

<b>Title</b>	<b>Demonstrate knowledge of theory and legislation for registration of electrical service technicians</b>		
<b>Level</b>	<b>3</b>	<b>Credits</b>	<b>3</b>

<b>Purpose</b>	<p>This unit standard covers the theory and legislation assessment required for registration as an electrical service technician.</p> <p>People credited with this unit standard are able to demonstrate knowledge of:</p> <ul style="list-style-type: none"> <li>– basic electrical theory, electrical circuits, power and energy, and electrical conductors and insulators;</li> <li>– flexible cords, flexible cables, and cables including termination methods;</li> <li>– the New Zealand electricity systems of supply and multiple earth neutral system;</li> <li>– electrical protection, personal electrical safety, personal protection devices, and isolating transformers;</li> <li>– the safety tagging system;</li> <li>– legislative requirements for workplace safety, and safe working practices for an Electrical Service Technician;</li> <li>– electrical testing and measuring instruments, electrical appliance testing, and electrical equipment and appliance commissioning and decommissioning;</li> <li>– electric motors and starters; and</li> <li>– damp situations and wet areas in terms of electrical safety requirements.</li> </ul>
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<b>Classification</b>	Electrical Engineering > Electrical Standards and Statutes
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<b>Available grade</b>	Achieved
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**Explanatory notes**

- 1 This unit standard has been developed for learning and assessment off-job.
- 2 Under the Electricity Amendment Act 2006, the Electrical Workers Registration Board (EWRB) has a responsibility to set registration criterion for electrical workers and to ensure that all persons applying for electrical registration are competent. As part of the competency requirements, 66 essential capabilities incorporating 31 critical items have been agreed between the EWRB and Australian licensing authorities.

- 3 To be eligible for registration as electrical service technicians, candidates must complete a competency-based programme of learning approved by the EWRB and must pass the EWRB Electrical Service Technician written examination covering electrical theory and related legislation, which is based on the requirements of the EWRB *Teaching Guidelines for Electrical Service Technician* available at [EWRB - Publications](#) and the practical skills assessment programme. The examination is the only valid assessment tool for this unit standard, and credit for this unit standard may only be granted on evidence of passing the examination. The EWRB *Teaching Guidelines for Electrical Service Technician* is the main references for this examination.
- The examination prescription and practical skill assessments prescribed in the EWRB *Teaching Guidelines for Electrical Service Technician* are structured around the essential capabilities and critical items that are considered relevant to maintenance and servicing of appliances, fittings, and equipment.
- 4 This unit standard satisfies the critical competencies component of the essential capabilities for registered electrical service technicians as specified by the EWRB.
- 5 Examination results will be notified by the EWRB.
- 6 People with the electrical service technician class of registration are permitted to:
- carry out maintenance of fittings that are connected to conductors used in works or electrical installations;
  - carry out maintenance of electrical appliances;
  - disconnect and connect fittings and appliances from and to a power supply, other than by means of a plug or pin inserted into a socket, or an appliance connector inserted into an appliance inlet; for the purpose of the maintenance of those fittings;
  - test work described (a) to (c) above;
  - certify work described in (a) to (c) above; and
  - supervise any work described in (a) to (e) above.
- 7 Definitions
- Act* – the Electricity Act 1992.
- Code or NZECP* – New Zealand Electrical Code of Practice issued under Part IV of the Act.
- Electrical appliance* – any appliance that uses, or is designed or intended to use, electricity, whether or not it also uses, or is designed or intended to use, any other form of energy.
- EWRB* – Electrical Workers Registration Board – the Board.
- Industry practice* – practice used and recommended by organisations involved in the electrotechnology industry.
- IP* – international protection ratings code.
- MEN* – multiple earth neutral.
- OSH* – occupational safety and health.
- PPE* – personal protective equipment.
- Regulation* – the Electricity (Safety) Regulations 2010.
- Safe and sound practice* – this relates to the installation of electrical equipment and is defined in AS/NZS 3000:2007.
- Section* – a section of the Electricity Act 1992.

*Servicing* – for the purposes of the EWRB registration classes means: any prescribed electrical work that involves the dismantling, repair, adjustment, reassembly, and replacement of electrical fittings, other than the installation of permanently wired conductors, of works or electrical installations intended for the generation, conversion, transformation, conveyance, or control of electrical supplies.

Other terms and interpretations are defined in the Electricity Act 1992, The Electricity Amendment Act 2006, Electricity (Safety) Regulations 2010, AS/NZS 3000 and the Companion Standards as prescribed in Schedule 2 of the Regulations.

*Supervision* – means that any trainee who is assisting with the carrying out of prescribed electrical work must be supervised under such control and direction to ensure that:

- (a) the work is carried out competently, and
- (b) while the work is being undertaken, appropriate safety measures are adopted, and
- (c) the completed work complies with the Electricity (Safety) Regulations 2010.

*Supervisor* – means a person, who holds a current practising licence issued by the EWRB that authorises the person to supervise prescribed electrical work.

*Trainee* – a person who is undergoing instruction or training in any class of prescribed electrical work for the purpose of obtaining registration as a registered person; and includes an apprentice who is working in the electricity industry who has uplifted a Trainee Limited Certificate.

Other terms and interpretations are defined in the Electricity Act 1992, The Electricity Amendment Act 2006, Electricity (Safety) Regulations 2010, AS/NZS 3000 and the Companion Standards as prescribed in Schedule 2 of the Regulations.

## 8 References

AS/NZS 3000:2007, *Electrical Installations (known as the Australian/New Zealand Wiring Rules)*;

Electrical Workers Registration Board *Supervision Procedures for Trainees*

29 October 2010 available at [EWRB - Publications](#);

EWRB *Teaching Guidelines for Electrical Service Technician* 20 May 2010 available at [EWRB - Publications](#);

Electricity Act 1992;

Electricity (Safety) Regulations 2010;

Electricity (Safety) Regulations 2010 Schedule 2 Standards;

and all subsequent amendments and replacements.

## 9 Range

a All measurements are to be expressed in Système Internationale (SI) units and multipliers.

b Material required for EWRB examinations is available at [EWRB - Training and Examinations](#).

c All evidence presented for all of the outcomes and evidence requirements in this unit standard must be in accordance with legislation, codes of practice, and Standards listed in explanatory note 8; with industry practice; and with the EWRB *Teaching Guidelines for Electrical Service Technician*.

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## Outcomes and evidence requirements

### Outcome 1

Demonstrate knowledge of basic electrical theory, electrical circuits, power and energy, and electrical conductors and insulators.

#### Evidence requirements

- 1.1 Answers and explanations are presented to questions relating to basic electrical theory, electrical circuits, power and energy, and electrical conductors and insulators.
- 1.2 Electrical calculations are performed.

### Outcome 2

Demonstrate knowledge of flexible cords, flexible cables, and cables including termination methods.

#### Evidence requirements

- 2.1 Answers and explanations are presented to questions relating to flexible cords and cables.  
  
Range differences between flexible cords, flexible cables, and cables.
- 2.2 Flexible cords, flexible cables, and cables termination methods are described.

### Outcome 3

Demonstrate knowledge of the New Zealand electricity systems of supply and multiple earth neutral system.

#### Evidence requirements

- 3.1 Answers, explanations, and references are presented to questions relating to New Zealand electricity systems of supply and multiple earth neutral system.

### Outcome 4

Demonstrate knowledge of electrical protection, personal electrical safety, personal protection devices, and isolating transformers.

#### Evidence requirements

- 4.1 Answers, explanations, and references are presented to questions relating to electrical protection, personal electrical safety, personal protection devices, and isolating transformers.

**Outcome 5**

Demonstrate knowledge of the safety tagging system.

**Evidence requirements**

- 5.1 Answers, explanations, and references are presented to questions relating to electrical safety tagging system.

**Outcome 6**

Demonstrate knowledge of legislative requirements for workplace safety, and safe working practices for an Electrical Service Technician.

Range provisions of the Act and regulations relating to – electrical safety, registration and licensing of an Electrical Service Technician, testing of prescribed electrical work, certification of prescribed electrical work, connection of prescribed electrical work.

**Evidence requirements**

- 6.1 Answers, explanations, and references are presented to questions relating to legislative requirements for workplace safety and safe working practices.

**Outcome 7**

Demonstrate knowledge of electrical testing and measuring instruments, electrical appliance testing, and electrical equipment and appliance commissioning and decommissioning.

**Evidence requirements**

- 7.1 Answers, explanations, and references are presented to questions relating to electrical testing and measuring instruments, and electrical appliance testing.
- 7.2 Answers, explanations, and references are presented to questions relating to electrical equipment and appliance commissioning and decommissioning.

**Outcome 8**

Demonstrate knowledge of electric motors and starters.

**Evidence requirements**

- 8.1 Answers and explanations are presented to questions relating to single-phase electric motors.
- 8.2 Answers and explanations are presented to questions relating to three-phase induction motors and three-phase induction motor starters.
- 8.3 Answers and explanations are presented to questions relating to electric motor fault finding and diagnosis.

**Outcome 9**

Demonstrate knowledge of damp situations and wet areas in terms of electrical safety requirements.

**Evidence requirements**

- 9.1 Answers, explanations, and references are presented to questions relating to damp situations and wet areas in terms of electrical safety requirements.

<b>Planned review date</b>	31 December 2016
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**Status information and last date for assessment for superseded versions**

Process	Version	Date	Last Date for Assessment
Registration	1	17 June 2011	N/A

<b>Consent and Moderation Requirements (CMR) reference</b>	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 (CMRs). 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 ElectroTechnology Industry Training Organisation (ETITO) [reviewcomments@etito.co.nz](mailto:reviewcomments@etito.co.nz) if you wish to suggest changes to the content of this unit standard.