



electrical focus

Compliance with AS/NZS 3000: 2000 Wiring Rules

Installation and Repair of Swimming and Spa Pool Equipment

Following the publication of AS/NZS 3000:2000 Wiring Rules, this Office has received a number of enquiries about the installation and repair of swimming and spa pool equipment. The enquiries relate to Clause 7.2 of AS/NZS 3000:2000 which states the requirements for selecting and installing electrical equipment for swimming pools and spa pools. The new requirements, which differ significantly to those of the previous edition (AS 3000 – 1991), have been amended to improve safety and to align with International Standards.

New Zones

One major change in the new Wiring Rules is the replacement of the “swimming pool zone” with three separate zones; Zone 0, Zone 1 and Zone 2. Different requirements and restrictions apply for each of these new zones.

Underwater Luminaires

Another significant change relates to underwater luminaires. AS/NZS 3000:2000 Wiring Rules now specifies that electrical equipment in Zone 0 (the area of the interior of the water container) be supplied as part of a Separated Extra-Low Voltage (SELV) system or Protected Extra-Low Voltage (PELV) system. The nominal voltage shall not exceed 12 volts ac or 30 volts ripple-free dc. In addition, the supply source must be installed outside Zone 0.

Previously it has been common practice for swimming pool luminaires to be 32 volt ac or 22 volts ac. From 1 December 2000, luminaires which do not meet the new requirements must not be installed. However, where an electrical contractor is engaged to repair a swimming pool luminaire, it is acceptable to replace existing 32 volt ac or 22 volt ac components with components of the same voltage.

In some older installations, there may be a 240 volt ac underwater luminaire supplied

from an isolating transformer or a Residual Current Device (RCD). Such installations are now considered to have less than the required level of safety. Therefore, as part of any repair work to such a luminaire or supply to it, the luminaire(s) and supply must be brought into compliance with the new requirements.

1mm² Solid Earth Conductor Now Acceptable

A recent amendment to Australian Standard AS/NZS 5000.2: 1999 Electric cables – Polymeric insulated Part 2: For working voltages up to and including 450/750 V incorporates a statement “Cables having solid phase conductors of 1mm² may use solid earth conductor of the same size”.

This Standard is referenced in Clause 5.5.2.1 (c) of AS/NZS 3000:2000 by the statement “... except where a cable standard permits a smaller conductor size”.

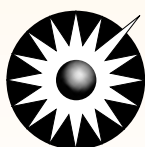
The Office of Energy has discussed this amendment with industry peak bodies and is urging users of this type of cable to pay particular care to ensure the solid earth conductor remains undamaged during and after installation. In particular:

1. The cable insulation must be stripped carefully to avoid conductor damage.
2. The bare conductor should be doubled back and terminated in the normal manner.
3. Earth continuity checks must be made.

Earth conductors are necessary to provide protection to persons and property from the effects of electric shock and fire. Special attention, which includes effective terminating, checking and testing, needs to be provided to the installation of earth conductors. This is especially the case when working with solid earth conductors of 1 mm², to ensure that the conductors and terminations are able to carry a fault current during a fault situation.

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- Prosecutions for Breaches of the *Electricity (Licensing) Regulations 1991* and *Electricity Regulations 1947*



Office of **Energy**

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PROSECUTIONS FOR BREACHES OF THE *ELECTRICITY (LICENSING) REGULATIONS 1991 AND ELECTRICITY REGULATIONS 1947*
1 March 2000 to 30 June 2000

<i>Breach</i>	<i>Name (and suburb of residence at time of offence)</i>	<i>Licence No.</i>	<i>Fine & Court Cost (\$)</i>
<i>Unlicensed electrical work Regulation 19 E(L)R</i>	<i>M Massen (Glendalough)</i>	<i>NLH</i>	<i>1,341.00*</i>
<i>Carried on business as an electrical contractor without a licence Regulation 33 E(L)R</i>	<i>A Bridges (Hillarys)</i>	<i>EW 125083</i>	<i>2,198.25*</i>
	<i>M Massen (Glendalough)</i>	<i>NLH</i>	<i>*</i>
<i>Failed to ensure electrical contractors number appeared in advertisement Regulation 45 E(L)R</i>	<i>Galloway Elect Cont (Midland)</i>	<i>EC 000939</i>	<i>957.50</i>
	<i>Shewah Electrical (Geraldton)</i>	<i>EC 006324</i>	<i>300.00</i>
	<i>Forrester Park Electrical Services (Midland)</i>	<i>EC 003917</i>	<i>397.70</i>
	<i>Envirolec (Duncraig)</i>	<i>EC 005507</i>	<i>371.00</i>
<i>Carried out substandard electrical work Regulation 49 E(L)R</i>	<i>G Zampogna (Stirling) [5 offences]</i>	<i>EW 105032</i>	<i>3,325.70*</i>
	<i>A Costar (Clarkson)</i>	<i>EW 125014</i>	<i>780.00</i>
	<i>C Harvey-Bridges (Spearwood)</i>	<i>EW 116592</i>	<i>596.35</i>
	<i>A Larssen (Kingsley)</i>	<i>EW 123192</i>	<i>677.77</i>
	<i>B Liddiard (Westminster)</i>	<i>EW 135081</i>	<i>942.70</i>
	<i>A Bridges (Hillarys)</i>	<i>EW 125083</i>	<i>*</i>
	<i>J Richardson (Ferndale)</i>	<i>EW 121084</i>	<i>717.70</i>
	<i>L Goldsworthy (Cloverdale)</i>	<i>EW 101123</i>	<i>1,778.20</i>
	<i>S Parsons (Clarkson)</i>	<i>EW 115349</i>	<i>747.70</i>
<i>A Winter (Floreat)</i>	<i>EW 130013</i>	<i>797.70</i>	
<i>Failed to effectively supervise an electrical apprentice Regulation 50 E(L)R</i>	<i>M De Saxe (Bassendean)</i>	<i>EW 127030</i>	<i>1,330.00</i>
<i>Failed to submit a Notice to the relevant Supply Authority Regulation 52 E(L)R</i>	<i>Jojoy Pty Ltd (Stirling) [45 offences]</i>	<i>EC 002496</i>	<i>6,340.70*</i>
	<i>Essex Electric (Malaga)</i>	<i>EC 000821</i>	<i>755.70</i>
	<i>Goldsworthy Electrical (West Perth)</i>	<i>EC 000998</i>	<i>2,741.70</i>
	<i>J West (Norseman) [7 offences]</i>	<i>EW 103595</i>	<i>407.70</i>
<i>Failed to report an unsafe electrical installation to the relevant supply authority and to the Director of Energy Safety Regulation 62 E(L)R</i>	<i>Wiring 2000 (Balcatta)</i>	<i>EC 002378</i>	<i>740.00</i>
<i>Failed to ensure that all service apparatus supplying electricity to a premise was installed and maintained in a safe condition for use Regulation 242 ER 1947</i>	<i>Electricity Corporation T/A Western Power Corporation</i>	<i>NLH</i>	<i>4,550.00</i>

Legend:

- NLH No Licence Held
E(L)R Electricity (Licensing) Regulations 1991
ER 1947 Electricity Regulations 1947
* Global fine (more than one offence)

Note: There were two other prosecutions finalised in this period. The details of these prosecutions are not included above as they resulted in either a spent conviction order or a conditional release order being issued.