Title	**Demonstrate knowledge of the national supply grid, MEN system, and earthing**		
Level	**3**	**Credits**	**6**

Purpose	People credited with this unit standard are able to demonstrate knowledge of: – the national supply grid and safety with high voltage equipment; – the MEN system; and – earthing and equipotential bonding.

Classification	Electrical Engineering > Core Electrical

Available grade	Achieved

Guidance Information

1 References
AS/NZS 3000 (version as cited in the Electricity (Safety) Regulations), *Electrical Installations (known as the Australian/New Zealand Wiring Rules)*;
New Zealand Electrical Codes of Practice (NZECP) as cited by the Electricity (Safety) Regulations, available at https://www.worksafe.govt.nz;
or any current subsequent amendments and replacements.

2 Definition
MEN – multiple earth neutral.

3 This unit standard can be used together with other relevant unit standards, additional learning and workplace training to meet the requirements of the Electrical Workers Registration Board (EWRB) core competencies, available at https://www.ewrb.govt.nz.

4 Where needed, sketches and drawings may be used to aid explanations.

5 This unit standard applies to installations and equipment rated above extra-low voltage unless specifically stated.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of the national supply grid and safety with high voltage equipment.

Performance criteria

1.1 Describe multiphase power.

Range reasons for use, advantages, star and delta connections.

1.2 Describe the NZ national electrical supply system.

Range generation, transmission, distribution system.

1.3 Outline dangers of high voltage.

Range two dangers.

1.4 Outline the foundational safety principles for working in the vicinity of high voltage.

Range may include but is not limited to – safe working procedures near high voltage, step, touch and induced voltages, sources of induced voltages and stored energy, creepage and clearance requirements, who is authorised to undertake High Voltage switching and isolation earthing procedures, the use of safe working procedures, approach distances.

Outcome 2

Demonstrate knowledge of the MEN system.

Performance criteria

2.1 Describe the configuration and reasons for the MEN system of supply used in New Zealand.

Outcome 3

Demonstrate knowledge of earthing and equipotential bonding.

Performance criteria

3.1 Describe common earthing and equipotential bonding components.

Range three components;
must include – purpose and arrangement of each component.

3.2 Describe the relationship between earth continuity and the disconnection times of protective devices and the importance of fast disconnection times.

Range the importance of low earth circuit resistance, dangers of high earth circuit resistance.

3.3 Identify requirements on installation and testing requirements for earthing and equipotential bonding from AS/NZS 3000.

Range three installations, two testing requirements.

Planned review date	31 December 2026

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	24 March 2022	N/A

Consent and Moderation Requirements (CMR) reference	0003

This CMR can be accessed at http://www.nzqa.govt.nz/framework/search/index.do.

Comments on this unit standard

Please contact Waihanga Ara Rau Construction and Infrastructure Workforce Development Council at qualifications@waihanga.nz if you wish to suggest changes to the content of this unit standard.