certificate III in Electrotechnology Electrician qualification by undertaking the Australian Context Training through an approved Western Australian Registered Training Organisation (RTO). The Certificate III qualification will then enable the person to obtain a WA Electrician's licence.

To enable this training and upon receipt of a completed application form, EnergySafety will issue

an Electrician's Provisional Licence. This licence will enable 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 12 months is an estimate and may vary depending upon the overseas electrician's on-the-job experience in Australia.

A person can only obtain a Certificate III in Electrotechnology Electrician if they complete:

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

An overseas electrician cannot be issued an Electrician's Licence until EnergySafety receives the Certificate III in Electrotechnology Electrician.

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electrical

focus

Investigation of police horse fatality results in \$25,000 penalty for an electrical contractor

On 18 April 2013 at Midland Magistrate's Court, an electrical contractor was convicted and fined \$25,000 with court costs of \$653 for employing and instructing an unlicensed employee to carry out electrical work at an oval in Kalamunda and also failing to report an electrical shock incident.

The unlicensed employee had carried out electrical work including the removal and replacement of five lighting control gear trays located inside two of the lighting towers at the oval. This involved the disconnection and reconnection of the 415 volt ac wiring to each gear tray. The unlicensed employee was an overseas electrician who did not hold a Western Australian licence.

While carrying out this work on the lighting towers, the electrical workers (an unlicensed worker and an apprentice) received electric shocks from one of the lighting towers.

These shocks were reported to their employer, an electrical contractor. However, the employer failed to report these electric shocks to the network operator.

Later on the same day, a Western Australia Police Horse called "Hercules" was electrocuted at the same location. Two police officers also received electric shocks from the ground near the base of one of the lighting towers.

EnergySafety's investigation found that the over-current and short circuit protection at the main switchboard for the 415 volt ac supply cables to two of the lighting towers, was inadequate and they were not earthed.

There was also a lighting fitting fault on both lighting towers that caused the lighting towers and the ground to become "live".

The electrical work carried out by the electrical worker did not contribute directly to the accident. However, had the electric shocks been reported to the network operator, an investigation would have been carried out by an electrical inspector and the installation made safe, thereby preventing the electrocution of the police horse.

The unlicensed employee was also convicted and fined \$1,500 with court costs of \$653 for carrying out electrical work without holding a licence or permit.

Western Power fined \$101,000 for failing to maintain its street lighting system

Following the electrocution of a teenage girl in Geraldton on 30 January 2011, EnergySafety charged Western Power with failing, so far as reasonable and practicable, to operate and maintain their overhead distribution

network so as to provide for the safety of persons.

EnergySafety's investigation found that a badly corroded obsolete "live" street light switch wire (an undersized copper conductor) had broken and had fallen but was held elevated because it was lying across bushes. The teenager came into contact with the wire while walking home at night from a party and was electrocuted.

Four of her companions also suffered electric shocks (two of which, were severe) while trying to rescue her. One was hospitalised and recovered.

Western Power were well aware of the risks posed by using small street lighting conductors but did not act swiftly to remove this danger in the preceding years.

The street light conductor was severely corroded and unsafe and was installed in an environment that was close to the ocean, which, over a long period of time, had caused significant corrosion of the copper conductor strands.

Numerous joints were found in the copper conductor, indicating many previous breakages. The street lighting conductor circuit was protected by an 80 ampere HRC fuse, which was not adequate to protect this size of conductor in the event of a short circuit.

This was not the first instance where a street lighting conductor has caused a fatality. In 1995, a copper street lighting conductor

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in Kalgoorlie fell to the ground and remained energised. A member of the public made contact with it and was electrocuted.

EnergySafety issued an Order to Western Power requiring the network operator rectify other street lighting conductors in the Kalgoorlie area. Western Power was also required to address this issue in other parts of its distribution network across Western Australia.

Rectification works were completed in the Kalgoorlie area. However, Western Power did not carry out any rectification works in other parts of their distribution network.

In another accident, in 2002, a corroded street lighting conductor in Geraldton fell to the ground and remained energised. A member of the public made contact with the “live” conductor and received an electric shock.

Western Power is currently undertaking a program of works to remove all overhead street lighting switch wires from its network by June 2014.

Western Power pleaded guilty to a breach of Regulation 10(1) of the Electricity (Supply Standards & System Safety) Regulations 2001 in Geraldton Court on 27 May 2013. The network operator was fined \$101,250 with court costs of \$5,721.

Senior electrical inspector positions at EnergySafety

As mentioned in Issue No. 62 of the “Energy Bulletin”, EnergySafety’s Electricity Compliance Directorate is seeking electricians who are keen on a change in their career paths and are interested in taking on the challenging role of a Senior Electrical Inspector at EnergySafety. Suitable applicants must have substantial experience as an electrician and electrical supervisor/manager.

The pool recruitment process for permanent and fixed term full-time positions will run until 26 November 2013. Applications are assessed on a monthly basis.

Suitable applicants may be offered full-time positions at Cannington or Kalgoorlie as opportunities become available up till 30 May 2014.

Please refer to the Department of Commerce webpage www.commerce.wa.gov.au/jobs for further details on the role. Applicants are encouraged to apply online.

To discuss the role in detail, please contact Peter Johnston, Chief Electrical Inspector Utilisation for a confidential discussion on (08) 9422 5274.

Review of WA Electrical Requirements

A comprehensive review of the WA Electrical Requirements is underway. Formal industry consultation will take place during the next few months, providing opportunities for associations, companies and individuals to provide input to the review.

Draft amendments and an issues paper will be published and written submissions will be invited during the following six week period.

In the meantime, you may wish to contact your industry association to discuss any proposals you may have.

Electrical contractor fined \$38,000 for submitting a Notice for an installation with multiple defects

An electrician/nominee has recently pleaded guilty, was convicted and fined \$9,500 with court costs of \$683 for carrying out unsafe and substandard electrical work. The work included an MEN connection (link) not being installed at the switchboard, failure to provide cable termination and a junction box for unterminated exposed cable ends in the roof space and the protection against electric shock not being provided for the exposed “live” conductive parts of a socket outlet.

The electrician’s employer (ie the electrical contractor), was also charged with submitting a Notice of Completion to the network operator Western Power when the electrical work was defective and not complete. The electrical contractor pleaded guilty and was convicted and fined \$38,000 with costs of \$653.

Also, as a result of this unsafe installation, Western Power revoked the contractor’s Service Connect Accreditation.

Which network operator?

EnergySafety is still receiving a large number of Preliminary Notices/Notices of Completion (Notices) which should have been submitted to one of the network operators. It is a requirement that Notices be submitted to one of the following relevant network operators:

- **Western Power** – operates the South West Interconnected System (SWIS) which covers north from Perth to Kalbarri, east from Perth to Kalgoorlie and Kambalda and the south west of the state from Perth down to Bremer Bay, Albany and Augusta.
- **Horizon Power** – manages two major interconnected systems, the North West Interconnected System (NWIS) in the Pilbara and the interconnected transmission network in the Kimberley region between Kununurra and Wyndham. It also operates the smaller Esperance network as well as over thirty non-interconnected systems in regional towns and remote communities (ie Gascoyne, Mid-West and Southern Goldfields areas) not connected to the SWIS (eg Esperance, Norseman and Hopetoun).
- **Privately owned mining operations** – privately owned electricity transmission and distribution networks, including:
 - **Rio Tinto Iron Ore** – for the Pilbara towns including Dampier, Wickham, Pannawonica, Tom Price and Paraburdo;
 - **BHP Billiton Nickel West Leinster** – for the Leinster townsite; and
 - **BHP Billiton Iron Ore** – the Newman townsite.

- **EnergySafety** – if the notifiable work subject of a Notice is not to be connected to the electricity supply of one of the above network operators, then Notices are to be submitted to EnergySafety. These could include installations of remote mine sites, roadhouses or homesteads with private generators etc).

When working on a mine site, Notices are not required to be submitted to the relevant network operator unless the work involves:

- an initial connection to distribution works or a private generating plant;
- an alteration to a main switchboard;
- an alteration to service apparatus or distribution works;
- the installation or removal of a private generating plant; or
- alteration of the rated power of a private generating plant.

For a map of the electricity infrastructure in Western Australia, please refer to <http://www.erawa.com.au/licensing/electricity-licensing/infrastructure-map/>

It is the responsibility of the electrical contractor carrying out the notifiable electrical work and submitting the Notices to identify the relevant network operator and to submit the Notices appropriately.

Notices incorrectly submitted to EnergySafety will be returned to the sender. This will delay the time it takes to get to the relevant network operator as well as increasing the likelihood that the Notice will not be received within the required time frame. The failure to submit Notices within the required time frame is a breach of the Regulations.

Replacing T8 fluorescent lighting tubes with T5 LEDs

EnergySafety has received a number of requests relating to the appropriate safety measures to be taken when replacing the traditional office overhead T8 lighting tubes with T5 LED fluorescent tubes (T5 is a code which refers to the diameter of the fluorescent tube, which measures 5/8 of an inch).

The energy efficient T5 LED fluorescent tubes are comparable to T8's light emission but are considered to be more environmentally friendly, dramatically reducing energy consumption. The T5 tubes also offer a greater life expectancy as they last at least two times longer than the T8s, resulting in reduced maintenance costs.

A qualified electrician can be used to replace the existing T8 lighting tubes. However, the changeover procedure is no different from changing over a T8 tube.

It is a safe and easy procedure that can be carried out by individuals without an electrical licence as the LEDs have the same length and the same two-pin connector at each end.

NOTE: Although LEDs can be used for 36 watt fittings with a conventional ballast, the starter must be removed, otherwise it will destroy the new LED replacement tube.

If T5 tubes are being used with existing T8 fluorescent tubes, the electrician will be required to install a T5 adaptor. Electricians should check replacement tubes and adaptors to ensure there are not "live" parts that can be accessed during its installation.

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There have been reports of insulation failures, which cause the metal enclosure of the tubes to become “live” hence, presenting the risk of an electric shock to the installer.

Electrical safety for stall operators at markets and shows

With the Perth Royal Show and other exhibitions scheduled for the upcoming Spring months, electrical contractors are reminded of the following safety requirements for the stall operators whom they may be assisting:

- any electrical equipment supplied through a socket outlet, must be protected by a residual current device (RCD);
- all electrical equipment must comply with Australian standards;
- all electrical equipment should be tested by competent persons (ie a licensed electrician or an appropriately trained competent person);
- extension cords run in a public traffic area should be arranged so they do not cause an obstruction to public walkways or invite damage to the cord;
- RCDs are to be tested to ensure they are operating correctly; and
- power boards should not be ‘piggybacked’ (ie supplying one power board from another). Each power board should be supplied directly from a socket outlet.

Phillips recall on LED lamp

Phillips Lighting has recently recalled its Master 12-60W E27 2700K A60 mains voltage LED lamp, used primarily in professional applications such as in the hospitality industry.

A small quantity of the bulbs has been found to leak electrical current to the metal housing and therefore have the potential to become “live”. If the lamp housing becomes “live” and a person comes into contact with it, he or she could receive an electric shock.

The lamps have been sold nationally by specialist lighting stores and electrical wholesale outlets between 1 October 2012 and 17 May 2013.

These lamps must not be installed and Phillips Lighting should be contacted to arrange for a refund.

Identification

The recall covers three production batches dated October, November and December 2012.

Commercial Code:
MLED12WA60E27WW
12NC: 929000182408



For any queries, contact Philips Lighting Customer Care on 1300 304 404.

Equipotential bonding requirements for pool and spa areas including fencing

Electrical contractors engaged to install power points for pool or spa pumps or associated equipment need to be aware of the Standards pertaining to equipotential bonding.

Equipotential bonding is an important measure to reduce risk of damage to electrical equipment, as well as preventing electric shocks or serious injury to those in or near the water.

Bonding involves joining together all conductive material that is, or can be earthed so that they are all at the same potential.

For pool and spa installations when the water is in contact with the exposed conductive parts of electrical equipment in the pool zone area (refer to AS/NZS 3000:2007 “Wiring Rules” for the defined zones – 0, 1 and 2), there is always a risk of injury for those in the water if the electrical insulation fails. Therefore, equipotential bonding is required on any exposed conductive parts of electrical equipment (eg metallic pool pump motors or pool heaters) not separated from “live” parts by double insulation and in contact with the water. This also includes the water within the filtering system.

Bonding must also be extended to any conductive fittings that are located in the pool or attached to it (eg pool ladders, diving boards and water slides), to any fixed external conductive parts of the pool structure (ie the reinforcement metal of the pool shell and decking) as well as any fixed, conductive material within arm’s reach of the pool edge (eg fencing, low voltage lights, lamp posts and pipework).

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Underwater lighting bezels and associated fixing screws should be insulated or made of insulated material.

For reinforced concrete pools, if conductive tie-wires have been used in the construction, they are considered to be a suitable bond between conductive and reinforcing materials, provided the reinforcement is adequately connected together, with one point of connection for the bonding conductor, to the reinforcement.

The bonding connection point for an equipotential bonding conductor to the conductive parts of swimming pools or spas, must meet the following criteria:

- it can be connected in an accessible position which allows space for further connections to be made after the construction of the pool;
- it can be readily identified by marking its location within the switchboard containing the circuits supplying the pool or spa, or at another permanent location;
- it has been designed and constructed in accordance with Clause 3.7 (ie connection and termination requirements); and
- it is protected against mechanical damage and is protected against corrosion in accordance with Clause 5.5.5.3 (ie encapsulating it with a suitable protective compound).

This connection point can also be used as a common point to connect other conductive fixtures and fittings to the bonding.

An equipotential bonding conductor must be connected between the electrical equipment in:

- the pool zone area;
- the conductive fixtures, fittings, pool structure or bonding connection point; and
- the bonded parts and the earthing conductors associated with each circuit supplying the pool or spa or alternatively, the earth bar at the switchboard from which the circuits originate.

Providing customers with downlight installation instructions

Electrical contractors are reminded to leave the manufacturer's installation instructions for recessed downlights with their customer.

The manufacturer's instructions contain valuable safety information and precautions that customers need to be aware of as well as information on the warranty.

If the customer retains the instructions, this will also benefit another electrical contractor who may attend the property at a later stage to replace or repair the downlights. It also assists the network operator's electrical inspector should an inspection be conducted.

Remote Area Power System (RAPS) installations

To enable Remote Area Power System (RAPS) inspections to be carried out, sufficient details need to be provided to identify the location of the installation without the advantage of local knowledge.

Locations outside town boundaries require **both** the lot and street number to be supplied along with the street name and nearest suburb/town. In addition, a telephone number or email address for the onsite customer and distance of the nearest cross street or intersection is required.

If the lot, street number and street name are not available, then GPS coordinates for the property involved would be acceptable.

Regardless of the method used to identify the property, a telephone number or email address for the onsite customer is always required.

Air conditioner installer fined \$15,000

No electrical licence – unsafe electrical work – severe penalty

Air conditioner installer, Christopher McConnell, appeared in the Perth Magistrates Court during July 2013 to face charges of carrying out electrical work without an electrical worker's licence or permit and for substandard electrical work.

Investigations by EnergySafety and Western Power revealed that McConnell had installed a number of split system air-conditioning units under the trading name of "The Cool Guy".

McConnell had sourced work from an electrical white goods store in Mandurah, from which the units were purchased. Customers who bought the units were provided with The Cool Guy's business card so that arrangements could be made with McConnell to install the air-conditioners.

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At the time of the offences, McConnell was the holder of a restricted electrical worker's licence which did not authorise him to carry out electrical installing work.

Christopher McConnell pleaded guilty to seven breaches of Regulation 19(1) of the Electricity (Licensing) Regulations 1991 (carrying out electrical work without a relevant licence) for which the Magistrate imposed a penalty of \$5,000 with \$1,200 in Court costs. In respect of the four breaches of Regulation 49(1) of the Regulations (substandard electrical work), McConnell also pleaded guilty and was fined \$10,000 with another \$1,200 in costs.

In his sentencing remarks, the Chief Magistrate stressed the

seriousness of people working without an appropriate electrical licence and leaving work in a substandard condition.

If you know of anyone who may be carrying out unlicensed electrical work, please report this to your relevant network operator or EnergySafety. Such people pose a clear risk to the public.

Reporting property damage

Readers will be aware of the requirements to report instances of electrical accidents to the relevant network operator (Regulation 63(1) of the Electricity (Licensing) Regulations 1991).

Any instances of a person receiving an electric shock, especially serious ones, must be reported.

Where damage to property has occurred as a result of a sudden discharge of electricity or has, or is likely to have an electrical origin, must also be reported to the relevant network operator.

Damage must be reported where it has not been contained within the faulty equipment involved, results in a fire or causes significant property damage. An open circuit neutral causing over or under voltage leading to equipment failure, is one example. Failure of a device where the damage is confined within that specific piece of equipment and does not result in a fire, is not reportable.

Prosecutions for breaches of electricity legislation

Between 1 April and 30 June 2013

Name (and suburb of residence at time of offence)	Licence No.	Legislation and Breach	Offence	Date of Offence	Fine (\$)	Court Costs (\$)
Paul Murphy (Kalamunda)	EW166565	Regulation 19(1) E(L)R 1991	Carried out electrical work while not authorised by licence or permit	Between 12/04/11 and 15/04/11	1,500.00	653.80
Bradley Ashworth (Queens Park)	EW147757	Regulation 49(1) E(L)R 1991	Carried out unsafe and substandard electrical work	Between 23/02/11 and 28/02/2011	5,000.00	649.70
Leigh Newett (Karratha)	EW128040	Regulation 49(1) E(L)R 1991 (4 breaches)	Carried out unsafe and substandard electrical work	Between 31/03/11 and 16/05/11	8,000.00	656.15
Darcy Telfer (Meadow Spring)	EW147914	Regulation 49(1) E(L)R 1991	Carried out unsafe and substandard electrical work	Between 14/03/11 and 21/03/11	8,000.00	656.15
Andrew Hill (Milpara)	EW114262	Regulation 49(1) E(L)R 1991	Carried out unsafe and substandard electrical work	16/12/10	9,500.00	764.40
Jabiru Industries Pty Ltd T/ As Electaire Products (Milpara)	EC005188	Regulation 52(3) E(L)R 1991	Submitting a Notice of Completion when the electrical work was defective and therefore incomplete	16/12/10	38,000.00	653.80

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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 (\$)
2G's SMI Pty Ltd T/As Sun Wise Electrics (Bunbury)	EC008636	Regulation 52(3) E(L)R 1991	Submitting a Notice of Completion to the when the electrical work was defective and therefore incomplete	18/03/2011	10,000.00	866.15
Gemini Pty Ltd T/ As Gemini Electrical Contracting (Bulgarr)	EC007687	Regulation 52(3) E(L)R 1991 (4 breaches)	Submitting a Notice of Completion when the electrical work was defective and therefore incomplete	Between 31/03/11 and 16/05/11	18,000.00	656.15
Kevin O'Reilly (Kalamunda)	EW152237	Regulation 53(2) E(L)R 1991	Employing, engaging or instructing a person to carry out electrical work while he was not authorised by a licence or permit	Between 12/04/11 and 15/04/11	25,000.00	653.00
		Regulation 63(2) E(L)R 1991	Failing to immediately report an electrical accident to the network operator			
Electricity Networks Corporation T/As Western Power (Perth)	EC004931	E(SS&SS)R 2001	Failed to operate and maintain their overhead distribution safely	30/01/11	101,250.00	6,245.05

Summary of Infringements for breaches of electricity legislation

Between 1 April and 30 June 2013

Legislation and breach	Offence	Number of infringements	Fine (\$)
Regulation 33B(2) EA 1945	Selling or hiring, or exposing or advertising for sale or hire, prescribed appliance without approval.	2	10,000

Legend EA Electricity Act 1945
E(L)R Electricity (Licensing) Regulations 1991
E(SS&SS)R Electricity (Supply Standards and System Safety) Regulations 2001

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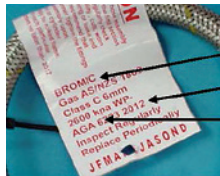
SAFETY ALERT – Bromic stainless steel flexible pigtail



EnergySafety wishes to advise gas fitters of the safety alert issued by Bromic Group regarding stainless steel flexible pigtails bearing approval number AGA 6223 manufactured between January 2011 and December 2012.

Identification

The pigtails in question can be identified via a white label with red writing (see image)



→ Bromic brand
→ Manufacturing year listed as 2011 or 2012.
→ Approval number AGA 6223

Safety issue

Under extreme conditions there is the possibility for the end fitting that is connected to the cylinder valve to separate from the hose assembly.

What to do

Where the pigtails are identified as being of the type and batch above, immediately replace with copper or equivalent pigtails.

For further information contact

Bromic Plumbing & Gas
Telephone: 02 9748 3900
Website: www.bromic.com.au
Email: plumbing@bromic.com.au

Important information on pre-1980 gas appliances

The Gas Appliance Rectification Programme (GARP) is now complete and the programme has been successful in identifying and addressing a large number of pre-1980 gas appliances, however not all such appliances will have been reported.

In an effort to capture any remaining appliances, that require replacement, the Director of Energy Safety has published an Order under section 13H of the *Gas Standards Act 1972* in the Government Gazette. This order prohibits the sale, hire or use of all pre-1980 gas appliances that are connected to a coastal gas distribution system. Only natural gas distribution systems are relevant to this order.

The order came into effect on 2 July 2013 and includes two options that allow for pre-1980 gas appliances to remain in service. The options are:

1. The owner can produce a letter provided from GARP that states the appliance has been assessed as suitable for continuing operation on the changed gas; or
2. The appliance, after request by the owner or gas fitter, is assessed as safe for continuing operation on the changed gas.

Gas fitters have a regulatory requirement to report any installation defects and non-compliances, and pre-1980 gas appliances are deemed to constitute such a non-compliance unless the owner can produce an acceptance letter as detailed above.



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Gas fitters may report installation defects and non-compliances to the gas supplier or where the gas supplier is not identified to EnergySafety.

Further more detailed information on this issue may be accessed on the EnergySafety website on www.energysafety.wa.gov.au



Calciner 6 – BHP Billiton Worsley Alumina Refinery

In early April this year EnergySafety visited BHP Billiton Worsley Alumina's refinery to view the commissioning of the new Calciner 6. The refinery is located 13 km north-west of Collie in the south-west corner of Western Australia.

The Calciner is of the gas suspension type. The calcination part of the process is carried out in the furnace of the Calciner where the hydrate (produced beforehand from bauxite ore processed to extract aluminium hydroxide) is heated to approximately 980°C (calcined) to drive off the water present and produce aluminium oxide.

The Calciner furnace consists of a vertical cylindrical furnace section with preheated combustion air entering axially at the bottom. The combustion zone is positioned at the base of the furnace. The alumina hydrate is introduced above the combustion zone in a steady stream and the products of combustion suspend the solids carrying the product to the top outlet.

The main burner system, consisting of a pilot and main burner, is intended to be dual fired (capable of using natural gas or heavy fuel oil) however, it is currently only approved for natural gas. The main burner has six nozzles, with the nozzles set equally apart around the circumference of the inlet to the Calciner furnace. The natural gas-fired burner has a 560 GJ/h gas rate.

There is a limited gas to air ratio of less than 1:20, up to an operating furnace lining temperature of 750°C. This has been established as providing reliable operation of the Calciner in that it was found to be responsive, stable and free from nuisance tripping. Up and until this temperature is obtained, the Calciner

furnace is limited to the lower explosive limit for the gaseous fuel.

Previous studies of the burner systems in the Queensland Calciners of the same manufacturer that were installed at Yarwun (two of) and at Gladstone (three of) since 2004 experienced no issues (explosions or deflagrations) with the Calciner flame safeguard system proving safe and reliable. The Worsley Calciner flame safeguard system is designed to comply with the British adopted European Standard, BS EN 746-2: Industrial thermo-processing equipment, which covers the European safety requirements for combustion and fuel handling systems, for cross lighting and is restricted until above 750°C. Confirmation was given by the gas fitter of the system safety and reliability with cross-lighting of the first nozzle by the pilot and cross lighting of the remaining nozzles by this same nozzle.

EnergySafety reviewed and considered the consequent applications made for variation/exemption to the Worsley Calciner 6 from the gas fitter and granted variation/exemptions with conditions to this effect.



Calciner 6 burner nozzle



Calciner 6 pilot

Gas appliance isolation valves; where are they required

The requirement for isolation valves on appliances is specified in AS/NZS 5601.1:2010 Gas installations Part 1: General installations Clause 6.6.3 Means of isolation. Table 6.3 gives the requirements for various appliance types for two classifications of buildings:

- single residential buildings; or
- commercial/industrial or residential apartment buildings.

We have been asked to define these building classifications so that gas fitters can better assess where to apply the different requirements of the clause.

The easiest way to define the building classification is to define a "Single residential building" and any building which does not fall into this classification is then classed as "Commercial/industrial or residential apartment buildings".

For the purposes of AS/NZS 5601.1:2010 Table 6.3 a single residential building means a building that is:

- a detached house; or
- one of a group of two or more attached dwellings each being a building separated by a fire-resistant wall, including a row house, terrace house, town house or villa unit.

Standards development update

Several of the Australian Standards cited by Schedule 7 of the Gas Standards (Gasfitting and Consumer Gas Installations) Regulations 1999 are under review and are being updated.

AS 1375: Industrial fuel-fired appliances

A draft standard incorporating public comment has been approved for publication. The next edition of this standard is expected to be published in the third quarter of 2013.

The new edition includes:

- Increased coverage of oil fired systems.
- Provisions for safe operation of ovens with solvents at elevated temperatures.

AS/NZS 1596: The storage and handling of LP Gas

Public comment has been received and is being incorporated into a draft for approval to publish.

The next edition of this standard is expected to be published in the first half of 2014.

The new edition includes:

- Increased cylinder restraint requirements.

AS 3814: Industrial and commercial gas-fired appliances

A draft standard for public comment is being prepared. The draft is expected to be released for public comment in the first half of 2014.

The new edition is expected to include:

- Increased specific provisions for gas engines and turbines.
- Increased information for compliance of programmable electronic control systems.

AS/NZS 5601: Gas installations

A draft standard incorporating public comment has been approved for publication. The next edition of this standard is expected to be published in the third quarter of 2013.

The new edition includes:

- Significant changes to the ventilation requirements for gas appliances in new buildings.

Adoption of the new editions of standards.

New editions of standards cited in schedule 7 of the Gas Standards (Gasfitting and Consumer Gas Installations) Regulations 1999 are automatically adopted in Western Australia on publication. However there is a six month phasing in period where the superseded edition is deemed to comply with the requirements of the new edition.

The requirement to comply with new editions of standards is not retrospective, only new gas fitting work must comply with the latest edition of the standard.

Natural Gas in Yanchep

Yanchep is an outer coastal suburb of Perth, situated 56 kilometres north of Perth's central business district. Around six years ago dormant gas network pipes were installed in the Capricorn Estate, in anticipation of the reticulated gas network expanding to the area. Today the Capricorn Estate consists of 1,140 lots with a large number of established homes.

In late 2012 ATCO Gas Australia completed 21km of extension to their gas network that went through Yanchep and on to Two Rocks. This has now enabled the estate to be connected to the Perth Metropolitan region of the natural gas network. ATCO Gas worked closely with the developer of the Capricorn Estate and its contractors to ensure thorough testing of the dormant network, during construction and more recently prior to commissioning.

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In the Western Australian State Government's 'Directions 2031' urban expansion plan, Yanchep was highlighted as a future satellite city and major metropolitan centre, further demonstrating the foresight by ATCO Gas in making natural gas available.

During the past five years the annual growth of the ATCO Gas network has been approximately 250km, with an average annual new customer connection rate of nearly 20,000. In the past 12 months, ATCO Gas has invested over \$39 million on in-ground infrastructure as part of its ongoing commitment to investing and supporting residential, commercial and industrial growth in Perth.

ATCO Gas is undertaking further expansion to connect Yanchep's neighbouring suburbs, to allow for the growing population to benefit from the availability of natural gas.

ATCO Gas intends to advise the existing households in the Capricorn Estate of the availability of natural gas and the benefits that they could get from switching to natural gas for hot water, cooking, and space heating.

ATCO Gas Australia is a privately-owned, economically regulated (by the ERA) gas distribution company that builds, owns and maintains the underground network that brings natural gas to more than 667,000 end users.



There are no temporary repairs for gas installations – reporting of incidents

EnergySafety received a report of a gas fitter having suffered burns to his face and arms resulting in several days in hospital.

He had received these burns whilst lighting a storage gas water heater.

It was found that the water heater was being re-lit after alterations had been made on the consumer piping outside the building. The underground services had to be relocated due to the preparations for new buildings on the site. To place this water heater back into service the air had to be purged from this portion of the gas consumer piping.

The purge was conducted in the small store room where the water heater was located. To facilitate the purge, the water heater was disconnected at the appliance isolating valve. The purge commenced and when the gas fitter felt he had LP Gas, at that point reconnected the water heater and lit the pilot. The thermostat was then turned up and the main burner lit. The gas fitter tidied up around the water heater and left it in operation.

Sometime had passed so he thought he should check the water heater. It had gone out. He again hit the piezo igniter, instantly there was a flash-over and he felt the searing flame on his exposed skin.

Initially the gas fitter declined medical assistance. That changed later in the day on his homeward journey dropping into the local hospital where he was admitted for two days.

As the investigation progressed, non-compliant repairs to a previously repaired portion of uPVC gas pipe was discovered.

It was alleged this repair was only temporary even though it had been in the ground almost twelve months. The repair consisted of two stainless steel rubber lined clamps, white uPVC water pipe and fittings with an amount of mastic to effect a seal.

There is nothing in the regulations that allow for a temporary repair of gasfitting lines. All fittings used for any repairs are to be approved for gas at the appropriate pressure ratings and the repairs are to be pressure tested prior to gas being turned back on.

When using any plastic material, uPVC or Polyethylene for use in the ground, it must be installed with marker tape inclusive of a tracer wire laid above the gasfitting line.

As a reminder the following is required in regards to reporting gas incidents.

Regulation 42 Incidents to be reported

- (1) If an incident that causes or is likely to cause injury to a person or damage to property occurs, a person who is aware of the incident must immediately report it-
 - (a) to the relevant gas supplier and the Director; or
 - (b) to the Director, if-
 - (i) the gas installation is a mobile engine or is on or in a caravan or marine craft; or
 - (ii) the relevant gas supplier is not identifiable.
- (2) Subregulation (1) does not apply-
 - (a) to a person who believes, on reasonable grounds, that the incident has already been, or is likely to have already been,

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reported in accordance with subregulation (1); or

(b) to a supervised gas fitter-

(i) who becomes aware of the incident while doing gasfitting work; and

(ii) who reports the incident to the supervising gas fitter.

(3) In this regulation-

incident means an incident that involves the sudden discharge of gas or that otherwise relates to gas.

EnergySafety was advised of this incident some seven days later.

Sealing of consumer piping branch lines

A gas fitter was engaged by a consumer to remove a damaged cooktop. In doing this work the gas fitter capped off that portion of the gas installation with the intention of coming back to install a new gas cooktop. The consumer however had an electrician replace the gas cooktop with an electrical one. The gas fitter was not advised of this change and having undertaken gasfitting work did not provide a Notice of Completion and unwittingly created a non-compliance.

When re-lighting gas appliances after any gasfitting work has been undertaken it is essential to purge the entire gas installation of any air. Unless this is completed any air remaining in the installation may extinguish any unprotected gas burner/s or allow gas to flow again prior to a flame failure device operating in the case of water heaters etc.

If left un-noticed unburnt gas may enter the room or accumulate in the body of the gas appliance (eg storage water heater) and provide a hazard in re-lighting if the gas has not dispersed.

This matter has prompted clarification of the requirements in such situations.

AS/NZS 5601:2010 states as follows:

3.4 Sealing of open ends

3.4.1 Removal of debris

Before any section of pipework is permanently connected or sealed it shall be checked for debris and moisture and cleared and dried before sealing.

3.4.2 Open ends to be sealed while work is in progress

Where alteration, repair or extension to consumer piping necessitates the removal of a pipe fitting or a gas appliance or the cutting of an installed pipe, all open ends, other than those at the immediate work area, shall be sealed prior to, and for the duration of the work. When the work site is vacated all open ends shall be sealed.

NOTE: the closing of a shut-off valve will not satisfy this requirement unless the outlet of the valve is sealed.

3.4.3 Outlet provided for future connection to be sealed.

Where an outlet has been provided for the connection of a gas appliance but is not to be used immediately, and the outlet is not fitted with a quick-connect device, it shall be sealed using a plug, cap, blank flange or a capped or plugged manual shut-off valve.

uPVC consumer piping found in roof space

As part of good practice, a gas fitter conducted a pressure test before commencing additional work. The pressure test revealed an existing gas leak.

The consumer agreed that the gas fitter locate the gas leak. After isolating sections of the gas installation the gas fitter believed the leak was on consumer piping in the roof space. He traced the copper consumer piping and found it attached to a plastic fitting and a length of uPVC. The leak was identified at this plastic fitting.

Two gas fitters had previously undertaken work but had not identified any leaks and had not been required to enter the roof space.

Fortunately due to the diligence of this gas fitter, this serious non-compliance was rectified. Any gas leak that remains undetected has the potential to cause serious property damage.

EnergySafety sees this as a good result and commends the gas fitter in ensuring the gas installation remains safe and compliant.

Remember, before entering any roof space make sure you always isolate the electricity supply by switching off at the main switch.

Apprentice training

The Great Southern Institute (Albany) and Durack College (Geraldton) are now added to the list of Registered Training Providers (RTOs) in Western Australia and provide trade training for plumbing and gas apprentices. Apprentices are now generally more in their late teens and mature aged than what they were a generation ago leading to reduced times in training following national competency requirements.

To enhance the training provided by the RTOs and host employees EnergySafety provides a short presentation to first year apprentices, on the role of the regulator in Western Australia. Together with gas inspectors from industry, the presentation provides an insight into the associated legislation and how it is applied. It also includes the role of the gas inspector in disciplinary matters, investigations into fire/explosions and the provision of advice on all gas installations.

At the conclusion of the presentation EnergySafety provides a small bag of fittings with instructions on how to make a test piece for gas pressure testing.



The test piece is later assembled in the workshop using their basic hand skills in welding and expanding copper pipe during later sessions of practical work. Their assembled test piece can then be used on the job when they are working under the supervision of a gas fitter.

Prior to working on a gas installation an apprentice must obtain a restricted gasfitting permit. All plumbing and gasfitting apprentices must be supervised when working on gas installations.

The supervising gas fitter is required to submit the notice of completion and is also responsible for fitting the compliance badge to the gas installation.

Tool box meetings are also available to employers undertaking gasfitting work. This is another opportunity for apprentices to meet with gas inspectors in a working environment. Any companies wishing to have an EnergySafety presentation or tool box meeting is encouraged to call the Gas Inspection Branch at EnergySafety, on 9422 5297. Contact can also be arranged via email to energysafety@commerce.wa.gov.au.

Prosecutions for breaches of gas legislation

1 April to 30 June 2013

Name (and suburb of residence at time of offence)	Licence No.	Legislation and Breach	Offence	Fine (\$)	Court Costs (\$)
John Benjamin Durant	NLH	GSA 1972 13(A)(2)	<i>Carried out gasfitting work while not holding a certificate of competency, permit or authorisation allowing him to do so</i>	5,000	575

Summary of infringements for breaches of gas legislation

1 April to 30 June 2013

Legislation and Breach	Offence	Number of Infringements	Fine (\$)
GSA S13A(2)	<i>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</i>	2	2,000
GSA S13D(2)	<i>Using a Type B gas appliance that a) is not approved; or b) is not marked, stamped or labelled</i>	1	1,000
GSR R22	<i>Leaving Type B appliance permanently connected without certificate of compliance</i>	1	600
GSR R28(2)	<i>Failing to attach approved badge or label on completion of work</i>	8	3,200
GSR R28(3)	<i>Failing to give notice of completion of gasfitting work within required time</i>	4	1,600
GSR R34(1)	<i>Failing to keep records of employed gas fitters in required manner</i>	2	2,500
	Total:	18	10,900

Legend GSA Gas Standards Act 1972

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