



Australian Government

UETTD RIS55 Install and maintain low voltage underground services

Release: 1

UETTDRI55 Install and maintain low voltage underground services

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package.

Application

This unit involves the skills and knowledge required to install and maintain low voltage (LV) underground services in the electricity supply industry (ESI).

It includes the installation, maintenance and connection of low voltage underground service lines and associated equipment between the connection point and the point of supply.

It also includes the repair and replacement of service cables, service fuses and the replacement and repair of service hardware and the identification and rectification of faults. It also covers insulation, voltage, phase rotation and polarity testing.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may apply under State and Territory legislative and regulatory licensing requirement which must be confirmed prior to commencing this unit.

Pre-requisite Unit

All competencies in the Common Unit Group must have been completed, plus all competencies in one (1) of the identified Pathway Unit Group(s).

Common Unit Group

UEENEEE101A Apply Occupational Health and Safety regulations, codes and practices in the workplace

UEENEEE102A Fabricate, assemble and dismantle utilities industry components

UEENEEE104A Solve problems in d.c. circuits

UEENEEE105A Fix and secure electrotechnology equipment

UEENEEE107A Use drawings, diagrams, schedules, standards, codes and specifications

UEENEEG101A Solve problems in electromagnetic devices and related circuits

UEENEEG102A Solve problems in low voltage a.c. circuits

UETTDREL16 Working safely near live electrical apparatus

Transmission Overhead Pathway Group

UETTDREL11 Apply sustainable energy and environmental procedures

UETTDREL12 Operate plant and equipment near live electrical conductors and apparatus

UETTDRI54 Install and maintain poles, structures and overhead conductors and cables

UETTDRT26 Install transmission structures and associated hardware

UETTDRT27 Maintain transmission structures and associated hardware

UETTDRT29 Install and maintain transmission overhead conductors and cables

Distribution Overhead Pathway Group

UETTDROP12 Maintain overhead energised low voltage conductors and cables

UETTDREL11 Apply sustainable energy and environmental procedures

UETTDREL12 Operate plant and equipment near live electrical conductors and apparatus

UETTDRI41 Install network infrastructure electrical equipment

UETTDRI42 Maintain network infrastructure electrical equipment

UETTDRI52 Install and maintain poles, structures and associated hardware

UETTDRI54 Install and maintain poles, structures and overhead conductors and cables

UETTDRI56 Install and maintain low voltage overhead services

Rail Traction Pathway Group

UETTDREL11 Apply sustainable energy and environmental procedures

UETTDREL12 Operate plant and equipment near live electrical conductors and apparatus

UETTDRI52 Install and maintain poles, structures and associated hardware

UETTDRI54 Install and maintain poles, structures and overhead conductors and cables

UETTDRT21 Install traction overhead wiring systems

UETTDRT22 Maintain traction overhead wiring systems

UETTDRT23 Install rail traction bonds

UETTDRT27 Install overhead traction components and equipment

UETTDRT28 Maintain overhead traction components and equipment

Distribution Cable Jointing Pathway Group

UETTDRCJ21 Lay ESI electrical cables

UETTDRCJ26 Install and maintain de-energised low voltage underground polymeric cables

UETTDRCJ27 Install and maintain de-energised high voltage underground polymeric cables

UETTDREL11 Apply sustainable energy and environmental procedures

UETTDREL12 Operate plant and equipment near live electrical conductors and apparatus

Electrotechnology Electrician Pathway Group

UEENEE137A Document and apply measures to control OHS risks associated with electrotechnology work

UEENEG006A Solve problems in single and three phase low voltage machines

UEENEEG033A Solve problems in single and three phase low voltage electrical apparatus and circuits

UEENEEG063A Arrange circuits, control and protection for general electrical installations

UEENEEG106A Terminate cables, cords and accessories for low voltage circuits

UEENEEG108A Trouble-shoot and repair faults in low voltage electrical apparatus and circuits

UEENEEG109A Develop and connect electrical control circuits

UEENEEK142A Apply environmentally and sustainable procedures in the energy sector

UETTDRIS67 Solve problems in energy supply network equipment

Competency Field

Industry Specific Cross Discipline

Unit Sector

Industry Specific Cross Discipline

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare for installation and maintenance of LV underground services and associated equipment

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Work schedules, construction plans, drawings, workplace procedures and material lists are received and confirmed
- 1.2** Job requirements and workplace procedures are identified and communicated with relevant personnel
- 1.3** Work health and safety (WHS)/occupational health and safety (OHS), environmental and workplace procedures for the installation and maintenance of LV underground services and associated equipment are obtained and confirmed for the purposes of the work to be performed
- 1.4** Work is prioritised and sequenced for completion within acceptable timeframes following consultation with relevant personnel and in accordance with workplace procedures

- 1.5 Hazards are identified, WHS/OHS risks assessed and control measures identified in accordance with workplace procedures
 - 1.6 Relevant work permits are obtained, understood and signed in accordance with workplace procedures
 - 1.7 Plant, equipment, tools and personal protective equipment (PPE) required for work are identified, obtained and confirmed in working order
 - 1.8 Worksite is prepared to minimise risk, damage to property, commerce and individuals in accordance with workplace procedures
 - 1.9 Traffic management plan is confirmed as being applied in accordance with workplace procedures
- 2 **Carry out installation and maintenance of LV underground services and associated equipment**
 - 2.1 WHS/OHS, sustainable energy and environmental principles and practices are monitored and followed to reduce incidents in accordance with workplace procedures
 - 2.2 Requirements for lifting and/or climbing and/or working at heights and the use of power tools/equipment are followed in accordance with workplace procedures
 - 2.3 Installation and maintenance of LV underground services and associated equipment are performed in agreed timeframes, to quality standards with a minimum of waste in accordance with workplace procedures
 - 2.4 LV underground services and associated equipment are installed in accordance with job requirements, work permits and workplace procedures
 - 2.5 Maintenance, including repair and/or replacement of LV services and associated equipment, is assembled in accordance with construction plans, drawings and workplace procedures
 - 2.6 Unplanned events are responded to in accordance with workplace procedures
 - 2.7 Quality checks of work are undertaken in accordance with workplace procedures
- 3 **Complete installation and maintenance of LV**
 - 3.1 Completed work is checked against work schedule, construction plans and drawings for compliance and

underground services and associated equipment

anomalies are reported in accordance with workplace procedures

- 3.2** WHS/OHS and environmental incidents are reported in accordance with workplace procedures, as required
- 3.3** Worksite is rehabilitated, cleaned up and made safe in accordance with workplace procedures
- 3.4** Tools, equipment and surplus resources and materials are, where appropriate, are cleaned, checked and returned to storage in accordance with workplace procedures
- 3.5** Relevant work permits are signed off and the LV services and associated equipment are returned to service in accordance with workplace procedures
- 3.6** Work records, reports and/or documentation are completed in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRIS55A Install and maintain low voltage underground services.

Links

UET Training Package Companion Volume Implementation Guide is found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7>

Assessment Requirements for UETTDRIS55 Install and maintain low voltage underground services

Modification History

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including the use of risk control measures
- applying sustainable energy principles and practices
- connecting low voltage (LV) underground services to at least two (2) of the following:
 - underground pillar/pit connection (single phase)
 - underground pillar/pit connection (three phase*)
 - underground to overhead connection
 - (* must do)
- installing LV underground service protection devices, including at least one (1) of the following:
 - fuse units
 - circuit breakers
 - service links
- testing of LV underground service connections, including at least four (4) of the following:
 - polarity test *
 - phase rotation test
 - continuity test
 - voltage test
 - insulation resistance test
 - (* must do)
- installing LV underground service cables using at least one (1) of the following:
 - aluminium LV cable
 - cross-linked polyethylene (XLPE) cable
 - copper LV cable
- dealing with unplanned events on at least one (1) occasion.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- standards, codes, legislation, supply authority regulations and/or enterprise requirements
- requirements for the use of enterprise construction manuals, system diagrams/plans and drawings, including:
 - types of LV underground services
 - methods of construction and installation
 - minimum depths for underground services to be buried and proximity to other assets and structures
- installation equipment/tools, including:
 - equipment and tools for underground service installation
 - fittings and hardware for underground service installation
- methods of laying cables, including:
 - conduits and sand and slabbing
- characteristics and applications of different types of cables, including:
 - cable cross-sectional area of conductors
 - current rating and fuse types and ratings
- techniques for maintenance of service installations, including:
 - diagnosis and repair of faults
- jointing and terminating methods, including:
 - polymeric heat-shrink materials
 - polymeric tape materials
 - insulated piercing connectors (IPCs)
 - energised and de-energised cables
 - connections to point of entry, fuse boxes, pillars and pits
- testing and commissioning procedures, including:
 - pre-energising tests - insulation resistance and continuity test
 - inspection
 - equipment functionality tests
 - polarity, voltage and phase sequence tests
 - neutral and phase identification tests
 - neutral integrity tests
 - meter function test
 - testing check forms
- connection principles, including:
 - purpose and function of multiple earth neutral (MEN) system
 - types of connection faults
 - causes and effects of incorrect and poor electrical connections

- principles of loop impedance
- reasons for and methods used to maintain standard phase sequencing
- purpose and operation of service fusing
- use of independent earth for testing.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, facilities, equipment and personal protective equipment (PPE) currently used in industry for installing and maintaining LV underground services
- applicable documentation, including workplace procedures, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

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