

<b>Title</b>	<b>Demonstrate knowledge of earthing and bonding mobile equipment around power lines for vegetation control and tree work</b>		
<b>Level</b>	<b>3</b>	<b>Credits</b>	<b>4</b>

<b>Purpose</b>	People credited with this unit standard are able to demonstrate knowledge of: earthing and bonding for vegetation control and tree work in an electricity supply worksite; earthing regulatory requirements for mobile equipment around power lines; and electrical bonding.
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<b>Classification</b>	Electricity Supply > Electricity Supply - Distribution Networks
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<b>Available grade</b>	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](http://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.  
*NZEC* refers to New Zealand Electrical Code of Practice.

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### Outcomes and performance criteria

#### Outcome 1

Demonstrate knowledge of earthing and bonding for vegetation control and tree work in an electricity supply worksite.

**Performance criteria**

- 1.1 Sources that cause development of hazardous voltages in the workplace are explained.
- Range may include but is not limited to – lightning strikes, fault currents.
- 1.2 Earth potential rises in a worksite during a fault situation are explained.
- 1.3 The equipotential zone on a worksite is explained.
- 1.4 Methods of reducing hazardous voltage exposure during faults to vegetation workers are explained.
- Range grounding, earthing, bonding.
- 1.5 Factors that reduce effective grounding, earthing, and bonding at a worksite are explained.
- Range may include but is not limited to – site layout, soil resistivity, climatic conditions, size and length of earthing and bonding conductors, placement of earthing electrodes, condition of terminations and electrodes.
- 1.6 Hazards of poorly implemented earthing and bonding in a vegetation control worksite are explained.
- Range generation of step, touch and hand to hand voltages.

**Outcome 2**

Demonstrate knowledge of earthing regulatory requirements for mobile equipment around power lines.

**Performance criteria**

- 2.1 Earthing terms are described.
- Range earthed, earthing system, earth electrode, earth impedance, earthing conductor.
- 2.2 The reason for the requirement of low resistance for an earthing system is explained.
- 2.3 Metalwork on mobile equipment that must be earthed is described.
- Range may include but is not limited to – exposed metalwork forming parts of mobile equipment, parts of mobile equipment within minimum approach distances.
- 2.4 Metalwork that must not or need not be earthed or bonded is explained.

2.5 Specific requirements for earthing and bonding mobile equipment are explained.

Range may include but is not limited to – asset owner’s requirements, SM-EI guidelines.

### Outcome 3

Demonstrate knowledge of electrical bonding.

#### Performance criteria

3.1 Bonding terms are described.

Range electrical bonding, earth bonding, equipotential bonding.

3.2 The need for bonding metalwork in terms of the elimination of the risk of electric shock and for prevention of arcing is explained.

3.3 Situations requiring bonding are described.

Range may include but is not limited to – mobile equipment, uninsulated metalwork; evidence of two items is required.

3.4 Bonding methods within the equipotential zone are described.

<b>Planned review date</b>	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	20 November 2014	31 December 2022
Review	2	27 August 2020	N/A

<b>Consent and Moderation Requirements (CMR) reference</b>	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](mailto:qualifications@connexis.org.nz) if you wish to suggest changes to the content of this unit standard.