



**Australian Government**

**Department of Education, Employment and Workplace Relations**

# **UETTD RIS09B Develop LV switching schedule**

**Release: 1**

## **UETTDRIS09B Develop LV switching schedule**

### **Modification History**

Not Applicable

### **Unit Descriptor**

**Unit Descriptor** 1)

#### **1.1) Descriptor**

This Competency Standard Unit covers the preparation of a basic switching schedule for LV network. It includes planning basic outages and taking into account loading of network components. It also includes the calculation of network loading conditions to ensure the network is operating within design parameters.

### **Application of the Unit**

**Application of the Unit** 4)

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

### 1.2) License to practice

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. 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) 2)

#### 2.1) Competencies

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

|    |            |                                                                    |
|----|------------|--------------------------------------------------------------------|
|    | UETTDRI03B | Perform LV field switching to a given schedule                     |
| or | UETTDRI04B | Perform high voltage field switching operation to a given schedule |
| or | UETTDRI05B | Perform substation switching to a given schedule                   |
| or | UETTDRT10B | Perform rail traction switching to a given schedule                |

For the full prerequisite chain details for this unit please refer to Table 3 in Volume 1, Part 2

## Employability Skills Information

### Employability Skills

3)

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:** Elements describe the essential outcomes of a unit of competency

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/plan to develop LV switching schedules

- |     |                                                                                                                                                                                                                                                          |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.1 | Works schedule(s), including drawings, plans, requirements, established procedures, and material lists, are obtained, analysed, if necessary, by site inspection and the extent of the preparation of the work determined for planning and coordination. |
| 1.2 | Work is prioritised and sequenced for the most efficient and effective outcome following consultation with others for completion within acceptable timeframes, to a quality standard and in accordance with established procedures.                      |
| 1.3 | Relevant requirements and established procedures for the work are communicated to all personnel and identified for all work sites.                                                                                                                       |
| 1.4 | Hazards are identified, OHS risks assessed and control measures are prioritised, implemented and                                                                                                                                                         |

**ELEMENT****PERFORMANCE CRITERIA**

|   |                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---|-----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|   |                                                     | monitored including emergency exits kept clear, to ensure safe systems of work are followed and according to established procedures.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|   | 1.5                                                 | Relevant work permits are secured to coordinate the performance of work according to requirements and/or established procedures.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|   | 1.6                                                 | Resources including personnel, equipment, tools and personal protective equipment required for the job are identified, scheduled and coordinated and confirmed in a safe and technical working order                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|   | 1.7                                                 | Clients/Customers are provided with possible solutions and/or options within the scope, acceptable cost and requirements.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|   | 1.8                                                 | Personnel participating in the work, including plant operators and contractors, are fully briefed and respective responsibilities coordinated and authorised where applicable in accordance with established procedures.                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|   | 1.9                                                 | Liaison and communication issues with other/authorised personnel, authorities, clients and land owners are resolved and activities coordinated to carry out work.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 2 | Carry out the development of LV switching schedules | <p>2.1 OHS and sustainable energy principles and practices to reduce the incidents of accidents and minimise waste are monitored and actioned in accordance with requirements and/or established procedures.</p> <p>2.2 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.</p> <p>2.3 Remedial actions are taken to overcome any shortfalls encountered in the work schedule according to requirements and/or established procedures.</p> <p>2.4 Development of LV switching schedules is carried out, in accordance with the work schedule</p> |

**ELEMENT****PERFORMANCE CRITERIA**

and requirements and/or established procedures.

2.5 Essential knowledge and associated skills are applied in the safe development of LV switching schedules to ensure completion in an agreed timeframe and, to quality standards with a minimum of waste according to requirements.

2.6 Solutions to non-routine problems are identified and actioned using acquired essential knowledge and associated skills according to requirements.

2.7 On going checks of quality of the work are undertaken in accordance with requirements and established procedures to ensure a quality like outcome is achieved for the client/customer and to a community/industry standard.

3 Complete development of LV switching schedules

3.1 Work undertaken is checked against works schedule for conformance with requirements, anomalies reported and solutions identified in accordance with established procedures.

3.2 Relevant work permit(s) are signed off and, plant is returned to service and advised to client/customer in accordance with requirements.

3.3 Accidents and/or injuries are reported and followed up in accordance with requirements/established procedures.

3.3 Works completion records, reports, as installed /modified drawing(s) and/or documentation and information are confirmed, processed and appropriate personnel notified.

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

**7) 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 developing LV switching schedule.

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

The extent of the essential knowledge and associated skills (EKAS) required is given in Volume 2 - Part 2.2 EKAS. It forms an integral part of this unit.

|         |                                                               |
|---------|---------------------------------------------------------------|
| T2.2.48 | Electrical equipment - HV and LV powerline                    |
| T2.4.1  | Switchgear installation                                       |
| T2.4.2  | Low voltage switching principles                              |
| T2.4.9  | System switching operations and authorisation procedures - LV |
| T2.4.12 | Low voltage overhead and substation switching principles      |
| T2.4.14 | Low voltage switching instruction preparation                 |
| T2.8.1  | Enterprises specific - policies and procedure instructions    |
| T2.8.2  | Enterprises specific - OHS instructions                       |
| T2.8.3  | Enterprises specific - technical drawing and documents        |

## 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

## EVIDENCE GUIDE

### 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 - UET09". 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 | Item List |
|                                                                          |                                               |           |

## EVIDENCE GUIDE

|   | to be demonstrated     |                                                                                                                                                                                                                                                                                                                                                             |
|---|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A | All of the following:  | Approvals/clearances<br>Access authorities                                                                                                                                                                                                                                                                                                                  |
| B | All of the following:  | Development of LV switching schedule to enterprise requirements                                                                                                                                                                                                                                                                                             |
| D | All of the following   | Planning of loading of network components, including standby generation.<br>Evaluate load parameters and effects on system, including paralleling and off-loading.<br>Identify unexpected sources of energisation, eg generators, UPS, solar, etc.<br>Implementing earthing procedures to reduce induced voltages.<br>Authorising issuance of work-permits. |
| E | 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 development of LV switching schedules.

In addition to the resources listed above, in Context of and specific resources for assessment, evidence should show

## EVIDENCE GUIDE

demonstrated competency working at realistic heights above ground i.e. above 3 metres, 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)

For optimisation of training and assessment effort, competence in this unit may be assessed concurrently with the following units:

UETTDRI08B Develop HV switching schedule

## Range Statement

### RANGE STATEMENT

**8)** 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.

This Competency Standard Unit shall/may be demonstrated in relation to the development of a LV switching schedule and may include system diagram, system plant data and loading evaluation of network components.

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
- Assessing risk
- Assessment
- Authorisation
- 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
- Hazards
- Identifying hazards
- Inspect
- Legislation
- 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

## Custom Content Section

### 2.2) Literacy and numeracy skills

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 | 4 | Writing | 4 | Numeracy | 4 |
|---------|---|---------|---|----------|---|

## Competency Field

Competency Field 5)

Industry Specific Cross-Discipline Units