

Paper prepared for: EEA relating to Unison Enforceable Undertaking Project

Prepared by: Bob Taylor, Bob Taylor Limited (Consultant)

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Title:

Review of Exiting Unit Standards Coverage of Testing of Electricity Network Assets

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This report has been prepared on the basis that the user will be appropriately trained, qualified, authorised, and competent.

Purpose

This report presents current information on training content and outcomes defined in existing Industry Unit Standards and Qualifications. The purpose is to provide Connexis, the Industry Advisory Group and trainers with recommendations on where training content and outcomes may be improved to reduce risk associated with the testing of Electricity Network Assets. It is also intended that this information will be used as an input to the next Unit Standard / Qualification review.

The following table has been developed from a schedule of Industry Unit Standards that include reference to electrical testing of Works and associated equipment. It identifies, under each Unit Standard, the specific outcomes that cover testing of Electricity Network Assets and any linkage within the training and assessment criteria to existing Industry Rules or Guides. For each Unit Standard, where applicable, recommendations are made to add further linkages to Industry Standards as part of the training and assessment content to ensure trainees/employees gain the necessary knowledge and skill to manage the risks associated with testing these Assets.

Unit Standard	References to Testing	Links to SMEI and/or EEA Guides	Connexus Recommended Actions
750 : Demonstrate knowledge of electrical test instruments and take measurements.	Outcomes: 1.1, 1.2, 1.3, 1.4, 2.1, 2.2, 2.4 and 2.5	No Link to SM_EI or EEA Guides	Add Reference to Line Mechanic and Cable Jointers Handbook: Chapter 25 Testing Safety of Persons; and Chapter 26 Testing – Network Equipment, Test instruments and Meters.
14269: Locate faults in power cables.	Outcomes: 1.3, 2.1 and 2.2	SM-EI General Reference Clause 2.	Add Reference to Line Mechanic and Cable Jointers Handbook: Section 26 Testing – Network Equipment, Test Instruments and Meters
14287: Use and maintain test instruments used in the high voltage electricity supply industry.	Outcomes 1, 2, 3 and 4	Guidance note Refers to SMEI 2015. Refers to Unit Standard 10507 Use of PPE in Electricity Supply Environment.	Update Reference to SM-EI to SM-EI 2021 Add Reference to Line Mechanic and Cable Jointers Handbook: Chapter 25 Testing Safety of Persons; and Chapter 26 Testing – Network Equipment, Test instruments and Meters.
14290: Joint, test and commission specialist communication cable systems.	Outcome: 3.2	Prerequisite 14287. Guidance note Refers to SMEI 2015.	Update Reference to SM-EI to SM-EI 2021
15852: Isolate and test low-voltage electrical subcircuits.	Not applicable. Range Limited to Electrical circuits – lighting circuit, power outlet, fixed wired appliance.		
15866: Demonstrate and apply knowledge of and the procedures for the examination of and testing of electrical installations.	Not applicable. Range Limited to Electrical circuits – lighting circuit, power outlet, fixed wired appliance.		

Unit Standard	References to Testing	Links to SMEI and/or EEA Guides	Connexus Recommended Actions
<p>16276: Respond to electricity supply external system operations communications.</p>	<p>No Reference</p>	<p>SM-EI General Reference Clause 2.</p>	<p>Update Reference to SM-EI to SM-EI 2021.</p> <p>Outcomes need to cover Rules governing Access and Test Permits, Specifically communication between Issuer and recipient of Permits.</p> <p>Add Reference to EEA Guide Switching Instructions and Communications 2019.</p>
<p>18277: Demonstrate knowledge of the requirements for holding access and test permits in the electricity supply industry.</p>	<p>Outcomes: 3 and 5</p>	<p>SM-EI General Reference Clause 2.</p>	<p>Update Reference to SM-EI to SM-EI 2021.</p>
<p>19950: Demonstrate knowledge of electrical test instruments and carry out electrical testing.</p>	<p>Outcomes: 1 and 2</p>	<p>SM-EI General Reference Clause 2.</p> <p>Note this is a Level 4 Unit also see Unit 750.</p>	<p>Update Reference to SM-EI to SM-EI 2021.</p> <p>Add Reference to Line Mechanic and Cable Jointers Handbook: Chapter 25 Testing Safety of Persons; and Chapter 26 Testing – Network Equipment, Test instruments and Meters.</p>

Unit Standard	References to Testing	Links to SMEI and/or EEA Guides	Connexus Recommended Actions
<p>23898: Describe and carry out polarity and phasing tests on low voltage electricity networks.</p>	<p>Outcomes: 1 and 2</p>	<p>SM-EI General Reference Clause 2.</p>	<p>Update Reference to SM-EI to SM-EI 2021.</p> <p>Add Reference to Line Mechanic and Cable Jointers Handbook: Chapter 25 Testing Safety of Persons Section 25.3.3 Polarity Testing, and Chapter 26 Testing Network Equipment, Test Instruments and Meters, Section 26.2.7 Polarity Test Devices and 26.2.9 Phase Rotation Meter.</p> <p>Add Reference to EEA Guide Testing of Service Connections to Premises 2020.</p> <p>Add Reference to EEA Guide to Safe Practices for Low Voltage Electrical Work 2012.</p>
<p>23899: Describe and carry out phasing tests on high voltage electricity networks.</p>	<p>Outcome: 1</p>	<p>SM-EI General Reference Clause 2.</p>	<p>Update Reference to SM-EI to SM-EI 2021.</p> <p>Add Reference to Line Mechanic and Cable Jointers Handbook: Chapter 26 Testing Network Equipment, Test Instruments and Meters, section 26.2.15 High Voltage Phasing Devices.</p>
<p>28194: Describe polarity and phasing tests on electricity supply networks.</p>	<p>Outcomes: 1 and 2</p>	<p>SM-EI General Reference Clause 2.</p>	<p>Update Reference to SM-EI to SM-EI 2021.</p> <p>Add Reference to:</p> <p>Line Mechanic and Cable Jointers Handbook: Chapter 25 Testing Safety of Persons; and Chapter 26 Testing – Network Equipment, Test instruments and Meters.</p>

Unit Standard	References to Testing	Links to SMEI and/or EEA Guides	Connexus Recommended Actions
28195: Demonstrate knowledge of fault diagnosis and power restoration on electricity supply network plant and equipment	No Reference	SM-EI General Reference Clause 2.	Update Reference to SM-EI to SM-EI 2021. Add Reference to: Line Mechanic and Cable Jointers Handbook: Chapter 24 Faults and Fault Response.
28278: Plan, joint, and test underground cables, and carry out a rescue from an electricity supply pit.	Outcomes: 1.2, 1.4, 2.2 and 2.4	SM-EI General Reference Clause 2.	Update Reference to SM-EI to SM-EI 2021. Add Reference to: Line Mechanic and Cable Jointers Handbook: Chapter 18 Cables – Jointing and Terminating. Add Reference to EEA Guide Safe Work with Cables 2017.
29419: Prepare for, install, test, and commission new electrical installations.	Not Applicable. This unit standard covers all aspects of a complete new small electrical installation. It includes planning, cabling, fitting-off, testing, and commissioning, and is intended for people wishing to become electricians.		
29468: Demonstrate and apply knowledge of safe plant isolation, re-commissioning, and associated electrical testing procedures.	Outcome: 2.4	No Reference to SM-EI	Add Reference to SM-EI to SM-EI 2021. Has application to ESI employees working on Works. Add Reference to EEA Guide Connection of HV Electrical Installations 2012.
29481: Apply knowledge of lighting installation, testing, repair, and disposal.	Not Applicable. This unit standard covers the application of electric lighting knowledge for electricians and related trades.		

Unit Standard	References to Testing	Links to SMEI and/or EEA Guides	Connexus Recommended Actions
29557: Apply fundamental techniques for identifying and locating faults in electrical fittings or systems.	Not Applicable. Faults may be at the level of electronic components, printed circuit boards, cards, wiring, electromechanical components, electromagnetic components, or other units or elements within larger systems such as dwellings, offices, factories, electricity supply facilities, or telecommunications systems.		
29737: Carry out acceptance, commissioning and maintenance tests on electricity supply plant and equipment.	Outcomes: 1, 2, 3 and 4	SM-EI General Reference Clause 2.	Update Reference to SM-EI to SM-EI 2021. Add Reference to Line Mechanic and Cable Jointers Handbook: Chapter 25 Testing Safety of Persons; and Chapter 26 Testing – Network Equipment, Test instruments and Meters.
29738: Plan, install, and test electrical installation wiring and equipment.	Not Applicable. People credited with this unit standard are able to: plan for installation of electrical fittings, plant and equipment to electrical installations or works; and install temporary or fixed electrical or control circuit wiring to electrical fittings, plant and equipment to electrical installations or works.		
29739: Demonstrate knowledge of the Electricity Act, circuit protection and compliance testing of works or installations.	Outcomes: 1, 4 and 5	SM-EI General Reference Clause 2.	Update Reference to SM-EI to SM-EI 2021. Add Reference to Line Mechanic and Cable Jointers Handbook: Chapter 25 Testing Safety of Persons; and Chapter 26 Testing – Network Equipment, Test instruments and Meters.
30111: Locate faults, repair or replace faulty components in a distribution network to a consumer installation.	Outcomes: 2.2, 3.2, 5.1 and 5.3	SM-EI General Reference Clause 2.	Update Reference to SM-EI to SM-EI 2021. Add Reference to Line Mechanic and Cable Jointers Handbook: Chapter 24 Faults and Fault Response.

Unit Standard	References to Testing	Links to SMEI and/or EEA Guides	Connexus Recommended Actions
30112: Demonstrate knowledge of electrical legislation and installation testing as an endorsed line mechanic.	Outcome: 3	SM-EI General Reference Clause 2.	Update Reference to SM-EI to SM-EI 2021. Add Reference to Line Mechanic and Cable Jointers Handbook: Chapter 25 Testing Safety of Persons; and Chapter 26 Testing – Network Equipment, Test instruments and Meters.