

energy

Bulletin

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Time to move on RCDs

In a tragic period of just 17 days in January 2009, there were three electrocutions in and around Perth.

In all instances, the victims most likely would not have received a fatal electric shock if the circuits with which they came into contact had been protected by RCDs.

Also, in all cases, RCDs were installed in other parts of the installations, but not on the circuits involved.

In Western Australian homes, 33 out of 38 electricity-related deaths in the past 16 years could have been prevented if an RCD had been fitted.

Since the mandating of RCDs in parts of new installations in 1991, EnergySafety has introduced several initiatives aimed at retrofitting RCDs into older homes, to increase levels of electrical safety. Some of these initiatives encouraged extending the coverage of RCDs into all parts of electrical installations.

EnergySafety has also promoted RCDs through safety campaigns on TV, radio and the press, but voluntary installation of RCDs has a low penetration rate of only about 20 per cent of the relevant housing stock.

Since 2000, fitting at least two RCDs has been compulsory for all new domestic electrical installations.

It is unfortunate that older housing remains without RCD protection, even though it would be of greatest benefit for pre-1980 houses that typically have ageing wiring installations.

EnergySafety has prepared regulations under the *Electricity Act 1945* to require the fitting of at least two RCDs in homes, where not already fitted, before they are sold or leased.

Both the real estate industry and the electrical industry were consulted during late 2008 and raised no objections to the proposal.

In the case of owner-occupied dwellings, the RCDs will have to be installed before the transfer of the property title, that is, before settlement.

For rented dwellings, the RCDs will have to be installed before a new tenant occupies the property, before the property title is transferred if being sold or otherwise within two years of gazettal of the new regulations.

Through this program, more than 90 per cent of the housing stock in WA should be equipped with at least two RCDs within 15 years. Some other states/territories in Australia have adopted a similar program or are proposing to do so.

This should result in a significant reduction in death from electrocutions in the home.

The proposal will be implemented before the end of 2009. Compulsory RCD installation in older homes will follow gazettal of the new regulations after a three month notice period.

In the meantime, the message for electrical contractors is very clear.

You individually can play your part in this important area of community and electrical safety by promoting the retrofitting of RCDs into installations and parts of installations that do not have this vital protection.

I urge you to draw your clients' attention to the importance of having two RCDs installed whenever and wherever you attend their premises.

I suggest that you make clear to them that the usual circuit breaker or fuse will not protect them against electric shock and the risk of electrocution.



KEN BOWRON
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The cost of unregistered gasfitting

An advertisement in the trades section of a local community paper resulted in the manager of a child care centre in Highgate engaging a person who she understood to be a gas fitter, to undertake the removal of two wall furnaces, surplus to the centre's requirements.

The 'gas fitter' provided a receipt to the manager upon payment for the work. Later that week, the manager noticed the smell of gas near where one of the wall furnaces had been removed. The manager tried to contact the gas fitter to arrange for him to come back and repair the gas leak. The gas fitter did not respond to the numerous phone calls made by the manager. Contact was then made with the Gas Inspection Branch (GIB) at EnergySafety.

The gas supplier (at this time, Alinta) was requested by EnergySafety to investigate the complaint. The investigation stalled when contact could not be made with the gas fitter and the matter was then referred back to the GIB.

Under the powers of s.14d of the *Energy Coordination Act 1994*, the GIB requested information as to who had placed the advertisement in the Community Newspaper. Further advertisements were discovered in other Community Newspapers. In these instances, the person placing the advertisement had been using the permit numbers of other gas fitters and had registered similar sounding business names with Business Names Registrations Branch of the Department of Consumer

and Employment Protection (now the Department of Commerce). Only post office box numbers were used as forwarding addresses for these businesses.

The use of different business names and styles of advertising was purposely done to make it difficult to trace the 'gas fitter'.

Undeterred, the inspectors from the GIB continued with the leads that were uncovered, and finally tracked the individual down.

All the available evidence was collated and submitted in a brief to the State Solicitor's Office. Finally, EnergySafety had its day in court. The evidence against this person was so strong that he entered a plea of guilty. He was charged under both s.13A of the *Gas Standards Act 1972* and s.38 of the *Gas Standards (Gasfitting and Consumer Gas Installations) Regulations 1999* and the Magistrate imposed fines totalling \$24,000.00 with court costs of \$971.50.

The Magistrate, in imposing such a high penalty, took into account the seriousness of these offences whereby a person was advertising as a reliable tradesperson (gas fitter) and had employed tactics to deceive his customers.

Fines of this magnitude should discourage others in undertaking unlicensed work for gain and can be seen as supporting those in industry who are responsible, highly trained tradespersons.

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National Licensing System – progress report

Work is gathering pace on the proposed National Licensing System. The Intergovernmental Agreement to be signed by all Premiers and Chief Ministers is close to completion. The decision Regulatory Impact Statement has been finished, following extensive regulator and industry consultation during 2008.

Federal government officials met with regulators from all states and territories on 12 February 2009 in Adelaide. The meeting’s purpose was to assemble the information needed to prepare drafting instructions. A nominated Parliamentary Counsel will use these instructions to prepare the Bill for an Act to establish the new system. When the first version of these instructions has been prepared, it will be

circulated to regulators for comment. After incorporating regulator comments, it will be circulated to industry, unions and other interested parties for their comments.

When drafting instructions are agreed and a Bill is drafted, it too will be referred for comments. It is hoped to have agreement on the Bill wording by the end of 2009. The finalised Bill will be introduced into the Parliament of Victoria. When enacted, the Act will be adopted by legislation in all other state and territory parliaments. No federal legislation is involved.

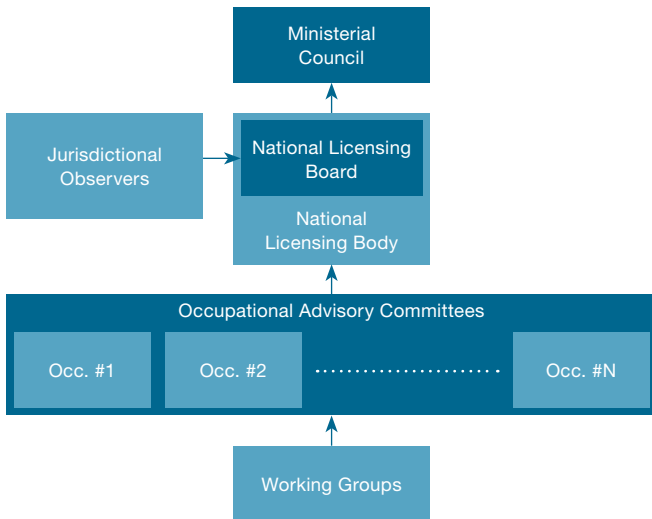
Initially, seven occupational groups will be included in the scheme. These will be electrical, air conditioning and refrigeration mechanics, building occupations,

land transport, marine, plumbing and gas fitting and property agents.

National harmonisation of the electrical trade is seen as the most advanced of these occupations and is likely to be the earliest to be incorporated into the new scheme.

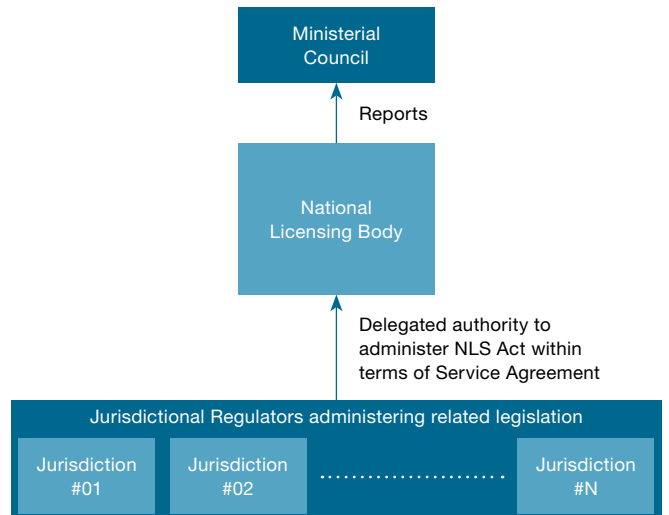
The National Licensing Body will have a governing board reporting to a ministerial council nominated by the Council of Australian Governments (the Prime Minister, Premiers and Chief Ministers). The board will be supported by jurisdictional observers (nine non-voting) and by advisory committees for each trade or licensed occupation. These committees will comprise representatives of regulators, industry, unions and selected technical experts, as indicated in the diagram below.

Governance Arrangement



The national body will set licensing, training, qualification, discipline and enforcement policies. These will continue to be administered by state and territory regulators, as shown right in the National Delegated Agency Model.

National Delegated Agency Model



EnergySafety will continue to consult industry, government and union stakeholders during the next phase which has now begun and involves the preparation of drafting instructions for the enabling Act.

electrical

focus

The penultimate word on Notices

Amended Preliminary Notices/ Notices of Completion

Electrical contractors should now be receiving books of amended Notices (identified by the reference number ESWA E001 0109 at the bottom right hand corner of the respective forms) when they place orders for more books.

These amended Notices should now be used to certify electrical installing work.

The existing Notices of Completion may still be used where the associated Preliminary Notice is submitted up to and including 30 June 2009.

The amended Notices must be used for all notifiable electrical installing work commenced after 30 June 2009.

Electrical Safety Certificates

There is still some confusion as to when an Electrical Safety Certificate should be issued.

An Electrical Safety Certificate must be issued for all electrical installing work that is carried out, with the exception of in-house electrical installing work carried out under the authority of an in-house electrical installing work licence.

The Electrical Safety Certificate must be given to the person who requested the work be carried out.

A copy of the Electrical Safety Certificate **MUST NOT BE SENT** to any network operator.

Also, for notifiable work, as well as issuing an Electrical Safety

Certificate, a Preliminary Notice/ Notice of Completion must be submitted (to the relevant network operator).

Notifiable work is defined as electrical installing work other than:

- (a) maintenance work, unless that work requires the disconnection and reconnection of the supply of electricity to the electrical installation concerned or the replacement of service apparatus; or
- (b) the alteration of a final sub-circuit; or
- (c) the addition of a single final sub-circuit.

Therefore, for notifiable work, **BOTH** a Notice of Completion **AND** an Electrical Safety Certificate **MUST** be completed and issued.

Notices of Completion – Minor Work

This form of notification is no longer used (as from 1 July 2008).

Relevant network operator

EnergySafety is receiving an increasingly large number of Notices that should have been delivered to one of the network operators.

The following information is provided to help clarify when EnergySafety should receive Notices.

It is a requirement of the *Electricity (Licensing) Regulations 1991* that Notices be delivered to the **relevant** network operator.

The relevant network operator, as referenced in the regulations, Regulations 51 and 52, will, in all

but a small number of instances, be one of the following:

- BHP Billiton Limited (Newman)
- BHP Billiton Limited (Leinster)
- Rio Tinto Iron Ore
- Horizon Power
- Western Power

If the work subject of a Notice is **not** to be connected to the electricity supply of one of the above network operators, then the Notice shall be delivered to EnergySafety.

It is the responsibility of the electrical contractor carrying out the electrical work and submitting the Notice to identify the **relevant** network operator and deliver the Notice to that network operator.

Failure to have required Notices delivered to the **relevant** network operator is a breach of regulations.

Simon Bunney still using fake electrician's licence

An article in the Electrical Focus of Energy Bulletin No. 43 (issued in August 2008), reported that Simon Bunney was found guilty of carrying out electrical work without being authorised by an electrical worker's licence or permit.

Bunney had used a fake electrical worker's licence to gain work as an electrician in the WA mining and marine industries. He had been working in these areas since March 2003.

This fraudulent activity has been referred to the WA Police for investigation.

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EnergySafety has recently been notified that Bunney is still using a fake electrician's licence in an attempt to obtain work as an electrician.

From our investigations, Bunney is moving from state to state, seeking employment as an electrician.

He is not licensed as an electrician and his level of competence to perform electrical work is therefore in doubt.

EnergySafety would appreciate any employer who is approached by Simon Bunney seeking employment as an electrician to notify EnergySafety by telephoning (08) 9422 5261.

On a broader note, it is important that electrical workers' licences are checked before employment to ensure they are valid. It is a breach of the Electricity (Licensing) Regulations 1991 to employ an unlicensed person. The validity of a licence, that is, if the history of the person is not known, can be checked by contacting EnergySafety's Licensing Office by telephoning (08) 9422 5258.

Electrical Inspector vacancies

EnergySafety is currently seeking new Electrical Inspectors, to be based at its Cannington Office.

Electricians who are interested in a change of career may consider working at EnergySafety.

The work is regulatory in nature, but encompasses a wide range of investigation and inspection activities.

Persons who are interested in finding out more about these vacancies should contact the Chief Electrical Inspector, Michael Bunko, by telephoning (08) 9422 5261.

Electrical contractor fined over unsafe electrical work

An electrical contractor has been fined \$10,000 over an incident in 2006 in which a worker received an electric shock when a drilling rig mast came into contact with high voltage power lines.

Jeremy Paul Blakiston Fowler (then trading as Electro Power Services) pleaded guilty to failing to ensure that the workplace was safe and was fined in the Perth Magistrates Court.

In May 2006, Western Power had contracted Outback Power Services to perform works and construct a voltage regulator at Eneabba. Electro Power Services had then been contracted by Outback Power to supervise drilling works to be performed by a drilling contractor.

On May 17, Mr Fowler and the drilling contractor were engaged in drilling holes with a drilling rig underneath power lines. The position in which the drilling contractor chose to place the rig required him to raise the mast very close to the power lines.

In repositioning the rig, the left-hand outrigger was raised and the mast tilted towards the power lines. The mast touched the power lines and the drilling contractor received an electric shock and was thrown backwards from the drilling rig.

The court heard that no formal pre-start meeting had been held before the work commenced, and that the drilling contractor was not given any directions for the work, with the exception of where the holes were required to be placed.

Mr Fowler had not checked whether the power lines were live, assuming they were. He was the person in control of the workplace, and so responsible for the drilling contractor's safety.

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A special message to all electrical contractors

Encourage your customers to install RCDs!

More than thirty people have been electrocuted in WA over recent years, five during the past year since I have been at EnergySafety. All of them would have survived if RCDs had been fitted in the electrical installations involved. The deaths occurred in ordinary homes and small business premises.

I ask all electrical contractors, when attending client's premises likely to have been built before 2000, to

check to see if RCDs are installed in the main and distribution switchboards. The latest version of the Wiring Rules requires at least two RCDs in all new domestic installations. WA regulations have required two RCDs since 2000. Some post-1991 installations may have only one fitted.

If no RCDs are installed, or only one is present, please encourage your client to have the appropriate number and rating of RCDs installed. Point out to them that

circuit breakers and fuses will not protect them against electric shock.

I enclose a letter from me which I hope will assist you in persuading your clients to do so. Please hand this letter to any of your clients when you discover they are not protected by RCDs.

Further copies can be downloaded from our web site at www.energysafety.wa.gov.au

Ken Bowron
Director of Energy Safety

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WorkSafe WA Commissioner Nina Lyhne said that the case once again illustrated the vital importance of taking every possible precaution when working with or near electricity.

“Over the past five years, 17 Western Australians have died as a result of electrocution, eight in workplaces and nine outside of workplaces” Ms Lyhne said.

“Electricity is one of WorkSafe’s operational priority areas, and a lot of time and resources are directed towards lessening the toll and educating people on how to work safely with electricity.

“The employer involved in this case was an experienced electrical contractor who held all the relevant qualifications to supervise the work being performed that day.

“He really should have known better than to allow a worker to perform tasks so close to live power lines, but he did not advise the worker to approach the job in any other way or discuss any other options with him.

“The worker was extremely lucky to have escaped any serious injury in this incident, and the case should serve as a reminder to anyone who has control of a workplace that they have a duty of care to ensure that the workplace is as safe as is practicable.”

Further information on working with electricity can be obtained by telephoning WorkSafe on 9327 8777 or on the website at www.worksafe.wa.gov.au.

Cape Naturaliste fire started by Western Power power line

A bush fire near Cape Naturaliste Lighthouse on February 7, 2009 which burned 108 hectares of bushland was started by a pole-top fire on a Western Power high voltage power line.

This is the main conclusion of a report into the fire cause released by the Director of Energy Safety, Ken Bowron.

“The bush fire originated at pole number 108 on the single-phase 12,700 volt overhead spur line off Feeder (BSN 510.0) near Cape Naturaliste Lighthouse, Dunsborough,” Mr Bowron said.

“The pole-top caught fire because of leakage current from the high voltage active conductor to the underslung earth return conductor.

“Dust or salt spray on the insulators, combined with light rain and high humidity, caused enough leakage current to generate sufficient heat at the point of contact between the wood and metal surface of the insulator support bracket to ignite the wood.

“Hot embers from the ensuing fire ignited vegetation under the power line.”

The investigation found no other credible ignition source, for example lightning, clashing conductors, vehicle movements, fuse operation or arson.

It also found remnants of previous pole top fires on this power line.

Mr Bowron said the most recent pole-top fire, along with evidence of previous ones, brought into question the effectiveness of Western Power’s inspection and maintenance processes for the power line in question.

“Further investigations are required to identify the risks of future pole-top fires in the area and the scope of the preventative work required to minimise this risk,” Mr Bowron said.

Two Rocks bushfire

A major fire at Two Rocks last month, which burned a large portion of pine plantation, was caused by clashing high voltage Western Power lines.

This is the principal conclusion of a report into the 16 January fire, released by EnergySafety.

“Burn marks and melting show clearly on two conductors immediately over the fire’s point of origin,” Ken Bowron, Director of Energy Safety, said.

“When electricity wires clash they cause a high-temperature arc which instantly melts the metal at the point of contact,” Mr Bowron said.

“Globules of metal, still very hot, fall to the ground. If they come in contact with dry combustible material, a fire often results, especially in hot, dry, windy weather.”

The report states that Western Power recorded a fault on the power line at 9.41am, which coincides with the time of origin of the fire.

The temperature at the time was over 33 degrees, with very low relative humidity at 15 per cent. The hot easterly wind speed was 29-50 kmh, with strong gusts.

“These are precisely the conditions likely to generate a fire when overhead conductors clash,” Mr Bowron said.

The EnergySafety report reveals that a conductor anchor bolt on the pole next to the fire origin point had pulled through the pole. This reduced significantly the tension of the conductor concerned. It sagged closer to its immediate neighbouring conductor, making a clash much more likely.

EnergySafety will work with Western Power to investigate the maintenance and inspection history of the power line involved to determine whether improvements are necessary.

The full report may be seen on <http://www.commerce.wa.gov.au/EnergySafety/>

Prosecutions for breaches of electricity legislation 1 December 2008 to 31 January 2009

Name (and suburb of residence at time of offence)	Licence No.	Legislation and Breach	Offence	Fine (\$)	Court Costs (\$)
Minh Thanh Tran (Ballajura)	NLH	E(L)R Regulation 19(1) (3 breaches)	Carried out electrical work without holding an electrical workers licence	3,000.00 *	769.20 *
Roger Stanton (Marangaroo)	EW109636	E(L)R Regulation 19(1)	Carried out electrical work after his electrical workers licence was cancelled	1,500.00 *	571.70 *
Roger Stanton (Marangaroo)	EC002696	E(L)R Regulation 33(1) (2 breaches)	Carried on business as an EC whilst not authorised by an EC licence	*	*
Minh Thanh Tran (Ballajura)	NLH	E(L)R Regulation 33(1) (3 breaches)	Carried on business as an EC whilst not authorised by an EC licence	*	*
Carl Christopher Blowers (Mindarie)	EW121793	E(L)R Regulation 50(A)	Permitted unsafe wiring or equipment to be connected to an electrical installation	750.00	571.70
Denham Electrical Pty Ltd (Bayswater)	EC007085	E(L)R Regulation 52(1) (4 breaches)	Failed to submit a Notice of Completion to the network operator upon completion of the electrical installing work	2,000.00	571.70
Shane Barry Mayfield (Kewdale)	EC007881	E(L)R Regulation 52(1) (10 breaches)	Failed to submit a Notice of Completion to the network operator upon completion of the electrical installing work	1,500.00	571.70
Seacross Holdings Pty Ltd T/As Addwest Air-conditioning (Kingsley)	EC001378	E(L)R Regulation 52(1) (9 breaches)	Failed to submit a Notice of Completion to the network operator upon completion of the electrical installing work	3,500.00	571.70
Sheed Electrical (Kalgoorlie)	EC004475	E(L)R Regulation 52(1) (8 breaches)	Failed to submit a Notice of Completion to the network operator upon completion of the electrical installing work	700.00	571.70
Steve Pilkington T/As Steve the Sparky (Hamilton Hill)	EC004249	E(L)R Regulation 52(1) (10 breaches)	Failed to submit a Notice of Completion to the network operator upon completion of the electrical installing work	5,000.00	571.20

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

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focus

Autogas fuel hose update February 2009

EnergySafety hosted a meeting on 6 February 2009 attended by representatives from fuel supply companies and Motor Trades Association (MTA) to discuss implications for autogas suppliers following the introduction of the Prohibition Order.

EnergySafety reminded the autogas suppliers that they considered installers, who are complying with the Prohibition Order, should not be responsible for costs associated with repairing blocked or failed converters and injectors for vehicles that had been fitted with complying hoses. EnergySafety recommended that a procedure be put in place to ensure that the processing of claims for this type of failure follows a fair and equitable process.

The meeting resolved that the following procedure should be adopted where damage to LP Gas vehicle components on a vehicle that complies with the Prohibition Order is clearly the result of contamination (other than vehicle system cooling issues):

- The installer to carry out repairs as required to restore the LP Gas vehicle to proper working order
- The vehicle owner to pay for these repairs in the first instance
- The vehicle owner to be provided with a receipt and a report of the contamination found in the LP Gas equipment in the vehicle

- The installer to provide to the vehicle owner, for the substantiation of his/her claim all parts that needed to be replaced in a plastic bag
- The vehicle owner to be provided with the contact telephone number of EnergySafety (08 9422 5297) and instructed to advise EnergySafety that contamination has occurred
- The vehicle owner to take the receipt, report and parts to the fuel supply company or to the last service station where he or she purchased gas, with the object of obtaining compensation for the repairs
- Should chemical fingerprinting be used for the analysis of a claim it will be helpful if the vehicle owner has obtained fuel from the same fuel outlet station on a regular basis in the period before the breakdown occurred. This is not a condition, it is a suggestion only. There is no particular preference to use any of the fuel suppliers, as the fuel they supply must meet the Commonwealth Fuel Quality standards.

Fuel suppliers are also currently investigating the availability of bowser hoses that emit low levels of plasticiser and are considering replacing both the older and relatively new hoses as these are more prone to plasticiser removal.

EnergySafety will update its website to reflect this procedure and upload additional information as it becomes available.

EnergySafety appreciates the level of cooperation received from industry during this transitional period and is further encouraged to learn that the majority of industry participants are now embracing and promoting the outcome EnergySafety set out to achieve in relation to this issue.

Autogas installations

EnergySafety has become aware of inferior quality brass fittings being used in autogas installations to terminate the copper service lines where they are screwed into components, such as the automatic fuel shut-offs and the converter. These are 900 flared and plain brass screwed fittings.

The concern is that the brass used in the manufacture of the fittings is of inferior quality and distorts upon tightening of the flare nut. These fittings may be supplied in the kits from the suppliers.

When tightening the flare nut, it has been found that the action of rotating the nut against the copper tube that is mated against the flared surface of the brass fitting is causing the brass to distort. The brass in these fittings has been found to be soft and, as a consequence, does not form an adequate mating surface between the copper tube and the brass flare. In some instances, there has been a narrowing of the wall thickness of the copper tube at the flare, resulting in fracture of the copper.

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Fracture of service lines, post installation, is considered a serious safety issue.

AS/NZS 1425 Clause 2.3 requires that components be suitably robust to withstand the stresses imposed by fitting and tightening.

AS/NZS 1425 Clause 4.4 requires that fittings for copper tubing be 900 flare connections in accordance with AS D26 or SAE J533.

Gas fitters are responsible for ensuring the fittings they use on an autogas installation in a motor vehicle LP Gas conversion meet the requirements of AS/NZS 1425 and should verify this with their supplier.



Components of flared fitting



Apprentices and trainees must hold a permit

Do you employ an apprentice to do gasfitting work under your supervision?

Recent visits to training organisations have disclosed that some plumbing and gasfitting apprentices are not obtaining a gasfitting permit to allow them to work under the supervision of a gas fitter while completing their apprenticeship.

Getting the apprentice to do the right thing can prove a bit difficult at times, especially when they have to part with money. Like any gas fitter, an apprentice must obtain a gasfitting permit before doing any gasfitting work. They are told this

when they do their gas training but it seems in some cases they fail to apply for the permit.

Failure to obtain a permit could have unfortunate consequences for both the apprentice and the employer, as both could be in breach of the regulations. The apprentice could be fined for doing unauthorised gasfitting work and their employer fined for failing to maintain a gas fitter's register (*Energy Bulletin 43*).

On completion of the required training, apprentices may apply for a restricted permit to work under supervision. This is normally done at the end of their first year after being issued with a 'Training/ Assessment statement' by their training provider. Information on the back of the statement tells

them how to apply. Once they have obtained their restricted permit they may carry out gasfitting work under supervision. The restricted permit lasts for the term of the apprenticeship. It is much cheaper to obtain a permit than to be fined for not having one.

Both group training organisations and host employers need to keep an employer register as required under Regulation 34 of the Gas Standards (Gasfitting and Consumer Gas Installations) Regulations 1999 of apprentices they employ to do gasfitting work.

Some apprentices who complete a pre-apprenticeship may qualify for a restricted permit immediately. For further information, contact our Licensing Office.

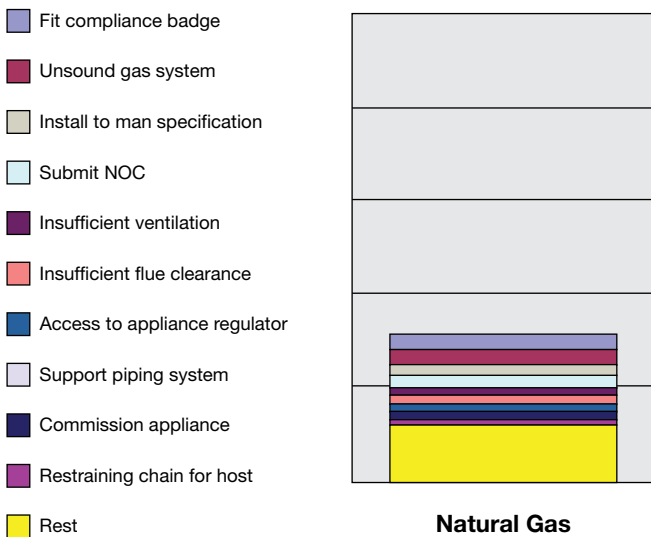
Poor gas fitter performance

EnergySafety receives information from gas suppliers on the number of installation inspections completed and defects observed on those inspections. This information provides details on the type of defects and their numbers.

Analysis of the information highlights the following:

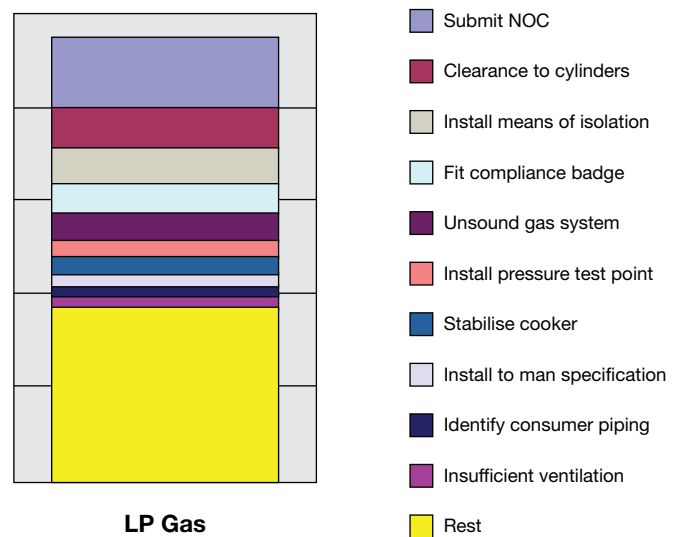
- The observed defect rate for LP Gas is three times that for natural gas.
- Leaks from the installation and insufficient ventilation for bayonet points (flueless space heaters) are frequently observed.

Clearly the discrepancy between LP and natural gas breach rates is of concern. The cause is unknown but may be related to LP Gas usage being more prevalent in country regions.



It is disappointing that leaks from gas installations and the lack of adequate ventilation for bayonet points, both with significant safety implications, remain among the most frequently observed breaches.

We are asking for your help on how these defects can be reduced. If you have any suggestions on the causes of these defects, or how they might be reduced, please contact David Robertson on (08) 9422 5254 or by email at david.robertson@commerce.wa.gov.au.



Explosion at a Type B appliance during commissioning

Recently, a gas explosion occurred in the combustion chamber of a hot water boiler (Type B appliance) during commissioning. The explosion relieved through the flue, damaging the boiler and the flue. The explosion occurred while commissioning the appliance.

It was found that an electrical din connector had been installed in a reverse orientation, causing a direct short between the adjacent terminals. The din connectors used were symmetric and it was not obvious that the terminal had been installed incorrectly. This caused the main safety shut off valves to open before the pilot start up sequence.

Under normal operation, the safety shut off valves should not be opened until the burner has been successfully started. The early opening of the safety shut off valves fills the appliance with a combustible air/gas mix which is ignited during the burner start cycle.

The commissioning agent had followed correct procedures, removing the “test fire link” to electrically

isolate the safety shut off valves to allow adjustment of start rates for the burner. The “test fire link” was reinstated while the burner was in operation to adjust low and high fire operation. The electrical isolation of the main safety shut off valves concealed the short circuit and its potential effects until the first full start of the burner.

An investigation found that a din terminal had been incorrectly installed by an unqualified employee of the burner agent while modifying the burner control system to comply with Australian requirements (installing test fire link).

Established commissioning practices would not have revealed this fault before an incident occurred. It is suggested that commissioning agents observe the gas pressure at the burner when running burner start cycles. This would indicate the early opening of the main shut off valves and action could then be taken before the incident occurred.

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Din connectors

Update on the status of AS 5601 and AS 3814

Both AS 5601 "Gas Installations" and AS 3814 "Industrial and commercial gas-fired appliances" were reviewed and put out for public comment last year.

AS 3814 received 39 pages of public comment. These have been reviewed by the committee responsible, AG 011, and the draft Standard amended where appropriate. It is likely that the new edition of this Standard will be released about mid this year.

AS 5601 received 109 pages of public comment for Part 1,



Ball valve



Components of the valve

"General gas fitting", and 31 pages of public comment for Part 2, "LP Gas installations in caravans and boats for non-propulsive purposes". After much discussion, the committee responsible for this Standard, AG 006, has reviewed the public comment for Part 1 and modified the draft. The review of the Part 2 public comments has yet to be completed. It is expected that this Standard will not be released until the last quarter of this year.

Poor work practices causes leaking valve

Regulation 25 of the Gas Standards (Gasfitting and Consumer Gas Installations) Regulations 1999 and Clause 4.1.1 of AS 5601-2004 "Gas Installations" require that gas fitting lines are clear of any foreign matter during, and on completion of, installation.

Recently during a pressure test, a new 40 mm ball valve was found to be leaking. Inspection of the failed valve revealed a trail of thread sealant along the lower internal surface of the valve. Following installation, and before the valve was operated, the sealant had set and on closing the valve, the sealant cut the soft seal on the ball valve causing it to leak in the closed position.

The poor work practice, resulting in an excessive amount of thread sealant accumulating in the valve, was not only expensive (replacement of the 40 mm ball valve) but could have resulted in a major incident from the leaking isolation valve on a Type B appliance.

New certifying body for Type A gas appliances and components

The IAPMO R&T Oceana Pty Ltd 'GasMark' Product Certification Scheme for Type 'A' gas appliances and components certification has been approved for Western Australia.

This approval was published in a notice in the Western Australian Government Gazette of 30 January 2009 by the Director of Energy Safety as required under section 13F(2) of the *Gas Standards Act 1972*.



IAPMO R&T Oceana Pty Ltd is a non-profit Californian based company of the International Association of Plumbing and Mechanical Officials (IAPMO). IAPMO R&T Oceana is based in Melbourne and is accredited by the Joint Accredited System of Australia and New Zealand (JAS-ANZ) to grant GasMark™ licences.

This latest approval is in addition to the continuing approvals for the Australian Gas Association's national Product Certification Schemes for gas appliances and components and SAI Global Product Compliance.

Most Australian regulatory authorities and New Zealand have recognised the new certifying body.

A Product Listing Directory can be viewed online at the IAPMO R&T Oceana Pty Ltd Australian website <http://www.iapmooceana.org/Pages/default.aspx>.

Australian Standards for gas distribution

EnergySafety is pleased that the new Australian Standard for gas distribution networks has been released.

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The new Standard consists of three parts and is published under the numbers:

- AS/NZS 4645.1:2008 “Gas distribution networks – Network management”
- AS/NZS 4645.2:2008 “Gas distribution networks – Steel pipe systems”
- AS/NZS 4645.3:2008 “Gas distribution networks – Plastics pipe systems”

EnergySafety played a pivotal role in the development of the entire suite of new gas distribution network Standards as a member of both the main committee AG008 and the chair of sub-committee AG008/01, responsible for Part 3.

The new gas distribution network Standards are performance based. They provide for a safety case and risk-based approach with separate and prescriptive parts for gas distribution networks constructed from plastics and steel. The prescriptive parts serve to provide a minimum reference Standard to benchmark risk-based solutions as well as a ready made solution for small network operators who do not require risk-optimised network solutions. The Standards take into consideration new materials and developments in polyethylene pipe systems and address many areas where previously ambiguity existed.

Standards form the technical foundation of the regulations and this new Standard will be called up in the Gas Standards (Gas Supply and Systems Safety) Regulations 2000 as part of a number of amendments currently being developed.

It is anticipated that the future national Standards for electricity distribution and transmission networks will utilise many aspects of the gas distribution network Standards.

The balcony and the barbecue

In 2006, EnergySafety published a brochure titled “Safe locations for using gas barbecues” on its website www.energysafety.wa.gov.au. Included in the brochure was a guideline for the safe use of barbecues on balconies and verandahs. It was thought that this guideline may be too conservative, given the design of newer balconies, some of which now have mesh enclosures added for security.

Prompted by interest from Standards Australia that it is considering adopting the guideline for a future edition of an Australian Standard, EnergySafety felt it necessary to test new variations to the guideline for acceptance. Tests were undertaken with assistance from WestNet Energy, which provided the testing equipment, and the Department of Housing and Works which provided access to a vacant unit in the Brownlie Towers at Bentley as a test venue.

A still day with an ambient temperature of 40°C made for ideal conditions to test the effects of the barbecue

emissions in the confines of the balcony. The balcony had a balustrade and a mesh security screen with an open area of 70-80%. The barbecue was operated with and without a load so that an emissions and temperature profile could be recorded over the course of the test. In completing the experiment, a sausage sizzle was used to provide a full load, with the cooked sausages provided to Department of Housing and Works staff at Bentley as a token of appreciation.

The test effectively proved the opinion that the EnergySafety guideline is conservative and balconies and verandahs that meet the guidelines can safely continue with the Aussie tradition of a barbecue. It should be noted that the use of barbecues on balconies and verandahs in multi-storey buildings may also be subject to tenancy agreements and the requirements of local Government and State regulatory authorities.

Engineering student working at EnergySafety

Alex Hayes, who is entering his final year studying Mechanical Engineering at the University of Western Australia, undertook a 12 week placement with EnergySafety, to gain work experience during the summer vacation, primarily working with the Gas Utilisation Branch.

During his time with EnergySafety, Alex has:

- Validated recommendations to update the pipe flow sizing tables in the Australian Standard, AS 5601: “Gas installations”;
- Set up and carried out an experiment on the safe use of barbecues on balconies;
- Conducted experiments on compatibility of composite piping systems;
- Prepared recommendations for variations/exemption applications for Type B gas appliances; and

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Conducting a pressure test on BGC's new brick kiln burner gas trains. Pictured (from left): Alex Hayes and Kim Martin

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- Attended several independent Type A and Type B gas appliance onsite certifications.

Alex was also able to gain an understanding of the regulatory work done by EnergySafety and how the standards and regulations play an integral part in industry, as well as expanding his knowledge of gas engineering. Overall, he enjoyed his time at EnergySafety and the experience that it afforded him.

Corroded copper pipe found in gas installation

A gas fitter handed to an EnergySafety inspector a piece of 1/2" copper tube that he had taken out of the wall of a house. The gas fitter described the house as being roughly 40 years old. The gas installation included the connection of two wall furnaces, a storage water heater and a quick connect fitting (bayonet point).

The gas fitter had received a call from the home owner complaining about a smell of gas. The owner also said both he and his wife had been suffering headaches and nausea in the last couple of weeks. The gas fitter had installed



Corroded copper pipe

a replacement water heater for these clients a few years previously and the problem was not evident at that time.

A pressure test was applied to the gas installation and a full drop was noted. The gas was turned back on and using an electronic leak detector, the source of the leak was found to be from within the cavity wall, where 1/2" copper tube had been inserted into the double brick wall to connect the bayonet point on the inside.

The offending section of copper pipe was removed and revealed an accumulation of copper (II) hydroxide around the pipe. Further examination revealed severe pitting of the pipe.

Reference to Australian Standard, AS 5601 Clause 4.4.4 "Consumer

pipng in a corrosive environment" states: "Where a pipe or fitting is to be installed in a corrosive environment the pipe or fitting shall be protected".

Gas fitters are reminded of the need to comply with this requirement of AS 5601.

NOTE: The sheathing, coating or wrapping of a pipe or fitting, installing of cathodic protection, sacrificial anodes or rectifier units, dependant on the situation, will satisfy this requirement.

As a means of protecting the new section of pipe, the gas fitter obtained some polyethylene black tubing and sleeved the pipe in this before inserting the pipework back through the brickwork and connecting up to the bayonet point.

Compliance badge fixing

Since the introduction of this requirement there have been numerous articles published in the *Energy Bulletin* over the years, providing guidance on where the badge needs to be located. EnergySafety still receives numerous enquiries in regard to approved locations. To assist gas fitters, approved locations are referenced in Section 2 (page 3) of the Notice of Completion Gasfitting Work Book.

EnergySafety WA	
<small>Gas Standards Act 1972 - Compliance Badge</small>	
Gasfitting work: New Connection <input type="checkbox"/> Pipework <input type="checkbox"/> Additional Work <input type="checkbox"/> Appliance Connection <input type="checkbox"/> Repair Work <input type="checkbox"/> Commissioning <input type="checkbox"/>	NOC No.: Variation/ Exemption No.:
Installation address/registration number of mobile for non-propulsive purposes:	
I confirm that this gasfitting work complies with the Gas Standards Act 1972 and its regulations.	Work Completion Date:
Registered Gas Fitter's Name:	Gas Fitter's No.:
<small>ESWA G013 1008</small>	

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Regulation 28(2) of the Gas Standards (Gasfitting and Consumer Gas Installations) Regulations 1999 requires a gas fitter on completion of gasfitting work to attach an approved badge (compliance badge) in an approved place relevant to the installation.

It is the gas fitter's responsibility to ensure the badge is attached

securely. The adhesive backing of the badge may not be sufficient and may require additional fixtures. Other fixing methods are:

- Self tapping screws or pop rivets to attach the badge to the gas meter box, ensuring that the vapour proofing requirements of the meter box are not compromised

- If no hood is fitted, attach to the LP Gas regulator support stand or wall behind the regulator
- Using cable ties directly to the gas pipework.

Note: If attaching the compliance badge to LP Gas regulator hoods, self tapping screws or pop rivets should be used.

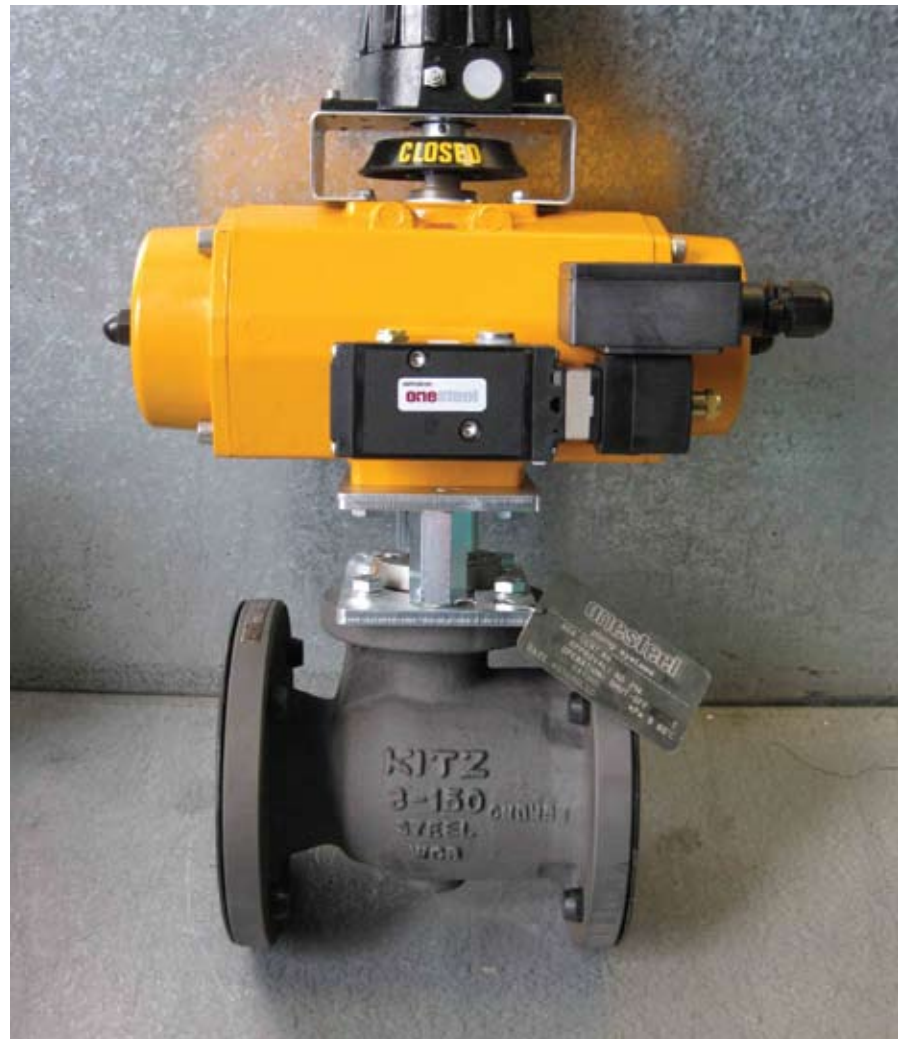
Non genuine ball valves

An independent designated (gas) inspector advised EnergySafety that a gas fitter working on the gas installation at a Midwest mine site had raised concerns about a number of ball valves that had been delivered to the site. The gas fitter had ordered from a supplier a certain brand of ball valve specified by the design engineer which held Australian Gas Association certification.

Not convinced the valves supplied were the ones requested, the gas fitter contacted the valve supplier who provided copies of the approval certificates allegedly for these valves. Sensing that the description of the valves did not match the details provided on the approval certificates, the gas fitter contacted the Australian agents to authenticate the certificates. Not only were the valves now suspect, the certificates provided were also found to be non genuine. It was at this stage that the gas fitter made the gas inspector aware of the matter.

Investigations conducted by the Gas Inspection Branch uncovered 'doctored approval certificates' and unauthorised use of a copyrighted logo. All this material was passed to the Australian agent to follow up with the valve supplier should they decide to take action.

To ensure the gas installation could be completed in accordance with the regulations, the gas inspector



Valves such as these are readily identified by the data plate fixed to the body of the valve

issued an Inspector's Order to have the 14 valves removed and replaced before the gas installation was to be placed into service. This has now taken place.

All gas fitters are reminded of the need to ensure the authenticity

of appliances and components. The consequences of using uncertified components in a gas installation could result in a hazardous situation where the plant and the personnel working within it are in danger should a failure occur.

Don't add fuel to the fire

The recent devastating bushfires in Victoria serve as a reminder to ensure gas installations are correct to ensure cylinders do not escalate any fire issues.

It is important to remember there is minimal danger with an LP Gas system that is correctly installed and operated.

"Cylinders which have been exposed to the most severe bush fires have remained intact because the pressure relief valve opens when the cylinder is exposed to heat of 70°C," said Mike Carrigg, Manager Sales for Kleenheat Gas.

The pressure relief valve allows excessive pressure to escape without compromising the integrity of the cylinder. If the valve 'trips' it will re-set once the over pressure condition is achieved.

So, next time you install or maintain a gas cylinder, check the following:

- Remove any flammable materials away from gas cylinders

- Make sure the cylinder is upright and secure
- Direct the pressure relief valves away from the building and from other cylinder valves
- Check that the cylinder can be turned off easily if necessary

For more information about gas safety, visit any Kleenheat Gas branch, office, agent or dealer.

Note re picture in last issue:

Issue No. 45 of *Energy Bulletin* featured a picture of a non complying gas installation at the Perth Royal Show. While Kleenheat Gas cylinders were pictured, Kleenheat Gas was not responsible for the installation.

This photograph appeared in Gas Focus No 45 under the article "Perth Royal Show". It depicted LP Gas cylinders that were part of a fixed gas installation and the other cylinders attached to a food vending caravan. You will also notice a temporary switchboard and a cool drink vending machine. Both the temporary switchboard and the vending machine being a possible source of ignition, were located

inside the hazardous zone as defined in Appendix F Hazardous Areas of AS/NZS 1596 "The Storage and Handling of LP Gas".

Although it is deemed that the gas cylinders do not present the hazard, the positioning of the switchboard and the cool drink vending machine cause the potential hazard.

The gas inspector had no option but to issue an Inspector's Order to have this potentially dangerous situation made safe. EnergySafety's gas inspectors may not be able to attend all the regional shows and events and ask the local gas fitters/plumbers to be vigilant and report any installation similar to the one in the photograph. Should this situation occur, request the organisers of the event to remove/relocate either the gas cylinders or offending electrical equipment to avoid these types of hazards.

If you are not satisfied with the response from the organiser, please contact EnergySafety's Gas Inspection Branch on telephone 9422 5297 and pass all the details to an inspector for further action.



Prosecutions for breaches of gas legislation 1 December 2008 to 31 January 2009

Name (and suburb of residence at time of offence)	Licence No.	Legislation and Breach	Offence	Fine (\$)	Court Costs (\$)
<i>Hajir Mobin (Ridgewood)</i>	NLH	GSA 13A(2) 38(1)	<p><i>Carried out gasfitting work while not holding a certificate of competency, permit or authorisation allowing him to do so</i></p> <p><i>Advertised or represented that he was the holder of a certificate of competency, a permit or authorisation whilst not being the holder of certificate of competency, permit or authorisation</i></p>		971.70
<i>Kornelis Colin Berkelaar (Byford)</i>	GF005406	GSR Regulations 28(2), 28(3), 28(3a)(b), 34, 15(2),	<p><i>Failed to fit a compliance badge to the gas installation</i></p> <p><i>Failed to submit a Notice of Completion to the gas supplier</i></p> <p><i>Failed to give a copy of the Notice of Completion to the customer</i></p> <p><i>Failing to keep records in relation to each gas fitter employed</i></p> <p><i>Failed to supervise the gasfitting work being done by a person who has a permit to do the work in the course of training</i></p>	2,000.00	569.20
<i>Sabah Nouri Al-Saad (Ballajura)</i>	GF010229	18(2)(A)(i), 18(2) (A)(ii), 28(3A)(A), 30(1)(A)	<p><i>Failed to ensure every part of the gas installation complied with the requirements in regulation 32</i></p> <p><i>Failed to ensure every part of the gas installations was safe to use</i></p> <p><i>Failed to submit a Notice of Completion to the Director</i></p> <p><i>Failed to rectify the gasfitting work to comply with the regulations</i></p>	1,200.00	2,857.20

Legend: GSA Gas Standards Act 1972
 GSR Gas Standards (Gasfitting and Consumer Gas Installations) Regulations 1999
 NLH No licence held