

Title	Demonstrate knowledge of earthing		
Level	3	Credits	2

Purpose	<p>This unit standard is for people working in the electrical trade, and covers the principles and regulations pertaining to the earthing of electrical installations.</p> <p>People credited with this unit standard are able to:</p> <ul style="list-style-type: none"> – demonstrate knowledge of regulatory requirements regarding earthing; – demonstrate knowledge of electrical bonding; and – demonstrate knowledge of earthing installations.
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Classification	Electrical Engineering > Electrical Installation and Maintenance
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Available grade	Achieved
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Explanatory notes

- 1 This unit standard has been developed for learning and assessment off-job.
- 2 This unit standard and unit standards 2016, 29473, and 29477 together meet the assessment requirements of ERAC CEPC 16.
This unit standard and unit standard 2016 and 29477 together meet the assessment requirements of ERAC CEPC 17.
This unit standard and unit standard 16415 and 29480 together meet the assessment requirements of ERAC CEPC 20.
- 3 **Definitions**
a.c. – Alternating current.
d.c. – direct current.
CEPC – Critical Essential Performance Capability.
ERAC – Electrical Regulatory Authorities Council.
EWRB – Electrical Workers Registration Board.
Industry practice – those practices that competent practitioners within the industry recognise as current industry best practice.
Safe and sound practice – as it relates to the installation of electrical equipment is defined in AS/NZS 3000:2007, *Electrical Installations (known as the Australian/New Zealand Wiring Rules)*.
- 6 **Range**
 - a Candidates may refer to current legislation and Standards during assessment.
 - b Demonstration of safe working practices and installation in accordance with *safe and sound practice* are essential components of assessment of this unit standard.
 - c All activities and evidence presented for all outcomes and evidence requirements

in this unit standard must be in accordance with:

- i legislation;
- ii policies and procedures;
- iii ethical codes;
- iv Standards – may include but are not limited to those listed in Schedule 2 of the Electricity (Safety) Regulations 2010;
- v applicable site, enterprise, and industry practice; and,
- vi where appropriate, manufacturers' instructions, specifications, and data sheets.

Outcomes and evidence requirements

Outcome 1

Demonstrate knowledge of regulatory requirements regarding earthing.

Evidence requirements

1.1 Define earthing terms.

Range earthed, earthed situation, earthing system, earth electrode, earth impedance, protective earthing conductor, main earthing conductor, main earthing bar.

1.2 Explain the reasons for the requirement of low resistance for an earthing system.

1.3 Describe metalwork that must be earthed.

Range metalwork forming parts of works, electrical installations, appliances, accessories.

Outcome 2

Demonstrate knowledge of electrical bonding.

Evidence requirements

2.1 Define bonding terms.

Range electrical bonding, earth bonding, equipotential bonding.

2.2 Explain the need for bonding metalwork in terms of the elimination of the risk of electric shock, and for prevention of sparking.

2.3 Describe situations requiring bonding.

Range bathrooms, kitchens, laundries, boiler rooms, dry-cleaning premises, service stations, engineering machine shops.

2.4 Describe bonding methods.

Outcome 3

Demonstrate knowledge of earthing installations.

Range domestic or small commercial installation, showing earth electrode, earth and neutral bars, conductive water and gas pipes, electrical outlets, appliances.

Evidence requirements

- 3.1 Describe essential components of an earthing system.
- 3.2 Draw a diagram of an earthing system showing all components, interconnections, and cable sizes.
- 3.3 Calculate the earth fault-loop impedance.

Planned review date	31 December 2019
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	29 April 1994	31 December 2013
Review	2	23 April 1996	31 December 2013
Review	3	10 February 1999	31 December 2013
Revision	4	3 April 2001	31 December 2013
Review	5	26 May 2005	31 December 2021
Rollover and Revision	6	15 March 2012	31 December 2021
Revision	7	15 January 2014	31 December 2021
Review	8	21 July 2016	N/A

Consent and Moderation Requirements (CMR) reference	0003
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Please note

Providers must be granted consent to assess against standards (accredited) by NZQA, before they can report credits from assessment against unit standards or deliver courses of study leading to that assessment.

Industry Training Organisations must be granted consent to assess against standards by NZQA before they can register credits from assessment against unit standards.

Providers and Industry Training Organisations, which have been granted consent and which are assessing against unit standards must engage with the moderation system that applies to those standards.

Requirements for consent to assess and an outline of the moderation system that applies to this standard are outlined in the Consent and Moderation Requirements (CMR). The CMR also includes useful information about special requirements for organisations wishing to develop education and training programmes, such as minimum qualifications for tutors and assessors, and special resource requirements.

Comments on this unit standard

Please contact The Skills Organisation reviewcomments@skills.org.nz if you wish to suggest changes to the content of this unit standard.