



Australian Government

UEENEEN107A Install and maintain active level crossing equipment

Release 2

UEENEEN107A Install and maintain active level crossing equipment

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor

1) Scope:

1.1) Descriptor

This unit covers the installation and maintenance of active level crossing equipment on rail networks. It encompasses safe working, regulatory requirements and following work procedures, performing scheduled maintenance findings and repairing faults, performing operational tests and reporting.

Application of the Unit

Application of the Unit 2)

This unit shall apply to qualifications in installation and maintenance of rail signalling electrical power and control systems.

Licensing/Regulatory Information

License to practice 3)

The skills and knowledge described in this unit may only be practised in the workplace under regulations related to electrical work, the codes of practice and regulations of the State/Territory in which the work is carried out. This includes codes of practice such as the 'Code Of Practice for the Defined Interstate Rail Network' for work carried out on that network.

Pre-Requisites

Prerequisite Unit(s) 4)

Competencies 4.1)

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

UEENEEN 109A Install and maintain train detection equipment

AND

Relevant work place requirements in 'Work site protection' have been acquired.

Literacy and numeracy skills 4.2)

Participants are best equipped to achieve competency in 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	4	Writing	4	Numeracy	4
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Employability Skills Information

Employability Skills 5)

This unit contains Employability Skills

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 to install and maintain active level crossing equipment	1.1 OHS procedures for a given work area are identified, obtained and understood.
	1.2 Established OHS risk control measures and procedures are followed in preparation for the work.
	1.3 The extent of installation and/or maintenance is determined from maintenance schedules, job specifications, drawings and regulatory requirements
	1.4 Appropriate personnel are consulted to ensure the work is coordinated effectively with others to minimise traffic disruption
	1.5 Materials needed for the installation and/or maintenance work are obtained in accordance with established procedures and checked against job requirements
	1.6 Tools, equipment and testing devices needed for the installation and/or maintenance work are obtained in accordance with established procedures and checked for correct operation and safety.
2 Install and maintain active level crossing equipment	2.1 OHS risk control measures and procedures for carrying out the work are followed.
	2.2 The correct functioning of equipment is established from relevant technical manuals and operating instructions to identify accessible

ELEMENT**PERFORMANCE CRITERIA**

operating requirements.

- 2.3 Equipment and components are cleaned, lubricated and adjusted to specified standards.
- 2.4 Equipment/component abnormalities are identified and appropriate remedial action is taken to ensure equipment conforms and performs to technical specifications.
- 2.5 Installation and maintenance is performed efficiently without waste of materials or damage to apparatus and the surrounding environment or services and using sustainable energy practices.
- 2.6 Equipment faults and/or damage to equipment are identified using efficient fault finding and diagnostic techniques, including fault indicators, error codes and maintenance records.
- 2.7 Equipment faults and/or damage to equipment are identified using efficient fault finding and diagnostic techniques, including fault indicators, error codes and maintenance records.
- 2.8 Installation and maintenance are performed using appropriate tools and test equipment to ensure signalling equipment operates to required technical and operational standards.
- 2.9 Faulty, worn, damaged or insecure components are replaced, repaired or secured to conform to manufacturers and workplace requirements.
- 2.10 Methods for dealing with unexpected situations are selected on the basis of safety and specified work outcomes.
- 2.11 Fault finding and repairs are carried out efficiently without waste of materials or damage to apparatus and the surrounding environment or services and using sustainable energy practices.
- 2.12 Equipment is tested and adjusted using appropriate test equipment and procedures to ensure it operates within the specified technical parameters.

ELEMENT	PERFORMANCE CRITERIA
3 Complete the installation and maintenance of active level crossing equipment	2.13 Level crossing lamp alignments are carried out as part of the testing and adjusting procedures where appropriate.
	3.1 OHS work completion risk control measures and procedures are followed.
	3.2 Equipment is taken out of service/brought back into use as appropriate, and required documentation is completed to conform to workplace requirements.
	3.3 Documentation required by the organisation is completed to ensure accurate maintenance records are maintained, and relevant reports produced.
	3.4 Work site/equipment is reinstated to organisation requirements and faulty components are tagged, recorded and despatched for repair/replacement.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

8) This describes the essential skills and knowledge and their level, required for this unit.

Evidence shall show that knowledge has been acquired of safe working practices and maintaining active level crossing equipment.

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

KS01-EN107A and maintenance

Active level crossing equipment installation

Evidence shall show an understanding of active level crossing equipment installation and maintenance, applying safe working practices and relevant Standards, Codes and Regulations to an extent indicated by the following aspects:

Rail signalling, active level crossing equipment

Servicing procedures encompassing:

Maintenance documentation

Coordination/planning sequence

Operational test procedures

Scheduled / preventative maintenance

Unscheduled / corrective maintenance

Certifying power supply equipment (commission and de-commission).

Note:

Certifying procedures are only applicable for compliance with rail operator and/or enterprise standards.

Equipment and their components encompassing:

Flashing lights

Audible warning devices

Boom gate/barrier

Pedestrian gate/barrier

Relay operation

Crossing predictor

Operation alarm monitoring

Traffic light interfaces.

Operating principles and parameters encompassing:

REQUIRED SKILLS AND KNOWLEDGE

Single line control

Double line control

Special controls

Processor controls

Remote alarm monitoring

Failure modes

Emergency operation

Interpreting circuits diagrams to evaluate correct operation and relationship to other signalling circuits

Correct operation in accordance with control and locking tables.

Servicing procedures encompassing:

Maintenance documentation

Coordination/planning sequence

Operational test procedures

Scheduled/preventative maintenance

Unscheduled/corrective maintenance

Certification of active level crossing equipment (commission/ de-commission).

Note:

Certifying procedures are only applicable for compliance with rail operator and/or enterprise standards.

Evidence Guide

EVIDENCE GUIDE

9) The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for this Training Package.

The Evidence Guide forms an integral part of this unit. It must be used in conjunction with all components 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-preferred model for apprenticeships. However, where summative (or final) assessment is used it must 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. In some circumstances, assessment in part or full can occur outside the workplace. However, it must be in accordance with industry and regulatory policy.

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 issues inherent in working with electricity, electrical equipment, gas or any other hazardous substance/material present a challenge for those determining competence. Sources of evidence need to be 'rich' in nature to minimise error in judgment.

Activities associated with normal everyday work influence decisions about how/much 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 practised. 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 must 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 – UEE11'. Evidence shall also comprise:

- A representative body of work performance 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 statement
 - Apply sustainable energy principles and practices as specified in the performance criteria and range statement
 - Demonstrate an understanding of the essential knowledge and associated skills as described in this unit. It may be required by some jurisdictions that RTOs provide a percentile graded result for the purpose of regulatory or licensing requirements.
 - Demonstrate an appropriate level of skills enabling employment
 - Conduct work observing the relevant Anti Discrimination legislation, regulations, policies and workplace procedures
- Demonstrated consistent performance across a representative range of contexts from the prescribed items below:
 - Install and maintain active level crossing equipment as described in 8) and including:
 - a. Interpreting specifications correctly
 - b. Using appropriate fault finding techniques
 - c. Maintaining electrically-operated level crossing equipment to operational requirements
 - d. Organising work to minimise road and rail traffic

disruptions

- e. Using tools correctly
- f. Following relevant codes of practice, OHS and environmental protection procedures and requirements
- g. Completing relevant technical reports, records and documentation, and
- h. Dealing with unplanned events by drawing on essential knowledge and skills to provide appropriate solutions incorporated in the holistic assessment with the above listed items

Note:

Successful completion of relevant vendor training may be used to contribute to evidence on which competency is deemed. In these cases the alignment of outcomes of vendor training with performance criteria and critical aspects of evidence shall be clearly identified.

**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 work as prescribed by this unit.

These should be used in the formal learning/assessment environment.

Note:

Where simulation is considered a suitable strategy for assessment, conditions must be authentic and as far as possible reproduce and replicate the workplace and be consistent with the approved industry simulation policy.

The resources used for assessment should reflect current industry practices in relation to maintaining power signalling and protected level crossing equipment and repairing faults.

**Method of
assessment****9.4)**

This 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 unit applies. This requires assessment in a structured environment which is intended primarily for learning/assessment and incorporates all necessary equipment and facilities for learners to develop and demonstrate the essential knowledge and skills described in this unit.

**Concurrent
assessment and
relationship with
other units****9.5)**

For optimisation of training and assessment effort, competency development in this unit may be arranged in combination with other competencies required by a given enterprise installation, maintenance and repair functions.

Concurrent assessment may include:

UEENEEN109A Install and maintain train detection equipment

UEENEEN105A Install and maintain rail signalling power supplies

UEENEEN118A Find and repair rail signal system faults

Range Statement

RANGE STATEMENT

10) This relates to the unit 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.

This unit shall be demonstrated in relation to:

- The relevant State/Territory codes of practice and safe working requirements.
- Equipment relevant to a particular rail network.
- Code of practice for the defined interstate rail network.

Activities may include: procedures for maintenance and repair of protected level crossing equipment on rail networks and may also include 'safe working, the use of plans and drawings, manufacturer's / enterprise specifications and manuals.

Maintenance activities may also incorporate safe working, working according to regulatory requirements and following work procedures, performing scheduled maintenance, finding and repairing faults, performing operational tests and completing reporting documentation.

Plant may include; elevated Work Platforms, portable generators and or crane truck

Electrical equipment may include; cross arms, bells, control and protection equipment, remote monitoring equipment, relay control, static flashers, electro-mechanical boom equipment, electro-mechanical pedestrian equipment, audible warning devices, power off indicators, flashing lights, current sensing devices, grade crossing predictors, solid state crossing controllers and road traffic control

Mechanical equipment may include; boom and flashing light mast, boom arm and counter weights and or pedestrian gates/booms.

Technical report may include: level crossing incident report, level crossing accident report, site survey and log report.

Test equipment may include; multimeters, laptop computer and peripherals, audio test meters

Generic terms used throughout this Vocational Standard shall be regarded as part of the Range Statement in which competency is demonstrated. The definition of these and other terms that apply are given in Volume 2, Section 2.1.

Unit Sector(s)

Not applicable.

Competency Field

Competency Field 11)

Rail Signalling