

Title	Maintain substation earthing and bonding		
Level	3	Credits	3

Purpose	People credited with this unit standard are able to: interpret design drawings and installation requirements of substation earthing and bonding standards; and inspect and maintain earth mats and bonding to equipment used in substations.
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Classification	Electricity Supply > Electricity Supply - Power System Maintenance
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Available grade	Achieved
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Guidance Information

- 1 Evidence presented for assessment against this unit standard must be consistent with safe working practices and be in accordance with applicable legislative and industry requirements.
- 2 Legislation, regulations and/or industry standards relevant to this unit standard include but are not limited to the current version of the Health and Safety at Work Act 2015; Electricity Act 1992; Electricity (Safety) Regulations 2010; and any subsequent amendments and replacements; Electricity supply industry codes of practice and documented enterprise procedures, including *Safety Manual – Electricity Industry* (SM-EI) (2015) available at www.eea.co.nz and AS/NZS 3000: *Electrical Installations* (known as the *Australian/New Zealand Wiring Rules*).
- 3 Definitions
Asset owner refers to an electricity industry participant who owns or operates assets used for generating or conveying electricity.
Industry requirements include all asset owner requirements; manufacturers' specifications; and enterprise requirements which may include the documented workplace policies, procedures, specifications, business, and quality management requirements relevant to the workplace in which assessment is carried out.
- 4 The outcomes of this unit standard could be met by carrying out an installation of a substation earth mat and bonding.

Outcomes and performance criteria

Outcome 1

Interpret design drawings and installation requirements of substation earthing and bonding standards.

Performance criteria

1.1 The earthing and bonding design drawings are interpreted.

1.2 The earthing and bonding installation standards are interpreted.

Range includes – knowledge and verification of understanding of the requirements of New Zealand Electrical Code of Practice 35, AS/NZS 3000: Section 5 and amendments.

1.3 The drawings and standards are translated into practical installation requirements.

Range includes but is not limited to – quantities and size of bonding conductors, distances, fixtures and excavation requirements, installation work plan.

1.4 Specialist earthing requirements for substations are described.

Range includes but is not limited to – operators mat, operator equipment handles.

Outcome 2

Inspect and maintain earth mats and bonding to equipment used in substations.

Performance criteria

2.1 The required materials, plant, tools and resources are assembled to meet client installation or maintenance requirements.

Range includes but is not limited to – the selection of suitable moulds to suit the conductors if exothermic welding (cadweld) is to be used for jointing and terminating conductors, welding tools, and materials.

2.2 The earth mat maintenance is completed in accordance with the work plan.

2.3 All bus system equipment is bonded to the earth mat.

Range may include but is not limited to – checks of all earthing bonds to ensure acceptability of connection to the earth mat; meet the requirements of the earthing and bonding standards under the regulations.

2.4 Operational safety earthing tail clamps and bus bonding points are located at positions to allow compliance with industry electrical safety rules.

Range may include but is not limited to – providing suitably located bus bonding points as specified for operational requirements.

2.5 The earth mat resistance is checked to ensure it meets specification requirements.

Range includes but is not limited to – compliance with New Zealand Electrical Code of Practice 35 in regard to step and touch voltages resistance.

Planned review date	31 December 2025
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	17 March 2016	31 December 2022
Review	2	25 March 2021	N/A

Consent and Moderation Requirements (CMR) reference	0120
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Comments on this unit standard

Please contact Connexis - Infrastructure Industry Training Organisation qualifications@connexis.org.nz if you wish to suggest changes to the content of this unit standard.