



Regulation Roundup

A bulletin for electrical and gas industry workers brought to you by the Office of the Technical Regulator

Issue 29 February 2012

Message from the Technical Regulator

Welcome to Issue 29 of Regulation Roundup. This edition is slightly early to enable us to promote the Electrical and Gas Roadshows. The schedule of Roadshows is enclosed for your information. We encourage you to attend one of these sessions as it will again have information that is highly relevant to the industry. In this edition of Regulation Roundup we again highlight issues we are uncovering with Solar PV installations. If you are installing solar systems please take note of the common faults associated with these systems. We have also highlighted a number of issues that have been uncovered with gas installations recently, some of these relate to new requirements that have been introduced within AS/NZS 5601. The Gas Roadshows this year will focus on failing to comply with the Standard issued in late 2010 and highlight issues of note. I again encourage you to take the time to read Regulation Roundup as it has been published with the aim to assist the industry achieve safe outcomes.

Robert Faunt
Technical Regulator

Registration of Gas and Electrical COC Books

You can register your COC books online at www.sa.gov.au/otr. Click on the link in the Top 5 box on the left side of the page.

This link will take you to where you can enter your details for the COC book you are registering. Remember to enter the prefix letter of the book you are registering eg G200251.



Faulty Eltech / Iso-Max dc Isolators Replacement Program

There have been several incidents recorded throughout Australia, (similar incident shown in this photo), where Eltech / Iso-Max dc isolators installed on PV array systems have resulted in a range of failures, including some suspected fires.

If you have installed any of the above dc isolators you are urged to read the bulletin issued by the Australian distributor, Eltech Industries, via their website: <http://www.eltechindustries.com.au/News>

This bulletin details proposed action by installers to replace all affected isolators.



The OTR advises of the following recall notice relating to a range of Mack & Lanson RCBO's distributed by both Lawrence & Hanson and Auslec stores throughout Australia.

Product Safety Recall

Mack & Lanson Branded Combination RCD & MCB (RCBO)
Part No.'s MRR-H10C, MRR-H16C, MRR-H20C, MRRH-25C, MRRH-32C and LANRCBO610SA, LANRCBO616SA, LANRCBO620SA, LANRCBO625SA, LANRCBO632SA sold from Electrical Wholesalers through the period 16/09/2010 to 5/11/2010.

Defect: The product fails the 6Ka short circuit test.

Hazard: Following a rare high fault current event at full rated capacity, the RCBO may pose an electrical shock risk.

What to do: Contact Electrical Product systems to arrange to have the items replaced. Electrical Product Systems will liaise with you as to the installation costs, return of the faulty products along with receipt of a Certificate of Electrical Safety (or equivalent depending on the requirements of the Electrical Authority in your area) to demonstrate the items have been installed. On completion, the relevant electrical authorities will be advised and the faulty items destroyed.

Contact Details: Contact "Electrical Product Systems" via the internet at www.rcborecall.com.au or alternatively contact by phone on 03 9862 4234.

Items bought between 16/09/2010 to 5/11/2010.

FOR TECHNICAL ENQUIRIES:

Electrical

P: (08) 8226 5518
(8.30am - 4.30pm)

F: (08) 8226 5529

Gas

P: (08) 8226 5722
(8.00am - 5.00pm)

F: (08) 8226 5866

www.sa.gov.au/otr

Electrical Bulletin

In This Issue

Message from the Technical Regulator	1
Registration of Gas and Electrical COC Books	1
Faulty Eltech / Iso-Max dc Isolators Replacement Program	1
Product Safety Recall	1

Electrical Bulletin	2
NECA Roadshow Seminar Series	2
Recessed luminaire barriers	2
Not so bright!	3
Safe removal of asbestos meter panels	3
Illegal meter relocation and reconnection of supply	3
Common electrical breaches	4
Shock report summary	5
Electrical expiations issued	6
Electrical worker disqualified	6
Employees Beware!	6
Are you a death dodger?	7

Gas Bulletin

Electrical wire in gas meter boxes	8
Installing uncertified domestic and commercial gas appliances	8
Servicing old appliances	8
Need to upgrade gas pressure on Industrial / Commercial installations?	8
Portable/Temporary hot water services... but not inside!	8
Polyethylene (black with yellow stripes – 'tiger pipe')	9
The AS/NZS 5601 – 2010 Gas Installation Standard is not a training manual	9
You must be joking!	9
Reversion fittings	9
Pressure points	10
Revision of pipe size tables	10
Requirements for marker tape and tracer wire on polyethylene (tiger pipe jobs) and polyamide nylon 11	10
Installation and maintenance of Type B gas appliances	10
Type B industrial burner controller changes	10
Testing gas installations for soundness	10
Got a pressure problem? Check the gas pipes	10
The importance of backfill, marker tape, tracer wire and as laid plans	11
How do you service this?	11
They must be crazy!	11

Contact List	12
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NECA Roadshow Seminar Series 2012



Attention all electricians...

The 2012 NECA Roadshow seminars will be held from March to April and we encourage all electrical contractors and workers to attend and find out the latest developments within the industry.

A significant training resource for our industry, the event this year will provide information on the:

- *New Occupational Health and Safety legislation*
- *NECA safe Workplace Health and Safety System*
- *Updates and ongoing issues with the Service and Installation Rules*
- *Solar Installation issues, lessons from two electrical fatalities and an update on down-lights*

We would like to thank the Office of the Technical Regulator and ETSA Utilities for their participation in this year's event.

Suppliers and wholesalers will be on location with product and service displays and NECA staff will also be on hand to answer your questions in regard to what NECA can do for you and your business.

To attend the 2012 NECA Roadshow Seminar, please complete and return the enclosed registration form to NECA SA via fax on (08) 8373 1528 or email mjolley@necasa.asn.au at least 7 days prior to your chosen event.

For further information please phone NECA SA on (08) 8272 2966 or visit www.neca.asn.au

Recessed luminaire barriers

AS/NZS 5110:2011

The new recessed luminaire barrier standard was released on 20 October 2011.

This Joint Australian/New Zealand Standard was prepared by Technical Committee EL-041, which included manufacturers and installers from the lighting industry and the thermal insulation industry as well as barrier manufacturers.

The objective of this Standard is to provide requirements to assess the safety of recessed luminaire barriers. Barriers may be an additional means to improve the following:

- The safety of buildings and installations by separation of possibly flammable elements, such as timber joists or ceilings, insulation (bulk, formed or loose fill), debris and the like from recessed luminaires.
- The safety of buildings and installations by separating materials, such as insulation (bulk, formed or loose fill), debris and the like, from the recessed luminaire, and to prevent such materials from impacting on the thermal characteristics of recessed luminaires.
- The thermal performance of recessed luminaires.

The Standard provides classifications, construction and marking requirements, and test procedures for recessed luminaire barriers to achieve uniform compliance criteria for any barrier that may be called up by other Standards, codes, commercial contracts, building specifications, regulatory requirements or the like.

Amendment 2 to AS/NZS

3000:2007, which should be released early this year, will include reference to this new Standard in Clause 4.5.2.3, giving one method of installation for recessed luminaires being the installation of a luminaire in combination with a barrier tested and classified in compliance with AS/NZS 5110, Recessed luminaire barriers, as being suitable for the installation conditions.

Not so bright!

In 2010 a maximum limit was imposed for artificial lighting in class 1 buildings (houses, sheds, carports etc). According to the National Construction Code Volume 2 (formerly the Building Code of Australia) this limit has been set at 5 Watts per m² (W/m²) in class 1 buildings and 4 W/m² on verandas or balconies attached to class 1 buildings. This change applies to all residential dwellings (new buildings & renovations, extensions, additions and relocations). So where does that leave our ELV Halogen down-lights? Hopefully back at the store, and replaced in houses by more energy efficient luminaires and lamps that can be installed in a safer manner than the old "Dichros". Electricians should be aware of these changes as some enquiries we have had were from sparkies or builders who had their planning approvals knocked back because of this change.

There has been a revolution in the technology of lamps and luminaires in the last few years, and the brightness and performance of LED's and Compact Fluoros has seen a reduction in the energy demands of lighting in commercial and domestic buildings. Not to mention the installation issues associated with ELV Halogen down-lights and the restrictions placed on them by AS/NZS 3000:2007.

When plans are submitted for new houses to a private certifier or local council for approval, they are assessed against the requirements of the National Construction Code (NCC). Once approval has been granted and construction completed the installation may also be inspected by council for compliance with the NCC. Once hand-over has occurred the electrical installation becomes the owner's responsibility, and unfortunately at this time they can choose to have anything they like installed. However, expert advice from you, the electrician, can help the owner select a more energy efficient alternative to the old ELV Halogen down-lights. Information can be obtained from the Roadshows and from wholesalers. Sourcing an appropriate luminaire for the installation may also avoid having to source additional luminaire covers or barriers, hence may save extra \$\$\$.

For any additional advice on NCC and planning requirements contact the *Department of Planning, Transport & Infrastructure (08) 8303 0602*.



Safe removal of Asbestos Meter Panels

The recent boom in solar PV installations has led to a number of enquiries to the OTR about the safety and legalities of removing and disposing of old meter panels that contain asbestos. ETSA Utilities Service and Installation Rules Appendix 2.4 requires any meter panel containing asbestos to be replaced with modern materials prior to any meter change at customer request (such as changeover to import/export meter). Electrical workers working with old switchboard/meter panels that may contain asbestos should be aware that drilling, breaking or cutting these materials may release harmful asbestos fibres.



Although Asbestos Containing Materials (ACM) used in panels are usually rough or fibrous and may have a strong tar smell, any black or dark brown switchboard/meter panels pre-dating 1987 may contain up to 20% asbestos. The back of the panel may be stamped as containing asbestos or stamped with a brand name such as Lebah, Zelemite, Miscolite or Ausbestos. The use of all forms of asbestos was banned in 2003 with only a few, very specific, exemptions.

Small amounts of ACM's such as meter or switchboard panels can be safely and legally removed and disposed of without a license, as long as stringent safeguards

are adhered to. SafeWork SA has a handy guide titled 'Asbestos and the Home Renovator' on their website. This guide can be found at the link below, and provides detailed safety procedures and control measures to use when removing and disposing of small amounts of asbestos.

http://www.safework.sa.gov.au/uploaded_files/asbestos_homerenovator.pdf

Illegal meter relocation and reconnection of supply

There are many instances each year where the OTR is advised of work done by electrical contractors who have relocated meters, and disconnected and reconnected supply without ETSA's authority. This work is usually done when contractors are pressured by builders to shift the meter box and switchboard due to renovation work.

Case 1

Recently a house was being demolished and the overhead service was removed from a fascia and relocated onto a temporary service pole by an electrical contractor. The meter was relocated into the new meter box and the new switchboard was re energised by the contractor.

Case 2

In another situation the meter reader could not find the meter but observed that the house still had supply. On investigation it was found that the meter panel and switchboard had been relocated from the laundry into the roof space to permit renovation work to continue.

These illegal and unsafe practices are in breach of both ETSA's Service and Installation Rules and the Electricity Act.

Contractors are warned that these practices will not be tolerated and an expiation fee of \$315 can be applied, or contractors prosecuted (maximum penalty \$5,000) for such breaches against Section 59 of the Electricity Act 1996.



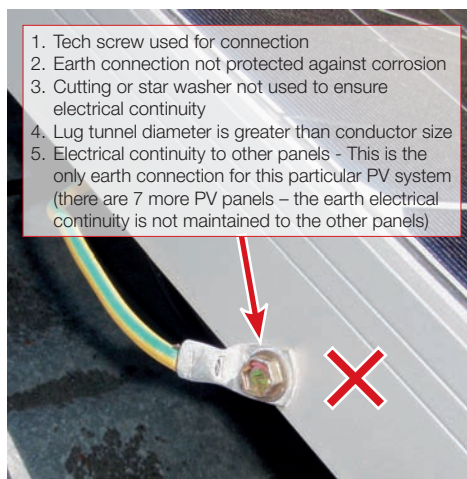
Common Electrical Breaches

Grid-connected photovoltaic installations

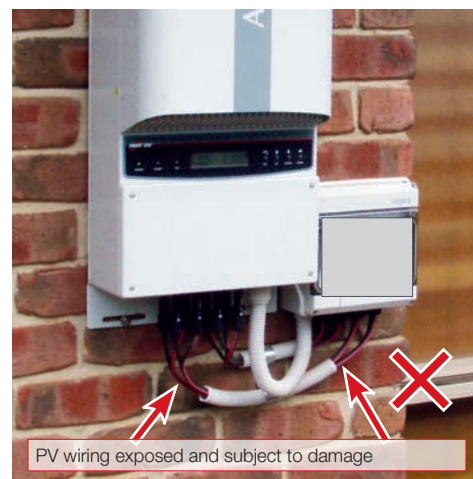
The following examples are some common breaches that the OTR is continually finding during audits of solar installations:



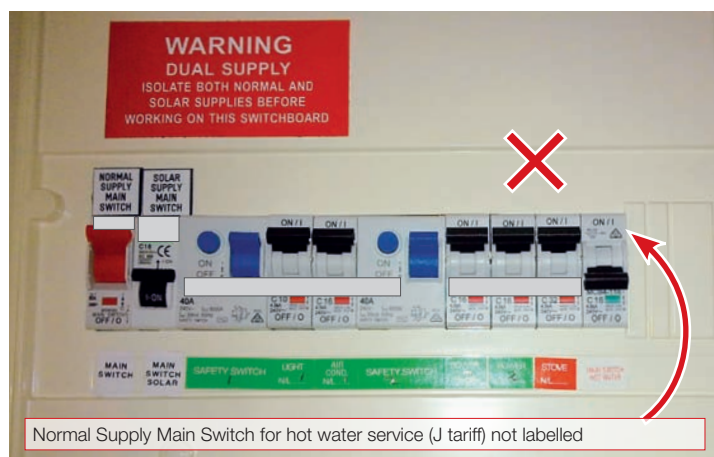
Polarity sensitive DC circuit breaker wired incorrectly



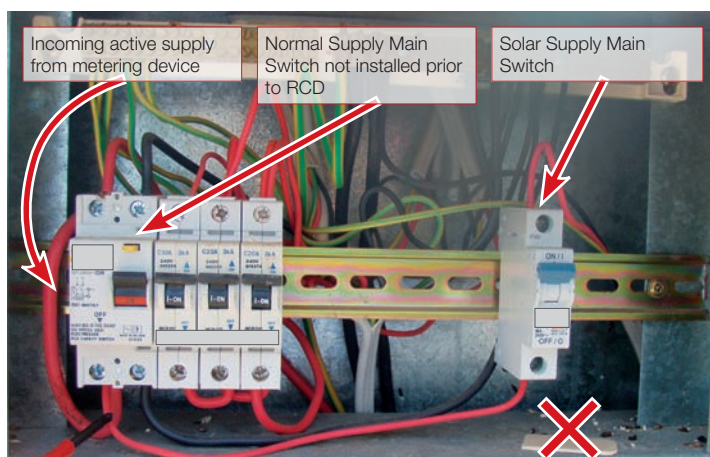
Inadequate earthing to PV panel



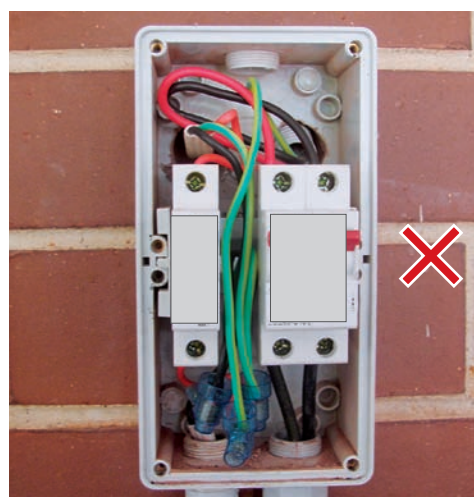
PV wiring inadequately protected against mechanical damage



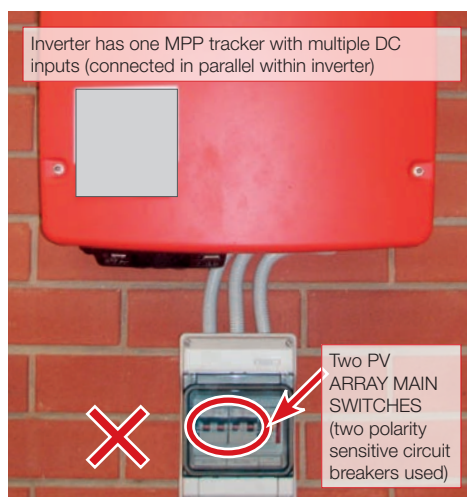
All main switches not readily distinguishable



Electricity supply to inverter is not under the control of a NORMAL SUPPLY MAIN SWITCH



No segregation between AC & DC wiring in enclosure. Enclosure not sealed against wall to prevent ingress of moisture



Two PV strings connected in parallel at inverter - polarity sensitive circuit breaker connected in each PV string



PV string wiring not fixed in position and laying of roof

The OTR has heard every excuse under the sun for the above mentioned non compliant issues "Every one does it like that", "that bloody apprentice", "I was gonna go back and fix it", "Jobs not finished yet" – There is no excuse for this lousy work practice.

Electrical contractors are once again reminded to ensure that workers are 'competent', have relevant training and understanding of the standards and ensure that final inspection and testing of completed solar installations is carried out.

Additionally, CEC council checklist for grid-connect systems may be useful:
<http://www.solaraccreditation.com.au/acccec/installerresources/formsandchecklists.html>

Shock Report Summary

The following are samples of shock reports received by the Office of the Technical Regulator since the last edition of Regulation Roundup.

Shock source	Cause	Contributing factors	Injuries	Action to make safe
Flexible cord	Cord end thrown in to puddle of water	Worker could not see that a puddle of water existed on top of metal roof on mobile hut.	Shock to left foot.	Site work halted until toolbox meeting addressed issue.
Light fitting and bypass timer switch.	Damaged wiring to light.	Worker repairing light used failed bypass switch to isolate instead of disconnecting supply at switchboard.	Shock between both hands.	Isolation procedures to be revised.
Control panel on food production line.	Control panel housing had a large crack in casing.	Moisture entry during cleaning process.	Tingling sensation to right hand.	Isolate area and replace control equipment.
Kitchen mixer.	Damage to mixer due to method of use.	Moisture had entered mixer.	Shock to hands.	Remove and replace mixer with new unit. Staff to be more vigilant.
Light fitting on steel pergola.	Light fitting removed because not working.	The circuit supplying the light was still energised and no junction box had been fitted to make safe.	Shock between hands and feet.	Owner had purchased home in this condition. Circuit isolated correctly by Electrical Contractor.
Open wire service line.	Insulation of conductors frayed.	Home owner was cleaning gutters when they contacted service line.	Shock between shoulder and hand.	Network operator replaced open wire service with insulated type.
Light fitting in stairway.	Globe was broken and home owner attempted to remove rest of globe from fitting.	Stairway had two way switching and owner had not turned off circuit breaker at the main switchboard.	Shock between hands.	Electrical Contractor attended and repaired light fitting.
Metal driveway gates.	High impedance Network Operators neutral cable in service line to house.	Return current path travelling through ground and along gates to supply system.	Shock between both hands.	Network Operator repaired service line which removed fault.
Refrigeration cabinet.	Thermostat controls.	Cover had fallen off of thermostat when being adjusted.	Shock to right hand.	Cover plus extra guard fitted to this unit by Electrical contractor.
Student, socket-outlet and capacitor.	Capacitor placed into socket-outlet.	When the student turned the power on there was a flash of light.	Student received blackened hands.	Further vigilance required by staff.
Unterminated cable in roof space.	Plumber working in roof brushed against unterminated cable.	Whilst renovations were underway to commercial kitchen a cable had been cut and not terminated.	Shock between forearm and feet.	Electrical contractor isolated cable. Work practices during renovation to be reviewed.
Lighting switch plate.	Plate damaged.	Damaged lighting switch mechanism exposing live parts.	Shock to left hand.	Lighting switch plate repaired by electrical worker.

OTR Electrical expiations issued since the last edition of Regulation Roundup

Worker/Contractor	Non compliance	Breach	Expiation
Electrical Contractor	Interfered with supply meter	Section 85 (1)(b) of the Electricity Act 1996	\$325.00
Electrical Contractor	Reverse polarity on DC circuit breaker installed	Section 61 (1)(a) Electricity Act 1996	\$325.00
Electrical Contractor	Reverse polarity on DC circuit breaker installed	Section 61 (1)(a) Electricity Act 1996	\$325.00
Electrical Contractor	Segregation of supplies not carried out	Section 61 (4) Electricity Act 1996	\$325.00
Electrical Contractor	Electrical work not carried out as required under regulations	Section 61 (1)(a) Electricity Act 1996	\$325.00
Electrical Contractor	Electrical work not carried out as required under regulations	Section 61 (1)(a) Electricity Act 1996	\$325.00
Electrical Contractor (2 breaches)	Inspection and testing not carried out	Section 61 (1)(b) Electricity Act 1996	\$325.00
	Electrical work not carried out as required under regulations	Section 61 (1)(a) Electricity Act 1996	\$325.00
Electrical Contractor	Unauthorised connection to the distribution network	Section 59 (1) Electricity Act 1996	\$325.00
Electrical Contractor	Electrical work not carried out as required under regulations	Section 61 (1)(a) Electricity Act 1996	\$325.00
Electrical Contractor	Electrical work not carried out as required under regulations	Section 61 (1)(a) Electricity Act 1996	\$325.00
Electrical Contractor	Inspection and testing not carried out	Section 61 (1)(b) Electricity Act 1996	\$325.00
Electrical Contractor	Exposed live parts	Section 61 (1)(a) Electricity Act 1996	\$325.00

Employees Beware!

- ✓ Do you work for a boss?
- ✓ Do you do unauthorised work on the weekend or after-hours for yourself using the company vehicle, tools and/or materials?
- ✓ Do you then issue an ECC from a book registered under your employer's or company name? or, Do you not issue an ECC at all?

If you answered YES to any of these questions BEWARE - these are unethical and dangerous practices!

You may be exposing yourself to risks that you have not even considered such as:

1. Tax implications
2. Work Cover issues if you injure yourself
3. Insurance liabilities if you do work that causes a fire, or injury to the property owner
4. There may also be licensing issues with Consumer and Business Services.

This could result in you losing your family home and other assets.

If you are doing work not associated with your employer, then you must use a separate ECC book registered to you. As an electrical worker you can issue an ECC without being a contractor as long as you use your own book and tick the box on the ECC under Section B.

Electrical worker disqualified

Registered Electrical Worker Mr William Page pleaded no contest in disciplinary proceedings brought before the district court on 18 November 2011. In the complaint, it was alleged that Mr Page carried out dangerous electrical work whilst contracting without a proper licence. In reading the material, His Honour Judge Clayton found that there was proper cause for disciplinary action and as a result, made the following orders:

1. The defendant William Page be disqualified from being licensed as an electrical contractor under the *Plumbers, Gasfitters & Electricians Act 1995* until further order.
2. The defendant William Page be prohibited from being a director of a body corporate, ie an electrical contractor, until further order.
3. The defendant William Page successfully complete an AS 3000 Wiring Rules course at a TAFE college within 12 months from 18 November 2011.

As a result of a complaint, the OTR carried out an investigation and found numerous breaches of the *Electricity Act 1996* – one requiring immediate disconnection.

This serves as a reminder to all electrical contractors and workers to ensure that your work complies with the standards, and is safe to energise.

IMPORTANT INFORMATION - Have You Changed Your Address?

Remember to contact Consumer and Business Services (formerly Office of Consumer and Business Affairs) for any change of address or licence details. Their address is L3, 91-97 Grenfell Street, Adelaide 5000, phone 131 882 or you can email them on pge.bos@agd.sa.gov.au.

Only contact the Office of the Technical Regulator for change of address notification if you receive Regulation Roundup but **do not** hold a trade licence.

Register Online

You can register online to receive Regulation Roundup electronically by going to www.sa.gov.au/otr and clicking on the link in the Top 5 box on the left side of the page. Requests for electronic versions of Regulation Roundup can also be emailed to dtei.otr@sa.gov.au Include your name, licence number (if you hold a trade licence) and a contact phone number in case there are any difficulties with emailing. You will also see in this box a link where you can register your Electrical and Gas Certificate of Compliance books. **Remember to contact us if you change your email address!**

Are you a death dodger?

Sadly, we have had two people receive fatal electric shocks in the last six months.

One of these workers was an experienced electrical worker carrying out fault-finding on equipment at a Riverland Winery, and the other an unlicensed worker carrying out electrical repairs during a bathroom renovation.

Both of these deaths could have been avoided, and the families freed from the trauma of losing a husband and father.

Around 40% of Electrical Apprentices at an Adelaide based RTO said in a recent survey that they had received electric shocks in the

course of their work. What is most concerning is that they all accepted that “*getting a 240V zap was nothing... we all get a boot at some stage*”, they said.

These apprentices are all death dodgers, sadly some may not escape and become a statistic. Unsafe work practices are often modelled behaviours, and so the practice of working live is being promoted by experienced tradesmen who should know better and who are also placing themselves at risk.

OTR fatality records from 2000 onwards show the electrical fatalities which were due to the victims receiving a 240V electric shock.



SA Electrical Fatalities

Year	Victim	Cause of fatality	Voltage
2000	Homeowner	Contact with live unearthed work light	240
2001	Homeowner	Contact with live parts - disused garden light	240
2001	Homeowner	Contact with live conduit in roof space	240
2001	Elect Contractor	Contact with live parts in hospital roof space	240
2001	Elect Contractor	Contact with live parts in roof space	240
2002	Elect Worker	Contact with live parts in a T bar ceiling	240
2003	Homeowner	Contact with live generator leads	240
2005	Maintenance person	Contact with live damaged tombstone connection in a fluorescent sign	240
2006	Cannabis grower	Contact with live part of an Edison Screw grow lamp	240
2009	Cannabis grower	Contact with live part of an Edison Screw grow lamp	240
2009	Homeowner	Shed fire, contact with live wet soil	240
2010 May	Elect Worker	Contact with live parts of a bottling line machine, shock voltage believed to be 240v	415
2011 Oct	Worker non licensed	Contact with live wiring in roof space	240

Note: Six additional fatalities due to contact with high voltage are not included.

Div 3 of the Electricity Regulations 1997 contains provisions to safeguard persons working with conductors or electrical equipment, and there are also specific requirements relating to working on or near live conductors and equipment.

Live electrical work usually cannot be justified. The only exception is when the electrical work is necessary in the interests of safety, and the risk of harm would be greater if the circuits and apparatus were de-energised before the work commenced. In these situations, the work must be carried out in accordance with a number of mandatory safety measures.

For all electrical work the risks associated with the electrical work must be assessed.

The following control measures must be implemented to ensure that work is carried out safely:

- Identify the circuits and apparatus to be worked on and the appropriate sources of electrical supply.
- De-energise the circuits and apparatus and isolate them from all sources of supply.

- Ensure the supply remains isolated by locking off and/or tagging the isolator.
- **Test before you touch**, prove the supply is de-energised by using appropriate test methods and approved test instruments. Verify that the instruments are functioning correctly before and after use.
- Employ only safe work practices.
- Insulate or segregate any part of the installation that remains energised, to eliminate or control the risk of inadvertent contact or flashovers.
- Wear appropriate clothing and personal protective equipment.
- Use appropriate tools and equipment.
- Provide workers with adequate information, instruction, training and supervision regarding the risk control measures.
- When leaving unfinished work ensure that it does not present a hazard to others at the workplace.
- Persons carrying out electrical work must be suitably licensed and trained in the work, and in rescue and resuscitation.

- A competent safety observer also trained in the work, and in rescue and resuscitation, must be used when:
 - a. The electrical work is necessary in the interests of safety and the risk of harm would be greater if the circuits and apparatus were de-energised before the work commenced.
 - b. A risk assessment undertaken before electrical testing confirms that a safety observer is required.

Further Information

- Div 5 of the SA Occupational Health, Safety and Welfare Regulations 2010.
- AS/NZS 4836:2011 Safe working on or near low-voltage electrical installations and equipment. This Standard outlines principles and procedures of safe work, organisation and performance on or near low-voltage electrical installations and equipment. It provides a minimum set of procedures, safety requirements and recommendations to manage the hazards associated with electricity, specifically arc blast, arc flash, electric shock and electrocution. Adopting these will provide a safe working environment for work on or near low-voltage electrical installations and equipment.

Gas Bulletin

Electrical wire in gas meter boxes

As stated elsewhere in this edition of Regulation Roundup, Australian Standards are not meant as training manuals and cannot cover every eventuality. Occasionally OTR gas and electrical inspectors come across situations that shake their belief in common sense.

This photo shows holes punched through a gas meter box into the cavity and electrical wiring run through the box. Gas meter boxes are meant to house gas meters and associated components only. Gas escapes can occur / deterioration of wiring can occur / arcing can occur / gas can penetrate into the cavity – all recipes for disaster.

The gas utility Envestra / APA takes a very dim view of this and refers all such matters to the OTR. Here's the rub: Australian Standards don't say "don't do it". We're sure that's because standards committees didn't dream anyone would be so careless in order to save half a metre of cable and go around the gas box!

Due to breaches identified, in this circumstance the client was faced with having to remedy the situation or risk having the gas supply terminated.

The OTR strongly recommends that this practice is not carried out. If you are not sure, contact the OTR for advice.



Installing uncertified domestic and commercial gas appliances

If your client has imported **or has had privately manufactured** any gas appliance and it is uncertified and unlabelled by a recognised Australian certifier you must proceed as follows:

- Do not install the appliance and advise the client **it is illegal to install an uncertified gas appliance.**

- If the appliance is already installed and needs service, do not proceed - advise the client **it is illegal to work on an uncertified gas appliance.**
- Direct the client to contact the gas utility, APA - appliance test laboratory, on (08) 8159 1661 to arrange a **safety assessment** of the uncertified appliances. **The lab manager will provide a quote and an appointment time.** Appliances can be tested in the APA lab at 330 Grange Rd, Kidman Park or on site.
- APA will not normally do any modifications to the appliance (conversion or fitting flame safety devices etc unless by special arrangement) and the owner may need to engage a technician or consultant to do this work prior to submitting the appliances for test. Contact the OTR for assistance if needed.

Servicing old appliances

The terms 'serviced' and 'servicing' in regard to a gas appliance were described by a coroner some years ago as having little meaning if the actual work was not fully completed. This was in relation to a case where a gas appliance had been 'serviced' and subsequently found to be faulty, causing a death.

A house fire last year was caused by lack of proper maintenance to an instantaneous hot water heater in a laundry. Although the unit had been 'serviced' by the fitting of a water section service kit the main gas valve was not checked nor lubricated. This resulted in the main gas valve jamming in the open position without water flow through the unit.

Subsequently flames extended beyond the appliance and onto the ceiling and ignited the roof timbers. Fortunately the residents were awoken by unusual noises and called the fire service who promptly attended and extinguished the fire before serious property and personal damage occurred.

Checking and lubricating the main gas valve is required on older design (instantaneous) hot water heaters when maintenance (servicing) is carried out. Do not assume that because the operation appears normal at the time of servicing that a crucial element such as the main gas valve will not stick or jam after you have left the job.

The OTR strongly recommends itemising your service and maintenance records to your customers to provide clarity for services provided, for example - *checked gas pressure, cleaned pilot and main burner(s), greased gas valve, replaced water section etc.*

Need to upgrade gas pressure on Industrial / Commercial installations?

There may be situations where a gas installation pressure on industrial and commercial sites needs to be upgraded to provide more capacity because the gas demand has outgrown the capacity of the gas installation.

Source or make a plan of the installation. The plan needs to show the layout, ie the length, loads and materials used and then contact APA Business Network Marketing on (08) 8159 1918 to see if APA can supply the site at a higher gas pressure.

If APA can supply higher gas pressure then you need to confirm the new operating and emergency over pressure, (EOP). You then need to retest the gas installation (from the gas meter outlet up to the over pressure protection devices ie OPSO regulator/s or slam shut device) at the EOP setting.

The installation downstream of the OPSO regulator or slam shut device should be pressure tested at the trip setting of the protection device. Once the installation has been confirmed as sound a submission can be forwarded to the OTR for acceptance.

The submission should include details of the job address contacts etc, a site plan indicating the pipe material, route, size, length and gas loads, together with details of the existing and proposed operating pressure / EOP.

A description of the installation / application is beneficial to help evaluate the proposal. A copy of the gas certificate of compliance covering the pressure test for soundness must be provided to the OTR and APA for the gas pressure to be increased.

If you need more details contact APA or contact the OTR and ask for Bulletin #42.

Portable/Temporary hot water services... but not inside!

The OTR was contacted recently by APA Group about a dangerous situation discovered when one of their technicians called to connect gas meters. Inside two adjacent units he found fan assisted **external** hot water units mounted on sack trucks with an LPG cylinder attached.

This set up is provided by some plumbing contractors as a temporary arrangement to provide hot water where (a) the premises are occupied and (b) the permanent installation is not completed or (c) natural

gas is not yet available. In this case both premises were occupied and natural gas was available but the permanent external hot water units had not been installed.

Apart from the obvious liability issues for the builder and the provider of the temporary hot water units, the situation is fraught with danger for the occupants. Emissions from an external 200MJ/hr appliance venting inside and the potential for production of carbon monoxide, temperature hazards from the flue, and an elevated risk with an LPG cylinder inside, would pose an immediate risk.

If you provide these temporary hot water kits on loan to customers or, in this case, to builders, you must:

- Label the kit very clearly. We suggest - **External appliance outdoor use only**
- Provide shut down procedures and what to do if a gas escape is detected
- Provide the name of your company and contact numbers.



Polyethylene

(black with yellow stripes – ‘tiger pipe’)

The South Australian Technical Regulator requires that all gasfitters using Polyethylene pipe be authorised before using the material. This means having completed a recognised PE training course followed by assessment and accreditation. Recognised courses are offered by TAFE, Gastrain and PE pipe manufacturers. Ref AS/NZS 5601 – 2010 Table 4.1 page 41.

PE advantages – (a) has a low relative cost (b) is available on long lengths or rolls (c) good for big loads with long runs (d) generally corrosion free.

PE limitations – (a) cannot be used above ground or within a building (b) cannot be used below a building (whether buried or suspended in a void) (c) all PE runs must terminate horizontally at least 300mm below ground and be connected to a metallic

riser (d) has a high rate of expansion and contraction so care must be taken when laying PE in open cut trenches when significant temperature changes can be expected – hot days & cool nights. Snake the pipe in the trench to allow for contraction - failure to do so may cause fittings to pull apart as the pipe cools. (e) it is essential that the surfaces to be joined are clean and that surface oxidation has been removed from the pipe before electro fusion.

The AS/NZS 5601

2010 Gas Installation Standard is not a training manual

AS/NZS 5601 is meant for use by trained persons as a reference and for confirmation that a planned action is compliant and meets the requirements of the Gas Act 1997. However, with the best of intentions on the part of the various committees, Australian Standards are not perfect; they may contain inadvertent errors or omissions and cannot cover every eventuality. If in doubt bring the OTR for an opinion.

A case in point concerned **clause 5.2 - Design of consumer piping**. This clause states that where natural gas piping is intended to operate at above 7kPa and where LPG consumer piping is intended to operate at above 140kPa the Technical Regulator may require plans and specifications to be provided before commencement of works.

The OTR became aware of a copper LPG outlet operating at 70kPa in the roof void of a take away shop. The 2nd stage regulator was also located in the roof void. This concerned the OTR because (a) the void was, essentially, inaccessible (b) it is probable that accelerated ageing of the non-metallic components of the regulator would occur due to the harsh environment on hot days (c) should a leak occur at 70kPa the heavier than air LPG would find plenty of ignition sources in a take away shop, eg gas appliances, canopy fans, fridge motors. (d) The shop is a work and public place.

It must be said that the gasfitter's copper pipe work was correctly sized (for 70kPa) and of a good standard. However, even though the clause does not say so, the AS/NZS 5601 Committee was thinking of buried LPG pipe operating at up to, or exceeding 140kPa, or alternatively, exposed and attached to a wall or running through steel trusses without ceilings in well ventilated industrial situations. The OTR will request the 5601 committee to clarify the intent of the clause.

You must be joking!

The OTR was contacted by a customer about what he thought was an unsafe gas



installation in a restaurant. Table top gas cookers were uncertified and were connected to individual LPG bottles below each table. The non-approved hoses were secured with worm drive clips and the gas bottles were being used as footrests by customers.

The OTR inspected the installation and the owner was directed to rectify all non compliances and source gas from a fixed external supply.

Reversion fittings

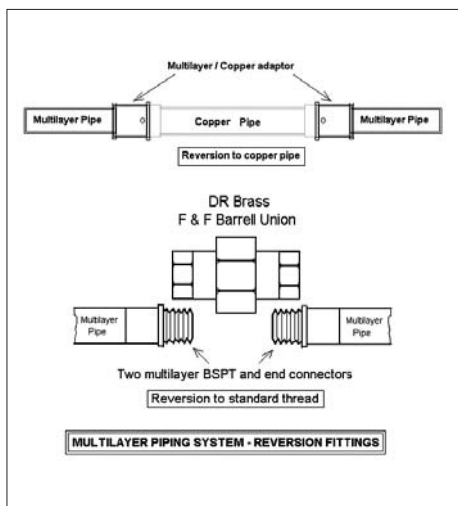
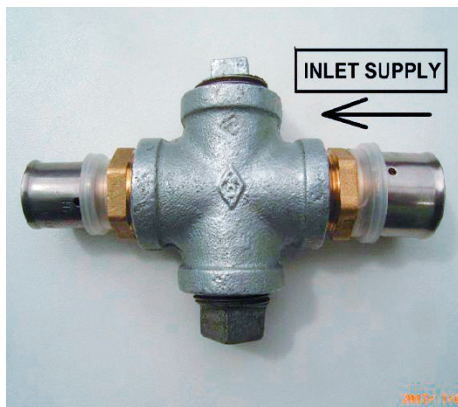
The various brands of composite PE/AL/ PE gas pipe system on the market are not dimensionally compatible. The pipe OD / ID, the fittings and the tools are different.

Where multilayer composite gas pipe is installed it is now **mandatory** for gasfitters to provide a ‘reversion fitting’ in the line at one or more locations depending on the length of run. This fitting is to provide a safe method of extending from, or carrying out repairs to, a composite gas system where the subsequent gasfitter does not have access to pipe, fittings or tools to suit the original system.

Refer clauses 5.2.13 / 5.3.17 / figure 5.2 / 4.5.1 / 4.5.3 / 4.5.4 for this and other mandatory requirements associated with composite gas pipe systems.

The OTR SA will accept a galvanised cross as an alternate to the two reversion options shown in the AS/NZS 5601 Standard (copper and barrel union). The following provisions will apply - the largest composite supply pipe connected to the cross must be equivalent in internal bore dimension to the galvanised cross (eg a 25mm OD composite pipe fitting connected to a 20mm ID BSP cross, and so on for other sizes).

If the length of run exceeds 10 metres the Standard requires additional reversion fittings to be fitted. The additional fittings can be either of the two types shown in the Standard or the galvanised cross option sized according to the pipe at that location. The cross provides several BSP threads for branches and/or extensions and universal connection points for alternate brands of composite or conventional pipe.



Pressure points

It is now **mandatory** to install a pressure point downstream of a consumer gas piping regulator (**unless the regulator has a built in pressure point on the downstream side*). This is to facilitate checking the operating pressure of an appliance or the capacity of an installation. It also enables a test for soundness to be carried out particularly on LPG installations. See Clause 5.11.4.

**Do not confuse with an appliance regulator.*

Revision of pipe size tables

All tables have been revised and the tables now contain grey shaded areas where it is recommended that a larger diameter pipe be used to avoid noise and accelerated erosion of pipe and fittings. This appendix also contains pipe sizing graphs (as used in New Zealand) as an alternate to the tables.

Requirements for marker tape and tracer wire on polyethylene (tiger pipe jobs) and polyamide nylon 11

It is now **mandatory** that marker tape be laid above **all** buried non metallic gas pipe to reduce the risk if inadvertent damage when excavating nearby. See AS/NZS 5601.1-2010 Clause 5.4.6.

It is also strongly recommended that where plastic pipe is used on larger jobs, that either detectable (foil backed) marker tape be used, or alternatively, non detectable marker tape with a continuous insulated single core tracer wire should be laid adjacent to the pipe. The wire is to be brought up above ground level and attached to each metallic riser. See Clause 5.4.6 note.



Installation and maintenance of Type B gas appliances

Type B appliances are industrial and commercial gas appliances, generally rated at more than 500MJ/hr, for which specific Australian Standards do not exist. They must comply with the requirements of the generic Standard AS 3814 - Industrial and Commercial Gas Fired Appliances - be tested on site by an OTR approved technician and then certified by an Authorised Officer appointed under the *Gas Act 1997* before being put into commercial operation.

Gasfitters are reminded that special training courses are available on the correct and safe installation, commissioning and maintenance of Type B gas appliances. Courses are run in South Australia by TAFE and Gastrain and details are available from the OTR. Obviously, as with all gasfitting work, OHS obligations apply and those undertaking this work should have either completed the Type B course or be suitably experienced and competent.

Type B industrial burner controller changes

After over 20 years of service in Australia and with the introduction of the newer LME series of Burner Controllers, Siemens have announced that it is now time to retire the LGA, LGB and LMG series of burner controllers.

The new LME ranges of controllers are certified with the Australian Gas Association on certificate number 7222.

This will mean that no new installations should have the LGA, LGB or LMG controllers installed as these controllers will be considered by the Australian Gas Association and the OTR as suitable for like-for-like service replacement only.

Siemens will continue to carry the LGB controllers for a period of time for service replacement but the LGA & LMG series will no longer be available.

The electro-mechanical LGB & LGA controllers rely on a motor for their staged sequencing whereas both the LMG and LME controllers are micro-processor based.

More information can be obtained from Siemens support on 1300 773 948.

Testing gas installations for soundness

Care must be taken when testing consumers' gas installations for soundness using the meter test point.

Some test points are glued in to the gas meter by the manufacturer and do not take much pressure to come apart. Be careful - but if you accidentally break a test point turn the meter off and call the APA Group on 1800 808 526. Remember to mention the broken pressure point on the meter if this is the case.



APA Group advises that gasfitters should disconnect the meter outlet 'O' connection and test the outlet service from the outlet riser. Once completed reconnect the 'O' connection and soapy water test the meter joints.

Got a pressure problem? Check the gas pipes

We recently received this photo from a gas fitter who could not believe his eyes when he was investigating a warranty claim on a new gas hotplate. The owner advised him that he had replaced the old gas hotplate on the recommendation of previous gasfitter, as its performance was poor. The new hotplate was even worse hence the warranty call. Looking at this photo one wonders how he was able to cook at all.

Investigations by a more diligent gasfitter showed that a tee had been cut into the existing galv steel outlet in the roof to serve a heater. The installer of that appliance had threaded the steel pipe in situ unwittingly causing the fitting in the picture to turn and crimp the copper supply to the hotplate, restricting supply. So much for fault finding!



The importance of backfill, marker tape, tracer wire and as-laid plans

The following photograph shows what happened when a PE gas pipe was laid in a residential multi-dwelling retirement development without proper plans. The system operated at 100kPa on LPG.

The landscapers for this site had accidentally driven a hardwood stake into the gas pipe because they had no idea that there was a gas pipe in the vicinity of their work.

Gas then leaked for nearly ten years before it was detected by a diligent gasfitter who was testing the installation prior to some proposed extensions.



No as-laid plans were produced by the gas contractor when installing the system. No marker tape or tracer wire was provided. Any excavations, repairs or extensions to underground services on the site will need to proceed with great caution.

The current owners of the installation at this site are now having to spend big \$\$\$\$\$ to locate / record the various services.

The lack of information in this case also makes it difficult to ascertain if the existing installation can carry additional gas loads for future extensions.

Where the gas pipe is laid underground then Section 5.4 must be complied with, particularly pipe bedding, depth of cover, quality of backfill, compaction of the trench fill, marker tape, tracer wire, transition from non-metallic pipe to metallic pipe for the risers and clearances to other services.

The OTR actively inspects installations on development of domestic, commercial and industrial sites to verify the standards of work and will take action where the requirements are not met. In this case the ten year old job did not show on our radar whilst in progress.

How do you service this?

Not only is there restricted ventilation for this storage HWS but how do you service it? The adjacent wall may also cause interference with the flue discharge and combustion emissions which could affect the safety and reliability of the appliance.

Please don't be like this Einstein - ensure you read the site plans before installing appliances to ensure neighbouring structures, including fences, don't restrict access and cause ventilation problems.

Let the builder know early so that alternate installation arrangements can be made to eliminate this by design. The appliance



manufacturer will not honour warranty claims where the installation instructions have not been followed and the appliance commissioned correctly.

AS/NZS5601.1 - 2010 Clause 6.3.3 Accessibility states that:

- Gas appliances shall be installed only in accessible locations and with sufficient clearances to allow access to, and removal of, all serviceable components.

If a service technician had to service this unit he would have to drain the cylinder, disconnect it and rotate it around just to gain access to clean the pilot!

So please ensure that there are sufficient clearances in front of an appliance when you install it or the OTR will require you to relocate it to a more suitable location.

They must be crazy!

An OTR inspector took this picture recently. All that was stopping the cylinder falling off the plank was a very tired-looking high pressure copper pigtail. You can imagine the effect a ruptured pigtail would have with high pressure LPG venting near the gas hot water unit.

The only good thing we can see here is the built-in gas gauge. The more sag in the plank the more supply you've got!



Contact list

be energy safe

Electrical technical advice

Office of the Technical Regulator

Level 8, 11 Waymouth Street, Adelaide
GPO Box 1264, Adelaide 5001
Phone: (08) 8226 5518 (8:30am–4:30pm)
Fax: (08) 8226 5529
Email: dtei.otrmail@sa.gov.au

Electrical Certificates of Compliance

Available in person from the following agencies:

Office of the Technical Regulator

Level 8, 11 Waymouth Street, Adelaide

NECA

213 Greenhill Road, Eastwood
Phone: (08) 8272 2966

Lawrence & Hanson

All stores

MM Electrical

All stores

Middendorp

All Stores

Rexel Australia Ltd

All stores

P & R Electrical Wholesalers

All stores

CNW Wholesalers

All stores

Service SA Outlets

EDS Centre, 108 North Terrace, Adelaide and
Regional Areas

Gas technical advice

Office of the Technical Regulator

Level 8, 11 Waymouth Street, Adelaide.
GPO Box 1264, Adelaide 5001
Phone: (08) 8226 5722 (8:00am–5:00pm)
Fax: (08) 8226 5866
Email: dtei.otr@sa.gov.au

Gas Certificates of Compliance

Available in person from the following agencies:

Office of the Technical Regulator

Level 8, 11 Waymouth Street, Adelaide

SA Water

250 Victoria Square, Adelaide

Gas Works

All stores

Gas Appliances Plus

Unley

Norm's Plumbing Supplies

John Street, Mt Gambier

Scott's Plumbing

66 O.G. Road, Klemzig

Northern's Plumbing Supplies

All Stores

Tradelink

All stores

Reece Plumbing

All stores

Service SA Outlets

EDS Centre
108 North Tce Adelaide
and Regional Areas

General Information

Licence and Address Change

Consumer & Business Services
Phone: 131 882

Appointments and Information

ETSA Builders & Contractors Line
Phone: 1300 6500 14
Fax: 1300 6500 16

Australian Standards

Standards Australia
www.standards.com.au

AGA

Phone: (03) 9580 4500
www.gas.asn.au

Training

Gas

Plumbing Industry Association

1 South Road, Thebarton
Phone: (08) 8292 4000
Fax: (08) 8292 4040

Technical Advisory Centre P/L

4/543 Churchill Road, Kilburn
Phone: (08) 8162 5640
Fax: (08) 8162 5638
www.techad.com.au

Gastrain

U1 61-65 Tapleys Hill Rd
Hendon 5014
Phone: 1300 955 583
Fax: (08) 8447 7753
www.gastrain.com.au

Electrical and Gas

TAFE info (for all training enquiries)

Phone: 1800 882 661

Peer Tec

Rescue and Resuscitation
1042 Port Road, Albert Park
Phone: (08) 8348 1200

Electrical

ATEC (Adelaide Training and Employment Centre)

Electrical Rescue & Resuscitation Certificate
Phone: (08) 8240 1233
www.atec.asn.au

Power Lines/Cables

Clearance Zones

Between vegetation and power lines or building/
structures and power lines contact
Office of the Technical Regulator
Phone: (08) 8226 5521

ETSA Service Rules advice

Phone: (08) 8404 4898

For locations of Gas, Electricity or Telecommunications

"Dial Before You Dig"

This service is still available when doing
emergency excavations at short notice.
Phone: 1100
www.dialbeforeyoudig.com.au

For after hours locations or gas emergency (including LPG)

Natural Gas Network 1800 808 526
Origin Energy LPG 1800 808 526
Kleenheat 1800 093 336
Elgas 1800 819 783
APA Group Gas leaks 1300 001 001

For gas or electrical major incident reporting 24 hours (South Australia only)

Office of the Technical Regulator

Phone: 1800 558 811
This number also appears in the 24 hour
emergency numbers section at the front of the
South Australian White Pages

Gas Trade contact

APA Group system operator
1300 001 001

Additional websites for further information

South Australian Parliament for Acts and Regulations

www.legislation.sa.gov.au

SafeWork SA

www.safework.sa.gov.au

Australian Liquefied Petroleum Gas Association (ALPGA)

www.alpga.asn.au

Australian Competition and Consumer Commission (ACCC)

www.accc.gov.au

Envestra web site promoting

natural gas
www.natural-gas.com.au

Elgas

www.elgas.com.au

Origin Energy

www.originenergy.com.au

Kleenheat

www.kleenheat.com.au

Australian Standards

http://infostore.saiglobal.com/store/



Government of South Australia

Department for Manufacturing,
Innovation, Trade, Resources and Energy

www.sa.gov.au/otr