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Electrical Safety Outlook

Autumn 08

A publication of the Electrical Safety Office

New Register of licensed electrical workers

If you employ electrical workers, from 1 March 2008 new laws mean you need to keep a register of licensed electrical workers.

The *Electrical Safety Act 2002* was amended late last year requiring employers and self-employed persons to ensure workers are appropriately licensed and to keep a register of licensed workers.

The register of licensed workers kept by the employer must be:

- available to an inspector for immediate inspection when requested
- held for at least five years after the holder ceases to be engaged by the employer, and
- updated within seven days after notification of a change in any of the prescribed details.

The register must include:

- the holder's name
- the number of the licence or, if not issued in Queensland, the number, code or another way of identifying the licence and the jurisdiction in which it was issued
- the class of the licence
- if the licence is a restricted electrical work licence—the type of electrical work stated on the licence
- the conditions or restrictions included in the licence, and
- the date the licence expires.

These details are readily obtained from the actual electrical licence.

Licence changes must be notified to employer

Holders of electrical work licences engaged to perform or supervise electrical work for an employer or a self-employed person must notify their employer in writing of any of the following changes within fourteen days of it happening.

- If the electrical work licence is suspended or cancelled, surrendered, expired and not renewed, or amended in a way that changes the authorised work or activities or the conditions or restrictions applying to the work or activities.
- If the electrical work licence is renewed or reinstated.
- If any other prescribed details (see above) for the holder change.

These changes reinforce safe work practices by ensuring that anyone undertaking electrical work is correctly licensed with verifiable details maintained in a way that is easily checked. The Act now also includes a range of penalties of up to $30,000 for breaches.

The Electrical Safety Office will be monitoring compliance with these new provisions.

There is no set format for the register and it may be kept in electronic form. An easy to use sample register is available on the department's website.

Floods expose electrical dangers

The recent flooding of around 3000 homes in Mackay has highlighted a number of electrical safety issues for both the general public and industry workers.

The department alerted homeowners affected by the floods to the dangers of water damaged equipment, wiring and appliances and the use of generators via the media.

But other issues emerged as the floods receded involving electrical supply and reconnections.

Initially Ergon Energy crews quickly identified and isolated power to those areas which presented potential electrical risk. A door-to-door check determined which homes could have power re-connected and isolated those that had been adversely affected.

Homeowners were issued with a letter requiring the home to be inspected by a licensed electrical contractor before power could be re-connected.

Crews worked to restore power to homes, replacing damaged underground cables and cable joints quickly while Mackay's electrical contracting community provided an immediate response with many homes tested within a short period of time.

Affected circuits were disconnected and power resupplied to many homes, particularly lights and some power circuits. Many hot water systems were also able to stay connected.

However some contractors raised concerns that installations tested as not being safe to re-connect were subsequently tested by another contractor and deemed to be safe. It is possible later testing showed suitable insulation resistance readings once accessories had dried, since it would be of huge concern if a licensed electrical contractor re-energised circuits that were not safe.

One problem was that testing of the homes was undertaken soon after the water subsided while plasterboard sheeting was still in place. Demolition/ renovation teams have since removed the damaged plasterboard up to the watermark resulting in many exposed socket outlets.

These outlets were either live or isolated by nothing more than insulation tape over the corresponding circuit breakers. All damaged circuits must have the load conductors removed and be suitably terminated or the circuit breakers secured or locked off.

With residents wanting to move back into their homes until such time as the builders can start renovation work, there may now be a significant electrical risk present in some homes. Many people may not be aware of the risk, because their homes have been 'checked' by a licensed electrical contractor.

Unoccupied homes also present a significant risk to tradespeople going in later as they may assume all circuits are disconnected and everything is 'dead'.

The Electrical Safety Office has raised this issue at meetings with local builders organised by the Queensland Building Services Authority stressing the need for builders to liaise closely with their electrical contractor to ensure the installation is either completely isolated or electrically safe before starting work.

Obligations for building and installing

Builders installing electrical household appliances or offering them as a package in the sale of the new house, should be aware they have obligations under the *Electrical Safety Act 2002* and *Electrical Safety Regulation 2002* regarding the safety of the appliances.

If the builder imports the appliances directly they take on obligations of importers outlined in the article 'Importing and supplying electrical equipment' on page 4.

All fixed electrical equipment should be installed in line with manufacturer's instructions and must be connected to electricity by a licensed electrician.

Failure to do so could render the builder liable for any electrical hazard (electric shock or fire) that results from incorrect installation.

Instructions on how to use the electrical equipment safely should always be supplied for all electrical equipment.

More detailed information is available on the department's website.

Don't work live

Electrical work must only be carried out by a licensed electrician and with the power turned off. Live work can expose people and property to serious electrical risk and should only be performed in very limited circumstances.

Section 12 of the *Electrical Safety Regulation 2002* sets out the mandatory requirements governing the performance of live work.

Live work may be performed in the following circumstances:

- it is not practicable to perform the electrical work other than by live work because:
  - it is necessary in the interests of safety, e.g. road safety – keeping traffic lights working while electrical work is done
  - electricity supply is necessary to properly perform the electrical work, e.g. testing and commissioning electrical equipment, or
  - there is no reasonable alternative to performing the electrical work by live work, e.g. electricity entity performing electrical work to avoid widespread outages
- the employer or self-employed person has prepared a documented risk assessment of the live work
- the electrical work is in accordance with a safe system of work (a safe system of work on low voltage electrical installations must comply with AS/NZS 4836 *Safe working on low-voltage electrical installations*)
- the employer or self-employed person authorises the performance of the live work only after consultation with the person in control of the electrical equipment
- the person who performs the live work has appropriate training for the performance of the live work
- the test equipment is appropriate, has been given to the person performing the electrical work, has been properly maintained and the person makes proper use of the test equipment
- the clothing and personal protective equipment are appropriate, have been given to the person performing the electrical work and the person makes proper use of them
- other than for electric line work, the electrical work's isolation point has been clearly identified and can be reached quickly without the need to climb over or shift obstructions
- the electrical work area is clear of obstructions for easy access to and from the area
- a safety observer is observing the performance of the electrical work, unless the work involves testing electrical equipment, and a risk assessment does not show a high risk to electrical safety.

All the above must be followed if live work is to be performed.

Electrical fatalities 2007–08

There have been four electrical related fatalities in Queensland from 1 July 2007 to 31 March 2008.

- In November 2007 an electrical worker performing tests to ascertain the cause of a reported electric shock at a building site contacted an energised roof and building scaffolding.
- In January 2008 a farmer received a fatal electric shock when one side of a spray boom was raised and contacted high voltage overhead powerlines.
- In January 2008 an unlicensed electrical worker was working on a lighting circuit in a shop when he received a fatal electric shock.
- In February 2008, one man died and a co-worker received a shock when a post hole auger penetrated the heavy duty underground conduit and the insulation of live consumer mains.

Remember, stay safe. Don't work live!

Subscribe online to our e-alerts and get this information faster.

Downlight dangers

Fire safety and electrical safety regulators across Australia have raised concern about an increase in building fires caused by heat from recessed lighting setting fire to building material and other materials.

The type of luminaire (light fitting) of particular concern is the incandescent halogen recessed 'downlight' which operates at very high temperature.

If thermal insulation is installed too closely around these lights, or they are installed too close to combustible material, ignition can result. Combustible material can include things like leaf litter which blows into roof spaces.

Transformers which supply the lighting can also suffer excessive temperature rise if improperly covered by thermal insulation.

The new edition of the Wiring Rules has responded to this problem with specific new provisions about the precautions that must be taken when installing recessed luminaires.

The revised Wiring Rules require that unless a recessed incandescent luminaire is specially designed and certified by the manufacturer with specific installation instructions for use in proximity to combustible materials, it must be installed with the default clearances and precautions detailed in the Wiring Rules.

These precautions are necessary to ensure the safety of people and their property.

Importing electrical appliances

If you import electrical appliances for sale in Australia you have specific obligations under the *Electrical Safety Act 2002* and *Electrical Safety Regulation 2002* regarding the safety of the appliances you import.

Household appliances are separated into two classification types: 'prescribed equipment' and 'non-prescribed equipment'.

'Prescribed' means that the product MUST have a current valid Australian certificate of approval, and is marked as required by that certificate of approval, before the equipment is sold.

'Non-prescribed' means that the product must be shown to be electrically safe and shown to comply with safety requirements of AS/NZS 3820 before being sold. A voluntary Australian certificate of approval may be obtained for this category of product as a way of showing compliance with the law.

A list of products that are classified as 'prescribed' is available online at www.deir.qld.gov.au.

An example of a nameplate and its approval marking is also available online.

It is important to know that every standard two and three pin supply plug is required to have a current valid Australian certificate of approval and all plugs are all now required to have a portion of the live pins insulated. The approval number should be marked on the plug.

It is also mandatory for all supply cords to have a current valid Australian certificate of approval and be marked with its approval number.

Prescribed equipment must have a correctly marked approval number, and if it has a supply cord and plug then the supply cord and insulated pin plug must have a certificate of approval and be marked with their approval number.

Importers should keep copies of the Australian certificate of approval (if the equipment is within the prescribed category).

As an importer (or supplier) looking to obtain an Australian approval certificate for a prescribed appliance, there are a number of things that you should attempt to source from the manufacturer.

- Copies of any overseas test report that they may have.
- Copies of the approval certificates for the supply cord and plug.
- Copy of the wiring diagram.

Specific guides to help you apply for approval and the documentation required with the application forms is available online.

If you want to import a product that does not have an overseas test report you will have to contact a laboratory in Australia (or New Zealand) to obtain quotes for the assessment of your product.

You can find an accredited laboratory on the National Association of Testing Authorities (NATA) website at www.nata.com.au.

Importer and suppliers should ensure any non-prescribed equipment for which they have obtained suitable evidence (e.g. Australian certificate of approval or test report to electrical safety standards) meets the safety criteria of AS/NZS 3820.

There are also private companies that can work on your behalf as electrical consultants, which manage the complete process for you and advise you specifically what is required from you to get your product ready for sale in Australia and New Zealand.

Instructions on how to install and use the electrical equipment safely should always be supplied for all electrical equipment.

More detailed information is available on the department's website.

Recalls

- **Clipsal** Industrial HD, 3 Pole Rotary Load Break Switch, 1 February 2008
- **DeWalt** 10" job site table saw, 25 January 2008
- **DeWalt** XRP series individual cordless drills, 3 January 2008
- **Hitachi** Power Tools - P13F Planers & C10 series Saws, 23 November 2007
- **Airflow** bathroom heater exhaust fan and light combinations, 21 November 2007
- **RML** Brand Carson surface mounted downlight, 12 November 2007

More detailed information is available on these recalls and other items on the department's website.

Dangerous roof wiring practice

The Electrical Safety Office is warning workers about wiring practices undertaken before the 1986 edition of the Wiring Rules for situations like shallow-pitched or flat roofs.

In houses that have high pitched ceilings or shallow-pitched or almost flat roofs, wiring may have been installed directly under the roof cladding and running over the top of the roofing beams.

The dangers from this installation practice arise when subsequent maintenance or repair of the roof involves screwing or nailing through the sheeting, or new roofing material being installed over the top of the current roof. A screw or nail can penetrate an electrical cable and liven the roof with disastrous effects for anyone coming into contact.

The 1986 and subsequent editions of the Wiring Rules now specifically prohibit the installation of commonly used wiring systems below a roof or roof cladding.

It is vital that all roofing, plumbing and building contractors as well as home handypersons engaged in maintaining, repairing or replacing roofs, should carefully check the roof cavity – especially of shallow-pitched roofs – for wiring that is run directly underneath the roof sheeting. Where this type of situation exists it should be suggested to the owner that they engage an electrical contractor to re-route the cables.

If in doubt, the contractor or homeowner should contact a licensed electrical contractor to confirm the safety of the electrical cabling in the roof cavity.

High voltage and hazardous area installations

Certain electrical work (installation work) in hazardous areas must not be connected to an electricity supply unless the work has been inspected and tested by an accredited auditor to ensure its safety.

This means electrical work involving laboratories, chemical manufacturing plants, spray booths and petrol dispensing pump installations must not be connected to supply without an inspection.

The *Electrical Safety Regulation 2002* Section 153(1) states:

"A person must not connect or reconnect a high voltage electrical installation, or an electrical installation located in a hazardous area, to a source of electricity after electrical installation work or electrical line work has been performed on the electrical installation unless:

(a) the electrical work has been inspected by an accredited auditor; and

(b) the accredited auditor has confirmed that the electrical installation, to the extent it is affected by the electrical work, has been tested to ensure it is electrically safe and is in accordance with the wiring rules and any other standard applying under this regulation to the electrical installation."

Any breach of this section leaves the contractor open to enforcement action which could include being issued with a notice (including on-the-spot fine), prosecution, or referral to the Electrical Licensing Committee.

A list of accredited auditors, and details of how to become an accredited auditor, are available on the department's website.

Wiring Rules seminars a hot ticket

Record attendances at the Wiring Rules seminars being held around the state have resulted in extra seminars being scheduled to cope with the demand.

More than 2,500 people attended 23 seminars in 10 locations over the two months from 30 January to end of March this year.

The seminars are being conducted jointly by the Electrical Safety Office (ESO), the Electrical and Communications Association (ECA) and Electrical Trades Union (ETU).

Fifty-four individual seminars were scheduled at 31 locations throughout Queensland between January and July 2008 and also at the Electro Expo in Brisbane from 28 to 30 March.

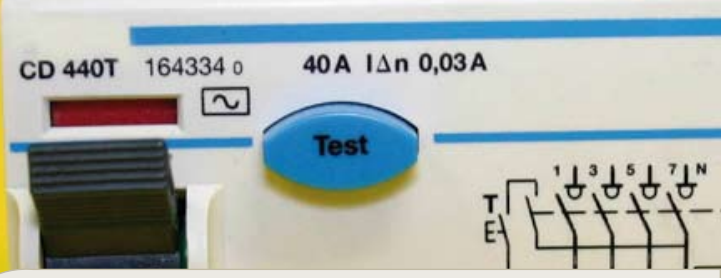
The seminars have been popular because the new Australian/ New Zealand standard *AS/NZS 3000:2007* will take effect in Queensland from 1 June 2008 and must be complied with by all licensed electrical workers in Queensland as required by section 66 of the *Electrical Safety Regulation 2002*.

The seminars give licensed electrical contractors and licensed electrical workers an overview of key aspects of the new Wiring Rules, in particular the changes from the 2000 version of the Standard.

The seminars also cover managing the risks associated with live work.

The seminar presentation (PowerPoint) can be downloaded from the ESO web pages for those licensed electrical contractors and licensed electrical workers either unable to attend or who wish to use the information for a presentation to their workplace colleagues.

Check out seminar availability on the department's website now or phone the Electrical Safety Infoline on 1300 650 662.



Safety switch research project

Many of Australia's domestic residences are protected by safety switches of various designs and some are now several decades old.

The Electrical Safety Office is undertaking a project to examine the physical, environmental and engineering factors that determine the useful life of a safety switch in Queensland.

The aim of the project is to gather data from field testing and from recorded outcomes of 'in-service testing' of a large number of domestic and industrial safety switch installations.

This will provide improved electrical safety advice to electricity consumers, device manufacturers, installers and regulators and will help ensure safety switches continue to provide the significant electrical safety benefits we have come to expect.

While confidence in, and reliance on safety switches is high, their protective or useful life is not known because a number of factors play a part in determining their longevity.

A safety switch is only useful in protecting people if it operates virtually instantly when an electrical fault occurs.

Safety switches can fail and get stuck in the 'always on' position and will not operate when an electrical fault occurs.

This failure may go undetected for some time. Failure to test the switch regularly means you don't know if it still works or not. So the best course of action is to ensure you test your safety switch every three months.

While some international information on safety switch reliability indicates that the failure rate is low, little is known of the factors that impact the protective life of safety switches in Australia.

What is known is testing will tell you whether your safety switch is working or not.

Existing research also shows that safety switches that are maintained by user testing are less likely to fail.

Testing is simply carried out by pressing the test button on the switch – the switch should immediately move to the 'off' position, confirming it is operating correctly.

Update on audits

The Electrical Safety Office is currently implementing an audit program that supports the Electrical Safety Plan for Queensland.

The 2007–08 statewide audit program targets priority areas for improvement in electrical safety to reduce electrical incidents and subsequent fatalities, serious injuries and property damage.

Audits are currently continuing on:

- electrical contractors
- operators of cathodic protection systems
- construction sites and availability of electrical work licences
- people advertising the performance of electrical work
- licence and supervision validation audit of visa workers
- electrical licence application compliance
- the sale of new electrical equipment products
- second hand retail businesses
- businesses installing thermal insulation in roof space
- electrical repairers who do not hold an electrical contractor's licence
- caravan manufacturers and
- non-electrical contractors who employ electrical workers (production workplaces, hospital and resorts).

Results of the 2006–07 campaign

Electrical repairers audit project

This compliance audit covered a random selection of workplaces whose business operations included the performance of repairing electrical equipment. Under the Act these businesses do not require an electrical contractor's licence.

Opportunities for improvement included:

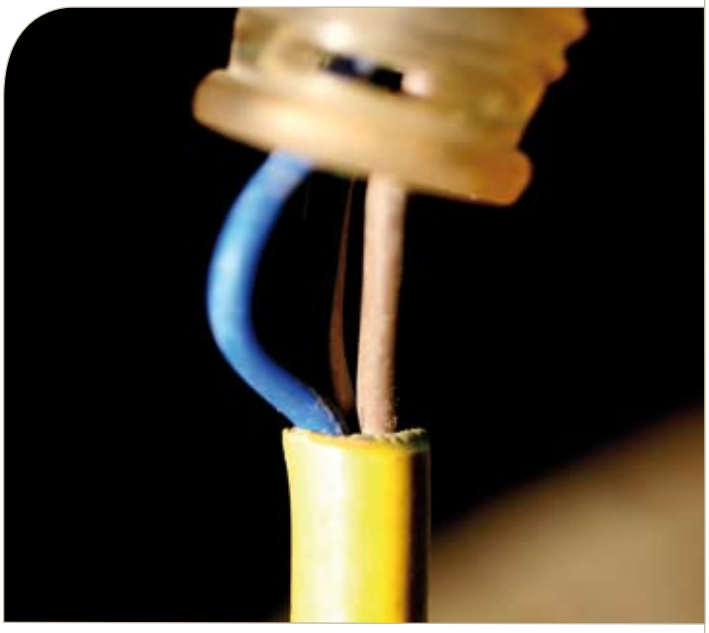
- obligation awareness
- having a documented system to ensure work is done safely and competently
- having a system in written form that requires testing to ensure compliance with relevant standards.

Employers (production workplaces, hospital and resorts) audit project

This project was based on a compliance audit of employers, other than electrical contractors such as factories, hospitals and resorts, who employ electrical workers, including electrical apprentices.

Opportunites for improvement included:

- obligation awareness
- contents of a safe system of work in relation to live work



- employees awareness of the safe system for live work
- use of safe systems for work around electrical parts
- understanding safety tag and log out requirements
- availability of a system for testing electrical equipment
- awareness of electrical installation testing procedures
- availability and use of relevant information e.g. standards or codes of practice
- availability of records and suitability of safety equipment and test instruments
- understanding high voltage isolation and access requirements
- understanding legislative requirements for high voltage or hazardous electrical installation.

Electrical contractors audit project

The main aim of this audit was to ascertain whether systems/measures were in place that ensure electrical contractors and their workers are working in a manner which keeps them electrically safe and ensures other persons and property are free from electrical risk.

Opportunities for improvement included:

- understanding required circumstances/decision for performance of live work
- understanding requirements for performance of live work
- contents of a safe system of work for live work including employees awareness of the safe system of work
- availability of records and suitability of safety equipment and test instruments
- availability and use of relevant information (how information is distributed, availability of documents i.e. legislation, codes of practice, safety alerts, wiring rules and wiring rules frequently asked questions (FAQs), and how information is disseminated in business e.g. tool box talks).

$25,000 fine a ‘huge wakeup call’ for unlicensed electrical contractor

Electric shock and serious burn injuries to a worker has given an unlicensed electrical business in Cairns a ‘huge wake-up call’ and a major overhaul of the company’s policies and guidelines.

The Cairns-based electrical business was fined $25,000 after an Electrical Safety Office (ESO) investigation into the incident.

The defendant confirmed in court that he has since put in place stringent guidelines for training and safety after what he described as a ‘huge wake up call’ when the worker was injured.

The owner of Woods Electrical Service pleaded guilty to failing to meet its obligation under sections 27 (b) and 30 of the *Electrical Safety Act 2002* (the Act) for a breach causing grievous bodily harm and for failure to ensure that his business or undertaking was conducted in an electrically safe way.

The Cairns Industrial Magistrate’s Court heard that in October 2007, an electrical worker employed by Woods Electrical Service received a severe electric shock and burn injuries while repairing an industrial dishwasher at a resort north of Cairns.

The owner was prosecuted for carrying on a business as an electrical contractor without an appropriate licence and for failing to meet his statutory safety obligations as an employer.

The injuries occurred through the use of a faulty multi-meter which should have been tested before use with testing incorporated into the system of work. This was not done.

The ESO investigation revealed the owner was not the holder of an electrical contractor’s licence and his business did not have adequate policies or procedures in place with respect to safe systems of work. There was no induction for new employees and no ongoing training for staff.

The ESO viewed the matter as serious because there was no adequate system in place. This applied even with an understanding that some fault may lie with the worker.

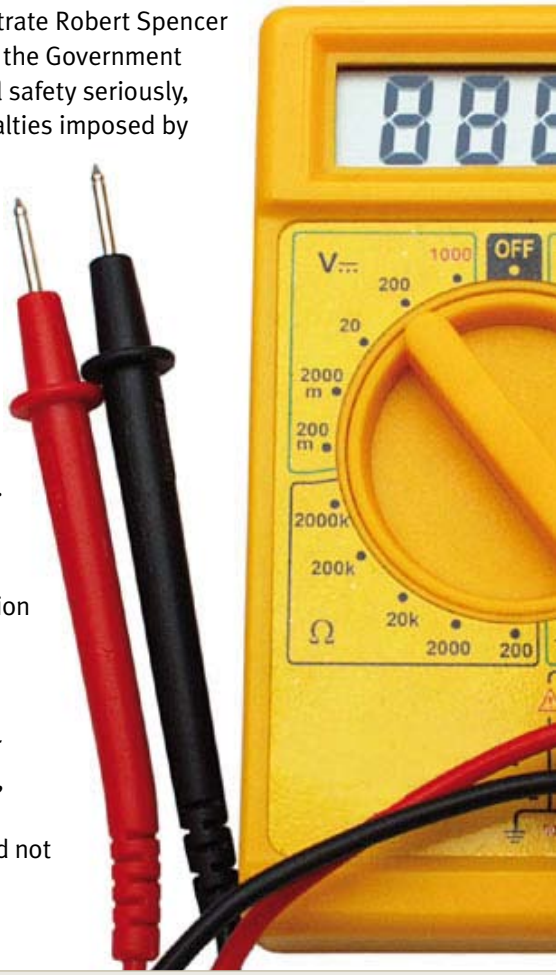
The prosecution was aware remedial measures were taken by the defendant, in terms of instituting safe systems and obtaining a contractors’ licence.

The defendant was remorseful, cooperated with the investigation and had no history of prior enforcement under electrical safety legislation.

Industrial Magistrate Robert Spencer pointed out that the Government viewed electrical safety seriously, with severe penalties imposed by legislation.

He noted the high risks involved and the results experienced by the injured worker, who is yet to recover from his injuries.

The court fined the defendant $25,000 in addition to investigation and court costs, but accepted the matters in favour of the defendant, ordering that a conviction should not be recorded.



Your questions answered

The following information answers questions raised about two stories in the previous edition of *Electrical Safety Outlook* (Summer 07).

Electrical safety in construction Article page 5

AS/NZS 3000 has always applied to construction sites and in addition to this requirement, as from 2003, construction sites also must comply with *AS 3012:2003*.

Switchboard rescue and resuscitation Article page 8

A resuscitation certificate is not the only way of proving your currency as training records would also be acceptable.

DEIR 08/2966

Feedback

We welcome your feedback on Electrical Safety Outlook.

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