



Australian Government

Department of Education, Employment and Workplace Relations

UETDRIS53A Install and maintain power system public lighting

Release: 1

UETTDRIS53A Install and maintain power system public lighting

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor

1) Scope:

1.1) Descriptor

This Competency Standard Unit covers the installation, maintenance and repair of public lighting systems. This also includes the inspection, testing and commissioning of the system associated with the street lighting circuit, the associated hardware and the earthing system. Installation will include the installation of, the associated hardware and components and, the wiring and earthing system. Maintenance may also include work on energised LV overhead or underground public lighting systems including the diagnosis of faults and the updating of relevant system data and or public lighting maintenance records.

Application of the Unit

Application of the Unit 2)

This Competency Standard Unit is intended to augment formally acquired competencies. It is suitable for employment-based programs under an approved contract of training.

Licensing/Regulatory Information

License to practice 3)

The skills and knowledge described in this unit may require a licence/registration to practice in the work place subject to regulations for undertaking of electrical work.

License to practice**3)**

Practice in workplace and during training is also subject to regulations directly related to Occupational Health and Safety, electricity/telecommunications/gas/water industry safety and compliance, industrial relations, environmental protection, anti discrimination and training.

Commonwealth, State/Territory or Local Government legislation and regulations may exist that limits the age of operating certain equipment.

Pre-Requisites**Prerequisite Unit(s)****4)****Competencies****4.1)**

Granting of competency in this unit shall be made only after competency in the following unit(s) has/have been confirmed.

Where pre-requisite pathways have been identified. All competencies in the Common Unit Group must be have been completed plus all the competencies in one (1) of the identified Pathway Unit Group(s):

Transmission Overhead

Distribution Overhead

Rail Traction

Distribution Cable Jointing

Common Unit Group

Unit Code	Unit Title
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

Prerequisite Unit(s)**4)**

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
UETTDREL11A	Apply sustainable energy and environmental procedures
UETTDREL12A	Operate plant and equipment near live electrical conductors and apparatus
UETTDREL16A	Working safely near live electrical apparatus

Transmission Overhead Pathway Group

Unit Code	Unit Title
UETTDNIS54A	Install and maintain poles, structures, overhead conductors and cables
UETTD RTP26A	Install transmission structures and associated hardware
UETTD RTP27A	Maintain transmission structures and associated hardware
UETTD RTP29A	Install and maintain transmission overhead conductors and cables

Distribution Overhead Pathway Group

Unit Code	Unit Title
UETTD RDP12A	Maintain overhead energised low voltage conductors and cables
UETTDNIS41A	Install network infrastructure electrical equipment
UETTDNIS42A	Maintain network infrastructure electrical equipment
UETTDNIS52A	Install and maintain poles, structures

Prerequisite Unit(s)	4)	and associated hardware
	UETTDRIS54A	Install and maintain poles, structures, overhead conductors and cables
	UETTDRIS56A	Install and maintain low voltage overhead services
Rail Traction Pathway Group		
	Unit Code	Unit Title
	UETTDRIS52A	Install and maintain poles, structures and associated hardware
	UETTDRIS54A	Install and maintain poles, structures, overhead conductors and cables
	UETTDRRT21A	Install traction overhead wiring systems
	UETTDRRT22A	Maintain traction overhead wiring systems
	UETTDRRT23A	Install rail traction bonds
	UETTDRRT27A	Install overhead traction components and equipment
	UETTDRRT28A	Maintain overhead traction components and equipment
Distribution Cable Jointing Pathway Group		
	Unit Code	Unit Title
	UETTDRCJ21A	Lay ESI electrical cables
	UETTDRCJ26A	Install and maintain de-energised low voltage underground polymeric cables.
	UETTDRCJ27A	Install and maintain de-energised high voltage underground polymeric cables.
	UETTDRIS41A	Install network infrastructure electrical equipment
	UETTDRIS42A	Maintain network infrastructure

Prerequisite Unit(s) 4)

electrical equipment

UETTDNIS55A Install and maintain low voltage underground services

Literacy and numeracy skills 4.2)

Participants are best equipped to achieve this unit if they have reading, writing and numeracy skills indicated by the following scales. Description of each scale is given in Volume 2, Part 3 “Literacy and Numeracy”

Reading 3 Writing 3 Numeracy 3

Employability Skills Information**Employability Skills 5)**

The required outcomes described in this unit of competency contain applicable facets of Employability Skills. The Employability Skills Summary of the qualification in which this unit of competency is packaged will assist in identifying Employability Skill requirements.

Elements and Performance Criteria Pre-Content

6) Elements describe the essential outcomes of a competency standard unit

Performance Criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the Evidence Guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Prepare for the installation and maintenance of public lighting systems	1.1 Works schedule(s), including drawings, plans, requirements, established procedures, and material lists, are received, analysed and confirmed, if necessary, by site inspection.
	1.2 Relevant requirements and established procedures for the work are communicated to all personnel and identified for all work sites.
	1.3 OHS policies and procedures related to requirements and established procedures for the installation and maintenance of public lighting systems are obtained and confirmed for the purposes of the work to be performed and communicated.
	1.4 Work is prioritised and sequenced following consultation with others for completion within acceptable timeframes and in accordance with established procedures.
	1.5 Hazards are identified, OHS risks assessed and control measures are prioritised, implemented and monitored including emergency exits kept clear according to established procedures.
	1.6 Relevant work permits are obtained to access and perform work according to requirements and/or established procedures.
	1.7 Resources including personnel, equipment, tools and personal protective equipment required for the job are obtained and confirmed in working order.
	1.8 Relevant personnel at worksite are confirmed current in First Aid, Pole Top Rescue and other related work procedures according to requirements.
	1.9 Liaison and communication issues with other/authorised personnel, authorities, clients and land owners are resolved to carry out work where necessary.

ELEMENT	PERFORMANCE CRITERIA
	<p>1.10 Site is prepared according to the work schedule and to minimise risk and damage to property, commerce, and individuals in accordance with established procedures.</p> <p>1.11 Personnel participating in the work, including plant operators and contractors, are fully briefed and respective responsibilities confirmed where applicable in accordance with established procedures.</p> <p>1.12 Traffic management plan is identified and implemented.</p>
<p>2 Carry out installation and maintenance of public lighting systems</p>	<p>2.1 OHS, sustainable energy and environmental principles and practices to reduce the incidents of accidents and minimise waste are monitored and followed in accordance with requirements and/or established procedures.</p> <p>2.2 Lifting, climbing, working in confined spaces and aloft, and use of power tools/equipment, techniques and practices are safely followed and, currency according to requirements confirmed.</p> <p>2.3 Essential knowledge and associated skills are applied in the safe installation and maintenance of public lighting systems to ensure completion in an agreed timeframe and, to quality standards with a minimum of waste according to requirements.</p> <p>2.4 Excavation/foundation construction is inspected, and confirmed as being in accordance with established procedures.</p> <p>2.5 Associated hardware, fittings and control gear are installed as per established procedures.</p> <p>2.6 Earthing system and street lighting circuit is installed as per established procedures.</p> <p>2.7 Inspection of public lighting and associated hardware is conducted to ascertain that it conforms to requirements/established procedures.</p> <p>2.8 Maintenance, including repair and/or replacement</p>

ELEMENT**PERFORMANCE CRITERIA**

- of the public lighting system is carried out, in accordance with the work schedule and requirements/established procedures.
- 2.9 Hazard warnings and safety signs are recognised and hazards and assessed OHS risks are reported to the immediate authorised persons for directions according to established procedures.
- 2.10 Unplanned events in the installation and maintenance of public lighting systems are undertaken within the scope of established procedures.
- 2.11 Known solutions to a variety of problems are applied using acquired essential knowledge and associated skills.
- 2.12 Ongoing checks of quality of the work are undertaken in accordance with instructions and established procedures.
- 3 Complete the installation and maintenance of public lighting systems
- 3.1 Work undertaken is checked against works schedule for conformance with requirements and anomalies reported in accordance with established procedures
- 3.2 Accidents and/or injuries are reported in accordance with requirements/established procedures, where applicable.
- 3.3 Work site is rehabilitated, cleaned up and made safe in accordance with established procedures.
- 3.4 Tools, equipment and any surplus resources and materials are, where appropriate, cleaned, checked and returned to storage or disposed of in accordance with established procedures.
- 3.5 Relevant work permit(s) are signed off and, the public lighting system is returned to service in accordance with requirements.
- 3.6 Works completion records, reports, as installed /modified drawing and/or documentation and information are finalised and processed and appropriate personnel notified.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

8) Essential Knowledge and Associated Skills (EKAS): This describes the essential skills and knowledge and their level, required for this unit.

Evidence shall show that knowledge has been acquired of installing and maintaining public lighting systems.

All knowledge and skills detailed in this unit should be contextualised to current industry practices and technologies.

KS01-TIS53A Installation and maintenance of public lighting

Evidence shall show an understanding of procedures for installation and maintenance on public lighting structures and associated equipment to an extent indicated by the following aspects:

T1 Standards, codes, legislation, supply authority regulations, local government and or enterprise requirements pertaining to the installation and maintenance of public lighting systems and associated equipment

T2 Requirements for the use of enterprise construction manuals, system diagrams/plans and drawings, encompassing:

- Street lighting circuits
- Earthing system

T3 Types of tools and equipment used for installation and maintenance

T4 Types and function of lanterns/luminaires/lamps, control equipment, poles and associated hardware used for street lighting

- Note: Examples include hp mercury vapour, LP and HP sodium vapour, fluorescent, quartz-halogen, wood, concrete, steel, composite, choke boxes, photo-electric cells, time switches, contactor boxes

T5 Types of lighting systems encompassing:

- Overhead and underground street lighting systems
- Controlling and switching of lighting systems

T6 Techniques for the installation of street lighting systems

T7 Techniques for the maintenance of street lighting systems

- Note: Examples include diagnosing of faults, removing, repairing, replacement and cleaning of public lighting and associated hardware

T8 Application of specific testing equipment

- Note: Examples include voltage detectors, insulation resistance testers, clamp-on ammeters, continuity testers, fault indicators

T9 Techniques for the inspection, testing and commissioning of street lighting systems

Evidence Guide

EVIDENCE GUIDE

9) This provides essential advice for assessment of the unit of competency and must be read in conjunction with the Performance Criteria and the range statement of the unit of competency and the Training Package Assessment Guidelines.

The Evidence Guide forms an integral part of this Competency Standard Unit and shall be used in conjunction with all component parts of this unit and, performed in accordance with the Assessment Guidelines of this Training Package.

Overview of Assessment 9.1)

Longitudinal competency development approaches to assessment, such as Profiling, require data to be reliably gathered in a form that can be consistently interpreted over time. This approach is best utilised in Apprenticeship programs and reduces assessment intervention. It is the Industry's preferred model for apprenticeships. However, where summative (or final) assessment is used it is to include the application of the competency in the normal work environment or, at a minimum, the application of the competency in a realistically simulated work environment. It is recognised that, in some circumstances, assessment in part or full can occur outside the workplace. However, it must be in accord with Industry and, Regulatory policy in this regard.

Methods chosen for a particular assessment will be influenced by various factors. These include the extent of the assessment, the most effective locations for the assessment activities to take place, access to physical resources, additional safety measures that may be required and the critical nature of the competencies being assessed.

The critical safety nature of working with electricity, electrical equipment, gas or any other hazardous substance/material carries risk in deeming a person competent. Hence, sources of evidence need to be 'rich' in nature so as to minimise error in judgment.

Activities associated with normal every day work have a bearing on the decision as to how much and how detailed the data gathered will contribute to its 'richness'. Some skills are more critical to safety and operational requirements while the same skills may be more or less frequently practiced. These points are raised for the assessors to consider when choosing an assessment method and developing assessment instruments. Sample assessment

instruments are included for Assessors in the Assessment Guidelines of this Training Package.

Critical aspects of evidence required to demonstrate competency in this unit 9.2)

Before the critical aspects of evidence are considered all prerequisites shall be met.

Evidence for competence in this unit shall be considered holistically. Each element and associated Performance Criteria shall be demonstrated on at least two occasions in accordance with the “Assessment Guidelines – UET12”. Evidence shall also comprise:

- A representative body of Performance Criteria demonstrated within the timeframes typically expected of the discipline, work function and industrial environment. In particular this shall incorporate evidence that shows a candidate is able to:
 - Implement Occupational Health and Safety workplace procedures and practices including the use of risk control measures as specified in the Performance Criteria and range; and
 - Apply sustainable energy principles and practices as specified in the Performance Criteria and range; and
 - Demonstrate an understanding of the essential knowledge and associated skills as described in this unit to such an extent that the learner’s performance outcome is reported in accordance with the preferred approach; namely a percentile graded result, where required by the regulated environment; and
 - Demonstrate an appropriate level of employability skills; and
- Conduct work observing the relevant Anti Discrimination legislation, regulations, policies and workplace procedures; and
- Demonstrated performance across a representative range of contexts from the prescribed items below:

Range of tools/equipment/materials/procedures/workplaces/other variables

Group No	The minimum number of items on which skill is to be demonstrated	Item List
A	At least one of the following:	Wood Concrete Steel Composite
B	At least two of the following:	HP mercury vapour, LP and HP sodium vapour Fluorescent Quartz-halogen
C	At least three of the following:	Voltage detectors* Insulation resistance testers Clamp-on ammeters Continuity testers Fault indicators (* must use)
D	At least one occasion	Dealing with an unplanned event by drawing on essential knowledge and associated skills to provide appropriate solutions incorporated in the holistic assessment with the above listed items.

Context of and specific resources for assessment 9.3)

This unit should be assessed as it relates to normal work practice using procedures, information and resources typical of a

workplace. This should include:

- OHS policy and work procedures and instructions.
- Suitable work environment, facilities, equipment and materials to undertake actual installation and maintenance of public lighting systems.

In addition to the resources listed above, in Context of and specific resources for assessment, evidence should show demonstrated competency working below ground, in limited spaces, with different structural/construction types and method and in a variety of environments.

Method of assessment

9.4)

This Competency Standard Unit shall be assessed by methods given in Volume 1, Part 3 “Assessment Guidelines”.

Note:

Competent performance with inherent safe working practices is expected in the Industry to which this Competency Standard Unit applies. This requires that the specified essential knowledge and associated skills are assessed in a structured environment which is primarily intended for learning/assessment and incorporates all necessary equipment and facilities for learners to develop and demonstrate the essential knowledge and associated skills described in this unit.

Concurrent assessment and relationship with other units

9.5)

There are no concurrent assessment recommendations for this unit.

Range Statement

RANGE STATEMENT

10) This relates to the unit of competency as a whole providing the range of contexts and conditions to which the Performance Criteria apply. It allows for different work environments and situations that will affect performance.

Competency shall be demonstrated in relation to the installation, maintenance and repair of public lighting systems, including the inspection, testing and commissioning of the system associated with the street lighting circuit, the associated hardware and the earthing system.

Maintenance may include the removal, repair, replacement and cleaning of public lighting and associated hardware.

Public lighting system may include lanterns/luminaires, lamps or control equipment in overhead and underground reticulated areas, poles and columns.

Associated hardware may include brackets, choke boxes, photo-electric cells, time switches, contactor boxes and appropriate nuts and bolts.

Testing equipment may include LV detectors and fault indicators.

The following constants and variables included in the element/Performance Criteria in this unit are fully described in the Definitions Section 1 of this volume and form an integral part of the Range Statement of this unit:

- Appropriate and relevant persons (see Personnel)
- Appropriate authorities
- Appropriate work platform.
- Assessing risk
- Assessment
- Authorisation
- Confined space
- Diagnostic, testing and restoration
- Documenting detail work events, record keeping and or storage of information
- Drawings and specifications
- Emergency
- Environmental and sustainable energy procedures
- Environmental legislation
- Environmental management documentation
- Established procedures
- Fall prevention
- Hazards
- Identifying hazards
- Inspect

RANGE STATEMENT

- Legislation
- MSDS
- Notification.
- OHS practices
- OHS issues
- Permits and/or permits to work
- Personnel
- Quality assurance systems
- Requirements
- Testing procedures
- Work clearance systems

Unit Sector(s)

Not applicable.

Competency Field

Competency Field **11)**

Industry Specific Cross-Discipline Units