



**Australian Government**

# **Assessment Requirements for UEERS0032 Maintain trackside signal and train protection equipment**

**Release: 1**

# Assessment Requirements for UEERS0032 Maintain trackside signal and train protection equipment

## Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

This unit replaces and is equivalent to UEERS0012 Install and maintain trackside signal and train protection equipment.

Modifications this release include:

- Title changed.
- Element titles and performance criteria amended to reflect title change.
- Minor amendments made to Performance Criteria text.
- Performance criteria 1.7, 2.2, 3.2 and 3.4 added.
- Performance and Knowledge Evidence updated for clarity.

## 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 occasion and include:

- interpreting specifications and circuit diagrams correctly
- using appropriate fault-finding techniques
- maintaining trackside signal and train protection equipment to operational requirements
- organising work to minimise traffic disruptions
- using tools and test equipment correctly
- following relevant codes of practice and environmental protection procedures and requirements
- completing relevant technical reports and documentation
- dealing with unplanned events
- applying rail safe working practices and relevant industry standards, codes and rail safety regulations
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
  - implementing workplace procedures and practices
  - using risk control measures
- applying sustainable energy principles and practices
- completing maintenance of trackside signal and train protection equipment.

## 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:

- trackside signal and train protection equipment maintenance, safe working practices and relevant standards, codes and regulations, including:
  - rail signalling principles - electrical
  - overview of electrical rail signalling including:
    - types of rail signalling/safe working systems including computer-based interlocking (CBI), automatic, controlled and interlocked signalling
    - advantages of electrical over mechanical signalling
    - advantages of CBI over electrical signalling systems
    - rail signalling principles - mechanical
  - overview of mechanical rail signalling including:
    - types of mechanical rail signalling systems for different rail traffic
    - deficiencies of mechanical signalling systems
    - effects of overhead traction systems on mechanical signalling systems (where applicable)
    - effects of external factors on the mechanical rail signalling system
  - purpose of elements of a mechanical rail signalling system including:
    - signals, point actuating systems, locking and train detection systems, control input devices, indicators, diagrams and monitors, mechanical interlocking frames, safe working systems and electro-mechanical interfaces
    - rail signalling and signal equipment
  - equipment and their components including:
    - incandescent lamps
    - light-emitting diode (LED) lamps
    - electro-mechanical
    - mechanical
    - interfacing to different interlocking systems, e.g. relay and CBI
  - operating principles and parameters including:
    - automatic signal control circuits
    - controlled signal control circuits
    - approach control circuits
    - bi-directional block control circuits
    - lamp proving circuits
    - failure mode
    - interpreting circuits diagrams to evaluate correct operation and relationship to other signalling circuits
    - correct operation in accordance with control and locking tables
  - servicing procedures including:
    - maintenance documentation
    - coordination/planning sequence

- operational test procedures
- scheduled/corrective maintenance
- unscheduled/preventative maintenance
- certifying signal equipment (commission and de-commission)
- certifying procedures applicable for compliance with rail operator/enterprise standards
- rail signalling, train protection equipment
- equipment and their components including:
  - electro-mechanical (e.g. train-stops or other relevant equipment)
  - electro-magnetic (e.g. automatic warning system (AWS or other relevant system))
  - electronic (e.g. train protection warning system (TPWS or other relevant system))
  - automatic train protection (ATP) system - Balise/beacon based
- operating principles including:
  - permissive operation
  - restrictive operation
  - failure modes
  - interpreting circuits diagrams to evaluate correct operation and relationship to other signalling circuits
  - correct operation in accordance with control and locking tables
- relevant WHS/OHS requirements including:
  - legislated requirements
  - safe working practices and relevant standards, codes and regulations
  - relevant job safety assessments or risk mitigation processes
- relevant manufacturer specifications and manuals
- relevant workplace documentation, policies and procedures.

## 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 suitable workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in suitable simulated workplace operational situations that replicate 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

- resources that reflect current industry practices in relation to maintaining trackside signal and protection equipment
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

## Links

Companion Volume Implementation Guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>