

Amendment No. 5 to the WA Electrical Requirements

This amendment comes into effect on 1 June 2008, to coincide with the date on which the AS/NZS 3000:2007 Wiring Rules come into effect.

This amendment (issued in March 2008) substitutes an entirely new Section 12 for the existing Section 12 of the WA Electrical Requirements (WAER) manual. The details of the new Section 12 are provided below. The purpose of this earlier release is to provide advance notice to industry.

Electrical designers and contractors who hold a copy of the WAER should amend their copy of the current manual accordingly.

An entirely new edition of the WAER (which will incorporate this Amendment No.5) is currently being drafted and is expected to be issued in its entirety to all registered holders of the manual, prior to 1 July 2008.

12 Special Requirements for Installations in WA

Under Regulation 49 of the *Electricity (Licensing) Regulations 1991*, the requirements set out below, which are additional to or at variance with the Wiring Rules and other Standards, take precedence over those appearing in the Standards and are mandatory.

12.1 Use of a Wiring Rules “Part 1” Design and Installation Solution

Electrical installation designers choosing to use a Wiring Rules Part 1 design and installation solution (rather than apply the deemed to comply requirements of Part 2) must comply with Clause 1.9.4 of the Wiring Rules and the following additional requirements.

Designers must not adopt a Part 1 solution for the following types of electrical installations, which must comply with Part 2 of AS/NZS 3000:2007 and the applicable standard or standards listed in this Section 12 of the WAER:

- Domestic installations
- Construction and demolition sites
- Medical treatment areas
- Relocatable installations and the site installations to supply them
- Marinas and pleasure craft
- Shows and carnivals.

Design Work

Designers must be competent to carry out designs that depart from Part 2 of the Wiring Rules under the provisions of Clause 1.9.4.1. For the purposes of this requirement, the following persons may be considered competent:

- Currently licensed electricians (previously known as electrical installers) with at least 10 years experience in the design and construction of consumer's electrical installations (other than domestic installations) since qualifying, including not less than 5 years design experience in total.
- Electrical designers who are holders of a TAFE Advanced Diploma in Electrical Engineering (or equivalent) and have at least 5 years experience in the design of consumer's electrical installations (other than domestic installations).
- Electrical designers who are professional power electrical engineers (persons who are eligible for corporate membership of the Institution of Engineers Australia) with at least 5 years experience in the design of consumer's electrical installations (other than domestic installations).

The designer must establish and retain for at least 10 years, a folder that contains:

- the document referred to in Clause 1.9.4.2 of the Wiring Rules, which contains the installation owner's or operator's acknowledgment and acceptance that some parts of the installation do not conform to Part 2 of the Wiring Rules; and
- the specific information listed in Clause 1.9.4.3 "Documentation" of the Wiring Rules".

The designer is also required to provide one copy of the folder and contents to the person with overall responsibility for the installation, and a further copy to the person engaged to verify the compliance of the installation.

The designer shall make his/her folder available for examination by an Inspector (Electricity), if requested.

Additionally the designer shall complete Section A of the "Part 1 Design and Verification Certificate"

(Note: Form of Certificate is to be as included at end of WAER Section 12, and Section B of the Certificate is to be completed by the person verifying the compliance of the design and installation – see below).

Verification of Compliance

Both the design and the construction of the parts of the installation that do not comply with Part 2 of the Wiring Rules are required to be independently assessed to confirm compliance with the requirements listed in Wiring Rules Clause 1.9.4.1 paragraphs (a), (b) and (c), as required by Clause 1.9.4.4.

This verification assessment work may only be carried out by persons who:

- were not involved in the design of the installation;
- who do not report to the designer (i.e. they may be part of the same organisation, subject to these constraints),

and who are one of the following:

- Currently licensed electricians (previously known as electrical installers) with at least 10 years experience in the design and construction of consumer's electrical installations (other than domestic installations) since qualifying, including not less than 5 years design experience in total.
- Electrical designers who are holders of a TAFE Advanced Diploma in Electrical Engineering (or equivalent) and have at least 5 years experience in the design of consumer's electrical installations (other than domestic installations).
- Electrical designers who are professional power electrical engineers (persons who are eligible for corporate membership of the Institution of Engineers Australia) with at least 5 years experience in the design of consumer's electrical installations (other than domestic installations).

On completion of the verification assessment, the verifier may, if appropriate, complete Section B of the "Part 1 Design and Verification Certificate".

It is the responsibility of the designer to ensure the verification work is carried out.

When completed by both the designer and verifier, the Certificate must be placed on the project folder referred to above, and retained by the designer for at least 10 years.

12.2 Consumers Mains

Single and multi-phase consumer's mains shall have a minimum current-carrying capacity of 32A per phase, except for:

- (a) Single domestic installations, where the minimum current-carrying capacity shall be:
 - (i) Single-phase: 63A
 - (ii) Multi-phase: 32A per phase

and

- (b) Multiple installations which incorporate a domestic installation, where the minimum current-carrying capacity shall be:
 - (i) Single-phase: 63A
 - (ii) Multi-phase: 63A per phase.

The minimum cable sizes used for consumers mains to domestic premises shall be:

- Single-phase: 10 square millimetres, copper conductors
- Three-phase: 6 square millimetres, copper conductors

When calculating voltage drop in an installation, the component of voltage drop across the consumer's mains shall be assessed using the maximum demand of the installation or 80% of the minimum current carrying capacity specified above, whichever is the greater.

12.3 Current-Carrying Capacity of Cables

Where cables are installed within 100mm of the ceiling in the roof space of domestic dwellings, they shall be deemed to be either partially or completely surrounded in thermal insulation for the purpose of calculating current-carrying capacity.

If a length of cable not exceeding 150mm passes through bulk thermal insulation (for example to connect to a lighting point), it shall not be considered as being surrounded by thermal insulation.

Where cables are installed in a manner permitting the free circulation of air around them (for example in a wiring enclosure of adequate dimensions, and in any case, of dimensions not less than 50mm X 100mm), the cables shall not be considered as being surrounded by thermal insulation.

12.4 Consumers Mains in Wall Cavities

Insulated and sheathed consumers mains are permissible without enclosure in heavy duty conduit when installed in the cavity of double-brick walls in WA (Clause 3.9.7.1.2).

12.5 Equi-potential Bonding in Shower Recesses and Bathrooms

Equipotential bonding of the conducting metal reinforcing mesh within concrete floors and walls forming part of a shower recess or bathroom is not required (Clause 5.6.2.5). That is, this is optional in WA.

12.6 Segregation of Electrical Installations

No part of the consumer's mains or wiring of a consumer's installation of one premises shall be located in the lot of another premises except where consumer's mains are in the immediate vicinity of a service frame or pillar.

12.7 Minimum Cross-sectional Area of Conductors

In domestic installations, conductors for final sub-circuits supplying socket outlets shall have a cross-sectional area of not less than 2.5 square millimetres.

12.8 Applicable Standards

Electrical work must be carried out so as to comply with all parts of the following Standards:

AS 2067	Switchgear Assemblies and Ancillary Equipment for Alternating Voltages Above 1kV
AS/NZS 2381	Electrical Equipment for Explosive Gas Atmospheres – Selection, installation and maintenance – General Requirements
AS/NZS 2430	Classification of Hazardous Areas – Examples of hazardous areas - General
AS/NZS 3001	Electrical Installations – Relocatable Premises (Including Caravans and Tents) and Their Site Installation
AS/NZS 3002	Electrical Installations – Shows and Carnivals
AS/NZS 3003	Electrical Installations – Patient Treatment Areas of Hospitals and Medical, Dental Practices and Dialysing Locations
AS/NZS 3004	Electrical Installations - Marinas and Pleasure Craft at Low Voltage

- AS/NZS 3008.1.1 Electrical Installations – Selection of Cables
- AS/NZS 3010 Electrical Installations – Generating Sets
- AS/NZS 60079 Electrical Apparatus for Explosive Gas Atmospheres
- AS/NZS 61241 Electrical Apparatus for Use in the Presence of Combustible Dust

(Form)

PART 1 DESIGN AND VERIFICATION CERTIFICATE

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This form has been approved by the Director of Energy Safety, Energy Safety WA, for use by designers and verifiers of electrical installations which are based on a Wiring Rules "Part 1" design and installation solution, to satisfy requirements detailed in Section 12.1 of the WA Electrical Requirements manual.

The form is to be used as a template, shall be typed and may comprise several pages in order to contain all required information.

Section A: To be completed by the designer who wishes to adopt a design solution complying with Part 1 of AS/NZS 3000:2007 Wiring Rules.

Designer's Name:

Designer's Employer or Business Name:

Project Name:

Project Address:

Brief Description of Project and Proposed Electrical Installation:

Certification by Designer:

I certify that the electrical installation design described above was designed by me, that I comply with the competence requirements for designers set out in Section 12.1 of the WA Electrical Requirements, and that the installation:

- (a) will satisfy the fundamental safety principles of Part 1 of the Wiring Rules;
- (b) will result in a degree of safety from physical injury, fire and electric shock not less than that which, in other circumstances, would be achieved by compliance with the particular requirements of the Wiring Rules; and
- (c) will satisfy the other requirements of Clause 1.9 of the Wiring Rules.

Signature: _____ **Date:** _____

Section B: To be completed by the verifier.

Verifier's Name:

Verifier's Employer or Business Name:

Verifier's Qualifications and Experience:

Certification by Verifier:

I certify that:

- I satisfy the independence and competence requirements for verification work set out in Section 12.1 of the WA Electrical Requirements;
- The electrical installation design described in Section A has been checked by me;
- I have satisfied myself that all of the design principles on which the design relies accord with those set out in Part 1 of AS/NZS 3000:2007;
- In carrying out the checking I have followed an established procedure to ensure all of the principles mentioned in Part 1 have been checked against the design described in Section 1; and
- I am able to verify that the installation:
 - (a) will satisfy the fundamental safety principles of Part 1 of the Wiring Rules; and
 - (b) will result in a degree of safety from physical injury, fire and electric shock not less than that which, in other circumstances, would be achieved by compliance with the particular requirements of the Wiring Rules; and
 - (c) will satisfy the other requirements of Clause 1.9 of the Wiring Rules.

Signature: _____ Date: _____