

Title	Apply earths to and remove earths from electrical conductors, plant and equipment		
Level	3	Credits	2

Purpose	People credited with this unit standard are able to: demonstrate knowledge of earthing requirements for electrical conductors, plant and equipment; prepare to apply earths to electrical conductors, plant and equipment of all voltages; prove earthing point de-energised; apply earths to and remove earths from electrical conductors, plant and equipment; and report on applying and removing earths from electrical conductors, plant and equipment.
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Classification	Electricity Supply > Electricity Supply - Core Skills
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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)* Wellington: Electricity Engineers' Association available at www.eea.co.nz.
- 3 Definitions
Asset owner refers to a 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 Earths include three phase and single phase earths and equipment specific earths.
- 5 This unit standard includes the application and removal of earths where access to the earthing points of conductors, plant and equipment is available from ground or floor level or within easy reach of a ladder with in-built fall protection. This unit standard

includes but is not limited to – switchyards and substations and their enclosed electricity transmission and distribution facilities, of all voltages.

- 6 This unit standard excludes the application of earths to and removal of earths from overhead electric line conductors and the terminals of pole mounted transformers and cables that are at overhead conductor height, where access is normally gained from a transmission tower, helicopter, elevating platform vehicle or ladder without in-built fall protection.
- 7 It is recommended people achieve Unit 10507, *Use personal protective equipment in an electricity supply environment*, or demonstrate equivalent knowledge and skills, before being assessed against this unit standard.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of earthing requirements for electrical conductors, plant and equipment.

Performance criteria

- 1.1 Requirements for earthing for safe working are described.
- 1.2 Responsibilities of employees when applying earths are described.
- 1.3 Statutory and industry inspections and care of insulating sticks and voltage detection devices are demonstrated.

Range manufacturers' specifications and recommendations.

Outcome 2

Prepare to apply earths to electrical conductors, plant and equipment of all voltages.

Performance criteria

- 2.1 The conductors or item of plant or equipment are physically identified.
Range single-line diagram, labels, line, plant and equipment layout.
- 2.2 Conductors or item of plant or equipment to be earthed are inspected to confirm or assure that they have been isolated.

Range SM-EI.

- 2.3 Earth attachment positions on conductors, plant and equipment and the local earth are identified in accordance with conductor, plant and equipment characteristics.
- Range SM-EI, industry standards, earthing terminals, tail clamp attachment points, clamp rating and compatibility.
- 2.4 Earths and procedures are determined.
- Range portable earths, voltage rating, fault level, conductor rating.
- 2.5 Earthing equipment is inspected for compliance.
- Range compliance – satisfactory for use, surface condition and cleanliness;
equipment – clamps, leads, fittings, sticks and poles, terminations.

Outcome 3

Prove earthing point de-energised.

Range voltage detection device, proving unit, insulation stick.

Performance criteria

- 3.1 Circumstances are identified when use of voltage detection device is required.
- Range overhead circuit conductors, first earth, out of sight of other applied earths, integral earthing not possible, capacitor.
- 3.2 Voltage detection device and insulating stick for system voltage is selected.
- Range voltage rating.
- 3.3 Voltage detection device is tested before and after use to ensure serviceable condition.
- Range audible test, visual test, industry standards.
- 3.4 Earthing points are proven de-energised.

Outcome 4

Apply earths to and remove the earths from electrical conductors, plant and equipment.

Performance criteria

- 4.1 Personal protective equipment is worn and used in accordance with SM-EI.
- Range includes but is not limited to – hard hats, insulating gloves and overgloves (where required), overalls, footwear.

4.2 Approvals are obtained.

Range access permit, operating order.

4.3 Earths are applied.

Range tail clamp connection to earth first, leads kept away from person, positive connection made and held in place before clamping, bonding across any conductor to be broken or equipment to be opened, bonding to adjacent metal, equipotential environment for work.

4.4 Earths are removed.

Outcome 5

Report on applying and removing earths from electrical conductors, plant and equipment.

Range may include – operating order, recipient safety measure form.

Performance criteria

5.1 Reported information is complete, concise, and legible.

5.2 Information is recorded in the required format and filed in the correct location.

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	19 August 1997	31 December 2022
Review	2	27 April 2001	31 December 2022
Revision	3	10 September 2004	31 December 2022
Review	4	19 May 2006	31 December 2022
Review	5	27 February 2020	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.