

TCN 008 – 2014

Exemption from Requirement to Install RCD for Road Lighting Installations

Purpose

The purpose of this Technical Note is to provide clarification for VicRoads staff and VicRoads contractors regarding the use of Residual Current Devices (RCD's) within VicRoads owned and operated road lighting installations.

Background

Clause 2.6 of AS/NZS 3000:2007 (the Australian Wiring Rules) details the requirements for 'ADDITIONAL PROTECTION BY RESIDUAL CURRENT DEVICES' for certain types of electrical installations. Residual Current Device's (RCD's) are typically used to provide additional protection to electrical circuits to minimise the risk of electric shock.

While the use of RCD's in certain types of electrical installations is mandatory, Clause 2.6.3.2 has always provided for specific circumstances where an exemption to the rule may be applied.

In December 2012, Standards Australia released Amendment Number 2 to AS/NZS 3000. Included in this amendment was a completely rewritten Clause 2.6.3. In particular, the circumstances where an exemption to use RCD's may be applied was expanded. Clause 2.6.3.2.1 now details permitted exemptions for Australian installations.

Exemption for Street Lighting Installations

An excerpt from AS/NZS 3000, Clause 2.6.3.2.1, is shown below.

2.6.3.2 Other electrical installations

2.6.3.2.1 Australia

Additional protection by RCDs with maximum residual current of 30mA shall be provided for-

Exemptions: This requirement need not apply to the following:

- 5 *Where disconnection of a circuit by an RCD could cause a danger greater than earth leakage current.*

Energy Safe Victoria, in correspondence dated 2 September 2014, advised VicRoads that, based on AS/NZS 3000-2007, Clause 2.6.3.2, Amendment 2 (December 2012), "Therefore if after consideration it is decided by VicRoads that the danger of supply loss is greater than the leakage current, the RCD can be omitted.". See Attachment 1.

VicRoads considers road lighting to be “*an effective road safety measure at appropriate locations*”. For this reason, if a road lighting scheme or part of a road lighting scheme fails, the risk of an incident is increased. Due to the nature of the electrical circuits in a lighting scheme, nuisance tripping by RCDs can be a problem.

It is therefore considered that, in accordance with AS/NZS 3000, Clause 2.6.3.2.1, Exemption 5 (shown above) and as advised by Energy Safe Victoria, VicRoads deems that the danger of supply loss resulting in a failure of the road lighting is a greater risk to motorists than the potential leakage current.

It must be noted however, that this exemption ONLY applies to VicRoads owned road lighting installations.

This exemption does not apply to socket outlets installed in the distribution cabinet. Any socket outlets provided within the road lighting distribution cabinet MUST be protected by an RCD or be a type that includes an integral RCD.

For further information contact the ITS & Electrical Standards Team on 9854 2111.

ATTACHMENT 1

Excerpt from Energy Safe email dated 2/9/2014

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For tips on electricity and gas
safety, visit ESV's website at
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From: Neil Fraser
Sent: Tuesday, 2 September 2014 10:17 AM
To: Michael Weekes
Cc: Brent Matthews
Subject: RE: RCD Exemption

Michael,

Please pass this response on.

Since initially considering this issue some years ago Amendment 2 to AS/NZS3000-2007 *Wiring rules* has been published, this removes the need for a specific exemption application to ESV for permission to depart from strict compliance to AS/NZS3000.

Amendment 2 was published in December 2012 introduced an exception to the requirements of Clause 2.6.3 which states:

2.6.3.2 Other electrical installations

2.6.3.2.1 Australia

Additional protection by RCD s with a maximum rated residual current of 30 mA shall be provided for—

- (a) final subcircuits supplying socket-outlets where the rated current of any individual socket-outlet does not exceed 20 A; and
- (b) final subcircuits supplying lighting where any portion of the circuit has a rated current not exceeding 20 A; and
- (c) final subcircuits supplying directly connected hand-held electrical equipment, e.g. hair dryers or tools.

NOTE: The final subcircuits referred to in Item (b) include, without limitation, those supplying the following equipment:

- (a) External lighting installations, such as bollard-type luminaires.
- (b) Illuminated signs.
- (c) In-ground lighting.
- (d) Ground-mounted lighting for the illumination of public features.

Exceptions: This requirement need not apply to the following:

- 1 Where other methods of protection are applied, e.g. a separated supply in accordance with Clause 7.4.

- 2 *Where an RCD is incorporated into a socket-outlet or located 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.*
- 3 *Where specific provisions for electrical installations exist through the application of other Standards, e.g. AS/NZS 3001, AS/NZS 3002, AS/NZS 3003, AS/NZS 3004 and AS/NZS 3012.*
- 4 *To special situations referred to in Sections 6 and 7 of this Standard that require RCD protection, which shall be provided in accordance with the requirements of the relevant Clause.*
- 5 *Where the disconnection of a circuit by an RCD could cause a danger greater than earth leakage current.*
- 6 *Where all socket-outlets on a final subcircuit are installed for the connection of specific items of equipment, provided that—*
 - (a) *the connected equipment is required by the owner or operator to perform a function that is essential to the performance of the installation and that function would be adversely affected by a loss of supply caused by the RCD operation; and*
 - (b) *the connected equipment is designed, constructed and used in such a manner that is not likely to present a significant risk of electric shock; and*
 - (c) *the socket-outlet is located in a position that is not likely to be accessed for general purposes; and*
 - (d) *the socket-outlet is clearly marked to indicate the restricted purpose of the socket-outlet and that RCD protection is not provided.*
- 7 *To a socket-outlet or a connecting device specifically for the connection of a fixed or stationary cooking appliance, such as a range, oven or hotplate unit.*

In these applications, the socket-outlet shall be clearly marked to indicate the restricted purpose of the socket-outlet and that RCD protection is not provided. The socket-outlet shall be located in a position that is not likely to be accessed for general purposes.

Additional protection by RCDs with a maximum rated residual current of 30 mA also needs to be provided in accordance with the requirements and regulations of legislation, such as Occupational Health and Safety Legislation.

Therefore if after consideration it is decided by Vicroads that the danger of supply loss is greater than leakage current, the RCD can be omitted.

Regards

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