AS/NZS 3000:2007 Amendment 2

Published 14 December 2012

Under Victorian legislation the day a revised standard is published it becomes the requirement.



The aim of this document is to highlight the important changes that effects the electrical trade within Victoria, within the amendment there are numerous other changes that are not listed some of those are clerical and printing mistakes, standards that have been upgraded or been replaced. The amendment is available from Standards Australia on www.saiglobal.com.au.

Clause number	Change	Impact
Α	Clause applies to Australia only	
NZ	Clause applies to New Zealand only	There has been a large increase in New Zealand only clauses.
Clause 1.4.84A	New Definition Shall – Indicates a statement is mandatory	Throughout the document a large number of 'should' have been changed to 'shall' making the requirement mandatory.
Clause 1.4.84B	New Definition Should – indicates a recommendation.	No impact.
Clause 1.9.2	Domestic electrical installations (Australia only) domestic electrical installations that meet all of the relevant requirements of AS/NZS 3018 are also deemed to meet Part 1 of this Standard.	In Victoria this will only apply when the revised version of AS/NZS 3018 is published, Standards Australia is preparing a draft for comment. The current edition of AS/NZS 3018:2001 "does not comply with part 1 of this standard".
Clause 2.5.5.1	Protection against switchboard internal arching fault currents. Note 3 Separation of live supply conductors from each other by insulation or barriers in accordance with this Clause 2.5.5.1 is not a requirement of separation, e.g. an IP2X enclosure with bare busbars is acceptable.	Supply conductors up to the line side of the protective device(s) within the switchboard shall be provided with means to reduce the probability of initiation of arcing faults by insulation or by separation. Energy Safe Victoria interprets this note to allow the installation of bare busbars, within CT chambers where access is restricted and the arrangement of the busbar and chamber are suitably designed and manufactured to prevent the initiation of an arching fault.
Clause 2.6.1	RCD's - AS/NZS 3003 does not permit a 30 mA RCD to be used upstream of a 10 mA RCD as a leakage protection device in medical treatment areas, as the arrangement does not provide the required discrimination.	Highlights an existing requirement from AS/NZS 3003.

Clause number	Change	Impact
Clause 2.6.2.2	Types of RCD's - Revised clause.	The existing clause has been replaced and RCD types have been extended and clarified.
Clause 2.6.3.1	Additional RCD protection - Residential electrical installations.	Smoke detectors have been added and are to be regarded as a lighting point of the purpose of this clause.
Clause 2.6.3.2.1 Exception 2	Additional RCD protection - Other electrical installations. Where an RCD is incorporated into a socket outlet or adjacent to a socket outlet and specifically intended for the protection of that socket outlet the RCD shall interrupt all live (active and neutral) conductors.	Allows for the RCD to be installed adjacent to the socket outlet.
Clause 2.6.3.4	Alterations, additions and repairs - Where all of the circuit protection on a switchboard is replaced, additional protection by RCDs as required by this Clause 2.6 shall be provided for the final subcircuits supplied from that switchboard Socket-outlets that are added to an existing circuit shall be protected by an RCD.	RCD protection is now required when replacing the protective devices, this prevents someone leaving the main switch and neutral bar and upgrading the rest of the switchgear on a switchboard without installing RCD's.
Clause 2.9.5.1	Equipment identification - All equipment installed on a switchboard shall be legibly and indelibly identified in the English language in accordance with the requirements of Clauses 2.9.5.2 to 2.9.5.6. NOTE: See Clauses 2.3.3 and 2.3.4 for the marking requirements of main switches and additional isolating switches.	Highlights the requirement for all equipment on switchboards to be identified in English and be legible and durable .
Clause 3.8.1	Identification conductors with green, yellow or green/yellow combination coloured insulation or sheathing shall not be used as active or neutral conductors in installation wiring.	Prohibits cables with sheathing coloured green, yellow or a combination of green and yellow being installed as installation wiring.
Clause 3.8.1	Table 3.4 Conductor colours for installation wiring Where colours are used for the identification of cable cores, AS/NZS cable identification colours and European cable identification colours shall not be combined within the same wiring enclosure or the same multi-core cable.	Prohibits the installation of cable using European cable identification colours and AS/NZS cable identification colours to be installed in the same wiring enclosure or within the same cable.
Clause 3.9.8.2(a)	Different Installations – (a) Common enclosure – cable or conductors that form part of different electrical installations shall not be installed within the same wiring enclosure or the same multicore cable.	Prohibits cables from different installations being installed within a multi-core cable or installed in the same wiring enclosure.



Clause number	Change	Impact
Clause 3.9.8.2 (b)	(b) Segregation Where conductors of different domestic or non-domestic portions of an electrical installation that form part of a multiple electrical installation terminate in a common enclosure, they shall be effectively segregated from each other within that enclosure.	Prohibits cables supplying different tenancies within a multiple installation being installed in the same wiring enclosures (this requirement need not apply to switchboards where such circuits originate).
Clause 3.11.5	Table 3.7 –minimum separation of underground services – Exception 3 Separation distances between conductive enclosures and the earthing electrode are not required where all conductive enclosures are bonded within the installation.	Removes the segregation requirements between the earth electrode and conductive services (such as a water pipe) where the conductive service is bonded within the installation.
Clause 4.4.2.2(d)	 Protection of socket-outlets – (d) Where installed in a location that is not readily accessible for the connection of a fixed or stationary appliance or a luminaire, the socket-outlet shall be securely fixed to a structure or support to ensure that no mechanical strain is placed on the installation wiring connections when inserting or removing a plug to the socket-outlet. Exceptions: The socket-outlet need not be fixed in position where the installation meets the following conditions: 1. Cable connections are not subject to undue mechanical stress on any connection in accordance with Clause 3.7.2.6. 2. The wiring system, where likely to be disturbed, is supported in accordance with Clause 3.9.3.3. 3. The wiring system, where installed in a suspended ceiling, is supported in accordance with Clause 3.9.3.2. 4. Conductors are flexible or stranded type. 5. Insulated, unsheathed cables, including exposed cores where sheathing is removed, are enclosed in accordance with Clause 3.10.1.1. 	Clarifies the requirement for a socket-outlet to be installed in a location that is not readily accessible within the wall behind a range hood or within a suspended ceiling without being fixed where it is arranged so there is no stress on the cable connections and where sheathing is removed and the single insulated conductors are enclosed.



Clause number	Change	Impact
Clause 4.5.2.2.1	Recessed luminaires - Lamps near flammable materials Where lamps are located near flammable materials— a) lamps shall be suitably shielded by a shade, reflector, guard or enclosure to prevent contact with the material; and b) lamps, such as spotlights, that generate heat in the illuminated surface, shall be separated by such a distance that the material will not attain excessive temperature. Where information is not otherwise provided with products, the minimum separation distances given in Table 4.2 shall be used. Flammable shades shall not be installed where they are liable to come in contact with any lamp.	Highlights the requirements: (a) between the lamp and flammable materials; and (b) the minimum distance between the face of the lamp and the distance the illuminated surface; and clearances where there is no information from the manufacture.
Clause 4.5.2.3	Recessed luminaires - Recessed luminaires and their auxiliary equipment shall be installed in a manner designed to prevent— a) excessive temperature rise of the luminaire and auxiliary equipment; and b) the risk of fire from ignition of combustible materials. These requirements shall be satisfied by one of the following compliance methods: (i) The installation of a luminaire designed and certified by the manufacturer as being suitable for operation— (A) in contact with combustible materials; or (B) in contact with or enclosed/covered by thermal insulation material. (ii) The installation of a luminaire in combination with a barrier tested and classified in compliance with AS/NZS 5110 as being suitable for the installation conditions. (iii) The installation of a luminaire with separation from thermal insulating materials, combustible building elements and loose combustible materials not less than— (A) the minimum clearance specified by the manufacturer of the luminaire, which may require a barrier or guard constructed of fire-resistant materials; or (B) the default clearances as specified in Figure 4.7, which may require a barrier or guard constructed of fire-resistant materials.	The clause has been revised and now relates to all types of recessed luminaires (not just incandescent and halogen). It emphasises that installers must ensure that the installer complies with:— (a) the manufacturer's installation instructions; and (b) the luminaire is designed and certified by the manufacturer as being suitable for operation; and (c) the luminaire in combination with a barrier are tested and classified in compliance with AS/NZS 5110 as being suitable for the installation conditions. Note - a luminaire without instructions may not be suitable or designed to be installed within a barrier. The default distances within Figure 4.7 have changed.



Clause number	Change	Impact
Clause 4.5.2.3.2	Warning Sign Where recessed luminaires are installed in an accessible roof space, a permanent and legible warning sign shall be installed in the roof space adjacent to the access panel, in a position that is visible to a person entering the space. The sign shall comply with AS 1319 and contain the words shown in Figure 4.8 with a minimum size of lettering of 10 mm. Recessed lights have been installed in this roof space. To reduce the risk of fire DO NOT COVER the light fittings with thermal insulation or any other material unless in accordance with instructions provided by the light fitting or barrier manufacturer.	New clause that requires a warning sign to be installed adjacent to the access into ceilings where recessed luminaires are installed.
	WARNING SIGN TO BE INSTALLED IN ACCESSIBLE ROOF SPACES	



Clause number	Change	Impact
Clause 4.5.2.3.3	Installation precautions (Australia) The following precautions should be undertaken for the installation of recessed downlights: (a) The heat generated from lamps should be dissipated in order to prevent over-temperature damage to the luminaire or to adjacent materials. Cooling air circulation through or around the equipment is a requirement for the typical range of downlights. AS/NZS 60598.1 and AS/NZS 60598.2.2 detail the test method and the maximum surface temperatures permitted for recessed luminaires. The maximum temperature of adjacent materials is to be no more than 90°C. (b) In the case of a suitably designed and certified luminaire (compliance method 4.5.2.3.1(i)), the manufacturer's instructions may restrict installation including warnings such as covering with insulation or the following AS/NZS 60598.1 symbol meaning 'Do Not Cover'.	New clause providing precautions need to be undertaken for the installation of recessed downlights: Incorporating instructions from manufacturers and the Building Code of Australia.
	However, for typical fittings, the installation method will be to provide barriers (compliance method 4.5.2.3.1(ii)) or clearances (compliance method 4.5.2.3.1(iii)) during installation, so as to prevent contact with materials that may impede air flow (e.g. thermal insulation) or that may be affected by the high temperature (e.g. combustible building elements). Unmarked light fittings shall be treated as 'Do Not Cover'. (c) Under National Building Code requirements, bulk thermal insulation is prevalent in modern building construction within roofs, ceilings, walls and floors depending on the type of building and its climate zone.	



Clause number	Change	Impact
Clause 4.5.2.3.3 continue	Bulk thermal insulation may also be retrofitted, added or altered in which case precautions will need to be applied by the insulation installer, where recessed downlights are present, or the luminaire installer, where insulation is present. In Australia AS 3999 include instructions for insulation installers in relation to clearances from recessed downlights and other types of electrical equipment that may be adversely affected by lack of cooling air circulation. (d) The presence of bulk thermal insulation, particularly over the rear of a ceiling mounted downlight, can readily impair cooling air circulation. Unless the luminaire manufacturer specifies otherwise (compliance method 4.5.2.3.1(ii)) or the barrier is classified to permit insulation coverage (compliance method 4.5.2.3.1(iii)), the space above the luminaire, shown as dimension A of Figure 4.7, shall remain clear and a warning sign as shown in Figure 4.8 shall be installed. (e) Where clearances are to be applied (compliance method 4.5.2.3.1(iii)) and bulk thermal insulation is not fixed in position, one of the following means shall be provided and secured in position to maintain the clearances: (i) A barrier complying with AS/NZS 5110. (ii) A guard complying with AS 3999. (iii) A barrier or guard constructed of fire-resistant materials. (f) Combustible materials should be prevented from being in close proximity or contacting hot surfaces of the luminaires. This includes structural timber which may be affected by pyrolysis which over a long exposure can result in increased susceptibility to ignition. Where extraneous material, such as leaves, vermin debris or combustible materials stored in a roof space, are present in proximity to the downlight, the precautions shall include the use of a suitably designed and certified luminaire (compliance method 4.5.2.3.1(ii)) or a barrier (compliance method 4.5.2.3.1(iii)) unless the auxiliary equipment instructions permit otherwise, any auxiliary equipment operating at a high temperature shall be installed ab	



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Clause 4.7.1	Stationary cooking appliance - A circuit for a fixed or stationary cooking appliance having an open cooking surface incorporating electric heating, e.g. cooktops, deep fat fryer, barbecue griddle, or similar, shall be provided with a switch, operating in all active conductors, mounted near the appliance in a visible and readily accessible position. Switches shall be marked to identify the appliance controlled. Where the open cooking surface is a combined gas/electric appliance incorporating both gas and electric cooking, the switching device shall operate in all live (active and neutral) conductors.	Revised Clause that now includes induction and ceramic cooktops as an open cooking surface incorporating electric heating. Existing requirements from the gas standard has been included.
Clause 4.18.1	Gas appliances A gas appliance connected to the electricity supply shall be provided with a means of electrical isolation that is adjacent to the appliance location and is accessible with the appliance in the installed position. The means of isolation shall be— (a) a plug to a switched socket-outlet; or (b) a plug to a socket-outlet that may be located in an inaccessible position but has a separate switch operating in all live (active and neutral) conductors located in an accessible position; or (c) a switch operating in all live (active and neutral) conductors. NOTE: If the appliance has an open cooking surface incorporating both gas and electric cooking, it shall also comply with Clause 4.7.	New Clause highlighting the existing requirements from the gas standard.



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Clause 4.18.2	Gas cylinders containing heavier-than-air gases—outdoors Electrical equipment that is a source of ignition, such as socket- outlets, switches, luminaires, switchboards, meter boxes and air- conditioners, shall not be installed within the hazardous areas shown in Figure 4.10 by dimensions A and B. Dimensions A and B are shown in Figure 4.10 for both exchange and in-situ fill gas cylinders. For further information, refer to AS/NZS 60079.10.1 and AS/NZS 5601 particularly for gases lighter than air. Exception: Approved combined gas and electrical meter enclosures are exempted from these requirements. NOTE: Electrical equipment selected and installed in accordance with Clause 7.7.2.4 is not considered an ignition source.	New Clause highlighting the existing requirements from the gas standard.
Clause 4.19	Air-condition and heat pump systems - Air-conditioning and heat pump systems incorporating a compressor shall be provided with a lockable isolating switch installed adjacent to the unit, which isolates all parts of the system including ancillary equipment, from the same location. For split system air-conditioning units, where the manufacturer requires the air-conditioning system to be connected to the electricity supply by means of a plug and socket at the internal unit, the isolating switch installed at the external unit shall control the socket-outlet located at the internal unit. Exception: The isolating switch may be installed at the switchboard supplying the system if the switchboard is dedicated to the equipment (e.g. an air-conditioning plant room).	New clause – in Victoria this has been a requirement since 2009 the significant change is that the isolating switch can only be installed adjacent to the unit containing the compressor. It now also requires an isolating switch to be installed adjacent to the unit containing the compressor where the supply is connected by means of plug and socket at the internal unit.



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Clause 5.4.8	Variable frequency devices Devices that produce high frequency currents in the protective earth may produce touch voltages that are dangerous to persons and livestock. NOTES: 1 The touch voltages may be as much as a 100 V but the manufacturer's advice should be sought when installing this type of device. These high frequency voltages may not be detectable using normal 50 Hz test instruments. An oscilloscope and ballast resistor should be used. 2 Attention is drawn to the safety requirements for electronic equipment in AS 62103.	New Clause highlighting the dangers involved in high frequency devices.
Clause 5.6.2.6.3	Conductive pool structures Where the pool structure is conductive, all extraneous conductive parts, including the reinforcing metal of the pool shell or deck, shall be connected to an equipotential bonding connection point complying with Clause 5.6.2.6.4. Where any of the items described in Clause 5.6.2.6.1 are required to be equipotentially bonded, the bonding shall be extended to the conductive pool structure by means of the equipotential bonding connection point.	New clause requiring pool structures with reinforcing metal of the pool shell or deck to be connected to equipotential bonding connection point.



Clause number	Change	Impact
Clause 5.6.2.6.4	 Equipotential bonding conductor connection point A connection point shall be provided at the swimming or spa pool location for the bonding connection to be made to the conductive parts of the pool structure. Where equipotential bonding is required, the connection point may also be used as a common point for the connection of other conductive fixtures and fittings to the bonding arrangement. The connection point shall be— (a) located in a position that will be accessible with space for connections to be made after pool construction (for example, a pit located adjacent to the pool equipment); (b) identified by marking of the location on the switchboard at which the circuits supplying the pool or spa originate, or other permanent location; (c) of suitable design and construction in accordance with Clause 3.7; (d) protected against mechanical damage in accordance with Clause 5.5.5.2; and (e) protected against corrosion in accordance with Clause 5.5.5.3. 	New clause requiring the establishment of a connection point in a pit or similar arrangement near the pool equipment for the connection or future connection of equipotential bonding. The location shall be marked in the switchboard
Clause 7.2.1.1	The particular requirements of this Clause 7.2 apply to the electrical installation of building services that are essential for the safe operation of the safety services consisting of fire detection, warning and extinguishing systems, smoke control systems, evacuation systems and the safety of persons using lifts. The requirements are intended to ensure that electricity supply is not inadvertently disconnected from electrical equipment that is required to operate during emergency conditions.	"where there was no alternative supply" has been deleted from the end of the sentence.



Clause number	Change	Impact
Clause 7.2.1.4	Lifts For the purposes of this Clause 7.2, lifts shall be deemed to include electrically controlled lifts that may convey persons, but do not include any conveying device from which passengers may safely alight should the apparatus stop at any point in its travel (for example escalators). Exceptions: 1 The electricity supply for a passenger lift that allows passengers to alight safely in the event of a loss of electricity supply need not be arranged as a safety service (for example, hydraulic or other lifts incorporating means for evacuation to a floor level). 2 A lift in a single private residence that is installed in accordance with AS/NZS 1735.18 need not comply with the requirements of this Clause 7.2. NOTE: Although compliance with the AS 1735 series is not a requirement of this Standard; regulatory authorities may require compliance and may have additional requirements.	Revised clause – In Victoria the definition of "lift" in AS/NZS 3000:2007 has the same meaning as passenger lift within the Electricity Safety (Installations) Regulations 2009. This means that the lift installation including the supply, control and protection is a prescribed electrical installation and is required to be inspected by a licensed electrical inspector before connection or when altered. For reference - Regulation 238(i) of the Victorian Electricity Safety (Installations) Regulations 2009. "Prescribed electrical installation work - circuit protective devices, switchgear, controlgear, wiring systems and accessories (other than fire detection and alarm systems) installed to provide control and protection of passenger lifts, fire pumps (excluding pumps for fire hose reels where those hose reels are not the sole means of fire protection) and air handling systems intended to exhaust and control the spread of fire and smoke;" And Regulation 239 of the "Electricity Safety (Installations) Regulations 2009" requires "Prescribed electrical installation work" to be inspected by a Licensed Electrical Inspector within 8 working days after the completion of that work.
Clause 7.3.2	Electricity generation systems The selection, installation and control of electrical equipment that is intended to form an electricity system shall comply with the following Standards: (a) Engine-driven generating sets AS/NZS 3010 (b) Stand-alone power systems AS 4509 (series) (c) Battery systems AS 3011 (d) Photovoltaic array systems AS/NZS 5033 (e) Grid connected inverter systems AS 4777 (series)	Grid connected inverter systems AS 4777 (series) has been added as a requirement.



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Clause number	Change	Impact
Clause 7.3.8.2.3	Grid-connected inverter systems The generation system shall not impose a voltage on the installation at the network point of supply outside the limits specified by Clause 1.6.2(c).	Additional requirement and Figure 7.5 has been modified including additional notes.
Clause 7.7.2.1	Hazardous areas Responsibility for classification The responsibility for classification of a hazardous area rests with the persons or parties in control of the installation. The requirements are contained in AS/NZS 60079.10.1 for gas or vapour and AS/NZS 60079.10.2 for combustible dust.	Updated to reflect new standards.
Clause 8.3.7.2	Verification – Testing (c) all Edison screw lampholders that are not incorporated in an appliance or provided with a shroud or skirt that prevents contact with the outer contact shall have the neutral connected to the outer contact; and (d) all fixed socket-outlets for multiphase supplies shall be connected so the phase sequence is the same throughout the installation.	Additional requirements.
Clause 8.4	Initial energization or certification date The date of initial or certification of an installation should be available on-site, either by marking or in an accessible record.	The date certified has been added



Clause number	Change	Impact
Appendix A	Normative References 4509 Stand-alone power systems 4509.1 Part 1: Safety requirements 4509.2 Part 2: System design 5110 Recessed luminaire barriers 5601 Gas installations 7000 Overhead line design—Detailed procedures 60079(Ser) Explosive atmospheres 60079.10.1 Part 10.1: Classification of areas—Explosive gas atmospheres 60079.10.2 Part 10.2: Classification of areas—Combustible dust atmospheres 60079.14 Part 14: Electrical installations design, selection and erection 60079.17 Part 17: Electrical installations inspection and maintenance 60335 Household and similar electrical appliances	There is a number of new standards, some replace obsolete standards. There are also existing standards that have changed status from informative (advisory only) to normative (mandatory).
	60335.2.41 Part 2.41 Safety—Particular requirements for pumps 60335.2.76 Part 2.76: Safety—Particular requirements for electric fence energizers (IEC 60335-2-76, Ed. 2.0 (2002) MOD) 60947 Low-voltage switchgear and controlgear 60947-3 Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units	



Clause number	Change	Impact
Appendix E	This Standard (AS/NZS 3000) contains provisions relating to the protection of an electrical installation from fire and electric shock, which are dependent on, or incorporated in, building requirements. Thus, reference to National Building Codes is recommended for clarification of the application and any exceptions. National Building Codes also contain a number of other provisions which relate to the design, selection and installation of equipment that forms part of an electrical installation, and which are intended to satisfy objectives for health, amenity, sustainability and energy efficiency.	The whole appendix has been updated and replaced. With updates and changes in E2.2.2 Fire Safety and E2.2.4 Sustainability and energy efficiency providing requirements.

