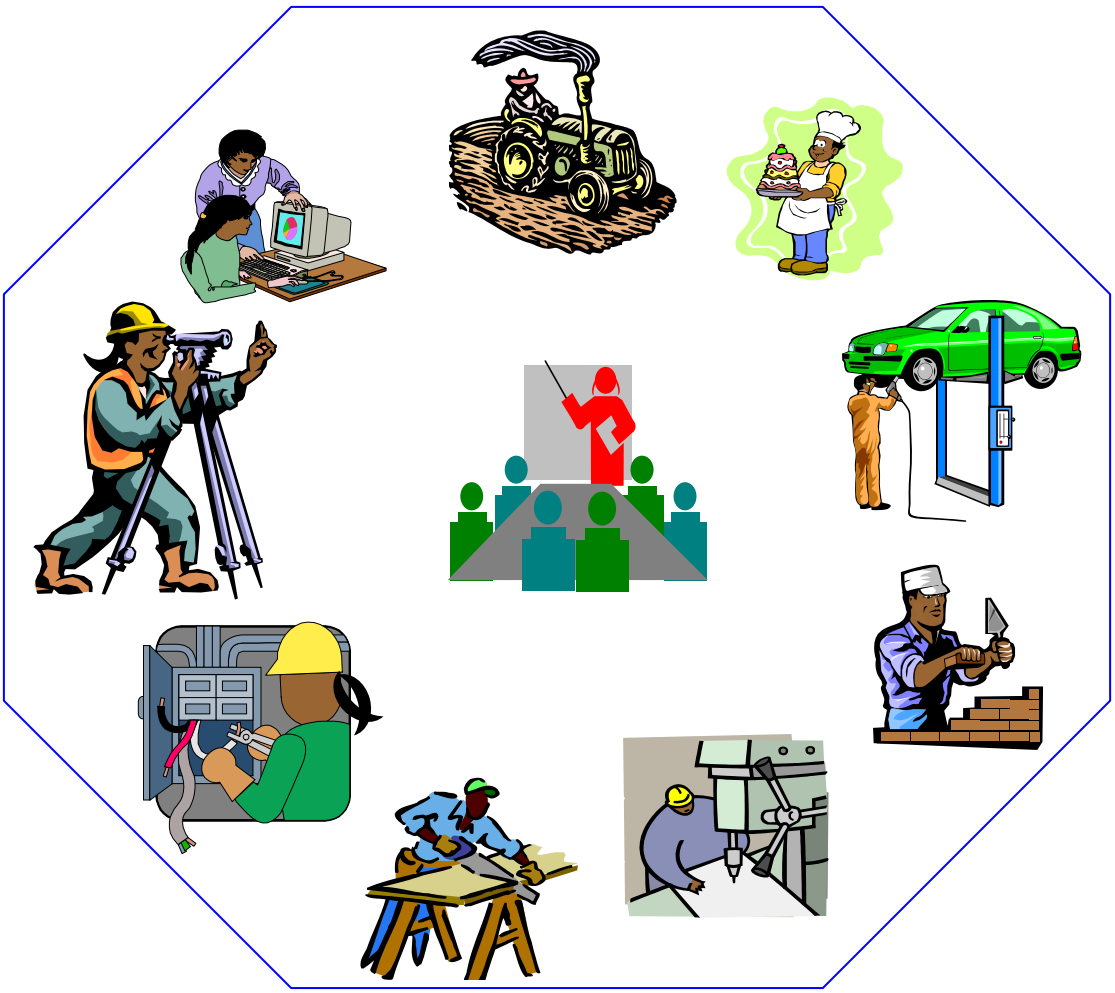
Federal Democratic Republic of Ethiopia

OCCUPATIONAL STANDARD

POWER TRANSMISSION SYSTEMS INSTALLATION AND MAINTENANCE

NTQF Level III and IV



Ministry of Education
June 2012

Introduction

Ethiopia has embarked on a process of reforming its TVET-System. Within the policies and strategies of the Ethiopian Government, technology transformation – by using international standards and international best practices as the basis, and, adopting, adapting and verifying them in the Ethiopian context – is a pivotal element. TVET is given an important role with regard to technology transfer. The new paradigm in the outcome-based TVET system is the orientation at the current and anticipated future demand of the economy and the labor market.

The Ethiopia Occupational Standards (EOS) is the core element of the Ethiopian National TVET-Strategy and an important factor within the context of the National TVET-Qualification Framework (NTQF). They are national Ethiopian standards, which define the occupational requirements and expected outcome related to a specific occupation without taking TVET delivery into account.

This document details the mandatory format, sequencing, wording and layout for the Ethiopia Occupational Standard which comprised of Units of Competence.

A Unit of Competence describes a distinct work activity. It is documented in a standard format that comprises:

- Occupational title and NTQF level
- Unit title
- Unit code
- Unit descriptor
- Elements and Performance criteria
- Variables and Range statement
- Evidence guide

Together all the parts of a Unit of Competence guide the assessor in determining whether the candidate is competent.

The ensuing sections of this EOS document comprise a description of the occupation with all the key components of a Unit of Competence:

- chart with an overview of all Units of Competence for the respective level (Unit of Competence Chart) including the Unit Codes and the Unit Titles
- contents of each Unit of Competence (competence standard)
- occupational map providing the technical and vocational education and training (TVET) providers with information and important requirements to consider when designing training programs for this standards and for the individual, a career path

UNIT OF COMPETENCE CHART

Occupational Standard: Power Transmission Systems Installation and Maintenance

Occupational Code: EIS TIM

NTQF Level III

EIS TIM3 01 0612 Use Drawings, Diagrams, Schedules and Manuals	EIS TIM3 02 0612 Operate Plant and Equipment near Live Electrical conductors/apparatus	EIS TIM3 03 0612 Dismantle, Assemble and Fabricate Electro Technology Components
EIS TIM3 04 0612 Implement and Monitor the Organizational OHS Polices Procedures and Programs	EIS TIM3 05 0612 Inspect Overhead Structures and Electrical Apparatus/Tower	EIS TIM3 06 0612 Develop HV Switching Schedule
EIS TIM3 07 0612 Coordinate Permit Procedures	EIS TIM3 08 0612 Contribute to Coordinated HV Live Line Work	EIS TIM3 09 0612 Maintain Energized Lines (Transmission) Using Live Line Stick Technique
EIS TIM3 10 0612 Maintain Energized Lines (Transmission) Using Bare Hand Technique	EIS TIM3 11 0612 Maintain Bare Hand Technique on a Helicopter Platform	EIS TIM3 12 0612 Monitor Implementation of Work Plan / Activities
EIS TIM3 13 0612 Apply Quality Control	EIS TIM3 14 0612 Lead Workplace Communication	EIS TIM3 15 0612 Lead Small Teams
EIS TIM3 16 0612 Improve Business Practice		

NTQF Level IV

EIS TIM4 01 0612 Apply Environment and Sustainable Energy Procedures	EIS TIM4 02 0612 Operate Plant and Equipment near Live Electrical Conductors/ Apparatus	EIS TIM4 03 0612 Work Safely near Live Electrical Apparatus as Non-Electrical Worker
EIS TIM4 04 0612 Implement and Monitor Organizational OHS Policies, Procedures and Programs	EIS TIM4 05 0612 Maintain HV Power System Circuit Breakers	EIS TIM4 06 0612 Assemble, Set-Up and Test Personnel Computers
EIS TIM4 07 0612 Terminate and Connect Components, Cables Wiring and Conductors for Electronic Circuits	EIS TIM4 08 0612 Investigate Quality of Supply Issues	EIS TIM4 09 0612 Maintain Voltage Regulating Equipment (Capacitor Banks)
EIS TIM4 10 0612 Install HV Plant and Equipment	EIS TIM4 11 0612 Analyze and Appraise Fault and Outage Data	EIS TIM4 12 0612 Draft and Layout Overhead and Ground Transmission Extension
EIS TIM4 13 0612 Contribute to Coordinated HV Live Line Work	EIS TIM4 14 0612 Maintain Distribution Field Devices	EIS TIM4 15 0612 Commission Distribution Field Devices
EIS TIM4 16 0612 Respond to Technical Enquiries and Requests	EIS TIM4 17 0612 Organize and Implement Line and Easement Surveys	EIS TIM4 18 0612 Plan and Organize Work
EIS TIM4 19 0612 Migrate to New Technology	EIS TIM4 20 0612 Establish Quality Standards	EIS TIM4 21 0612 Develop Individuals and Team
EIS TIM4 22 0612 Utilized Specialized Communication Skills	EIS TIM4 23 0612 Manage and Maintain Small/Medium Business Operation	

NTQF Level III

Occupational Standard: Power Transmission Systems Installation and Maintenance Level III	
Unit Title	**Use Drawings, Diagrams, Schedules and Manuals**
Unit Code	**EIS TIM3 01 0612**
Unit Descriptor	This unit covers the use of drawings, diagrams, equipment and cable schedules and manuals as they apply to the various electro technology work functions. It encompasses the rudiments for communicating with schematic, wiring and mechanical diagrams and equipment and cable/connection schedules, manuals, site and architectural drawings and plans showing the location of services, apparatus, plant and machinery.

Elements	Performance Criteria
1. Prepare to use drawings, diagrams, schedules and manuals	1.1 Established OHS risk control measures and procedures are followed. 1.2 The need for drawings, diagrams, schedules or manual is determined from the nature of the ***work*** to be undertaken. 1.3 Established routines and procedures are followed to obtain drawings, diagrams, schedules or manuals required for the work to be undertaken.
2. Use drawings, diagrams, schedules and manuals to obtain job information	2.1 Drawings, diagrams, schedules and/or manuals are selected, appropriate to the work being undertaken. 2.2 Drawings, diagrams and schedules are interpreted using knowledge of drawing layouts, conventions and symbols. 2.3 Dimensions are extracted from drawings and diagrams for application to work undertaken. 2.4 Location of equipment is determined from equipment schedules and location diagrams. 2.5 Manuals are reviewed to ascertain their format and where information relevant to the work to be undertaken is located. 2.6 Information given in manuals is interpreted in relation to the work to be undertaken.
3. Use drawings, diagrams, schedules and manuals to convey information and ideas	3.1 Drawing conventions are used in neat freehand drawings to convey information and ideas to others involved in the work to be undertaken. 3.2 Drawing conventions are used to neatly correct freehand original job drawing to show final 'as installed' arrangement. 3.3 Corrected drawings are forwarded to appropriate person(s) in accordance with established procedures.

Variable	Range
This competence standard unit shall be demonstrated in relation to assembly, installation, fault finding, maintenance or development work functions in any of the following disciplines:	• Appliances • Business equipment • Computers • Data Communications • Electrical • Electrical Machines • Electronics • Fire protection • Instrumentation • Refrigeration and Air Conditioning • Renewable / sustainable energy, and • Security technology

Evidence Guide	
Critical Aspects of Competence	Evidence that shows a candidate is able to: • Implement Occupational Health and Safety workplace procedures and practices including the use of risk control measures • Apply sustainable energy principles and practices • Conduct work observing the relevant Anti Discrimination legislation, regulations, polices and workplace procedures
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • safe working practices and using drawings, diagrams, schedules and manuals
Underpinning Skills	Demonstrates skills to: • Drawings and diagrams • Occupational Health and Safety principles • safe working practices and applying OHS practices
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Power Transmission Systems Installation and Maintenance Level III	
Unit Title	**Operate Plant and Equipment Near Live Electrical Conductors/Apparatus**
Unit Code	**EIS TIM3 02 0612**
Unit Descriptor	This unit covers the safe operation and maintenance of plant and equipment near live electrical conductors and/or apparatus. It encompasses plant and equipment relevant to the enterprise and is in addition to any local government legislation and or regulatory requirements regarding the operation of that plant and or equipment. It includes the conducting of operational checks, the correct positioning of road signs, barriers and or warning devices. It also encompasses the completion of log books and job completion documentation.

Elements	Performance Criteria
1. Prepare to operate plant and equipment near energized and exposed electrical conductors/ apparatus	1.1 Works schedule(s), including drawings, plans, requirements, established procedures, and material lists, are received, analyzed and confirmed, if necessary, by site inspection. 1.2 Relevant requirements and established procedures for the operation of ***plant and equipment*** near energized and exposed electrical conductors/apparatus 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 operation of plant and equipment near energized and exposed electrical conductors/apparatus are obtained and confirmed for the purposes of the work to be performed and communicated. 1.4 Work is prioritized 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 prioritized, 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/authorized personnel, authorities, clients and land owners are resolved to carry out work where necessary.
	1.10	Site is prepared according to the work schedule and to minimize risk and damage to property, commerce, and individuals in accordance with established procedures.
	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.
	1.12	Road signs, barriers and warning devices are positioned in accordance with requirements.
2. Carry out the operation of plant and equipment near energized and exposed electrical conductors/ apparatus	2.1	OHS and sustainable energy principles and practices to reduce the incidents of accidents and minimize waste are monitored and followed in accordance with requirements and/or established procedures.
	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.
	2.3	Apply essential knowledge and associated skills in the safe operation of plant and equipment near energized and exposed electrical conductors/apparatus to ensure completion in an agreed timeframe and, to quality standards with a minimum of waste according to requirements.
	2.4	Plant and equipment are safely operated near energized and exposed electrical conductors/apparatus according to requirements and established procedures.
	2.5	Hazard warnings and safety signs are recognized and hazards and assessed OHS risks are reported to the immediate authorized persons for directions according to established procedures.
	2.6	Unplanned events in the operation of plant and equipment near energized and exposed electrical conductors/apparatus are undertaken within the scope of established procedures.
	2.7	Known solutions to a variety of problems are applied using acquired Essential Knowledge and Associated Skills.

	2.8 On-going checks of quality of the work are undertaken in accordance with instructions and established procedures.
3. Complete the operation of plant and equipment near energized and exposed electrical conductors/ apparatus	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 in accordance with established procedures. 3.5 Relevant work permit(s) are signed off and, plant and equipment are checked, returned to service/stored appropriately, in accordance with requirements and established procedures. 3.6 Works completion records, reports, as installed /modified drawing and/or documentation and information are finalized and processed and appropriate personnel notified.

Variable	**Range**
Plant and equipment near live electrical conductors and/or apparatus	• Support plant may include elevating work platform, back hoes, earth drilling rigs, trench excavators, heavy vehicles, concrete cutters, compressors, portable generators, welders, crimper-cutters, pumps, chain-saws, jack-hammers, post hole diggers, sand-blasters, drills and self-loading vehicle. • Equipment may include hand operated ratchet and friction grip winches, chain pullers and block and tackle.

Evidence Guide	
Critical Aspects of Competence	Evidence that shows a candidate is able to: • implement occupational health and safety workplace procedures and practices including the use of risk control measures • apply sustainable energy principles and practices • conduct work observing the relevant legislation, regulations, polices and workplace procedures

Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • Basic electrical principles • Magnetism • Electromagnetic principles • Electro technology science and materials • Engineering applications of mathematical principles • Engineering applications of mechanical principles • Engineering applications of material properties • Elevator work platform operational principles • Chain saw principles • Environmental fundamentals • Material handling and the environment • Enterprise specific - policy and procedure Instructions • Enterprise specific - OHS instructions • Enterprise specific - technical drawings and documents
Underpinning Skills	Demonstrates skills to: • safe working practices and applying OHS practices • hand and power tools • occupational health and safety principles electrical safe working practice • hydraulic and pneumatic portable equipment • enterprise vehicles • generation power systems
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Power Transmission Systems Installation and Maintenance Level III	
Unit Title	**Dismantle, Assemble and Fabricate Electro-Technology Components**
Unit Code	**EIS TIM3 03 0612**
Unit Descriptor	This unit covers basic fitting and fabrication techniques as they apply in the various electro technology work functions. It encompasses the safe use of hand and fixed and portable power tools, cutting, shaping joining and fixing using metallic and non-metallic materials, dismantling and assembling equipment, basic mechanical measurement and marking-out and reading diagrams.

Elements	Performance Criteria
1. Prepare for dismantling, assembling and fabrication work	1.1 OHS procedures for a given work area are obtained and understood through ***established routines and procedures***. 1.2 Established OHS risk control measures and procedures in preparation for the work are followed. 1.3 Safety hazard not previously identified are reported and advice on risk control measures are sought from the work supervisor. 1.4 The nature of the work is obtained from documentation and from work supervisor to establish the scope of work to be undertaken. 1.5 Advice is sought from the work supervisor to ensure the work is coordinated effectively with others. 1.6 Materials required for the work are obtained in accordance with established routines and procedures. 1.7 Tools, equipment and measuring devices needed to carry out the work are obtained and checked for correct operation and safety. 1.8 Cutting tools such as drills and chisels are sharpened to suit the material on which they are to be used.
2. Dismantle and assemble electro-technology apparatus	2.1 Established OHS risk control measures and procedures for carrying out the work are followed. 2.2 Circuits/machines/plant is checked as being isolated where necessary in strict accordance OHS requirements and procedures. 2.3 Appropriate tools are selected and used correctly and safely in dismantling and assembling apparatus. 2.4 Apparatus manufacturer's dismantling and assembling

	guides are used where applicable. 2.5 Components are marked or tagged during the dismantling to help ensure correct and efficient reassembly. 2.6 Dismantled components and parts are stored to protect them against loss or damage. 2.7 Apparatus is dismantled and assembled efficiently without unnecessary waste of materials and energy and unnecessary damage to apparatus, and the surrounding environment or services. 2.8 Procedures for referring non-routine events to immediate supervisor for directions are followed. 2.9 Routine quality checks are carried out in accordance with work instructions.
3. Fabricate electro-technology components	3.1 Established OHS risk control measures and procedures for carrying out the work are followed. 3.2 Circuits/machines/plant is checked as being isolated where necessary in strict accordance OHS requirements and procedures. 3.3 Appropriate tools are selected and used correctly and safely in fabricating components. 3.4 Drawings and instruction for the fabrication of components are followed. 3.5 Component dimensions are determined directly or by calculation from information given in job drawings and instructions. 3.6 Components are fabricated efficiently without unnecessary waste of materials and energy and unnecessary damage to the surrounding environment or services. 3.7 Procedures for referring non-routine events to immediate supervisor for directions are followed. 3.8 Routine quality checks are carried out in accordance with work instructions.
4. Complete work and report.	4.1 OHS risk control work completion measures and procedures are followed. 4.2 Work site is cleaned and made safe in accordance with established procedures. 4.3 Work supervisor is notified of the completion of the work in accordance with established procedures.

Variable	Range
Installation, fault finding, maintenance or development work functions in any of the following disciplines:	• Appliances • Business equipment • Computers • Data Communications • Electrical • Electrical Machines • Electronics • Fire protection • Instrumentation • Refrigeration and Air Conditioning • Renewable / sustainable energy, and • Security technology

Evidence Guide	

Critical Aspects of Competence	Evidence that shows a candidate is able to:
	• Implement Occupational Health and Safety workplace procedures and practices including the use of risk control measures
	• Apply sustainable energy principles and practices
	• Conduct work observing the relevant legislation, regulations, polices and workplace procedures
	• Demonstrated consistent performance across a representative range of contexts from the prescribed items below:
	  • dismantle, assemble and fabricate electro technology components including:
	  • dismantle and assemble an apparatus relevant to the discipline in which competence is sought and that requires selection and safe use of variety dismantling/assembling tools.
	  • sharpening a drill bit for at least two different types of material
	  • fabricating a component that requires the selection and safe use of a variety of fabrication tools
	  • dealing with unplanned events by drawing on essential knowledge and skills to provide appropriate solutions

Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • Safe working practices and dismantling, assembling and fabricating electro technology components. • Occupational Health and Safety principles

Underpinning Skills	Demonstrates skills to: • Safe working practices and applying OHS practices • Safe working practices and dismantling, assembling and fabricating electro technology components. • Hand tools • Power tools • Dismantling and assembling techniques
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Power Transmission Systems Installation and Maintenance Level III	
Unit Title	**Implement and Monitor the Organizational OHS Policies, Procedures and Programs**
Unit Code	**EIS TIM3 04 0612**
Unit Descriptor	This unit covers the implementation and monitoring of the participative arrangements for the management of the organizational OHS polices procedures, programs and issues, including disseminating information on hazards and risk assessment to meet OHS standards. It also encompasses the collation of work group input, as well as implementation of enterprise procedures for resolving OHS issues.

Elements	Performance Criteria
1. Prepare/plan to implement and monitor the organizational OHS policies, procedures and programs	1.1 Works schedule(s), including drawings, plans, requirements, established procedures, and material lists, are received, analyzed if necessary, by site inspection and the extent of the preparation of the work determined for planning and coordination. 1.2 Relevant requirements and established procedures for the work are communicated to all personnel and identified for all work sites. ***1.3*** ***Hazards*** are identified, ***OHS*** risks assessed and control measures are prioritized , implemented and monitored including emergency exits kept clear, to ensure safe systems of work are followed and according to established ***procedures.*** 1.4 ***Work*** is prioritized 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. 1.5 Risk control measures are identified, prioritized, implemented and evaluated against the work schedule. 1.6 Relevant work permits are secured to coordinate the performance of work according to requirements and/or established procedures. 1.7 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. 1.8 Clients/Customers are provided with alternative methods within the scope, acceptable cost and requirements.

	1.9	Liaison and communication issues with other/authorised personnel, authorities, clients and land owners are resolved and activities coordinated to carry out work.
	1.10	Site is prepared according to the work schedule and to minimize OHS risk, damage to property, commerce, and individuals in accordance with established procedures.
	1.11	Personnel participating in the work, including plant operators and contractors, are fully briefed and respective responsibilities authorised and coordinated where applicable in accordance with established procedures.
	1.12	Positioning of road signs, barriers and warning devices is planned in accordance with traffic control management requirements and established procedures.
2. Carry out the implementation and monitoring of the organizational OHS policies, procedures and programs	2. 1	OHS and Sustainable Energy principles and practices to reduce the incidents of accidents and minimize waste are implemented and monitored in accordance with requirements and/or established procedures.
	2. 2	First Aid, Pole Top Rescue and other related work procedures are performed according to requirements and/or established procedures.
	2. 3	Lifting, climbing, working in confined spaces, working at heights, and use of power tools/equipment, techniques and practices are safely exercised according to requirements.
	2. 4	Hazard warnings and safety signs are recognised and hazards and assessed OHS risks are risk control measures are implemented, preventative action taken and monitored and/or appropriate authorities consulted, where necessary, in accordance with requirements and established procedures.
	2. 5	Remedial actions are taken to overcome any shortfalls encountered in the work schedule according to requirements and/or established procedures.
	2. 6	Implementation and monitoring of the participative arrangements for the systematic management of organizational OHS policy procedures, programs and issues are carried out, in accordance with the work schedule and requirements and/or established procedures.
	2. 7	Essential Knowledge and Associated Skills in the safe

		implementation and monitoring of the participative arrangements for the management of organizational OHS policy procedures, programs and issues is applied to ensure completion in an agreed timeframe and, to quality standards with a minimum of waste according to requirements.
	2. 8	Solutions to non-routine problems are identified and acted using acquired Essential Knowledge and Associated Skills according to requirements.
	2. 9	On-going checks of quality of the work are undertaken in accordance with requirements and established procedures to ensure a quality outcome is achieved for the client/customer and to a community/industry standard.
3. Complete the implementation and monitoring of the organizational OHS policies, procedures and programs	3.1	Work undertaken is checked against works schedule for conformance with requirements, anomalies reported and solutions identified in accordance withestablished procedures.
	3.2	Accidents, incidents and/or injuries are reported in accordance with requirements/established procedures.
	3.3	Work site is rehabilitated, cleaned up and confirmed 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 in accordance with established procedures.
	3.5	Relevant work permit(s) are signed off and, the work completed/returned to service and advised to client/customer in accordance with requirements.
	3.6	Works completion records, reports, as installed /modified drawing(s) and/or documentation and information are confirmed, processed and appropriate personnel notified.

Variable	**Range**
All relevant OHS legislation particularly include:	• general duty of care • requirements for maintenance and confidentiality of records of occupational injury and disease • provision of information and training • regulations and codes of practice relating to hazards present in work area • health and safety representatives and OHS committees • issue resolution
Hazardous events	• accidents, fire and emergencies such as chemical spills or

include:	bomb scares
Procedures for dealing with hazardous events include:	• evacuation, chemical containment and first aid procedures
Workplace procedures include:	• risk assessment and management; inspection • housekeeping; participative arrangements , either general or specific to OHS training and assessment • specific hazard policies and procedures • OHS information • OHS record keeping • maintenance of plant and equipment • purchasing of supplies and equipment and • counselling/disciplinary processes

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • Implement Occupational Health and Safety workplace procedures and practices including the use of risk control measures • Apply sustainable energy principles and practices
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • implementing and monitoring the organizational OHS policies, procedures and programs • Enterprise specific - policies and procedure instructions • Enterprise specific - OHS instructions • Enterprise specific - technical drawings and documents
Underpinning Skills	Demonstrates skills of: • Power line safety - implementation and monitoring • Power line safety practices • Power line installation safety
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices. Moreover, access to: • a range of emergencies and hazardous events (may be gathered through simulations), • document on current OHS Acts, regulations and enterprise OHS policies and procedures • personal protective equipment (PPE)
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Power Transmission Systems Installation and Maintenance Level III	
Unit Title	**Inspect Overhead Structures and Electrical Apparatus/ Tower**
Unit Code	**EIS TIM3 05 0612**
Unit Descriptor	This unit covers the inspection as per requirements of overhead structures such as towers and electrical apparatus. Overhead structures include towers and overhead conductors and or cables include, underground and overhead transition points, electrical equipment, hardware and or earthing systems. It also includes the completion of inspection reports and other relevant documentation in accordance with requirements.

Elements	Performance Criteria
1. Prepare for the inspection of overhead structures and electrical apparatus used on towers	1.1 Works schedule(s), including drawings, plans, requirements, established procedures, and material lists, are received, analyzed 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 ***inspection of overhead structures and electrical apparatus*** used on towers are obtained and understood for the purposes of the work to be performed. 1.4 Work is prioritized 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 prioritized, 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 identified, scheduled and obtained and, in working order. 1.8 Relevant personnel at work site are confirmed current in First Aid, Tower/Pole Top Rescue and other related work procedures according to requirements.

	1.9 Liaison and communication issues with other/authorized personnel, authorities, clients and land owners are resolved to carry out work. 1.10 Site is prepared according to the work schedule and to minimize risk and damage to property, commerce, and individuals in accordance with established procedures. 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. 1.12 Traffic management plan is identified and implemented.
2. Carry out inspection of overhead structures and electrical apparatus used on towers	2.1 OHS and sustainable energy principles and practices to reduce the incidents of accidents and minimize waste are monitored and followed in accordance with requirements and/or established procedures. 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. 2.3 Essential knowledge and associated kills are applied in the safe inspection of overhead structures and electrical apparatus used on towers to ensure completion in an agreed timeframe and, to quality standards with a minimum of waste according to requirements. 2.4 Inspection of overhead structures and electrical apparatus used on towers is carried out, in accordance with the work schedule and requirements/established procedures. 2.5 Hazard warnings and safety signs are recognized and hazards and assessed OHS risks are reported to the immediate authorized persons for directions according to established procedures. 2.6 Known solutions to a variety of problems are applied using acquired essential knowledge and associated skills. 2.7 On-going checks of quality of the work are undertaken in accordance with instructions and established procedures.
3. Complete the inspection of overhead structures and electrical apparatus used on	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. 3.3 Work site is rehabilitated, cleaned up and made safe in

towers	accordance with established procedures. 3.4 Tools, equipment and any surplus resources and materials are, where appropriate, cleaned, checked and returned to storage in accordance with established procedures. 3.5 Relevant work permit(s) are signed off and, overhead structures and electrical apparatus used on towers are returned to service in accordance with requirements. 3.6 Works completion records, reports, as installed /modified drawing and/or documentation and information are finalized and processed and appropriate personnel notified.

Variable	**Range**
Inspection of overhead structures such as poles and/or other structures other than towers and electrical apparatus and equipment	• Inspection may be carried out on foot, and/or by conventional ground-based vehicle, or from the air. Aircraft may be helicopters or fixed-wing types. • Inspection techniques include use of X-ray and infrared camera. • Items to be inspected may include overhead poles and or structures, but not towers. • Types of electrical apparatus to be inspected include overhead conductors and cables, underground cables and overhead transition points and, electrical equipment such as pole mounted transformers and air-break switches, hardware, such as insulators, surge arrestors and cross-arms and or earthing systems.
The following constants and variables included:	• Appropriate and relevant persons (see Personnel) • Appropriate authorities • Appropriate work platform • Assessing risk • Assessment • Authorization • 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 management documentation • Established procedures • Fall prevention • Hazards • Identifying hazards

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

Evidence Guide	
Critical Aspects of Competence	Evidence that shows a candidate is able to: • Implement Occupational Health and Safety workplace procedures and practices including the use of risk control measures • Apply sustainable energy principles and practices • Conduct work observing the relevant legislation, regulations, polices and workplace procedures
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • inspecting overhead structures and electrical apparatus (poles /structures) • Poles and structures inspection principles • Power line inspection principles
Underpinning Skills	Demonstrates skills to: • safe working practices and applying OHS practices • Poles and structures inspection • Power line inspection
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Power Transmission Systems Installation and Maintenance Level III	
Unit Title	**Develop HV Switching Schedule**
Unit Code	**EIS TIM3 06 0612**
Unit Descriptor	This unit covers the preparation of a basic switching schedule for interconnected HV network plant. 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 designed parameters.

Elements	Performance Criteria
1. Prepare/plan to develop HV switching schedules	1.1 Works schedule(s), including drawings, plans, requirements, established procedures, and material lists, are obtained, analyzed, if necessary, by site inspection and the extent of the preparation of the work determined for planning and coordination. 1.2 Work is prioritized 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 Risk control measures are identified, prioritized and evaluated against the work schedule. 1.4 Relevant requirements and established procedures for the work are communicated to all personnel and identified for all work sites. 1.5 Hazards are identified, OHS risks assessed and control measures are prioritized , implemented and monitored including emergency exits kept clear, to ensure safe systems of work are followed and according to established procedures. 1.6 Relevant work permits are secured to coordinate the performance of work according to requirements and/or established procedures. 1.7 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. 1.8 Clients/Customers are provided with possible solutions and/or options within the scope, acceptable cost and requirements. 1.9 Personnel participating in the work, including plant

	operators and contractors, are fully briefed and respective responsibilities coordinated and authorized where applicable in accordance with established procedures. 1.10 Liaison and communication issues with other/authorized personnel, authorities, clients and land owners are resolved and activities coordinated to carry out work.
2. Carry out the development of HV switching schedules	2.1 OHS and Sustainable Energy principles and practices to reduce the incidents of accidents and minimize waste are monitored and acted in accordance with requirements and/or established procedures. 2.2 Hazard warnings and safety signs are recognized and hazards and assessed OHS risks are reported to the immediate authorized persons for directions according to established procedures. 2.3 Remedial actions are taken to overcome any shortfalls encountered in the work schedule according to requirements and/or established procedures. 2.4 Development of ***HV switching schedules*** is carried out, in accordance with the work schedule and requirements and/or established procedures. 2.5 Essential Knowledge and Associated Skills applied 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 acted 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 HV 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 Accidents and/or injuries are reported and followed up in accordance with requirements/established procedures. 3.3 Ensure relevant work permit(s) are signed off and plant is returned to service and advised to client/customer in accordance with requirements. 3.4 Works completion records, reports, as installed /modified drawing(s) and/or documentation and information are

	confirmed, processed and appropriate personnel notified.

Variable	Range
Development of HV switching schedules and include the use of:	• system diagrams • data schedules • system loading data and • use of computer based systems
The following constants and variables included:	• Appropriate and relevant persons (see Personnel) • Appropriate authorities • Appropriate work platform • Assessing risk • Assessment • Authorization • 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 • Legislation • MSDS • Notification • OHS practices • OHS issues • Permits and/or permits to work • Personnel • Quality assurance systems • Requirements • Testing procedures • Work clearance systems

Evidence Guide	
Critical Aspects of Competence	Evidence that shows a candidate is able to: • Implement Occupational Health and Safety workplace procedures and practices including the use of risk control measures • Apply sustainable energy principles and practices • Conduct work observing the relevant legislation, regulations, polices and workplace procedures
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • developing an HV switching schedule • Electrical equipment - HV and LV Power line • High voltage switching principles • High voltage fault switching principles • High voltage distribution transformer principles • System switching operations and authorization procedures - HV • High voltage overhead and substation switching principles • High voltage switching instruction preparation • Enterprises specific - polices and procedure instructions • Enterprises specific - OHS instructions • Enterprises specific - technical drawing and documents • Enterprise specific – switching diagrams • Enterprise specific - specialized tools
Underpinning Skills	Demonstrates skills to: • safe working practices and applying OHS practices • Power line safety practices • High voltage switching • High voltage fault switching • High voltage distribution transformer • High voltage SWER system • Feeder automation system • High voltage overhead and substation switching
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Power Transmission Systems Installation and Maintenance Level III	
Unit Title	**Coordinate Permit Procedures**
Unit Code	**EIS TIM3 07 0612**
Unit Descriptor	This unit covers the coordination of work procedures that require the issue of electrical permits to work and other permits for working on major parts of the electrical network. It encompasses the analysis and coordination of all work activities planned to be undertaken within more or less the same time timeframe to ensure that: the organization's work safety and statutory requirements are complied with; the extent of power interruption, and hence inconvenience to customers, is minimized; and the effective utilization of available resources, both from the organization and from its contractors to ensure all planned activities are timely completed to specified standards and requirements.

Elements	Performance Criteria
1. Prepare/plan to coordinate permit procedures	1.1 Works schedule(s), including drawings, plans, requirements, established procedures, and material lists, are obtained, analyzed, if necessary, by site inspection and the extent of the preparation of the work determined for planning and coordination. 1.2 Work is prioritized 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 prioritized , implemented and 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 applied in the coordination of permit procedures according to established procedures.

	1.7 Clients/customers are provided with possible solutions and/or options within the scope, acceptable cost and requirements. 1.8 Liaison and communication issues with other/authorized personnel, authorities, clients and land owners are resolved and activities coordinated to carry out work.
2. Carry out the coordination of permit procedures	2.1 OHS and Sustainable Energy principles and practices to reduce the incidents of accidents and minimize waste are monitored and acted in accordance with requirements and/or established procedures. 2.2 Hazard warnings and safety signs are recognized and hazards and assessed OHS risks are reported to the immediate authorized persons for directions according to established procedures. 2.3 Remedial actions are taken to overcome any shortfalls encountered in the work schedule according to requirements and/or established procedures. 2.4 ***Coordination of permit procedures*** is carried out, in accordance with the work schedule and requirements and/or established procedures. 2.5 Essential knowledge and associated skills in the safe co-ordination of permit procedures is applied 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 acted using acquired Essential Knowledge and Associated Skills according to requirements. 2.7 Ongoing 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 the coordination of permit procedures	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. 3.4 Works completion records, reports, as installed /modified

	drawing(s) and/or documentation and information are confirmed, processed and appropriate personnel notified.

Variable	Range

Coordination of permit procedures	May include but not be limited to the following:
	• Enterprise/organizational specific co-ordination could involve:
	  • Electrical network diagrams, electrical permit to work system, other work permit system such as work in confined space or in hazardous environment, outsourcing procedures, hazard identification, risk classification and management procedures.
	  • Regulatory requirements include Occupational Health and Safety and electrical safety
	  • Computer based systems can be used in the generation of work schedules, programs and/or resource allocation.

The following constants and variables included:	• Appropriate and relevant persons (see Personnel) • Appropriate authorities • Assessing risk • Assessment • Authorization • 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 • Work clearance systems

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • Implement Occupational Health and Safety workplace procedures and practices including the use of risk control measures • Apply sustainable energy principles and practices • Conduct work observing the relevant legislation, regulations, polices and workplace procedures
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • Coordinating permit procedures • High voltage switching principles • High voltage fault switching principles • High voltage distribution transformer principles • High voltage SWER system • Feeder automation system • System switching operations and authorization procedures - HV • System switching operations and authorization procedures - LV • High voltage overhead and substation switching principles • Low voltage overhead and substation switching Principles • High voltage switching instruction preparation • Low voltage switching instruction preparation • Enterprises specific - polices and procedure instructions • Enterprises specific - OHS instructions • Enterprises specific - technical drawing and documents • Enterprise specific - specialized tools
Underpinning Skills	Demonstrates skills to: • safe working practices and applying OHS practices • Power line safety practices • High voltage switching • High voltage fault switching • High voltage distribution transformer • System switching operations and authorization procedures - LV • Feeder automation system • System switching operations and authorization procedures - HV • High voltage SWER system • Enterprise specific – switching diagrams

Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Power Transmission Systems Installation and Maintenance Level III	
Unit Title	**Contribute to Coordinated HV Live Line Work**
Unit Code	**EIS TIM3 08 0612**
Unit Descriptor	This unit specifies the outcomes required of live line working team members to work effectively as a cohesive team to ensure safety of all team members and the community when undertaking high voltage (HV) live line work. It includes the pre-work briefing on tasks to be undertaken, roles of individual team members, identification of possible hazards, risk management analysis and implementation of palliative measures to control or mitigate the risk to acceptable levels. It also encompasses the monitoring of work performance to ensure safety, and the post-work debriefing to identify areas for continuous improvement.

Elements	Performance Criteria
1. Plan to contribute to a coordinated high voltage live line work team	1.1 Works schedule(s), including drawings, plans, requirements, established procedures, and material lists, are obtained, analyzed, if necessary, by site inspection and the extent of the preparation of the work determined for planning and coordination by the team. 1.2 Relevant requirements and established procedures for the work are communicated to all team members and identified for all work sites. 1.3 OHS policies and procedures related to requirements and established procedures for the working on HV live lines are obtained and confirmed for the purposes of the work to be performed and discussed among all team members. 1.4 Work is prioritized and sequenced following consultation with all team members to ensure safe systems of work are followed for completion within acceptable timeframes and in accordance with established procedures. 1.5 OHS and live line work hazards are identified, risk assessments conducted and control measures are identified, prioritized, implemented and documented against the work schedule, including the checking of site weather and environmental conditions to ensure that live line work can be undertaken safely. 1.6 Relevant live line work permits or authority for live line work are secured to coordinate the performance of work by the team according to requirements and/or

	established procedures. 1.7 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. 1.8 Personnel participating in the work, including plant operators and contractors, are fully briefed and respective responsibilities coordinated and authorized where applicable in accordance with established procedures. 1.9 Liaison and communication issues with other/authorized personnel, authorities, clients and land owners are resolved and activities coordinated to carry out work. 1.10 Site is prepared according to the work schedule and to minimize risk and damage to property, commerce, and individuals in accordance with established procedures. 1.11 All team members to be engaged in the work discuss and agree, without ambiguity, on their respective roles, and possible role changes during the course of work. 1.12 Positioning of road signs, barriers and warning devices is planned and coordinated in accordance with requirements.
2. Carry out the contribution to coordinated high voltage live line work	2.1 OHS and Sustainable Energy principles and practices to reduce the incidents of accidents and minimize waste are monitored and acted in accordance with requirements and/or established procedures. In particular, established live line working procedures are strictly adhered to. 2.2 First Aid, Rescue and other related work procedures are performed according to requirements and/or established procedures 2.3 Lifting, climbing, working aloft, and use of power tools/ equipment, techniques and practices, where applicable are safely exercised according to requirements. 2.4 Live line permits and other provisions for live line work are in place as required, in accordance with the requirements and established procedures. 2.5 Essential Knowledge and Associated Skills in the safe ***contribution to coordinated high voltage live line*** work is applied to ensure completion in an agreed timeframe and, to quality standards with a minimum of waste according to requirements. 2.6 Work is undertaken on HV Live Line in a team environment work according to the work schedule and requirements/ established procedures.

	2.7 Work is shared among all team members in a coordinated manner as discussed and agreed during pre-work briefing. 2.8 Hazard warnings and safety signs are recognized and hazards and assessed OHS risks are discussed with team members and reported to the immediate authorized persons for directions according to established procedures. 2.9 Unplanned events in the maintenance of HV Live Line work are discussed among all team members and appropriate action undertaken accordingly. 2.10 Solutions to non-routine problems are identified and acted using acquired essential knowledge and associated skills according to requirements. 2.11 Ongoing 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 the contribution to coordinated high voltage live line work	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 Accidents and/or injuries are reported and followed up in accordance with requirements/established procedures. 3.3 Work site is rehabilitated, cleaned up and confirmed 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 in accordance with established procedures. 3.5 Relevant work permit(s) are signed off and, High Voltage Live Line work is returned to service and advised to client/customer in accordance with requirements. 3.6 Works completion records, reports, as installed /modified drawing(s) and/or documentation and information are confirmed, processed and appropriate personnel notified. 3.7 Aspects of work schedule are discussed identified via feedback with fellow team members and information on improvement forwarded to appropriate personnel according to established procedures.

Variable	**Range**

Contribution to coordinated high voltage live line work and may include the following:	• This is a common unit for all developed live line working techniques such as hot stick, gloves and barrier, or bare hand. Technical details utilizing these live line respective units of competence for live line work. • HV Live Line work may include the maintenance of energized HV electrical apparatus, conductors and cables. • Work may be undertaken on ladders, insulated elevating work platforms or through the use of a work platform secured to a helicopter. • The emphasis of this unit is to foster and promote effective team work live line work to ensure safety of all team members and the community during the course of work

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • Implement occupational health and safety workplace procedures and practices including the use of risk control measures • Apply sustainable energy principles and practices • Conduct work observing the relevant legislation, regulations, polices and workplace procedures
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • contributing to coordinated high voltage live line work • Occupational Health and Safety principles • Statutory and safety considerations • Fundamentals for working safely near live electrical apparatus • Enterprise Specific - policy and procedures instructions • Enterprise Specific - OHS Instructions
Underpinning Skills	Demonstrates skills to: • safe working practices and applying OHS practices • Electrical safe working practice • Power line safety practices • Enterprise specific - specialized tools • Enterprise Specific - team work high voltage live line
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Power Transmission Systems Installation and Maintenance Level III	
Unit Title	**Maintain Energized Lines (Transmission) Using Live Line Stick Technique**
Unit Code	**EIS TIM3 09 0612**
Unit Descriptor	This unit covers the maintenance of energized high voltage transmission overhead electrical apparatus, i.e. live line work using line Stick techniques and includes the verification of the site conditions and the potential hazards, the conformation and calculation of physical loads and the selection of appropriate and authorized work method. It includes the preparation and cleaning of specialist material and tools in accordance with authorized technical instructions. It also encompasses the undertaking of OHS and safe working practices and the rendering inoperative of the automatic re-closing device including its restoration in accordance with the work plan and the procedure of issuing/accepting electrical access permits and or relevant work document.

Elements	Performance Criteria
1. Prepare/plan to maintain energized lines (transmission) using live line stick technique	1.1 Works schedule(s), including drawings, plans, requirements, established procedures, and material lists, are obtained, analyzed, if necessary, by site inspection and the extent of the preparation of the work determined for planning and coordination. 1.2 Relevant requirements and established procedures for the work are communicated to all personnel and identified for all work sites. 1.3 Hazards are identified, OHS risks assessed and control measures are prioritized , implemented and monitored including emergency exits kept clear, to ensure safe systems of work are followed and according to established procedures. 1.4 Work is prioritized 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. 1.5 Risk control measures are identified, prioritized and evaluated against the work schedule. 1.6 Relevant work permits are secured to coordinate the performance of work according to requirements and/or established procedures.

	1.7 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. 1.8 Relevant personnel at work site are confirmed current in first aid, CPR, and other rescue procedures according to requirements. 1.9 Liaison and communication issues with other/authorized personnel, authorities, clients and land owners are resolved and activities coordinated to carry out work. 1.10 Site is prepared according to the work schedule and to minimize risk and damage to property, commerce, and individuals in accordance with established procedures. 1.11 Personnel participating in the work, including plant operators and contractors, are fully briefed and respective responsibilities coordinated and authorized where applicable in accordance with established procedures. 1.2 Positioning of road signs, barriers and warning devices is planned in accordance with requirements.
2. Carry out the maintenance of energized lines (transmission) using live line stick technique	2.1 OHS and sustainable energy principles and practices to reduce the incidents of accidents and minimize waste are monitored and acted in accordance with requirements and/or established procedures. 2.2 First Aid, CPR and other Rescue procedures and other related work procedures are performed according to requirements and/or established procedures. 2.3 Lifting, climbing, working aloft, and tools/equipment, techniques and practices are safely exercised according to requirements. 2.4 Hazard warnings and safety signs are recognized and hazards and assessed OHS risks are reported to the immediate authorized persons for directions according to established procedures. 2.5 Remedial actions are taken to overcome any shortfalls encountered in the work schedule according to requirements and/or established procedures. 2.6 ***Maintenance of energized high voltage overhead electrical transmission apparatus*** is carried out, in accordance with the work schedule and requirements and/or established procedures. 2.7 Essential knowledge and associated skills are applied in the ***safe maintenance*** of energized high voltage overhead electrical transmission apparatus to ensure completion in an agreed timeframe and, to quality standards with a minimum of waste according to

	requirements. 2.8 Solutions to non-routine problems are identified and acted using acquired essential knowledge and associated skills according to requirements. 2.9 Ongoing 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 the maintenance of energized lines (transmission) using live line stick technique	3.1 Work is checked against schedule for conformance, anomalies reported in accordance with established procedures. 3.2 Accidents and /or injuries are reported and followed up in accordance with requirements/established procedures. 3.3 Work site is rehabilitated, cleaned up and confirmed 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 in accordance with established procedures. 3.5 Relevant work permit(s) (live line) are signed off and client/ customer advised in accordance with requirements. 3.6 Works completion records, reports, as installed/modified drawing(s) and/or documentation and information are confirmed, processed and appropriate personnel notified.

Variable	**Range**
Maintenance of energized lines (transmission) using live line stick technique and includes:	• the replacement of suspension and tension insulators, • the calculating of conductor loads being both vertical and • tension and conductor repairs
Maintenance includes:	• Live line Stick care and maintenance including mandatory testing • Rope care and maintenance including mandatory testing • Electrical testing of insulators • Repair conductors

Evidence Guide	
Critical Aspects of	Assessment requires evidence that the candidate:

Competence	• Implement occupational health and safety workplace procedures and practices including the use of risk control measures • Apply sustainable energy principles and practices • Conduct work observing the relevant legislation, regulations, polices and workplace procedures
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • maintaining energized lines (transmission) using live line stick technique • Basic rigging techniques • Plant, equipment and tools used for HV line work • HV principles • High voltage switching principles • High voltage fault switching principles • High voltage distribution transformer principles
Underpinning Skills	Demonstrates skills to: • safe working practices and applying OHS practices • Installation and maintenance on transmission lines and associated equipment • Live line working up to 132kV with Hot stick • Live line working for voltages greater than 132kV and up to 500kV with hot stick • Power line safety practices • High voltage switching principles • High voltage fault switching principles • High voltage distribution transformer principles • High voltage SWER system • Feeder automation system
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Power Transmission Systems Installation and Maintenance Level III	
Unit Title	**Maintain Energized Lines (Transmission) Using Bare Hand Technique**
Unit Code	**EIS TIM3 10 0612**
Unit Descriptor	This unit covers the maintenance of energized high voltage transmission overhead electrical apparatus, i.e. lives line work using Bare Hand techniques and includes the verification of the site conditions and the potential hazards, the conformation and calculation of physical loads and the selection of appropriate and authorized work method. It includes the preparation and cleaning of specialist material and tools in accordance with authorized technical instructions. It also encompasses the undertaking of OHS and safe working practices and the rendering inoperative of the automatic reclosing device including its restoration in accordance with the work plan and the procedure of issuing/accepting electrical access permits and or relevant work document.

Elements	Performance Criteria
1. Prepare/plan to maintain energized lines (Transmission) using Bare Hand technique	1.1 Works schedule(s), including drawings, plans, requirements, established procedures, and material lists, are obtained, analyzed, if necessary, by site inspection and the extent of the preparation of the work determined for planning and coordination. 1.2 Relevant requirements and established procedures for the work are communicated to all personnel and identified for all work sites. 1.3 Hazards are identified, OHS risks assessed and control measures are prioritized , implemented and monitored including emergency exits kept clear, to ensure safe systems of work are followed and according to established procedures. 1.4 Work is prioritized 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. 1.5 Risk control measures are identified, prioritized and evaluated against the work schedule. 1.6 Relevant work permits are secured to coordinate the

	performance of work according to requirements and/or established procedures. 1.7 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. 1.8 Relevant personnel at work site are confirmed current in First Aid, CPR, and other rescue procedures according to requirements. 1.9 Liaison and communication issues with other/authorized personnel, authorities, clients and land owners are resolved and activities coordinated to carry out work. 1.10 Site is prepared according to the work schedule and to minimize risk and damage to property, commerce, and individuals in accordance with established procedures. 1.11 Personnel participating in the work, including plant operators and contractors, are fully briefed and respective responsibilities coordinated and authorized where applicable in accordance with established procedures. 1.12 Positioning of road signs, barriers and warning devices is planned and coordinated in accordance with requirements.
2. Carry out the maintenance of energized lines (transmission) using bare hand technique	2.1 OHS and Sustainable Energy principles and practices to reduce the incidents of accidents and minimize waste are monitored and acted in accordance with requirements and/or established procedures. 2.2 First aid, CPR and other rescue procedures and other related work procedures are performed according to requirements and/or established procedures. 2.3 Lifting, climbing, working in confined spaces and aloft, and tools/equipment, techniques and practices are safely exercised according to requirements. 2.4 Hazard warnings and safety signs are recognized and hazards and assessed OHS risks are reported to the immediate authorized persons for directions according to established procedures. 2.5 Remedial actions are taken to overcome any shortfalls encountered in the work schedule according to requirements and/or established procedures. 2.6 ***Maintenance of energized high voltage overhead electrical transmission apparatus*** is carried out, in accordance with the work schedule and requirements and/or established procedures.

	2.7 Essential Knowledge and Associated Skills in the safe maintenance of energized high voltage overhead electrical transmission apparatus is applied to ensure completion in an agreed timeframe and, to quality standards with a minimum of waste according to requirements. 2.8 Solutions to non-routine problems are identified and acted using acquired Essential Knowledge and Associated Skills according to requirements. 2.9 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 the maintenance of energized lines (transmission) using bare hand technique	3.1 Work is checked against schedule for conformance, anomalies reported in accordance with established procedures. 3.2 Accidents and/or injuries are reported and followed up in accordance with requirements/established procedures. 3.3 Work site is rehabilitated, cleaned up and confirmed 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 in accordance with established procedures. 3.5 Relevant work permit(s) (live line) are signed off and client/customer advised in accordance with requirements. 3.6 Works completion records, reports, as installed /modified drawing(s) and/or documentation and information are confirmed, processed and appropriate personnel notified

Variable	**Range**
Maintenance of energized lines (transmission) using Bare Hand techniques and includes:	• the replacement of suspension and tension insulators and the calculating of conductor loads being both vertical and tension and conductor repairs • the work shall include rope care and maintenance including mandatory testing; electrical testing of insulators • conductive clothing application and maintenance
The following constants and variables included	• Appropriate and relevant persons (see Personnel) • Appropriate authorities • Appropriate work platform

in this unit:	• Assessing risk • Assessment • 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, management documentation • Established procedures • Fall prevention and Hazards • Identifying hazards • Inspect • Legislation MSDS • OHS practices and issues • Permits and/or permits to work • Personnel • Quality assurance systems • Testing procedures • Work clearance systems

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • Implement Occupational Health and Safety workplace procedures and practices including the use of risk control measures • Apply sustainable energy principles and practices • Conduct work observing the relevant Anti Discrimination legislation, regulations, polices and workplace procedures
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • maintaining energized lines (transmission) using Bare Hand technique • Extra high voltage - Bare-Hand live-line principles • Extra high voltage - Bare-Hand live line Procedures • HV principles
Underpinning Skills	Demonstrates skills to: • safe working practices and applying OHS practices • Live line working up to 132kV with hot stick • Power line safety practices
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning

Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Power Transmission Systems Installation and Maintenance Level III	
Unit Title	**Maintain Bare Hand Technique on a Helicopter Platform**
Unit Code	**EIS TIM3 11 0612**
Unit Descriptor	This unit covers the maintenance of energized high voltage transmission overhead electrical apparatus, i.e. lives line work using Bare Hand techniques from a helicopter platform and includes the verification of the site conditions and the potential hazards, the conformation and calculation of physical loads and the selection of appropriate and authorized work method. It includes the preparation and cleaning of specialist material and tools in accordance with authorized technical instructions. It also encompasses the undertaking of OHS and safe working practices and the rendering inoperative of the automatic re-closing device including its restoration in accordance with the work plan and the procedure of issuing/accepting electrical access permits and or relevant work document.

Elements	Performance Criteria
1. Prepare/plan to maintain energized lines (transmission) using Bare Hand technique from a helicopter platform	1.1 Works schedule(s), including drawings, plans, requirements, established procedures, and material lists, are obtained, analyzed, if necessary, by site inspection and the extent of the preparation of the work determined for planning and coordination. 1.2 Work is prioritized 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 Risk control measures are identified, prioritized and evaluated against the work method. 1.4 Relevant requirements and established procedures for the work are communicated to all personnel and identified for all work sites. 1.5 Hazards are identified, OHS risks assessed and control measures are prioritized , implemented and monitored including emergency exits kept clear, to ensure safe systems of work are followed and according to established procedures. 1.6 Relevant work permits are secured to coordinate the performance of work according to requirements and/or established procedures. 1.7 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. 1.8 Relevant personnel at work site are confirmed current in First aid, CPR, and other rescue procedures according to requirements. 1.9 Liaison and communication issues with other/authorized personnel, authorities, clients and land owners are resolved and activities coordinated to carry out work. 1.10 Site is prepared according to the work schedule and to minimize risk and damage to property, commerce, and individuals in accordance with established procedures. 1.11 Personnel participating in the work, including plant operators and contractors, are fully briefed and instructed in respective responsibilities coordinated and authorized where applicable in accordance with established procedures. 1.12 Positioning of road signs, barriers and warning devices is planned and coordinated in accordance with requirements.
2. Carry out the maintenance of energized lines (transmission) using bare hand technique from a helicopter platform	2.1 OHS and sustainable energy principles and practices to reduce the incidents of accidents and minimize waste are monitored and acted in accordance with requirements and/or established procedures. 2.2 First aid, CPR and other Rescue procedures and other related work procedures are performed according to requirements and/or established procedures. 2.3 Lifting and tools/equipment, techniques and practices are safely exercised according to requirements. 2.4 Hazard warnings and safety signs are recognized and hazards and assessed OHS risks are reported to the immediate authorized persons for directions according to established procedures. 2.5 Remedial actions are taken to overcome any shortfalls encountered in the work schedule according to requirements and/or established procedures. 2.6 ***Maintenance of energized high voltage overhead electrical transmission apparatus*** is carried out, in accordance with the work schedule and requirements and/or established procedures. 2.7 Essential knowledge and associated skills are applied in the safe maintenance of energized high voltage overhead electrical transmission apparatus to ensure completion in an agreed timeframe and, to quality

	standards with a minimum of waste according to requirements. 2.8 Solutions to non-routine problems are identified and acted using acquired essential knowledge and associated skills according to requirements. 2.9 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 the maintenance of energized lines (transmission) using bare hand technique from a helicopter platform	3.1 Work is checked against schedule for conformance, anomalies reported in accordance with established procedures. 3.2 Accidents and/or injuries are reported and followed up in accordance with requirements/established procedures. 3.3 Work site is rehabilitated, cleaned up and confirmed 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 in accordance with established procedures. 3.5 Relevant work permit(s) (live line) are signed off and client/customer advised in accordance with requirements. 3.6 Works completion records, reports, as installed /modified drawing(s) and/or documentation and information are confirmed, processed and appropriate personnel notified.

Variable	**Range**
Maintain energized lines (transmission) using Bare Hand technique from a helicopter platform:	• the maintenance of conductors and hardware, • The calculating of conductor load in tension. In addition the work shall include conductive clothing application and maintenance; • working from a helicopter platform; • safe working practices in and around aircraft
The following constants and variables included in this unit:	• Appropriate and relevant persons (see Personnel) • Appropriate authorities • Appropriate work platform • Assessing risk • Assessment • Authorization • 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 • Legislation • MSDS • Notification • OHS practices • OHS issues • Permits and/or permits to work • Personnel • Quality assurance systems • Requirements • Testing procedures • Work clearance systems

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • Implement Occupational Health and Safety workplace procedures and practices including the use of risk control measures • Apply sustainable energy principles and practices • Conduct work observing the relevant Anti Discrimination legislation, regulations, polices and workplace procedures
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • Extra high voltage bare-hand live-line using a helicopter • HV principles
Underpinning Skills	Demonstrates skills to: • safe working practices and applying OHS practices • Power line safety practices
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test

	• Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Power Transmission Systems Installation and Maintenance Level III	
Unit Title	**Monitor Implementation of Workplan/Activities**
Unit Code	**EIS TIM3 12 0612**
Unit Descriptor	This unit covers competence required to oversee and monitor the quality of work operations within an enterprise. This unit may be carried out by team leaders or supervisors.

Elements	Performance Criteria
1. Monitor and improve workplace operations	1.1 Efficiency and service levels are monitored on an ongoing basis. 1.2 Operations in the workplace support overall enterprise goals and quality assurance initiatives. 1.3 Quality ***problems*** and issues are promptly identified and adjustments are made accordingly. 1.4 Procedures and systems are changed in consultation with colleagues to improve efficiency and effectiveness. 1.5 Colleagues are consulted about ways to improve efficiency and service levels.
2. Plan and organise workflow	2.1 Current workload of colleagues is accurately assessed. 2.2 Work is scheduled in a manner which enhances efficiency and customer service quality. 2.3 Work is delegated to appropriate people in accordance with principles of delegation. 2.4 Workflow is assessed against agreed objectives and timelines and colleagues are assisted in prioritisation of workload. 2.5 Input is provided to appropriate management regarding staffing needs.
3. Maintain workplace records	3.1 ***Workplace records*** are accurately completed and submitted within required timeframes. 3.2 Where appropriate completion of records is delegated and monitored prior to submission.
4. Solve problems and make decisions	4.1 Workplace problems are promptly identified and considered from an operational and customer service perspective. 4.2 Short term action in initiated to resolve the immediate problem where appropriate. 4.3 Problems are analysed for any long term impact and

	potential solutions are assessed and acted in consultation with relevant colleagues. 4.4 Where problem is raised by a team member, they are encouraged to participate in solving the problem. 4.5 Follow up action is taken to monitor the effectiveness of solutions in the workplace.

Variables	**Range**
Problems	May include but not limited to: • difficult customer service situations • equipment breakdown/technical failure • delays and time difficulties • competence
Workplace records	May include but is not limited to: • staff records and regular performance reports

Evidence Guide	
Critical Aspects of Competence	Assessment must confirm appropriate knowledge and skills to: • ability to effectively monitor and respond to a range of common operational and service issues in the workplace • understanding of the role of staff involved in workplace monitoring • knowledge of quality assurance, principles of workflow planning, delegation and problem solving
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • roles and responsibilities in monitoring work operations • overview of leadership and management responsibilities • principles of work planning and principles of delegation • typical work organization methods appropriate to the sector • quality assurance principles and time management • problem solving and decision making processes • industrial and/or legislative issues which affect short term work organization as appropriate to industry sector
Underpinning Skills	Demonstrate skills to: • monitoring and improving workplace operations • planning and organizing workflow • maintaining workplace records
Resource Implications	Access is required to real or appropriately simulated work areas, materials and equipment
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the workplace or in a simulated workplace setting

Occupational Standard: Power Transmission Systems Installation and Maintenance Level III	
Unit Title	**Apply Quality Control**
Unit Code	**EIS TIM3 13 0612**
Unit Descriptor	This unit covers the knowledge, attitudes and skills required in applying quality control in the work operation and activities.

Elements	Performance Criteria
1. Implement quality standards	1.1 Agreed quality standard and procedures are acquired and confirmed 1.2 Standard procedures are introduced to organizational staff / personnel. 1.3 Quality standard and procedures documents are provided to employees in accordance with the organization policy. 1.4 Standard procedures are revised / updated when necessary
2. Assess quality of service delivered	2.1 Services delivered are ***checked*** against organization ***quality standards*** and specifications 2.2 Service delivered are evaluated using the appropriate evaluation ***parameters*** and in accordance with organization standards 2.3 Causes of any identified faults are identified and corrective actions are taken in accordance with organization policies and procedures
3. Record information	3.1 Basic information on the quality performance is recorded in accordance with organization procedures 3.2 Records of work quality are maintained according to the requirements of the organization
4. Study causes of quality deviations	4.1 Causes of deviations from final outputs or services are investigated and reported in accordance with organization procedures 4.2 Suitable preventive action is recommended based on organization ***quality standards*** and identified causes of deviation from specified quality standards of final service or output
5. Complete documentation	5.1 Information on quality and other indicators of service performance is recorded. 5.2 All service processes and outcomes are recorded.

Variable	Range
Quality check	• Check against design / specifications • Visual inspection and Physical inspection
Quality standards	• materials • components • process • procedures
Quality parameters	• standard design / specifications • material specification

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • Checked completed work continuously against organization standard • Identified and isolated faulty or poor service • Checked service delivered against organization standards • Identified and applied corrective actions on the causes of identified faults or error • Recorded basic information regarding quality performance • Investigated causes of deviations of services against standard • Recommended suitable preventive actions
Underpinning Knowledge	Demonstrates knowledge of: • Relevant quality standards, policies and procedures • Characteristics of services • Safety environment aspects of service processes • Evaluation techniques and quality checking procedures • Workplace procedures and reporting procedures
Underpinning Skills	Demonstrates skills to: • interpret work instructions, specifications and standards appropriate to the required work or service • carry out relevant performance evaluation • maintain accurate work records • meet work specifications and requirements • communicate effectively within defined workplace procedures
Resource Implications	The following resources should be provided: • Access to relevant workplace or appropriately simulated environment and materials relevant to the activity/ task
Methods of Assessment	Competence may be accessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the workplace or in a simulated workplace setting

Occupational Standard: Power Transmission Systems Installation and Maintenance Level III	
Unit Title	**Lead Workplace Communication**
Unit Code	**EIS TIM3 14 0612**
Unit Descriptor	This unit covers the knowledge, attitudes and skills needed to lead in the dissemination and discussion of information and issues in the workplace.

Elements	Performance Criteria
1. Communicate information about workplace processes	1.1 Appropriate ***communication method*** is selected 1.2 Multiple operations involving several topics areas are communicated accordingly 1.3 Questions are used to gain extra information 1.4 Correct sources of information are identified 1.5 Information is selected and organized correctly 1.6 Verbal and written reporting is undertaken when required 1.7 Communication skills are maintained in all situations
2. Lead workplace discussion	2.1 Response to workplace issues are sought 2.2 Response to workplace issues are provided immediately 2.3 Constructive contributions are made to workplace discussions on such issues as production, quality and safety 2.4 Goals/objectives and action plan undertaken in the workplace are communicated.
3. Identify and communicate issues arising in the workplace	3.1 Issues and problems are identified as they arise 3.2 Information regarding problems and issues are organized coherently to ensure clear and effective communication 3.3 Dialogue is initiated with appropriate staff/personnel 3.4 Communication problems and issues are raised as they arise

Variable	Range
Methods of communication	• Non-verbal gestures • Verbal • Face to face • Two-way radio • Speaking to groups • Using telephone • Written • Using Internet • Cell phone

Evidence Guide	
Critical Aspects of Competence	Demonstrates skills and knowledge to: • Dealt with a range of communication/information at one time • Made constructive contributions in workplace issues • Sought workplace issues effectively • Responded to workplace issues promptly • Presented information clearly and effectively written form • Used appropriate sources of information • Asked appropriate questions • Provided accurate information
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • Organization requirements for written and electronic communication methods • Effective verbal communication methods
Underpinning Skills	Demonstrates skills to: • Organize information • Understand and convey intended meaning • Participate in variety of workplace discussions • Comply with organization requirements for the use of written and electronic communication methods
Resources Implication	The following resources must be provided: variety of information, communication tools, simulated workplace
Methods of Assessment	Competence may be assessed through: • Interview / Oral Questioning • Observation/Demonstration
Context of Assessment	Competence may be assessed in the workplace or in a simulated workplace setting

Occupational Standard: Power Transmission Systems Installation and Maintenance Level III	
Unit Title	**Lead Small Teams**
Unit Code	**EIS TIM3 15 0612**
Unit Descriptor	This unit covers the knowledge, attitudes and skills to lead small teams including setting and maintaining team and individual performance standards.

Elements	Performance Criteria
1. Provide team leadership	1.1 ***Work requirements*** are identified and presented to team members 1.2 Reasons for instructions and requirements are communicated to team members 1.3 ***Team members' queries and concerns*** are recognized, discussed and dealt with
2. Assign responsibilities	2.1 Duties and responsibilities are allocated having regard to the skills, knowledge and aptitude required to properly undertake the assigned task and according to company policy 2.2 Duties are allocated having regard to individual preference, domestic and personal considerations, whenever possible
3. Set performance expectations for team members	3.1 Performance expectations are established based on client needs and according to assignment requirements 3.2 Performance expectations are based on individual team members duties and area of responsibility 3.3 Performance expectations are discussed and disseminated to individual team members
4. Supervised team performance	4.1 ***Monitoring of performance*** takes place against defined performance criteria and/or assignment instructions and corrective action taken if required 4.2 Team members are provided with ***feedback***, positive support and advice on strategies to overcome any deficiencies 4.3 ***Performance issues*** which cannot be rectified or addressed within the team are referenced to appropriate personnel according to employer policy 4.4 Team members are kept informed of any changes in the priority allocated to assignments or tasks which might impact on client/customer needs and satisfaction 4.5 Team operations are monitored to ensure that employer/

	client needs and requirements are met 4.6 Follow-up communication is provided on all issues affecting the team 4.7 All relevant documentation is completed in accordance with company procedures

Variable	**Range**
Work requirements	• client profile • assignment instructions
Team member's concerns	• roster/shift details
Monitor performance	• formal process • informal process
Feedback	• formal process • informal process

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • maintained or improved individuals and/or team performance given a variety of possible scenario • assessed and monitored team and individual performance against set criteria • represented concerns of a team and individual to next level of management or appropriate specialist and to negotiate on their behalf • allocated duties and responsibilities, having regard to individual's knowledge, skills and aptitude and the needs of the tasks to be performed • set and communicated performance expectations for a range of tasks and duties within the team and provided feedback to team members
Underpinning Knowledge and Attitudes	Demonstrates knowledge of • maintaining or improving individuals and/or team performance given a variety of possible scenario • assessing and monitoring team and individual performance against set criteria • representing concerns of a team and individual to next level of management or appropriate specialist and to negotiate on their behalf • allocating duties and responsibilities, having regard to individual's knowledge, skills and aptitude and the needs of the tasks to be performed • setting and communicating performance expectations for a range of tasks and duties within the team and providing feedback to team members

Underpinning Skills	• communication skills required for leading teams • informal performance counseling skills • team building skills • negotiating skills
Resource Implications	• access to relevant workplace or appropriately simulated environment where assessment can take place • materials relevant to the proposed activity or task
Methods of Assessment	Competence may be assessed through: • Interview / Oral questioning / Written Test • Observation/Demonstration
Context of Assessment	Competence may be assessed individually in the actual workplace or through accredited institution

Occupational Standard: Power Transmission Systems Installation and Maintenance Level III	
Unit Title	**Improve Business Practice**
Unit Code	**EIS TIM3 16 0612**
Unit Descriptor	This unit covers the skills, knowledge and attitudes required in promoting, improving and growing business operations.

Elements	Performance Criteria
1. Diagnose the business	1.1 ***Data required*** for diagnosis is determined and acquired 1.2 ***Competitive advantage*** of the business is determined from the data 1.3 ***SWOT analysis*** of the data is undertaken
2. Benchmark the business	2.1 Sources of relevant benchmarking data are identified 2.2 ***Key indicators*** for benchmarking are selected in consultation with key stakeholders 2.3 Like indicators of own practice are compared with benchmark indicators 2.4 Areas for improvement are identified
3. Develop plans to improve business performance	3.1 A consolidated list of required improvements is developed 3.2 Cost-benefit ratios for required improvements are determined 3.3 Work flow changes resulting from proposed improvements are determined 3.4 Proposed improvements are ranked according to agreed criteria 3.5 An action plan to implement the top ranked improvements is developed and agreed 3.6 ***Organizational structures*** are checked to ensure they are suitable
4. Develop marketing and promotional plans	4.1 The practice vision statement is reviewed 4.2 Practice ***objectives*** are developed/reviewed 4.3 Target markets are identified/refined 4.4 ***Market research data*** is obtained 4.5 ***Competitor analysis*** is obtained 4.6 ***Market position*** is developed/reviewed 4.7 Practice ***brand*** is developed 4.8 ***Benefits*** of practice/practice products/services are

	identified 4.9 ***Promotion tools*** are selected/developed
5. Develop business growth plans	5.1 Plans to increase ***yield per existing client*** are developed 5.2 Plans to add new clients are developed 5.3 Proposed plans are ranked according to agreed criteria 5.4 An action plan to implement the top ranked plans is developed and agreed 5.5 Practice work practices are reviewed to ensure they support growth plans
6. Implement and monitor plans	6.1 Implementation plan is developed in consultation with all relevant stakeholders 6.2 Indicators of success of the plan are agreed 6.3 Implementation is monitored against agreed indicators 6.4 Implementation is adjusted as required

Variable	**Range**
Data required includes:	• organization capability • appropriate business structure • level of client service which can be provided • internal policies, procedures and practices • staff levels, capabilities and structure • market, market definition • market changes/market segmentation • market consolidation/fragmentation • revenue • level of commercial activity • expected revenue levels, short and long term • revenue growth rate • break even data • pricing policy • revenue assumptions • business environment • economic conditions • social factors • demographic factors • technological impacts • political/legislative/regulative impacts • competitors, competitor pricing and response to pricing • competitor marketing/branding • competitor products
Competitive advantage	• services/products • fees

includes:	• location • timeframe
Objectives should be 'SMART' , that	• Specific • Measurable • Achievable • Realistic • Time defined

Market research data includes:	• data about existing clients
	• data about possible new clients
	• data from internal sources
	• data from external sources such as:
	• trade associations/journals
	• Yellow Pages small business surveys
	• libraries
	• Internet
	• Chamber of Commerce
	• client surveys
	• industry reports
	• secondary market research
	• primary market research such as:
	  • telephone surveys
	  • personal interviews
	  • mail surveys

Competitor analysis	• competitor offerings • competitor promotion strategies and activities • competitor profile in the market place
SWOT analysis includes:	• internal strengths such as staff capability, recognized • quality • internal weaknesses such as poor morale, • under-capitalization, poor technology • external opportunities such as changing market and • economic conditions • external threats such as industry fee structures, strategic • alliances, competitor marketing
Key indicators may include:	• salary cost and staffing • personnel productivity (particularly of principals) • profitability • fee structure • client base • size staff/principal • overhead/overhead control
Organizational structures include:	• legal structure (partnership, limited liability company, etc.) • organizational structure/hierarchy • reward schemes
Market position should	• product • the good or service provided

include data on:	• product mix • the core product - what is bought • the tangible product - what is perceived • the augmented product - total package of consumer • features/benefits • product differentiation from competitive products • new/changed products • price and pricing strategies (cost plus, supply/demand, ability to pay, etc.) • pricing objectives (profit, market penetration, etc.) • cost components • market position • distribution strategies • marketing channels • promotion • promotional strategies • target audience • communication • promotion budget
Practice brand may include:	• practice image • practice logo/letter head/signage • phone answering protocol • facility decor • slogans • templates for communication/invoicing • style guide • writing style • AIDA (attention, interest, desire, action)
Benefits may include:	• features as perceived by the client • benefits as perceived by the client
Promotion tools include:	• networking and referrals • seminars • advertising • press releases • publicity and sponsorship • brochures • newsletters (print and/or electronic) • websites • direct mail • telemarketing/cold calling
Yield per existing client may be increased by:	• raising charge out rates/fees • packaging fees • reduce discounts • sell more services to existing clients

Evidence Guide	
Critical Aspects of Competence	The candidate must be able to demonstrate: • ability to identify the key indicators of business performance • ability to identify the key market data for the business • knowledge of a wide range of available information sources • ability to acquire information not readily available within a business • ability to analyze data and determine areas of improvement • ability to negotiate required improvements to ensure implementation • ability to evaluate systems against practice requirements • and form recommendations and/or make recommendations • ability to assess the accuracy and relevance of information
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • data analysis • communication skills • computer skills to manipulate data and present information • negotiation skills and problem solving • planning skills • marketing principles • ability to acquire and interpret relevant data • current product and marketing mix • use of market intelligence • development and implementation strategies of promotion and growth plans
Underpinning Skills	Demonstrates skill in: • analysis and manipulation of data • ability to acquire and interpret required data, current practice systems and structures and sources of relevant benchmarking data • applying methods of selecting relevant key benchmarking indicators • communication skills • working and consulting with others when developing plans for the business • planning skills, negotiation skills and problem solving • using computers to manipulate, present and distribute information
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of	Competence may be assessed in the workplace or in a

Assessment	simulated workplace setting

NTQF Level IV

Occupational Standard: Power Transmission Systems Installation and Maintenance Level IV	
Unit Title	**Apply Environment and Sustainable Energy Procedures**
Unit Code	**EIS TIM4 01 0612**
Unit Descriptor	This competence standard unit covers the implementation of relevant environmental procedures to specific projects/sites. It includes the identification of possible environmental risks and impacts, the undertaking of work in accordance with sustainable energy and energy conservation principles, the provision of re-cycling materials and the recording and reporting of environmental incidents. It also encompasses the process of reviewing and participating and contributing in environmental procedures according to established enterprise requirements.

Elements	Performance Criteria
1. Prepare to implement environmental and sustainable energy	1.1 Works schedule(s), including drawings, plans, requirements, established procedures, and material lists, are received, analyzed 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 implementation of environmental and sustainable energy procedures are obtained and confirmed for the purposes of the work to be performed and communicated. 1.4 ***Environmental*** and sustainable energy procedures are identified, prioritized and combined within relevant projects, 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 prioritized, 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 environmental and sustainable energy procedures, 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 environmental and sustainable energy procedures and other related work procedures according to requirements. 1.9 Liaison and communication issues with other/authorized personnel, authorities, clients and land owners are resolved to carry out work where necessary. 1.10 Site is prepared according to the work schedule, taking into account environmental and sustainable energy procedures and the need to minimize risk and damage to property, commerce, and individuals in accordance with established procedures. 1.11 Personnel participating in the work, including plant operators and contractors, are fully briefed on environmental and sustainable energy procedures and respective responsibilities confirmed where applicable in accordance with established procedures.
2. Carry out environmental and sustainable energy procedures	2.1 OHS and sustainable energy principles and practices to reduce the ***incidents*** of accidents and minimize waste are monitored and followed in accordance with requirements and/or established procedures. 2.2 Use of power tools/equipment, techniques and practices are safely followed under environmental and sustainable energy procedures and, currency according to requirements confirmed. 2.3 Essential knowledge and associated skills are applied in the safe implementation of environmental and sustainable energy procedures to ensure completion in an agreed timeframe and, to quality standards with a minimum of waste according to requirements. 2.4 Relevant environmental procedures are applied to a ***specific project(s)/site(s).*** 2.5 Work is conducted in accordance with the principles of sustainable energy and energy conservation. 2.6 Provision for the re-cycling or re-use of materials is undertaken where possible. 2.7 Hazard warnings and safety signs are recognized and hazards and assessed OHS ***risks*** are reported to the immediate authorized persons for directions according to established procedures.

	2.8 Unplanned events in the implementation of environmental and sustainable energy procedures are undertaken within the scope of established procedures. 2.9 Known solutions to a variety of problems are applied using acquired essential knowledge and associated skills on environmental and sustainable energy procedures. 2.10 Ongoing checks of quality of the work are undertaken in accordance with instructions and established procedures.
3. Complete the environmental and sustainable energy procedures	3.1 Work undertaken is checked against works schedule for conformance with requirements and environmental and sustainable energy procedures 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 environmental and sustainable energy procedures as well as other established procedures. 3.4 Tools, equipment and any surplus resources and materials are, where appropriate, cleaned, checked and returned to storage in accordance with environmental and sustainable energy procedures as well as other established procedures. 3.5 Relevant work permit(s) are signed off and, environmental risks/incidents and potential impacts are reported and recorded according to requirements/established procedures. 3.6 Works completion records, reports, as installed /modified drawing and/or documentation and information are finalized and processed and appropriate personnel notified.

Variable	**Range**
Environmental risks	may include: • impact of mismanagement of chemicals • impact of mismanagement of biological agents • detrimental impact on limited water resources • spillage • waste disposal • detrimental impact on water catchment areas (urban and non-urban)

	• detrimental impact on rivers • waterways and channels • unsatisfactory trade waste treatment • and disposal processes • poor construction processes • planning deficiencies • neglect of sustainable energy principles
Environmental legislation	May include: • relevant federal legislation • relevant local government by-laws • relevant government or quasi government policies and regulations • relevant community planning and development agreements (e.g. land care agreements)
Environmental management documentation	May include: • information on applicable environmental laws or other requirements • complaint records • training records • process information • process operational log books • inspection • maintenance and calibration records • relevant contractor and supplier information • incident reports • information on emergency preparedness and response • records of significant environmental impacts • chain of custody and compliance records • audit results • management reviews
Incidents of environmental impact	May include: • emissions to air • releases to/of water • releases to land • vibration and noise • disposal of waste • contamination of land • impact on communities • destruction of habitat • use of energy sources • waste generation processes and technologies • impact on culturally significant sites • may involve the implementation of emergency responses
Specific project(s)/site(s)	may include, but is not limited to: • buildings • plants construction and maintenance sites • workshops

	• laboratories • catchments • flood plains irrigation sites • wetlands • drainage sites • waste disposal sites • easements
The following constants and variables included in this unit:	• Appropriate and relevant persons (see Personnel) • Appropriate authorities • Assessing risk • Assessment • Authorization • 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 • Legislation • MSDS • Notification • OHS practices • OHS issues • Permits and/or permits to work • Personnel • Quality assurance systems • Requirements • Testing procedures • Work clearance systems

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • Implement Occupational Health and Safety workplace procedures and practices including the use of risk control measures • Apply sustainable energy principles and practices • Conduct work observing the relevant legislation, regulations, policies and workplace procedures

Underpinning Knowledge and Attitudes	Demonstrates knowledge to: • applying environmental and sustainable energy procedures • Occupational Health and Safety principles • Environmental Fundamentals
Underpinning Skills	Demonstrates skills to: • Material handling and the environment • Filtering and sampling oil and the environment • Enterprise specific - OHS instructions
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Power Transmission Systems Installation and Maintenance Level IV	
Unit Title	**Operate Plant and Equipment near Live Electrical Conductors/Apparatus**
Unit Code	**EIS TIM4 02 0612**
Unit Descriptor	This competence standard unit covers the safe operation and maintenance of plant and equipment near live electrical conductors and/or apparatus. It encompasses plant and equipment relevant to the enterprise and is in addition to any local government legislation and or regulatory requirements regarding the operation of that plant and or equipment. It includes the conducting of operational checks, the correct positioning of road signs, barriers and or warning devices. It also encompasses the completion of log books and job completion documentation.

Elements	Performance Criteria
1. Prepare to operate plant and equipment near energized and exposed electrical conductors/apparatus	1.1 Works schedule(s), including drawings, plans, requirements, established procedures, and material lists, are received, analyzed and confirmed, if necessary, by site inspection. 1.2 Relevant requirements and established procedures for the operation of plant and equipment near energized and exposed electrical conductors/apparatus 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 operation of plant and equipment near energized and exposed electrical conductors/apparatus are obtained and confirmed for the purposes of the work to be performed and communicated. 1.4 Work is prioritized 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 prioritized, 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/authorized personnel, authorities, clients and land owners are resolved to carry out work where necessary. 1.10 Site is prepared according to the work schedule and to minimize risk and damage to property, commerce, and individuals in accordance with established procedures. 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. 1.12 Road signs, barriers and warning devices are positioned in accordance with requirements.
2. Carry out the operation of plant and equipment near energized and exposed electrical conductors/apparatus	2.1 OHS and sustainable energy principles and practices to reduce the incidents of accidents and minimize waste are monitored and followed in accordance with requirements and/or established procedures. 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. 2.3 Apply essential knowledge and associated skills in the safe operation of plant and equipment near energized and exposed electrical conductors/apparatus to ensure completion in an agreed timeframe and, to quality standards with a minimum of waste according to requirements. 2.4 Plant and equipment are safely operated near energized and exposed electrical conductors/apparatus according to requirements and established procedures. 2.5 Hazard warnings and safety signs are recognized and hazards and assessed OHS risks are reported to the immediate authorized persons for directions according to established procedures. 2.6 Unplanned events in the operation of plant and equipment near energized and exposed electrical conductors/apparatus are undertaken within the scope of established procedures.

	2.7 Known solutions to a variety of problems are applied using acquired essential knowledge and associated skills. 2.8 Ongoing checks of quality of the work are undertaken in accordance with instructions and established procedures.
3. Complete the operation of plant and equipment near energized and exposed electrical conductors/ apparatus.	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 in accordance with established procedures. 3.5 Relevant work permit(s) are signed off and, ***plant*** and equipment are checked, returned to service/stored appropriately, in accordance with requirements and established procedures. 3.6 Works completion records, reports, as installed/modified drawing and/or documentation and information are finalized and processed and appropriate personnel notified.

Variable	**Range**
Equipment	May include: • hand operated ratchet and friction grip winches • chain pullers • block and tackle
Support plant	May include: • elevating work platform • back hoes • earth drilling rigs • trench excavators • heavy vehicles • concrete cutters • compressors • portable generators • welders • crimper-cutters

	• pumps • chain-saws • jack-hammers • post hole diggers • sand-blasters • drills • self-loading vehicle
The following constants and variables included in this unit:	• Appropriate and relevant persons (see Personnel) • Appropriate authorities • Assessing risk • Assessment • Authorization • 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 • Legislation • MSDS • Notification • OHS practices • OHS issues • Permits and/or permits to work • Personnel • Quality assurance systems • Requirements • Testing procedures • Work clearance systems

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • Implement Occupational Health and Safety workplace procedures and practices including the use of risk control measures • Apply sustainable energy principles and practices • Conduct work observing the relevant legislation, regulations, policies and workplace procedures
Underpinning	Demonstrates knowledge to:

Knowledge and Attitudes	• Basic electrical principles • Magnetism • Electromagnetic principles • Electro technology science and materials • Hand tools • Power tools • Occupational Health and Safety principles • Electrical safe working practice • Engineering applications of mathematical principles • Engineering applications of mechanical principles • Engineering applications of material properties • Elevating work platform operational principles • Hydraulic and pneumatic portable equipment • Enterprise vehicles • Chain saw principles • Generation power systems • Environmental fundamentals • Material handling and the environment • Enterprise specific - policy and procedure instructions
Underpinning Skills	Demonstrates skills to: • Basic electrical practices • Magnetism • Electromagnetic practices • Electro technology science and materials • Hand tools • Power tools • Occupational health and safety practices • Electrical safe working practice • Engineering applications of mathematical principles • Engineering applications of mechanical principles • Engineering applications of material properties • Elevating work platform operational practices • Hydraulic and pneumatic portable equipment • Enterprise vehicles • Chain saw practices • Generation power systems
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Power Transmission Systems Installation and Maintenance Level IV	
Unit Title	**Work Safely near Live Electrical Apparatus as Non-Electrical Worker**
Unit Code	**EIS TIM4 03 0612**
Unit Descriptor	This unit covers compliance with working safely up to the defined "safe approach distance" near energized electrical apparatus (including electrical power lines) for non-electrical worker. It includes work functions that may be performed, such as vegetation control, scaffolding, rigging, painting, and/or any other activity that requires working safely and complying with requirements and/or established procedures near live electrical apparatus by a non-electrical worker. Also included is the preparation of risk assessment control measures that encompass job safety assessment. It does not include any work that is or may be performed by other competent operatives within the defined "safe working zone". The defined "safe working zone" is that so defined by relevant regulatory agencies/bodies, local government legislation, Industry bi-partite body – Guidelines/ Codes of Practices or other related requirements for Safe work and access near live electrical and mechanical apparatus.

Elements	Performance Criteria
1. Prepare to work safely near live electrical apparatus as nonelectrical worker	1.1 Instructions related to the work to be performed safely near live electrical apparatus as non-electrical worker are received and confirmed. 1.2 Relevant requirements and established procedures to be followed and, relevant personnel to be communicated with for the work to be performed are identified. 1.3 ***OHS*** policies and procedures to be followed for the work to be performed are received and confirmed. 1.4 Suggestions to assist in meeting the safety requirements for working near live electrical apparatus as a non-electrical worker are made to others involved in the work. 1.5 ***Hazards*** are identified, OHS risks assessed and control measures are prioritized, implemented and monitored including emergency exits kept clear according to established procedures. 1.6 Scope of responsibility and process of relevant work

		permit(s) issue is identified, received and confirmed according to requirements and established procedures.
	1.7	Relevant responsibility associated with First Aid, Safety Observers and/or other related work safety procedures at the worksite are identified in accordance with requirements and established procedures to ensure safety measures are followed in the instance of an incident.
	1.8	Processes for identifying and reporting client issues to appropriate personnel in accordance with industry/acceptable /community standards are identified.
	1.9	Site and the work schedule to be prepared are confirmed according to given instructions for a quality outcome and to minimize risk and damage to property, commerce, stock and individuals in accordance and established procedures.
	1.10	Electricity infrastructure assets, related voltages and requirements for working safely near live electrical apparatus as non-electrical worker are identified.
	1.11	Safe approach distances including any zones thereof that may apply, as defined in industry guidelines, requirements and/or established procedures for the intended work are confirmed.
2. Carry out the work safely near live electrical apparatus as non-electrical worker.	2.1	OHS principles and practices to reduce the incidents of accidents are identified in accordance with given instructions, requirements and/or established procedures.
	2.2	Working safely and complying with all safety requirements for working near live electrical apparatus as a non-electrical worker are followed in accordance with given instructions and established routines/procedures.
	2.3	Processes for monitoring and reporting/referring hazards and OHS risks to the immediate authorized personnel for directions according to established procedures are followed.
	2.4	Non-routine events are referred to the immediate authorized personnel for directions according to established procedures.
	2.5	Unexpected events associated with working safely near live electrical apparatus as a non-electrical worker are responded to using acquired known solutions and skills related to routine procedures to ensure work instructions and established procedures are met.

3. Complete the work safely near live electrical apparatus as non-electrical worker.	3.1 Work schedule and anomalies for completion and checking of the work are reported to authorized personnel in accordance with established procedures. 3.2 Processes for reporting to authorized personnel accidents and/or incidents are confirmed in accordance with established procedures. 3.3 Requirements for returning work permit(s) and/or access Authorization permits are confirmed. 3.4 Appropriate personnel are notified of work completion according to established procedures. 3.5 Works completion records, report forms/data sheets are completed accurately in accordance with given instructions and established procedures.

Variable	**Range**

This unit shall/may be demonstrated in relation to:	• safe working so defined by relevant regulatory agencies/bodies, local government legislation,
	• Industry bi-partite body – Guidelines/Codes of Practices or other related requirements for safe work and access near live electrical apparatus.
	• Work functions that may be performed , such as:
	  • vegetation control
	  • operation of cranes
	  • elevating work platforms
	  • excavators
	  • concrete pumps etc.
	  • scaffolding
	  • rigging
	  • painting, and/or
	  • any other activity that requires working safely and complying with requirements and/or established procedures near live electrical apparatus by a non-electrical worker/
	• Working safely up to the defined “safe working zone” near energized electrical apparatus (including electrical power lines) for non-electrical worker including an understanding of risk assessment control measures that encompass job safety assessment but excluding any work that is or may be performed by other competent operatives within the defined “safe working zone”.
	• Safe use of plant, equipment and tools within electrical environments including but not limited by:
	  • the electricity supply infrastructure assets,
	  • infrastructure constructions and excavations including

	an understanding of safe approach distances zones/safe working clearance • work permit(s) and/or access authorization permits • technical standards and industry guidelines • rural applications • road construction • pavements and effect of inclement weather
The following constants and variables included in this unit:	• Appropriate and relevant persons • Appropriate authorities • Assessing risk • Authorization • Drawings and specifications • Emergency • Established procedures • Hazards • Identifying hazards • Legislation • Notification • OHS practices • OHS issues • Permits and/or permits to work • Work clearance systems

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • Implement occupational health and safety workplace procedures and practices including the use of risk control measures • Apply sustainable energy principles and practices • Conduct work observing the relevant legislation, regulations, policies and workplace procedures
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: Basic electrical principles Evidence shall show an understanding of electrical principles to an extent indicated by the following aspects: • Nature of electrical current and charge • Sources of electricity • Effects of current • Single-source single-load circuits encompassing: • components that make up the circuit, and • relationship between voltage and current • Consequences of short-circuit and an open-circuit • Occupational Health and Safety principles • Evidence shall show an understanding of occupational health and safety to an extent indicated by the following aspects

	• The basic legal requirements covering occupational health and safety in the workplace encompassing:
	  • general aims and objectives of the relevant state or territory legislation relating to OHS
	  • employer and employee responsibilities, rights and obligations
	  • major functions of safety committees and representatives
	  • powers give to Occupational Health and Safety Inspectors
	• The requirements for personal safety in the workplace encompassing:
	  • the safety precautions that are required to ensure personal safety in the workplace
	  • potential hazards in relation to improper industrial housekeeping
	  • sources of pollution in an engineering environment and outline control measures
	• Workplace safety check, identifying potential workplace hazards and suggested measures for accident prevention encompassing:
	  • safety checklist for a typical workplace environment
	  • identifying and reporting potential workplace hazards
	  • methods of prevention of safety hazards within a typical workplace environment
	• working safely with electrical tools or equipment encompassing:
	  • causes of electrical accidents and state the effects that electric shock can cause
	  • purpose of circuit protection devices, such as fuses, circuit breakers and Residual
	Current Devices (RCDs)
	• safe isolation of an electrical supply
	• emergency procedures for the rescue of an electric shock victim equipment
	• emergency First Aid for an electric shock victim
	Note: Emergency first aid is limited to first-on-the scene assistance to a victim of electric shock, and basics of CPR.
	• Electrical safe working practice
	Evidence shall show an understanding of working safely on or around electrical equipment through the application of risk management principles and control measures for dealing with non-electrical hazards and extra-low voltage, low-voltage and high-voltage hazards and high-current hazards. The following aspects indicate the extent of understanding required:
	• Risk management and assessment of risk encompassing:.

	• Principle and purpose of risk management • Processes for conducting a risk assessment • Hazards associated with low-voltage, extra-low voltage and high-currents encompassing: • Arrangement of power distribution and circuits in an electrical installations • Parts of an electrical system and equipment that operate at low-voltage and extra low Voltage • Parts of an electrical system and equipment where high-currents are likely. Risks and control measures associated with high-voltage encompassing: • Parts of an electrical system and equipment that operate at high-voltage, • The terms 'touch voltage', 'step voltage', 'induced voltage' and 'creep age' as they relate to the hazards of high-voltage, and • Control measures used for dealing with the hazards of high-voltage. • Optical fiber safety encompassing: • Coherent optical sources and joining procedures • Laser safety class 3a devices or their replace • Risks and control measures associated with low voltage encompassing: • Risks associated with modifying electrical installations, fault finding, maintenance and repair • Control measures before, while and after working on electrical installations, circuits or equipment • Isolation and tagging-off procedures • Risks and restrictions in working live • Control measures for working live. • Risks and control measures associated with harmful dusts and airborne contaminants. Note: Sources include thermal insulation, fibrous cement materials and asbestos and other fiber reinforced switchboard materials. • Safety, selection, use, maintenance and care of test equipment encompassing: • Safety characteristics of electrical testing devices • Safe use of electrical testing device • Checks and storage methods for maintaining the safety of testing devices. Transmission, distribution and rail power systems Evidence shall show an understanding of transmission, distribution and rail systems to an extent indicated by the following aspects: • Relationship between the transmission, distribution and rail system within an overall power system

	Note: Examples include different organizations responsible for generation, transmission, distribution and rail and, how they correlate and their functions
	• Characteristics of a transmission, a distribution and a rail system
	Note: Examples include principal components, typical voltage levels and methods of transmission and distribution including grid type transmission systems, radial, parallel and ring main feeders
	• Relationship between an overhead and underground supply systems within an overall power system
	Note: Examples include advantages/disadvantages, applications and the basic steps for planning and installing an overhead and underground distribution system
	• Single line drawings and layouts
	Note: Examples of drawings and layouts of transmission and distribution systems including, radial, parallel and ring main feeders and the HV equipment associated with substations
	Fundamentals for working safely near live electrical apparatus
	Evidence shall show an understanding of working safely up to the defined “safe working zone” near energized electrical apparatus (inc. electrical power lines) for non-electrical worker to an extent indicated by the following aspects:
	• Standards, guidelines/codes of practice, local government legislation, supply authority regulations and or enterprise requirements including relevant certification and licensing, applicable to working safely up to the defined “safe working zone” near energized electrical apparatus (inc. electrical power lines) for non-electrical worker
	• Definitions of terminologies
	Note: Examples include ‘safe working zone’ ‘risk assessment’, ‘safe approach distances zones’, ‘safe working distances’.’ work permits’, access Authorization permits’, ‘Technical standards’
	‘isolation procedures’ and compliance requirements’
	• OHS policies and procedures for working safely encompassing:
	  • emergency response and first aid procedures such as CPR
	  • roles and responsibilities of employers, employees and other parties under ohs legislation
	  • personal protective equipment
	  • identifying hazards, assessing and controlling OHS risks
	  • first aid procedures
	  • duties of a safety observer

	• working at heights/confined spaces • permit to work systems and isolation procedures • safe application of different types of tools and equipment • operation of mobile plant and machinery (e.g. EWP) near live electrical apparatus • Electricity supply infrastructure assets and voltages • Techniques and precautions in undertaking different work functions and working safely up to the defined "safe working zone" near energized electrical apparatus (including electrical power lines) for non-electrical worker Note: Examples of work functions that may be performed include, vegetation control, scaffolding, rigging, painting, and/or any other activity that requires working safely near live electrical apparatus by a non-electrical worker
Underpinning Skills	Demonstrates skills to: • Confirmation of the "safe working zone" for safe work and access near live electrical and mechanical apparatus • Identification of the relevant technical standards. Acts, regulations and codes/guidelines • Identification of established (enterprise) procedures • Confirmation of the principles of electricity, the three phase power system, electric shock and resuscitation, power system • Recognition of aerial voltage systems • Identification of Low Voltage • Aerial circuits • Identification of high voltage • Procedures in the event of an incident • Events constituting an incident • Procedures for responding to incidents • Hazard and risk assessment procedure • Conduct work-site hazard assessment • Confirmation of essential components of hazard assessment checks • Apply hazard identification in electrical work • Confirmation of the basic safety principles for work on • Identify electrical works hazard and risk
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Power Transmission Systems Installation and Maintenance Level IV	
Unit Title	**Implement and Monitor Organizational OHS Policies, Procedures and Programs**
Unit Code	**EIS TIM4 04 0612**
Unit Descriptor	This covers the implementation and monitoring of the participative arrangements for the management of the Organizational OHS policies procedures, programs and issues, including disseminating information on hazards and risk assessment to meet OHS standards. It also encompasses the collation of work group input, as well as implementation of enterprise procedures for resolving OHS issues.

Elements	Performance Criteria
4. Prepare/Plan to implement and monitor the Organizational OHS policies, procedures and programs	1.1 Works schedule(s), including drawings, plans, requirements, established procedures, and material lists, are received, analyzed, if necessary, by site inspection and the extent of the preparation of the work determined for planning and coordination. 1.2 Relevant requirements and established ***procedures*** for the work are communicated to all personnel and identified for all work sites. 1.3 ***Hazards*** are identified, ***OHS*** risks assessed and control measures are prioritized, implemented and monitored including emergency exits kept clear, to ensure safe systems of work are followed and according to established procedures. 1.4 Work is prioritized 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. 1.5 Risk control measures are identified, prioritized, implemented and evaluated against the work schedule. 1.6 Relevant work permits are secured to coordinate the performance of work according to requirements and/or established procedures. 1.7 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. 1.8 Clients/Customers are provided with alternative

	methods within the scope, acceptable cost and requirements. 1.9 Liaison and communication issues with other/authorized personnel, authorities, clients and land owners are resolved and activities coordinated to carry out work. 1.10 Site is prepared according to the work schedule and to minimize OHS risk, damage to property, commerce, and individuals in accordance with established procedures. 1.11 Personnel participating in the work, including plant operators and contractors, are fully briefed and respective responsibilities authorized and coordinated where applicable in accordance with established procedures. 1.12 Positioning of road signs, barriers and warning devices is planned in accordance with traffic control management requirements and established procedures.
5. Carry out the implementation and monitoring of the Organizational OHS policies, procedures and programs	2. 10 OHS and sustainable energy principles and practices to reduce the incidents of accidents and minimize waste are implemented and monitored in accordance with requirements and/or established procedures. 2. 11 First aid, pole top rescue and other related work procedures are performed according to requirements and/or established procedures. 2. 12 Lifting, climbing, working in confined spaces, working at heights, and use of power tools/equipment, techniques and practices are safely exercised according to requirements. 2. 13 Hazard warnings and safety signs are recognized and hazards and assessed OHS risks are risk control measures are implemented, preventative action taken and monitored and/or appropriate authorities consulted, where necessary, in accordance with requirements and established procedures. 2. 14 Remedial actions are taken to overcome any shortfalls encountered in the work schedule according to requirements and/or established procedures. 2. 15 Implementation and monitoring of the participative arrangements for the systematic management of Organizational OHS policy procedures, programs and issues are carried out, in accordance with the work schedule and requirements and/or established procedures.

	2. 16 Essential knowledge and associated skills in the safe implementation and monitoring of the participative arrangements for the management of Organizational OHS policy procedures, programs and issues is applied to ensure completion in an agreed timeframe and, to quality standards with a minimum of waste according to requirements. 2. 17 Solutions to non-routine problems are identified and acted using acquired essential knowledge and associated skills according to requirements. 2. 18 On-going checks of quality of the work are undertaken in accordance with requirements and established procedures to ensure a quality outcome is achieved for the client/customer and to a community/industry standard.
6. Complete the implementation and monitoring of the Organizational OHS policies, procedures and programs	3.7 Work undertaken is checked against works schedule for conformance with requirements, anomalies reported and solutions identified in accordance withestablished procedures. 3.8 Accidents, incidents and/or injuries are reported in accordance with requirements/established procedures. 3.9 Work site is rehabilitated, cleaned up and confirmed safe in accordance with established procedures. 3.10 Tools, equipment and any surplus resources and materials are, where appropriate, cleaned, checked and returned to storage in accordance with established procedures. 3.11 Relevant work permit(s) are signed off and, the work completed/returned to service and advised to client/customer in accordance with requirements. 3.12 Works completion records, reports, as installed / modified drawing(s) and/or documentation and information are confirmed, processed and appropriate personnel notified.

Variable	**Range**
In accordance with all relevant OHS legislation, particularly:	• general duty of care • requirements for maintenance and confidentiality of records of occupational injury and disease • provision of information and training • regulations and codes of practice relating to hazards present in work area • health and safety representatives and OHS committees • issue resolution

Hazardous events include:	• accidents, fire and emergencies such as chemical spills or bomb scares
Procedures for dealing with them include:	• evacuation, chemical containment and first aid • procedures
In accordance with workplace procedures for:	• risk assessment and management; inspection • housekeeping; participative arrangements , either general or specific to OHS training and assessment • specific hazard policies and procedures • OHS information • OHS record keeping • maintenance of plant and equipment • purchasing of supplies and equipment and • counseling/disciplinary processes

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • Implement Occupational Health and Safety workplace procedures and practices including the use of risk control measures • Apply sustainable energy principles and practices
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • implementing and monitoring the organizational OHS policies, procedures and programs • Enterprise specific - policies and procedure instructions • Enterprise specific - OHS instructions • Enterprise specific - technical drawings and documents
Underpinning Skills	Demonstrates skills of: • Power line safety - implementation and monitoring • Power line safety practices • Power line installation safety
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices. Moreover, access to: • a range of emergencies and hazardous events (may be gathered through simulations), • document on current OHS Acts, regulations and enterprise OHS policies and procedures • personal protective equipment (PPE)
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Power Transmission Systems Installation and Maintenance Level IV	
Unit Title	**Maintain HV Power System Circuit Breakers**
Unit Code	**EIS TIM4 05 0612**
Unit Descriptor	This covers the maintenance of high voltage power system circuit breakers including the diagnosis of faults and the repair and replacement of high voltage power system circuit breakers components in accordance with enterprise requirements. It includes the diagnostic checks, pre-commissioning tests and function checks involving the circuit breakers and their associated control circuits and interpretation of these tests against agreed specifications.

Elements	Performance Criteria
1. Prepare/plan to maintain High Voltage power system circuit breakers	1.1 Work schedules including drawings, plans, requirements procedures and material lists are acquired, analyzed and the extent of work determined. 1.2 Relevant requirements and established procedures for the work are communicated to all personnel and identified for all work sites. 1.3 Hazards are identified, OHS risks assessed and control measures are prioritized, implemented and monitored including emergency exits kept clear, to ensure safe systems of work are followed and according to established procedures. 1.4 Work is prioritized and sequenced for the most efficient and effective outcome following consultation with others for completion within acceptable timeframes, to agreed quality standards and in accordance with established policies and procedures. 1.5 Risk control measures are identified, prioritized, implemented and evaluated against the work schedule. 1.6 Resources including personnel, equipment, tools and personal protective equipment required for the job are identified, acquired and confirmed in safe/technical working order. 1.7 Liaison issues with other personnel and/or authorities are resolved and activities coordinated to facilitate the work. 1.8 Personnel participating in the work including plant operators and contractors are fully briefed, their respective responsibilities explained and coordinated and appropriate Authorization checked in accordance with

	established procedures. 1.9 Work site is prepared according to the work schedule and to minimize risk and damage to property and personnel in accordance with established procedures.
2. Carry out maintenance on high voltage power system circuit breakers	2. 1 OHS and sustainable energy principles and practices to reduce the incidence of accidents and minimize waste are implemented and monitored in accordance with established procedures. 2. 2 CPR, rescue from live electrical apparatus and other related safety procedures are in place according to requirements and established procedures. 2. 3 Safe working documentation is acquired and requirements completed in accordance with established procedures. 2. 4 Lifting, climbing and working aloft, use of power tools/equipment techniques and practices are safely exercised in accordance with established procedures. 2. 5 Hazard warnings and safety signs are recognized and hazards and assessed OHS risks are reported to the immediate authorized persons for directions according to established procedures. 2. 6 Essential knowledge and associated skills for the safe maintenance of HV power system ***circuit breaker*** is applied to ensure completion in an agreed timeframe and, to quality standards with a minimum of waste according to requirements. 2. 7 Maintenance of HV power system ***circuit*** breakers is carried out in accordance with the work schedule and requirements and/or established procedures 2. 8 Maintenance of HV power system circuit breakers is completed in an agreed timeframe and to quality standards with a minimum of waste according to requirements. 2. 9 Unplanned events or conditions are responded to in accordance with established procedures.
3. Complete the maintenance of high voltage power system circuit breakers	3.1 Work undertaken is ***checked*** against work schedule for conformance with requirements, anomalies reported and solutions identified in accordance with established procedures. 3.2 Safe working documentation is surrendered and high voltage power system circuit breakers are made ready for service. 3.3 Work site is rehabilitated, cleaned up and confirmed safe

	in accordance with established procedures. 3.4 ***Tools***, equipment and any surplus resources and materials are cleaned, checked and returned to storage in accordance with established procedures. 3.5 Required works completion records, reports and/or documentation and information are completed, processed and appropriate personnel notified in accordance with established procedures.

Variable	**Range**
Circuit breaker types may include:	• Bulk oil • small oil volume • air blast • vacuum • air insulated and • gas insulated SF6
Associated control circuits include:	• operating mechanisms • solenoids • spring • hydraulic and pneumatic drives • contactors • AC heaters • tripping and closing circuits and • control wiring
Diagnostic checks may include:	• insulation resistance • contact resistance (dynamic and static) • timing (in-service and out of service) • gas pressure • air pressure • gas density • oil pressure • minimum operate checks
Specialized tools may include:	• insulation resistance test sets • contact resistance tester • trip and close coil testers • manufacturer's specific tools • sequence timing equipment

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • Implement Occupational Health and Safety workplace • procedures and practices including the use of risk control • measures • Apply sustainable energy principles and practices

Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • Occupational Health and Safety principles • Low voltage - energized work practices for substations • Low voltage switching principles • Enterprise specific - specialized tools • Enterprise specific - equipment installation procedures • Substation tools and equipment • Typical fault conditions and symptoms • Equipment components and materials – substations • Substation LV supply design principles • Hydraulic and pneumatic system principles – Substations • Circuit breaker construction principles - substations • Circuit breaker operating principles - substations
Underpinning Skills	Demonstrates skills of: • Safe working practice • Enterprise specific - policy and procedures instructions • Enterprise specific - OHS instructions • Enterprise specific - technical drawing and documents • Enterprise specific - switching diagrams • Enterprise specific - data management processes • Analyze and interpret results and measurements - substations • Substation safety practices • Substation switching practices
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices. In addition to the resources listed above, in Context of and specific resources for assessment, evidence should show demonstrated competence working at realistic heights above ground, i.e. above 3 meters, in limited spaces, with different structural/construction types and method and in a variety of environments.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard : Power Transmission Systems Installation and Maintenance Level IV	
Unit Title	**Assemble, Set-Up and Test Personnel Computers**
Unit Code	**EIS TIM4 06 0612**
Unit Descriptor	This unit covers assembly, setting up and testing personal computers as directed in computer service manuals. It encompasses safe working practices, checking computer components, assembling components to form a basic personal computer, installing and testing basic operating system, drivers and application software, following written and oral instruction and applying customer relations procedures.

Elements	Performance Criteria
1. Assemble personal computer	1.1 OHS procedures for a given work area are identified, obtained and understood through established routines and procedures. 1.2 Established OHS risk control measures and procedures in relation to computer and keyboard use are followed. 1.3 Advice is sought from the work supervisor to ensure the work is coordinated effectively with others. 1.4 Computer, components, operating system and application software are obtained in accordance with established routines and checked as meeting requirements. 1.5 Computer components are assembled and connected in accordance with manufacturer's instructions. 1.6 Routine quality checks are carried out in accordance with work instructions. 1.7 Procedures are followed for referring non-routine events to immediate supervisor for directions.
2. Install operating system and application software	2.1. Established OHS risk control measures and procedures for carrying out the work are followed. 2.2. Computer is started up and on-screen instructions for the installation of the operating system to default configuration are followed, including drivers. 2.3. Application software is installed to default configuration following on-screen installation instruction. 2.4. Computer shutdown procedures are followed and computer switched off. 2.5. Routine quality checks are carried out in accordance

	with work instructions. 2.6. Routine quality checks are carried out in accordance with work instructions. 2.7. Procedures for referring non-routine events to immediate supervisor for directions are followed.
3. Install operating system and application software	3.1 Established OHS risk control measures and procedures for carrying out the work are followed. 3.2 Computer is switched on and start-up procedures are followed and checked. 3.3 Operating system and application programs are checked to be opening and operating correctly. 3.4 Faults are identified as being the result of faulty ***hardware or software.*** 3.5 The need to test or measure live is determined in strict accordance with OHS requirements and when necessary conducted within established safety procedures. 3.6 Faults are rectified in accordance with computer hardware, operating system and application instructions. 3.7 Procedures for referring non-routine events to immediate supervisor for directions are followed. 3.8 Computer shutdown procedures are followed and computer switched off. 3.9 Work is carried out efficiently without waste of materials or damage to apparatus, circuits, the surrounding environment or services and using sustainable energy principles.
4. Complete work and report.	4.1 OHS risk control work completion measures and procedures are followed. 4.2 Work area is cleaned and made safe in accordance with established procedures. 4.3 Work supervisor is notified of the completion of the work in accordance with established procedures.

Variable	**Range**
This unit shall be demonstrated in relation to:	• Assembling • setting-up • test and rectifying faults in a personal computer for single user operation and not intended to be connected to a • network
Hardware faults	• replacement of subassemblies and interconnections

rectification is confined to:	

Software faults rectification is confined to:	• resetting default configuration

Evidence Guide	

Critical Aspects of Competence	Assessment requires evidence that the candidate:
	• Implement Occupational Health and Safety workplace procedures and practices including the use of risk control measures
	• Apply sustainable energy principles and practices
	• Conduct work observing the relevant legislation, regulations, policies and workplace procedures
	• Assemble, set-up and test personal computers including:
	  • Correctly connecting computer, components and peripherals.
	  • Installing a basic operating system for single user operation.
	  • Installing application software to default configuration.
	  • Testing computer operation.
	  • Identifying and rectifying interconnection faults.
	  • Shutting down a computer correctly.
	  • Dealing with unplanned events by drawing on
	  • essential knowledge and skills to provide appropriate solutions

Underpinning Knowledge and Attitudes	Demonstrates knowledge to: • Personal computers, hardware structure • Computer hardware sub-assemblies • Personal computer operating systems, basics • Occupational Health and Safety principles
Underpinning Skills	Demonstrates skills to: • Personal computers, hardware structure • Computer hardware sub-assemblies • Occupational Health and Safety principles Electronic Safe working practices
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard : Power Transmission Systems Installation and Maintenance Level IV	
Unit Title	**Terminate and Connect Components, Cables Wiring and Conductors for Electronic Circuits**
Unit Code	**EIS TIM4 07 0612**
Unit Descriptor	This unit covers the implementation, performance and evaluation of component connections and terminations of conductors, wiring, cables, and other recognized mediums. It encompasses implementing reliable termination and connection processes, working to specifications, safe use of connection and termination tools, safe use of termination and/or soldering devices, selection and placement of components, termination and connection reparation, termination and connection techniques, and valuating termination and connection work.

Elements	Performance Criteria
1. Prepare to implement connection/ termination processes that include components, conductors, wiring and cables for electronic circuits	1.1 OHS procedures for a given work area are obtained and understood through established routines and procedures. 1.2 Established OHS risk control measures and procedures in preparation for the work are followed. 1.3 Prepare to ***implement connection/termination processes that include components, conductors, wiring and cables for electronic circuits.*** 1.4 Safety hazards, which have not previously been identified, are reported and advise on risk control measures, are sought from the work supervisor. 1.5 The scope and nature of work to be undertaken is determined from documentation and instructions from work supervisor. 1.6 An implementation and work plan is developed to ensure the work is coordinated effectively with others. 1.7 Materials required for the work are obtained in accordance with established routines and procedures. 1.8 Tools, equipment, measuring and termination and connection devices needed to carry out the work are obtained and checked for correct operation and safety
2. Connect/termi nate components,	2.1 Established OHS risk control measures and procedures for carrying out the work are followed. 2.2 ***Components and connection***/termination methods

conductors, wiring and cables		and devices are selected in accordance with their specified type and rating. (See Note 1)
	2.3	Components and conductors are placed in accordance with specification/drawing and correct polarity.
	2.4	Terminations and connections are prepared in accordance to ensure reliability of connections in accordance with industry standards.
	2.5	Termination and connections are made using devices and techniques that comply with manufacturer's requirements and industry standards.
	2.6	Procedures for identifying and responding to non-routine events including defects are coordinated and acted in accordance with established procedures.
	2.7	Connection/termination activities are carried out efficiently without unnecessary waste of materials or damage to apparatus and the surrounding environment or services and using sustainable energy practices.
3. Evaluate completed connections and terminations of components, conductors, wiring and cables	3.1	Established OHS risk control measures and procedures for carrying out the work are followed.
	3.2	Defects in component placement, connections and terminations are identified by visual inspection and recorded.
	3.3	Solutions to non-compliant work are developed and responded to in accordance with established procedures and requirements
	3.4	Connections and terminations are performance tested for compliance with the specified Standard and non-compliance performance characteristics identified and recorded.
	3.5	Rework is carried out to rectify defects and noncompliant performance characteristics to manufacturer's requirements and industry standards.
	3.6	Connections and terminations are confirmed compliant with established procedures and requirements
4. Complete and document connections and terminations activities	4.1	OHS risk control work completion measures and procedures are followed.
	4.2	Work site is cleaned and made safe in accordance with established procedures.
	4.3	Evaluation documentation confirming compliance of the connections and terminations is verified in accordance with established procedures and requirements
	4.4	Inspection, testing, and rectification work is documented

	in accordance with established procedures.
Variable	**Range**
This unit shall be demonstrated in relation to implementation, performance, and evaluation of component connections and terminations of :	Conductors, wiring, cables, and other recognized mediums for electronic circuits. This shall include: • implementing reliable termination and connection processes • selection and placement of at least five different types of electronic components • connection of electronic components by soldering • termination and connection of a coaxial cable • termination and connection of a high performance copper cable • termination of an insulated cable by using a crimped connection • evaluating reliability of termination and connection work and providing solutions

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • implement occupational health and safety workplace procedures and practices including the use of risk control measures • apply sustainable energy principles and practices • conduct work observing the relevant legislation, regulations, policies and workplace procedures
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • basic cable and conductor terminations • electronic cable and conductor terminations • basic of electronic component • basic electrical testing and measuring devices and techniques • electronic soldering equipment and techniques • OHS principles and electronic safe working practices
Underpinning Skills	Demonstrates skills to: • terminate basic cable and conductor • terminate electronic cable and conductor • use basic electrical testing and measuring devices • use electronic soldering equipment and techniques • apply OHS practices and electronic safe working practices
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Power Transmission Systems Installation and Maintenance Level IV	
Unit Title	**Investigate Quality of Supply Issues**
Unit Code	**EIS TIM4 08 0612**
Unit Descriptor	This unit covers the technical investigation of quality of supply issues and recommends solutions. Quality of supply issues may include television and radio interference, voltage complaints, harmonics and system irregularities.

Elements	Performance Criteria
1. Plan and coordinate for the investigation of issues in quality of Supply	1.1 OHS practices/procedures and Environmental and Sustainable Energy procedures, which may influence the ***investigation of issues in the quality of supply***, are reviewed and determined. 1.2 Purpose of the investigation is established and expected outcomes of the work are confirmed with the appropriate personnel. 1.3 Organizational established procedures on policies and specifications for the investigation are obtained or established with the appropriate personnel. 1.4 Equipment/tools and personal protective equipment are selected and coordinated based on specified requirements and established procedures. 1.5 Work is prioritized 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. 1.6 Risk control measures are identified, prioritized and evaluated against the work schedule. 1.7 Relevant work permits are secured to coordinate the performance of work according to requirements and/or established procedures. 1.8 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. 1.9 Liaison and communication issues with other/authorized personnel, authorities, clients and land owners are resolved and activities coordinated to carry out work. 1.10 Site is prepared according to the work schedule and to

	minimize risk and damage to property, commerce, and individuals in accordance with established procedures. 1.11 Personnel participating in the work, including plant operators and contractors, are fully briefed and respective responsibilities coordinated and authorized where applicable in accordance with established procedures. 1.12 Positioning of road signs, barriers and warning devices is planned in accordance with requirements.
2. Carry out and coordinate the investigation of issues in the quality of supply	2. 1 Circuit/system modeling is used to evaluate alternative proposals as per established procedures. 2. 2 OHS and Sustainable Energy principles, functionality and practices to reduce the incidents of accidents and minimize waste are incorporated into the project in accordance with requirements and/or established procedures. 2. 3 Investigation decisions are made on the basis of safety and effective outcomes according to requirements and/or established procedures. 2. 4 Mathematical models of the quality system are used to analyze the effectiveness of the finished product/service as per requirements and established procedures. 2. 5 Technical advice is given to potential hazards, safety risks and control measures so that monitoring and preventative action can be undertaken and/or appropriate authorities consulted, where necessary, in accordance with requirements and established procedures. 2. 6 Essential knowledge and associated skills is applied to Analyze specific data and compare it with compliance specifications to ensure completion of the project within an agreed timeframe according to requirements. 2. 7 Solutions to non-routine problems are identified and acted using acquired essential knowledge and associated skills according to requirements. 2. 8 Quality of work is monitored against personal performance agreement and/or established organizational and professional standards. 2. 9 Testing of quality is undertaken according to requirements and established procedures.

3. Complete and coordinate the investigation of issues in the quality of supply	3.1 Final assessments of the quality of supply are undertaken to ensure they comply with all requirements and include all specifications and documentations needed to complete the supply brief. 3.2 Appropriate personnel are notified of completion and reports and/or completion documents are finalized. 3.3 Reports and/or completion documents are submitted to relevant personnel/organizations for approval and, where applicable, statutory or regulatory approval. 3.4 Approved copies of quality assessment documents are issued and records are updated in accordance with established procedures.

Variable	**Range**
This shall/may be demonstrated in relation to the investigation of supply issues and may include the following:	• distribution feeders/networks • substations • transformers • HV switchgear • LV switchgear • relevant protection systems • fuses and circuit breakers

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • Implement Occupational Health and Safety workplace procedures and practices including the use of risk control measures • Apply sustainable energy principles and practices • Conduct work observing the relevant legislation, regulations, policies and workplace procedures
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • Occupational Health and Safety principles • Occupational Health and Safety principles - enterprise responsibilities • Safe design principles • Test equipment – fundamentals • Test equipment E – field
Underpinning Skills	Demonstrates skills of: • Electrical safe working practice • Quality of supply measures
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace and OHS practices.
Methods of	Competence may be assessed through:

Assessment	• Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Power Transmission Systems Installation and Maintenance Level IV	
Unit Title	**Maintain Voltage Regulating Equipment (Capacitor Banks)**
Unit Code	**EIS TIM4 09 0612**
Unit Descriptor	This covers the maintenance and repair of substation voltage regulating equipment and is restricted to high voltage capacitor banks and their associated switching reactors and the inspection, recording of information, testing and measurement of the associated control circuits. It also includes the range of acceptance tests and discharge requirements for complete units within a substation in accordance with established enterprise standards and procedures. It also encompasses fault diagnosis and pre-commissioning tests and interpretation of test results against agreed specifications.

Elements	Performance Criteria
1. Prepare/plan to maintain voltage regulating equipment (capacitor banks)	1.1 Work schedules including drawings, plans, requirements procedures and material lists are acquired, analyzed and the extent of work determined. 1.2 Relevant requirements and established procedures for the work are communicated to all personnel and identified for all work sites. 1.3 Hazards are identified, OHS risks assessed and control measures are prioritized, implemented and monitored including emergency exits kept clear, to ensure safe systems of work are followed and according to established procedures. 1.4 Work is prioritized and sequenced for the most efficient and effective outcome following consultation with others for completion within acceptable timeframes, to agreed quality standards and in accordance with established policies and procedures. 1.5 Risk control measures are identified, prioritized, implemented and evaluated against the work schedule. 1.6 Resources including personnel, equipment, tools and personal protective equipment required for the job are identified, acquired and confirmed in safe/technical working order. 1.7 Liaison issues with other personnel and/or authorities are resolved and activities coordinated to facilitate the

		work.
	1.8	Personnel participating in the work including plant operators and contractors are fully briefed, their respective responsibilities explained and coordinated and appropriate authorization checked in accordance with established procedures.
	1.9	Work site is prepared according to the work schedule and to minimize risk and damage to property and personnel in accordance with established procedures.
2. Carry out the maintenance of voltage regulating equipment (capacitor banks)	2.1	OHS and sustainable energy principles and practices to reduce the incidence of accidents and minimize waste are implemented and monitored in accordance with established procedures.
	2.2	CPR, rescue from live electrical apparatus and other related safety procedures are in place according to requirements and established procedures.
	2.3	Safe working documentation is acquired and requirements completed in accordance with established procedures.
	2.4	Lifting, climbing and working aloft, use of power tools/equipment techniques and practices are safely exercised in accordance with established procedures.
	2.5	Hazard warnings and safety signs are recognized and hazards and assessed OHS risks are reported to the immediate authorized persons for directions according to established procedures.
	2.6	Capacitor bank is isolated, discharged and maintained in accordance with requirements.
	2.7	Defective capacitor elements are identified, located and replaced in accordance with manufacturers and enterprise procedures and recommendations.
	2.8	Capacitor network is balanced and pre-service tests and ***measurements*** completed in accordance with enterprise procedures.
	2.9	Unplanned events or conditions are responded to in accordance with established procedures.
3. Complete the maintenance of voltage regulating equipment (capacitor banks)	3.1	Work undertaken is ***checked*** against work schedule for conformance with requirements, anomalies reported and solutions identified in accordance with established procedures.
	3.2	Safe working documentation is surrendered and the capacitor bank is made ready for service.
	3.3	Work site is rehabilitated, cleaned up and confirmed

	safe in accordance with established procedures. 3.4 Tools, equipment and any surplus resources and materials are cleaned, checked and returned to storage in accordance with established procedures. 3.5 Required works completion records, reports and/or documentation and information are completed, processed and appropriate personnel notified in accordance with established procedures.

Variable	**Range**
Checks and measurements may include:	• inspection and cleaning • identification and replacement of defective/unserviceable elements/cans • unbalance current/voltage tests • functional tests and control/alarm system checks

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • Implement occupational health and safety workplace procedures and practices including the use of risk control measures • Apply sustainable energy principles and practices • Conduct work observing the relevant legislation, regulations, policies and workplace procedures
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • Occupational Health and Safety principles • Enterprise specific - specialized tools • Substation tools and equipment • Equipment components and materials - substations • Static reactive plant principles - substations
Underpinning Skills	Demonstrates skills to: • Electrical safe working practice • Enterprise specific - policy and procedures instructions • Low voltage - energized work practices for substations • Enterprise specific - switching diagrams • Enterprise specific - technical drawing and documents • Analyze and interpret results and measurements - substations • Enterprise specific - equipment installation Procedures • Enterprise specific - data management processes • Typical fault conditions and symptoms • Enterprise specific - OHS instructions • Substation safety practices • Substation switching practices

Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices. In addition to the resources listed above, in Context of and specific resources for assessment, evidence should show demonstrated competence working at realistic heights above ground, i.e. above 3 meters, in limited spaces, with different structural/construction types and method and in a variety of environments.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Power Transmission Systems Installation and Maintenance Level IV	
Unit Title	**Install HV Plant and Equipment**
Unit Code	**EIS TIM4 10 0612**
Unit Descriptor	This covers the installation of high voltage plant and equipment and includes the pre-commissioning tests within agreed specifications. It includes the installation of the earthen systems, tertiary cabling and/or bus bar systems in accordance with enterprise procedures but does not include the necessary protection systems.

Elements	Performance Criteria
1. Prepare/plan the installation of high voltage plant and equipment	1.1 Work schedules including drawings, plans, requirements procedures and material lists are acquired, analyzed and the extent of work determined. 1.2 Relevant requirements and established procedures for the work are communicated to all personnel and identified for all work sites. 1.3 Hazards are identified, OHS risks assessed and control measures are prioritized, implemented and monitored including emergency exits kept clear, to ensure safe systems of work are followed and according to established procedures. 1.4 Work is prioritized and sequenced for the most efficient and effective outcome following consultation with others for completion within acceptable timeframes, to agreed quality standards and in accordance with established policies and procedures. 1.5 Risk control measures are identified, prioritized, implemented and evaluated against the work schedule. 1.6 Resources including personnel, equipment, tools and personal protective equipment required for the job are identified, acquired and confirmed in safe/technical working order. 1.7 Liaison issues with other personnel and/or authorities are resolved and activities coordinated to facilitate the work. 1.8 Personnel participating in the work including plant operators and contractors are fully briefed, their respective responsibilities explained and coordinated and appropriate authorization checked in accordance with established procedures.

	1.9	Work site is prepared according to the work schedule and to minimize risk and damage to property and personnel in accordance with established procedures.
2. Carry out the installation of high voltage plant and equipment	2.1.	OHS and sustainable energy principles and practices to reduce the incidence of accidents and minimize waste are implemented and monitored in accordance with established procedures.
	2.2.	CPR, rescue from live electrical apparatus and other related safety procedures are in place according to requirements and established procedures.
	2.3.	Safe working documentation is acquired and requirements completed in accordance with established procedures.
	2.4.	Lifting, climbing and working aloft, use of power tools/equipment techniques and practices are safely exercised in accordance with established procedures.
	2.5.	Hazard warnings and safety signs are recognized and hazards and assessed OHS risks are reported to the immediate authorized persons for directions according to established procedures.
	2.6.	Earthen requirements are identified and installed or confirmed installed in accordance with enterprise policies and procedures.
	2.7.	Foundations and other appropriate civil works are constructed and/or confirmed ready for the erection of ***high voltage plant and equipment.***
	2.8.	High voltage plant and equipment is erected and associated HV connections, LV controls and supplies are installed in accordance with manufacturers and enterprise procedures and recommendations.
	2.9.	Remedial actions are taken to overcome any shortfalls encountered in the work schedule according to requirements and/or established procedures.
	2.10.	Pre-commissioning checks are carried out and the high voltage plant and equipment made ready for service in accordance with established policies and procedures.
	2.11.	Work undertaken is checked against works schedule for conformance with requirements, anomalies reported and solutions identified in accordance with established procedures.
3. Complete the installation of	3.1	Work undertaken is ***checked*** against work schedule for conformance with requirements, anomalies reported and solutions identified in accordance with established

high voltage plant and equipment		procedures.
	3.2	Safe working documentation is surrendered and installed power system high voltage plant and equipment made ready for service.
	3.3	Work site is rehabilitated, cleaned up and confirmed safe in accordance with established procedures.
	3.4	Tools, equipment and any surplus resources and materials are cleaned, checked and returned to storage in accordance with established procedures.
	3.5	Required works completion records, reports and/or documentation and information are completed, processed and appropriate personnel notified in accordance with established procedures.
	3.6	Associated drawings, schematics and diagrams are updated to reflect work as executed in accordance with enterprise procedures.

Variable	**Range**
This Competence Standard Unit shall/may be demonstrated in relation to substation high voltage plant and equipment	May include: • transformers and instrument transformers • auxiliary transformers • surge arrestors • wave traps • circuit breakers • capacitor banks • disconnections • earth switches • ripples filters • static VAR compensators • gas insulated switchgear • fault throwers • resistor banks • neutral earthen transformers and reactors • high current DC switchgear and equipment
Pre-commissioning checks and measurements	May include: • insulation resistance • winding resistance • dielectric dissipation factor • winding ratio • vector group • low voltage excitation • continuity • trip and close checks • gas pressure checks • contact timing and other checks

	• measurements as required by the manufacturer
The following constants and variables included in this unit:	• Appropriate and relevant persons (see Personnel) • Appropriate authorities • Assessing risk • Assessment • Authorization • 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 • Legislation • MSDS • Notification • OHS practices • OHS issues • Permits and/or permits to work • Personnel • Quality assurance systems • Requirements • Testing procedures • Work clearance systems

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • Implement Occupational Health and Safety workplace procedures and practices including the use of risk control measures • Apply sustainable energy principles and practices • Conduct work observing the relevant legislation, regulations, policies and workplace procedures
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • Occupational Health and Safety principles • Low voltage switching principles

	• Enterprise specific - technical drawing and documents • Enterprise specific - equipment installation procedures • Enterprise specific - data management processes • Substation tools and equipment • Analyze and interpret results and measurements - substation
Underpinning Skills	Demonstrates skills to: • Electrical safe working practice • Low voltage - energized work practices for substations • Enterprise specific - policy and procedures instructions • Enterprise specific - OHS instruction • Substation safety practices • Enterprise specific - specialized tools • Typical fault conditions and symptoms - substations • Equipment components and materials - substations • Enterprise specific - switching diagrams
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Power Transmission Systems Installation and Maintenance Level IV	
Unit Title	**Analyze and Appraise Fault and Outage Data**
Unit Code	**EIS TIM4 11 0612**
Unit Descriptor	This unit covers the data gathering and analysis of system outages and plant failures. It includes the recommending of solutions and maintenance plans to ensure system security.

Elements	**Performance Criteria**
1. Plan and coordinate for the analysis and appraisal of fault and outage data	1.1 OHS practices/procedures and Environmental and Sustainable Energy procedures, which may influence the ***analysis and appraisal of fault and outage data***, are reviewed and determined. 1.2 Purpose of the analysis/appraisal is established and expected outcomes of the work are confirmed with the appropriate personnel. 1.3 Organizational established procedures on policies and specifications for the design are obtained or established with the appropriate personnel. 1.4 Equipment/tools and personal protective equipment are selected and coordinated based on specified requirements and established procedures 1.5 Work is prioritized 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 1.6 Risk control measures are identified, prioritized and evaluated against the work schedule 1.7 Relevant work permits are secured to coordinate the performance of work according to requirements and/or established procedures 1.8 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 1.9 Liaison and communication issues with other/authorized personnel, authorities, clients and land-owners are resolved and activities coordinated to carry out work 1.10 Site is prepared according to the work schedule and to minimize risk and damage to property, commerce, and

		individuals in accordance with established procedures
2. Carry out and coordinate the analysis and appraisal of fault and outage data	2.1	Personnel participating in the work, including plant operators and contractors, are fully briefed and respective responsibilities coordinated and authorized where applicable in accordance with established procedures
	2.2	Positioning of road signs, barriers and warning devices is planned in accordance with requirements
	2.3	Circuit/systems modeling is used to evaluate alternative proposals as per established procedures.
	2.4	Circuit/systems modeling is used to evaluate alternative proposals as per established procedures.
	2.5	OHS and sustainable energy principles, functionality and practices to reduce the incidents of accidents and minimize waste are incorporated into the project in accordance with requirements and/or established procedures
	2.6	Analysis \ Appraisal decisions are made on the basis of safety and effective outcomes according to requirements and/or established procedures
	2.7	Mathematical models of solutions for system outages and plant failures are used to Analyze the effectiveness of the finished project as per requirements and established procedures
	2.8	Technical advice is given to potential hazards, safety risks and control measures so that monitoring and preventative action can be undertaken and/or appropriate authorities consulted, where necessary, in accordance with requirements and established procedures
	2.9	Essential knowledge and associated skills are applied to Analyze specific data and compare it with compliance specifications to ensure completion of the project within an agreed timeframe according to requirements.
3. Complete and coordinate the analysis and appraisal of fault and outage data	3.1	Solutions to non-routine problems are identified and acted using acquired essential knowledge and associated skills according to requirements
	3.2	Quality of work is monitored against personal performance agreement and/or established organizational and professional standards.
	3.3	Final inspections of the analysis/appraisal are undertaken to ensure they comply with all requirements

	and include all specifications and documentations needed to complete the design brief. 3.4 Appropriate personnel are notified of completion and reports and/or completion documents are finalized.

Variable	Range
This shall/may be demonstrated in relation to the analysis and appraisal of fault and outage data and may include the following:	• Relevant protection systems, • both HV and LV (fuses and circuit breakers) • distribution feeders/networks (overhead and underground) • substations and transformers • HV switchgear • LV switchgear
The following constants and variables included in this unit:	• Appropriate and relevant persons (see Personnel) • Appropriate authorities • Appropriate work platform • Assessing risk • Assessment • Authorization • 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 • Legislation • MSDS • Notification. • OHS practices • OHS issues • Permits and / or permits to work • Personnel. • Quality assurance systems. • Requirements. • Safe design principles • Testing procedures • Work clearance systems

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • Implement Occupational Health and Safety workplace procedures and practices including the use of risk control measures • Apply sustainable energy principles and practices • Conduct work observing the relevant Anti Discrimination legislation, regulations, policies and workplace procedures
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • Occupational Health and Safety principles • Occupational health and safety , enterprise responsibilities • HV principles • Power line safety - implementation and monitoring • Electrical equipment - protection and control schemes • Safe design principles • Switchgear installation • Low voltage switching principles • High voltage switching principles • High voltage fault switching principles • High voltage distribution transformer principles • High voltage SWER system • Feeder automation system • Analysis network event records
Underpinning Skills	Demonstrates skills to: • Occupational Health and Safety principles • Electrical safe working practice • HV practices • Power line safety - implementation and monitoring • Electrical equipment - protection and control schemes • Safe design practices • Switchgear installation • Low voltage switching practices • High voltage switching practices • High voltage fault switching practices • High voltage distribution transformer practices • High voltage SWER system • Feeder automation system • Analysis network event records
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Power Transmission Systems Installation and Maintenance Level IV	
Unit Title	**Draft and Layout Overhead and Ground Transmission Extension**
Unit Code	**EIS TIM4 12 0612**
Unit Descriptor	This covers the planning and layout of one or two pole minor overhead transmission extensions, including the estimating of the costs and/or resources for the work to be undertaken. It also encompasses on-the-job design, surveying techniques and layout to the field locations as per enterprise requirements.

Elements	Performance Criteria
1. Prepare/plan to draft and layout an overhead transmission extension	1.1 Works schedule(s), including drawings, plans, requirements, established procedures, and material lists, are obtained, analyzed , if necessary, by site inspection and the extent of the preparation of the work determined for planning and coordination. 1.2 Work is prioritized 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 Risk control measures are identified, prioritized and evaluated against the work schedule. 1.4 Relevant requirements and established procedures for the work are to all personnel and identified for all work sites. 1.5 Hazards are identified, OHS risks assessed and control measures are prioritized, implemented and monitored including emergency exits kept clear, to ensure safe systems of work are followed and according to established procedures. 1.6 Relevant work permits are secured to coordinate the performance of work according to requirements and/or established procedures. 1.7 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. 1.8 Clients/Customers are provided with possible solutions and /or options within the scope, acceptable cost and requirements.

	1.9	Liaison and communication issues with other/authorized personnel, authorities, clients and land owners are resolved and activities coordinated to carry out work.
	1.10	Personnel participating in the work, including plant operators and contractors, are fully briefed and respective responsibilities coordinated and authorized where applicable in accordance with established procedures.
	1.11	Site is prepared according to the work schedule and to minimize risk and damage to property, commerce, and individuals in accordance with established procedures.
	1.12	Positioning of road signs, barriers and warning devices is planned in accordance with requirements.
2. Carry out drafting and layout of an overhead distribution extension	2.1	OHS and sustainable energy principles and practices to reduce the incidents of accidents and minimize waste are monitored and acted in accordance with requirements and/or established procedures.
	2.2	First Aid, Pole Top Rescue and other related work procedures are performed according to requirements and/or established procedures.
	2.3	Lifting, climbing, working in confined spaces and aloft, and use of power tools/equipment, techniques and practices are safely exercised according to requirements.
	2.4	Hazard warnings and safety signs are recognized and hazards and assessed OHS risks are reported to the immediate authorized persons for directions according to established procedures.
	2.5	Remedial actions are taken to overcome any shortfalls encountered in the work schedule according to requirements and/or established procedures.
	2.6	The drafting and layout of an overhead transmission extension is carried out, in accordance with the work schedule and requirements and/or established procedures.
	2.7	Essential knowledge and associated skills for the drafting and layout of an overhead distribution extension is applied to ensure completion in an agreed timeframe and, to quality standards with a minimum of waste according to requirements.
	2.8	Solutions to non-routine problems are identified and acted using acquired essential knowledge and associated skills according to requirements.

	2.9	Ongoing 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 drafting and layout of an overhead transmission extension	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	Accidents and/or injuries are reported and followed up in accordance with requirements/established procedures.
	3.3	Work site is rehabilitated, cleaned up and confirmed 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 in accordance with established procedures.
	3.5	Relevant work permit(s) are signed off and the job is returned to service and advised to client/customer in accordance with requirements.
	3.6	Works completion records, reports, as installed / modified drawing(s) and/or documentation and information are confirmed, processed and appropriate personnel notified.

Variable	**Range**
This shall/may be demonstrated in relation to:	• undertaking a draft and layout of an overhead transmission extension Pole • including wood • concrete, steel and composite) • associated hardware • including conductors (bare wire and aerial bundle cable) • cross arms, insulators • ACR • regulator • earthen • air break switches • gas switches • capacitor units • transformers • links • fuses • sectionalizes • lead arrestors

	• HV switchgear • LV switchgear • control boxes • communications • equipment • lanterns • signage • supervisory cable • cable TV • substations • relevant protection systems and associated civil works
The following constants and variables included in this unit:	• Appropriate and relevant persons (see Personnel) • Appropriate authorities • Appropriate work platform • Assessing risk • Assessment • Authorization • 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 • Legislation • MSDS • Notification • OHS practices • OHS issues • Permits and/or permits to work • Personnel • Quality assurance systems • Requirements • Safe design principles • Testing procedures • Work clearance systems

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • Implement Occupational Health and Safety workplace procedures and practices including the use of risk control measures • Apply sustainable energy principles and practices • Conduct work observing the relevant Anti Discrimination legislation, regulations, policies and workplace procedures
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • Power line transmission installation • Power line installation safety • Pole and hardware installation • Transmission overhead line component • fundamentals • Enterprise specific – switching diagrams • Interpretation of power transmission network • drawings and documentation • Overhead transmission extension layout principles • Surveying techniques • Introduction to computer software (Power line) and CAD
Underpinning Skill	Demonstrates skills to: • safe working practices and applying OHS practices • Power line transmission installation • Power line installation safety • Pole and hardware installation • Transmission overhead line component fundamentals • Enterprise specific – switching diagrams • Interpretation of power transmission network drawings and documentation • Overhead transmission extension • Surveying techniques
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Power Transmission Systems Installation and Maintenance Level IV	
Unit Title	**Contribute to Coordinated HV Live Line Work**
Unit Code	**EIS TIM4 13 0612**
Unit Descriptor	This specifies the outcomes required of live line working team members to work effectively as a cohesive team to ensure safety of all team members and the community when undertaking high voltage (HV) live line work. It includes the pre-work briefing on tasks to be undertaken, roles of individual team members, identification of possible hazards, risk management analysis and implementation of palliative measures to control or mitigate the risk to acceptable levels. It also encompasses the monitoring of work performance to ensure safety, and the post-work debriefing to identify areas for continuous improvement.

Elements	Performance Criteria
1. Plan to contribute to a coordinated High Voltage Live Line work team.	1.1 Works schedule(s), including drawings, plans, requirements, established procedures, and material lists, are obtained, analyzed , if necessary, by site inspection and the extent of the preparation of the work determined for planning and coordination by the team. 1.2 Relevant requirements and established procedures for the work are communicated to all team members and identified for all work sites. 1.3 OHS policies and procedures related to requirements and established procedures for the ***working on HV live lines*** are obtained and confirmed for the purposes of the work to be performed and discussed among all team members. 1.4 Work is prioritized and sequenced following consultation with all team members to ensure safe systems of work are followed for completion within acceptable timeframes and in accordance with established procedures. 1.5 OHS and live line work hazards are identified, risk assessments conducted and control measures are identified, prioritized, implemented and documented against the work schedule, including the checking of site weather and environmental conditions to ensure that live line work can be undertaken safely. 1.6 Relevant live line work permits or authority for live line work are secured to coordinate the performance of work by the team according to requirements and/or

	established procedures. 1.7 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. 1.8 Personnel participating in the work, including plant operators and contractors, are fully briefed and respective responsibilities coordinated and authorized where applicable in accordance with established procedures. 1.9 Liaison and communication issues with other/authorized personnel, authorities, clients and land owners are resolved and activities coordinated to carry out work. 1.10 Site is prepared according to the work schedule and to minimize risk and damage to property, commerce, and individuals in accordance with established procedures. 1.11 All team members to be engaged in the work discuss and agree, without ambiguity, on their respective roles, and possible role changes during the course of work. 1.12 Positioning of road signs, barriers and warning devices is planned and coordinated in accordance with requirements.
2. Carry out the contribution to coordinated High Voltage Live Line work.	2.1 OHS and Sustainable Energy principles and practices to reduce the incidents of accidents and minimize waste are monitored and acted in accordance with requirements and/or established procedures. In particular, established live line working procedures are strictly adhered to. 2.2 First Aid, Rescue and other related work procedures are performed according to requirements and/or established procedures 2.3 Lifting, climbing, working aloft, and use of power tools/equipment, techniques and practices, where applicable are safely exercised according to requirements. 2.4 Live line permits and other provisions for live line work are in place as required, in accordance with the requirements and established procedures. 2.5 Essential knowledge and associated skills in the safe contribution to coordinated High Voltage Live Line work is applied to ensure completion in an agreed timeframe and, to quality standards with a minimum of waste according to requirements. 2.6 Work is undertaken on HV Live Line in a team

	environment work according to the work schedule and requirements/ established procedures. 2.7 Work is shared among all team members in a coordinated manner as discussed and agreed during pre-work briefing. 2.8 Hazard warnings and safety signs are recognized and hazards and assessed OHS risks are discussed with team members and reported to the immediate authorized persons for directions according to established procedures. 2.9 Unplanned events in the maintenance of HV Live Line work are discussed among all team members and appropriate action undertaken accordingly. 2.10 Solutions to non-routine problems are identified and acted using acquired essential knowledge and associated skills according to requirements. 2.11 Ongoing 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 the contribution to coordinated High Voltage Live Line work.	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 Accidents and/or injuries are reported and followed up in accordance with requirements/established procedures. 3.3 Work site is rehabilitated, cleaned up and confirmed 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 in accordance with established procedures. 3.5 Relevant work permit(s) are signed off and, High Voltage Live Line work is returned to service and advised to client/customer in accordance with requirements. 3.6 Works completion records, reports, as installed/modified drawing(s) and/or documentation and information are confirmed, processed and appropriate personnel notified. 3.7 Aspects of work schedule are discussed identified via feedback with fellow team members and information on improvement forwarded to appropriate personnel

	according to established procedures.
Variable	**Range**
This shall/may be demonstrated in relation to contributing to coordinated high voltage live line work This is a common unit for all developed live line working techniques such as:	• hot stick • gloves and barrier, or bare hand technical details utilizing these live line techniques are covered in other respective units of competence for live line work • HV Live Line work may include the maintenance of energized HV electrical apparatus • conductors and cables Work may be undertaken: • on ladders, insulated elevating work platforms or through the use of a work platform secured to a helicopter. The emphasis of this unit is to foster and promote effective team work live line work to ensure safety of all team members and the community during the course of work.
The following constants and variables included in the Range Statement of this unit:	• Appropriate and relevant persons (see Personnel) • Appropriate authorities • Appropriate work platform • Assessing risk • Assessment • Authorization • 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 • Legislation • MSDS • Notification • OHS practices • OHS issues • Permits and/or permits to work • Personnel • Quality assurance systems • Requirements • Testing procedures • Work clearance systems

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • Implement Occupational Health and Safety workplace procedures and practices including the use of risk control measures • Apply sustainable energy principles and practices • Conduct work observing the relevant legislation, regulations, policies and workplace procedures
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • Occupational Health and Safety principles • Electrical safe working practice • Power line safety practices • Statutory and safety considerations • Fundamentals for working safely near live electrical apparatus • Enterprise Specific - policy and procedures instructions • Enterprise Specific - OHS Instructions • Enterprise specific - specialized tools • Enterprise Specific - team work high voltage live line
Underpinning Skills	Demonstrates skills to: • Electrical safe working practice • Power line safety practices • Statutory and safety considerations • Fundamentals for working safely near live electrical apparatus • Enterprise Specific - policy and procedures instructions • Enterprise Specific - OHS Instructions • Enterprise specific - specialized tools • Enterprise Specific - team work high voltage live line
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Power Transmission Systems Installation and Maintenance Level IV	
Unit Title	**Maintain Transmission Field Devices**
Unit Code	**EIS TIM4 14 0612**
Unit Descriptor	This covers the maintenance of ACRs, gas switches, regulators and line capacitors, communication systems including mobile phones and TMR radio. It includes secondary injection, timing, and function tests and proving correct tripping, reclosing and remote operation.

Elements	Performance Criteria
1. Plan for the maintenance of transmission field devices	1.1 Work schedules including drawings, plans, requirements procedures and material lists are acquired, analyzed and the extent of work determined. 1.2 Relevant requirements and established procedures for the work are communicated to all personnel and identified for all work sites. 1.3 Hazards are identified, OHS risks assessed and control measures are prioritized, implemented and monitored including emergency exits kept clear, to ensure safe systems of work are followed and according to established procedures. 1.4 Work is prioritized and sequenced for the most efficient and effective outcome following consultation with others for completion within acceptable timeframes, to agreed quality standards and in accordance with established policies and procedures. 1.5 Risk control measures are identified, prioritized, implemented and evaluated against the work schedule. 1.6 Resources including personnel, equipment, tools and personal protective equipment required for the job are identified, acquired and confirmed in safe/technical working order. 1.7 Liaison issues with other personnel and/or authorities are resolved and activities coordinated to facilitate the work. 1.8 Personnel participating in the work including plant operators and contractors are fully briefed, their respective responsibilities explained and coordinated and appropriate authorization checked in accordance with established procedures. 1.9 Work site is prepared according to the work schedule

	and to minimize risk and damage to property and personnel in accordance with established procedures.
2. Carry out the maintenance of transmission network field devices	2.1 OHS and sustainable energy principles and practices to reduce the incidence of accidents and minimize waste are implemented and monitored in accordance with established procedures. 2.2 CPR, Rescue from live electrical apparatus and other related safety procedures are in place according to requirements and established procedures. 2.3 Safe working documentation is acquired and requirements completed in accordance with established procedures. 2.4 Lifting, use of power tools/equipment techniques and practices are safely exercised in accordance with established procedures. 2.5 Hazard warnings and safety signs are recognized and hazards and assessed OHS risks are reported to the immediate authorized persons for directions according to established procedures. 2.6 Essential knowledge and associated skills for the safe ***maintenance of transmission network field devices*** is applied to ensure completion in an agreed timeframe and, to quality standards with a minimum of waste according to requirements. 2.7 Maintenance, including testing of transmission field devices is undertaken according to requirements and established procedures. 2.8 Unplanned events or conditions are responded to in accordance with established procedures.
3. Complete the maintenance of transmission network field devices	3.1 Functional checks of transmission field devices are completed and all work checked against the requirements to ensure compliance. 3.2 Anomalies between the work schedule requirements and measured performance are reported and solutions identified in accordance with established procedures. 3.3 Safe working documentation is surrendered and transformer made ready for service. 3.4 Work site is rehabilitated, cleaned up and confirmed safe in accordance with established procedures. 3.5 Tools, equipment and any surplus resources and materials are cleaned, checked and returned to storage in accordance with established procedures. 3.6 Approved copies of the maintenance of transmission

	network field devices documents are issues and records are updated in accordance with established procedures.
Variable	**Range**
This shall/may be demonstrated in relation to the maintenance of transmission field devices:	• Automatic circuit recloses (ACRs) • gas switches • secondary injection tests • primary injection tests • TMR radio's, SCADA • remote control • over current • earth fault • sensitive earth fault • inverse time curves • definite time curves • tripping • reclose • DC supplies • AC supplies • alarms • OHS practices and issues • Permits and/or permits to work • Personnel • Quality assurance systems • Requirements • Testing procedures • Work clearance systems

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • Implement Occupational Health and Safety workplace procedures and practices including the use of risk control measures • Apply sustainable energy principles and practices • Conduct work observing the relevant legislation, regulations, policies and workplace procedures
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • Occupational Health and Safety principles • Electrical safe working practice • Statutory and safety considerations • Electrical equipment - protection and control • schemes • Discrete protection schemes - isolation and • tagging procedures • Protection devices - maintenance and commission principles

	• Manufacturers requirements • Disposal procedures for insulating materials • Visual inspection procedures - substations • Surge relay operation and maintenance - substations • Analyze and interpret results and measurements - substations • Voltage regulation scheme principles – substations • Use of test equipment on a discrete protection scheme - substations
Underpinning Skills	Demonstrates skills to: • Electrical safe working practice • Statutory and safety considerations • Electrical equipment - protection and control schemes • Discrete protection schemes - isolation and tagging procedures • Protection devices - maintenance and commission practices • Manufacturers requirements • Disposal procedures for insulating materials • Visual inspection procedures - substations • Surge relay operation and maintenance - substations • Analyze and interpret results and measurements - substations • Voltage regulation scheme principles – substations • Use of test equipment on a discrete protection scheme - substations
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Power Transmission Systems Installation and Maintenance Level IV	
Unit Title	**Commission Transmission Field Devices**
Unit Code	**EIS TIM4 15 0612**
Unit Descriptor	This covers the commissioning of ACRs, gas switches, regulators and line capacitors, communication systems including mobile phones and TMR radio. It also includes communication with the Operating Authority, testing, clearing after test and energizing using techniques that are acceptable to the Operating Authority.

Elements	Performance Criteria
1. Plan for the commissioning of transmission field devices	1.1 Work schedules including drawings, plans, requirements procedures and material lists are acquired, analyzed and the extent of work determined. 1.2 Relevant requirements and established procedures for the work are communicated to all personnel and identified for all work sites. 1.3 Hazards are identified, OHS risks assessed and control measures are prioritized, implemented and monitored including emergency exits kept clear, to ensure safe systems of work are followed and according to established procedures. 1.4 Work is prioritized and sequenced for the most efficient and effective outcome following consultation with others for completion within acceptable timeframes, to agreed quality standards and in accordance with established policies and procedures. 1.5 Resources including personnel, equipment, tools and personal protective equipment required for the job are identified, acquired and confirmed in safe/technical working order. 1.6 Liaison issues with other personnel and/or authorities are resolved and activities coordinated to facilitate the work. 1.7 Personnel participating in the work including plant operators and contractors are fully briefed, their respective responsibilities explained and coordinated and appropriate authorization checked in accordance with established procedures. 1.8 Work site is prepared according to the work schedule and to minimize risk and damage to property and

		personnel in accordance with established procedures.
2. Carry out the commissioning of transmission network field devices	2.1	OHS and sustainable energy principles and practices to reduce the incidence of accidents and minimize waste are implemented and monitored in accordance with established procedures.
	2.2	CPR, rescue from live electrical apparatus and other related safety procedures are in place according to requirements and established procedures.
	2.3	Safe working documentation is acquired and requirements completed in accordance with established procedures.
	2.4	Lifting, use of power tools/equipment techniques and practices are safely exercised in accordance with established procedures.
	2.5	Hazard warnings and safety signs are recognized and hazards and assessed OHS risks are monitored and preventive action taken and/or appropriate authorities consulted where necessary in accordance with established procedures.
	2.6	Commissioning, including testing of transmission field devices is undertaken according to requirements and established procedures.
	2.7	Data is analyzed and compared with compliance specifications to ensure completion of the maintenance work is within an agreed timeframe and according to requirements.
	2.8	Unplanned events or conditions are responded to in accordance with established procedures.
3. Complete the commissioning of transmission network field devices	3.1	Functional checks of transmission field devices are completed and all work checked against the requirements to ensure compliance.
	3.2	Anomalies between the work schedule requirements and measured performance are reported and solutions identified in accordance with established procedures.
	3.3	Safe working documentation is surrendered and transformer made ready for service.
	3.4	Work site is rehabilitated, cleaned up and confirmed safe in accordance with established procedures.
	3.5	Tools, equipment and any surplus resources and materials are cleaned, checked and returned to storage in accordance with established procedures.
	3.6	Documents and records related to the transmission field devices are updated in accordance with

	established procedures.
Variable	**Range**
This shall/may be demonstrated in relation to:	• the commissioning of transmission field devices • Automatic circuit recloses (ACRs) • gas switches • secondary injection tests • primary injection tests • TMR radio's • SCADA • remote control • Over current • earth fault • sensitive earth fault • inverse time curves • definite time curves • tripping • reclose • DC supplies • AC supplies • alarms
The following constants and variables included in this unit:	• Appropriate and relevant persons (see Personnel) • Appropriate authorities • Appropriate work platform • Assessing risk • Assessment • Authorization • 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 • Legislation • MSDS • Notification • OHS practices • OHS issues • Permits and/or permits to work

	• Personnel • Quality assurance systems • Requirements • Testing procedures • Work clearance systems

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • Implement occupational health and safety workplace procedures and practices including the use of risk control measures • Apply sustainable energy principles and practices • Conduct work observing the relevant legislation, regulations, policies and workplace procedures
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • Occupational Health and Safety principles • Statutory and safety considerations • Electrical equipment - protection and control schemes • Discrete protection schemes - isolation and tagging procedures • Protection devices - maintenance and commission principles • Manufacturers' requirements • Disposal procedures for insulating materials • Visual inspection procedures -substations • Surge relay operation and maintenance - substations • Analyze and interpret results and measurements - substations • Commissioning of transmission protection and control systems - substations • Voltage regulation scheme principles - substations • Use of test equipment on a discrete protection scheme - substations
Underpinning Skills	Demonstrates skills to: • Occupational Health and Safety practices • Electrical safe working practice • Statutory and safety considerations • Electrical equipment - protection and control schemes • Discrete protection schemes - isolation and tagging procedures • Protection devices - maintenance and commission • Manufacturers' requirements • Disposal procedures for insulating materials • Visual inspection procedures -substations • Surge relay operation and maintenance - substations • Analyze and interpret results and measurements -

	substations • Commissioning of transmission protection and control systems – substations • Voltage regulation scheme principles - substations • Use of test equipment on a discrete protection scheme - substations
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Power Transmission Systems Installation and Maintenance Level IV	
Unit Title	**Respond to Technical Enquiries and Requests**
Unit Code	**EIS TIM4 16 0612**
Unit Descriptor	This unit covers responding to enquiries of a technical nature using electricity supply industry (ESI) requirements, techniques and processes. It includes the relevant application of knowledge of relevant acts and regulations, codes of practice, guidelines and compliance regimes, and arrangements used to facilitate a response to enquiries or requests. The enquiries may be internal or with customers.

Elements	Performance Criteria
1. Prepare to respond to technical enquiries and requests	1.1 Instructions related to responding to enquiries using industry requirements, techniques and processes of a technical nature to be performed are received and confirmed 1.2 Relevant requirements and established procedures to be followed and, relevant personnel (including internal and/or customer) to be communicated with for the work to be performed are identified 1.3 OHS policies and procedures to be followed for the work to be performed are received and confirmed. 1.4 Suggestions to assist in meeting the safety requirements for responding to technical enquiries and requests are made to others involved in the work. 1.5 Hazards are identified; OHS risks assessed and control measures are prioritized, implemented and monitored including emergency exits kept clear according to established procedures. 1.6 Scope of responsibility and process of relevant work permit(s) issue is identified, received and confirmed according to requirements and established procedures 1.7 Relevant responsibility associated withf aid, safety observers and/or other related work safety procedures at the worksite are identified in accordance with requirements and established procedures to ensure safety measures are followed in the instance of an incident 1.8 Processes for identifying and reporting client (including internal and customer) issues to appropriate personnel in accordance with industry/acceptable /community standards are identified

	1.9 Workplace and the work schedule is confirmed according to given instructions for a quality outcome and to minimize risk and damage to property, commerce, stock and individuals in accordance and established procedures 1.10 Electricity infrastructure assets, related voltages and requirements, where applicable, for working safely near live electrical apparatus as non-electrical worker are identified 1.11 Safe approach distances including any zones thereof that may apply, as defined in industry guidelines, requirements and/or established procedures for the intended work are confirmed
2. Carry out responses to technical enquiries and requests	2.1 OHS principles and practices to reduce the incidents of accidents are identified in accordance with given instructions, requirements and/or established procedures 2.2 Enquiries and/or requests are responded to according to requirements and established procedures, and in a timely manner 2.3 Working safely and complying with all safety requirements for responding to technical enquiries and requests are followed in accordance with given instructions and established outlines/ procedures 2.4 Processes for monitoring and reporting/referring hazards and OHS risks to the immediate authorized personnel for directions according to established procedures are followed 2.5 Non-routine events are referred to the immediate authorized personnel for directions according to established procedures 2.6 Apply essential knowledge and associated skills in the application of responding to technical enquiries and requests to ensure completion in an agreed timeframe and, to quality standards with a minimum of waste according to requirements 2.7 Unexpected events associated with enquiries and/or requests of a technical nature are responded to using acquired known solutions and skills related to routine procedures to ensure work instructions and established procedures are met.
3. Complete responses to technical enquiries and	3.1 ***Work*** schedule and anomalies for completion and checking of the work are reported to authorized personnel in accordance with established procedures 3.2 Processes for reporting to authorized personnel

requests	accidents and/or incidents are confirmed in accordance with established procedures 3.3 Requirements for returning work permit(s) and/or access Authorization permits, where applicable, are confirmed 3.4 Appropriate personnel are notified of work completion according to established procedures. 3.5 Works completion records, report forms/data sheets are completed accurately in accordance with given instructions and established procedures

Variable	**Range**
This shall/may be demonstrated in relation to:	• safe working so defined by relevant or regulatory agencies/bodies, • local government legislation, • Industry bi-partite body – Guidelines/Codes of Practices or other related requirements for responding to technical enquires and requests

Work functions may include:	• the application of knowledge of electricity supply industry (ESI) transmission, transmission or rail/tram network requirements,
	• techniques and processes and the application of knowledge of relevant acts and regulations, codes of practice, guidelines and compliance regimes, and arrangements used to facilitate a response to enquiries or requests.
	• Examples include knowledge of critical codes in the industry – e.g. storm code emergencies, identification of key equipment, recognition of normal and abnormal industry situations, key processes and systems used in the industry such as, maps, catalogues, and the application of general safety and environmental processes and practices used in the industry. Knowledge and identification of key equipment used in industry.
	• Questioning (customer information gathering techniques) including observance of equipment, identification of anomalies from the norm and reporting of information.
	• Recognition of normal and abnormal industry situations may include:
	  • equipment
	  • performance indicators
	  • anomalies report
	  • knowledge of critical system/network failures/anomalies and knowledge of key processes and
	  • systems used in the industry e.g. maps, drawings etc., and safety and environment processes and practices used in the industry

	Note: Examples performance indicators are - SAIDI - System Average Interruption Duration Index, SAIFI - System Average Interruption Frequency Index, MAIFI – Momentary Average Interruption Frequency Index, CAIDI - Customer Average Interruption Duration Index Enquiries may be internal or with customers
The following constants and variables included in this unit:	• Appropriate and relevant persons • Appropriate authorities • Assessing risk • Authorization • Drawings and specifications • Emergency • Established procedures. • Hazards • Identifying hazards • Legislation • Internal and external customers • Notification. • OHS practices • OHS issues • Permits and/or permits to work • Work clearance systems.

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • Implement Occupational Health and Safety workplace procedures and practices including the use of risk control measures • Apply sustainable energy principles and practices • Conduct work observing the relevant legislation, regulations, policies and workplace procedures
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • Occupational health and safety principles • Engineering applications of material properties. • Generation power systems • Transmission, transmission and rail power systems • Fundamentals for working safely near live electrical apparatus • Environmental fundamentals • Material handling and the environment • Enterprise specific - policy and procedure instructions • Enterprise specific - OHS instructions • Enterprise specific - technical drawings and documents • Technical enquiries and requests
Underpinning Skills	. Demonstrates skills to: • Occupational Health and Safety practices

	• Engineering applications of material properties. • Generation power systems • Transmission, transmission and rail power systems • Fundamentals for working safely near live electrical apparatus • Material handling and the environment • Enterprise specific - policy and procedure instructions • Enterprise specific - OHS instructions • Technical enquiries and requests
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Power Transmission Systems Installation and Maintenance Level IV	
Unit Title	**Organize and Implement Line and Easement Surveys**
Unit Code	**EIS TIM4 17 0612**
Unit Descriptor	This covers the surveying of transmission and sub transmission lines and easements for activities associated with the design and installation of electrical equipment. This activity should encompass the use of instruments such as compasses, inclinometer, distance measuring devices, etc. and be in accordance with customer requirements, nominated design specifications and company processes.

Elements	Performance Criteria
1. Plan and coordinate the Organization and implementation of line and easement surveys	1.1 OHS practices/procedures and environmental and sustainable energy procedures, which may influence the Organization and implementation of line and easement surveys, are reviewed and determined. 1.2 Purpose of the line and easement surveys is established and expected outcomes of the work are confirmed with the appropriate personnel. 1.3 Organizational established procedures on policies and specifications for the design are obtained or established with the appropriate personnel. 1.4 Equipment/tools and personnel protective equipment are selected and coordinated based on specified requirements and established procedures. 1.5 Work is prioritized 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. 1.6 Risk control measures are identified, prioritized and evaluated against the work schedule. 1.7 Relevant work permits are secured to coordinate the performance of work according to requirements and/or established procedures. 1.8 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. 1.9 Liaison and communication issues with other/authorized personnel, authorities, clients and land

		owners are resolved and activities coordinated to carry out work.
	1.10	Site is prepared according to the work schedule and to minimize risk and damage to property, commerce, and individuals in accordance with established procedures.
	1.11	Personnel participating in the work, including plant operators and contractors, are fully briefed and respective responsibilities coordinated and authorized where applicable in accordance with established procedures.
	1.12	Positioning of road signs, barriers and warning devices is planned in accordance with requirements
2. Carry out and coordinate the Organization and implementation of line and easement surveys	2.1	Circuit/systems modeling is used to evaluate alternative proposals as per established procedures.
	2.2	OHS and sustainable energy principles, functionality and practices to reduce the incidents of accidents and minimize waste are incorporated into the project in accordance with requirements and/or established procedures.
	2.3	Survey design decisions are made on the basis of safety and effective outcomes according to requirements and/or established procedures.
	2.4	Mathematical models of the transmission system are used to Analyze the effectiveness of the finished project as per requirements and established procedures.
	2.5	Technical advice is given to potential hazards, safety risks and control measures so that monitoring and preventative action can be undertaken and/or appropriate authorities consulted, where necessary, in accordance with requirements and established procedures.
	2.6	Essential knowledge and associated skills are applied to analyze specific data and compare it with compliance specifications to ensure completion of the project within an agreed timeframe according to requirements.
	2.7	Solutions to non-routine problems are identified and acted using acquired essential knowledge and associated skills according to requirements.
	2.8	Quality of work is monitored against personal performance agreement and/or established Organizational and professional standards.
	2.9	Work teams/groups are arranged / coordinated /

	evaluated to ensure planned goals are met according to established procedures.
3. Complete and coordinate the Organization and implementation of line and easement surveys	3.1 Final assessment of the surveys are undertaken to ensure they comply with all requirements and include all specifications and documentations needed to complete the design brief. 3.2 Appropriate personnel are notified of completion and reports and/or completion documents are finalized. 3.3 Reports and/or completion documents are submitted to relevant personnel/organizations for approval and, where applicable, statutory or regulatory approval. 3.4 Approved copies of survey documents are issued and records are updated in accordance with established procedures.

Variable	**Range**
This Competence Standard Unit shall/may be demonstrated in relation to:	• the organization and implementation of line • Survey instruments (theodolites, measuring devices, compasses, inclinometer) • Survey software Poles • conductors – bare wire and aerial bundled cable; • cross arms • insulators • substations • transformers • HV switchgear • LV switchgear
The following constants and variables included in this unit:	• Appropriate and relevant persons (see Personnel) • Appropriate authorities • Appropriate work platform • Assessing risk • Assessment • Authorization • 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 • Legislation • MSDS • Notification • OHS practices • OHS issues • Permits and/or permits to work • Personnel • Quality assurance systems • Requirements • Safe design principles • Testing procedures • Work clearance systems

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • Implement Occupational Health and Safety workplace procedures and practices including the use of risk control measures • Apply sustainable energy principles and practices • Conduct work observing the relevant legislation, regulations, policies and workplace procedures
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • Occupational Health and Safety principles • Electrical safe working practice • Occupational Health and Safety principles - enterprise responsibilities • Safe design principles • Surveying techniques • Project management
Underpinning Skills	Demonstrates skills to: • Electrical safe working practice • Occupational Health and Safety practices • Surveying techniques • Project management • Safe design practices
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Power Transmission Systems Installation and Maintenance Level IV	
Unit Title	**Plan and Organize Work**
Unit Code	**EIS TIM4 18 0612**
Unit Descriptor	This unit covers the knowledge, skills and attitude required in planning and organizing work activities in a production application. It may be applied to a small independent operation or to a section of a large organization.

Elements	**Performance Criteria**
1. Set objectives	1.1 ***Objectives*** are consistent with and linked to work activities in accordance with organizational aims 1.2 Objectives are stated as measurable targets with clear time frames 1.3 Support and commitment of team members are reflected in the objectives 1.4 Realistic and attainable objectives are identified
2. Plan and schedule work activities	2.1 Tasks/work activities to be completed are identified and prioritized as directed 2.2 Tasks/work activities are broken down into steps in accordance with set time frames and achievable components 2.3 Task/work activities are assigned to appropriate team or individuals in accordance with agreed functions 2.4 ***Resources*** are allocated as per requirements of the activity 2.5 ***Schedule of work activities*** is coordinated with personnel concerned
3. Implement work plans	3.1 ***Work methods and practices*** are identified in consultation with personnel concerned 3.2 ***Work plans*** are implemented in accordance with set time frames, resources and ***standards***
4. Monitor work activities	4.1 Work activities are monitored and compared with set objectives 4.2 Work performance is monitored 4.3 Deviations from work activities are reported and recommendations are coordinated with appropriate personnel and in accordance with set standards 4.4 Reporting requirements are complied with in accordance with recommended format

	4.5 Observe timeliness of report 4.6 Files are established and maintained in accordance with standard operating procedures
5. Review and evaluate work plans and activities	5.1 Work plans, strategies and implementation are reviewed based on accurate, relevant and current information 5.2 Review is based on comprehensive consultation with appropriate personnel on outcomes of work plans and reliable feedback 5.3 Results of review are provided to concerned parties and formed as the basis for adjustments/simplifications to be made to policies, processes and activities 5.4 Performance appraisal is conducted in accordance with organization rules and regulations 5.5 Performance appraisal report is prepared and documented regularly as per organization requirements. 5.6 Recommendations are prepared and presented to ***appropriate personnel/authorities*** 5.7 ***Feedback mechanisms*** are implemented in line with organization policies

Variable	**Range**
Objectives	• Specific • General
Resources	• Personnel • Equipment and technology • Services • Supplies and materials • Sources for accessing specialist advice • Budget
Schedule of work activities	• Daily • Work-based • Contractual • Regular
Work methods and practices	• Legislated regulations and codes of practice • Industry regulations and codes of practice • Occupational health and safety practices
Work plans	• Daily work plans • Project plans • Program plans • Resource plans • Skills development plans • Management strategies and objectives
Standards	• Performance targets • Performance management and evaluation systems • Occupational standards • Employment contracts • Client contracts

	• Discipline procedures • Workplace assessment guidelines • Internal quality assurance • Internal and external accountability and auditing requirements • Training Regulation Standards • Safety Standards
Appropriate personnel/ authorities	• Appropriate personnel include: • Management • Line Staff
Feedback mechanisms	• Feedback mechanisms include: • Verbal feedback • Informal feedback • Formal feedback • Questionnaire • Survey • Group discussion

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • set objectives • planned and scheduled work activities • implemented work plans • monitored work activities • reviewed and evaluated work plans and activities
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • Organization's strategic plan, policies rules and regulations, laws and objectives for work unit activities and priorities • Organizations policies, strategic plans, guidelines related to the role of the work unit • Team work and consultation strategies
Underpinning Skills	Demonstrates skill of: • Planning • Leading • Organizing • Coordinating • Communication Skills • Inter-and intra-person/motivation skills • Presentation skills
Resource Implications	The following resources must be provided: • Workplace or fully equipped location with necessary tools and equipment as well as consumable materials
Methods of Assessment	Competence may be accessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the workplace or in simulated workplace setting.

Occupational Standard: Power Transmission Systems Installation and Maintenance Level IV	
Unit Title	**Migrate to New Technology**
Unit Code	**EIS TIM4 19 0612**
Unit Descriptor	This unit defines the competence required to apply skills and knowledge in using new or upgraded technology. The rationale behind this unit emphasizes the importance of constantly reviewing work processes, skills and techniques in order to ensure that the quality of the entire business process is maintained at the highest level possible through the appropriate application of new technology. To this end, the person is typically engaged in on-going review and research in order to discover and apply new technology or techniques to improve aspects of the organization's activities.

Elements	Performance Criteria
1. Apply existing knowledge and techniques to technology and transfer	1.1 Situations are identified where existing knowledge can be used as the basis for developing new skills. 1.2 New or upgraded technology skills are acquired and used to enhance learning. 1.3 New or upgraded equipment are identified, classified and used where appropriate, for the benefit of the organization.
2. Apply functions of technology to assist in solving organizational problems	2.1 Testing of new or upgraded equipment is conducted according to the specification manual. 2.2 Features of new or upgraded equipment are applied within the organization 2.3 Features and functions of new or upgraded equipment is used for solving organizational problems 2.4 Sources of information is accessed and used relating to new or upgraded equipment
3. Evaluate new or upgraded technology performance	3.1 New or upgraded equipment is evaluated for performance, usability and against OHS standards**.** 3.2 ***Environmental considerations*** are determined from new or upgraded equipment. 3.3 ***Feedback*** is sought from users where appropriate.

Variables	Range
Environmental Considerations	May include but is not limited to: • recycling • safe disposal of packaging (e.g. cardboard, polystyrene, paper, plastic) and • correct disposal of waste materials by an authorized body
Feedback	May include: • surveys • questionnaires • interviews and • meetings

Evidence Guide	
Critical Aspects of Competence	Competence must confirm the ability to transfer the application of existing skills and knowledge to new technology
Underpinning Knowledge and Attitudes	• Broad awareness of current technology trends and directions in the industry (e.g. systems/procedures, services, new developments, new protocols) • Knowledge of vendor product directions • Ability to locate appropriate sources of information regarding metal manufacturing and new technologies • Current industry products/services, procedures and techniques with knowledge of general features • Information gathering techniques
Underpinning Skills	• Research skills for identifying broad features of new technologies • Ability to assist in the decision making process • Literacy skills in regard to interpretation of technical manuals • Ability to solve known problems in a variety of situations and locations • Evaluate and apply new technology to assist in solving organizational problems • General analytical skills in relation to known problems
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Demonstration/ Observation with Oral Questioning
Context of Assessment	Competence may be assessed in the workplace or in a simulated workplace setting.

Occupational Standard: Power Transmission Systems Installation and Maintenance Level IV	
Unit Title	**Establish Quality Standards**
Unit Code	**EIS TIM4 20 0612**
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to establish quality specifications for work outcomes and work performance. It includes monitoring and participation in maintaining and improving quality, identifying critical control points in the production of quality output and assisting in planning and implementing of quality assurance procedures.

Elements	Performance Criteria
1. Establish quality specifications for product	1.1 Market specifications are ***sourced*** and ***legislated requirements*** identified. 1.2 Quality specifications developed and agreed upon 1.3 Quality specifications are documented and introduced to organization staff / personnel in accordance with the organization policy 1.4 Quality specifications are updated when necessary
2. Identify hazards and critical control points	2.1. Critical control points impacting on quality are identified. 2.2. Degree of risk for each hazard is determined. 2.3. Necessary documentation is accomplished in accordance with organization quality procedures
3. Assist in planning of quality assurance procedures	3.1 Procedures for each identified control point are developed to ensure optimum quality. 3.2 Hazards and risks are minimized through application of appropriate controls. 3.3 Processes to monitor the effectiveness of quality assurance procedures are developed.
4. Implement quality assurance procedures	4.1 Responsibilities for carrying out procedures are allocated to staff and contractors. 4.2 Instructions are prepared in accordance with the enterprise's quality assurance program. 4.3 Staff and contractors are given induction training on the quality assurance policy. 4.4 Staff and contractors are given in-service training relevant to their allocated procedures.
5. Monitor quality	5.1 Quality requirements are identified

of work outcome	5.2 Inputs are inspected to confirm capability to meet quality requirements 5.3 Work is conducted to produce required outcomes 5.4 Work processes are monitored to confirm quality of output and/or service 5.5 Processes are adjusted to maintain outputs within specification.
6. Participate in maintaining and improving quality at work	6.1 Work area, materials, processes and product are routinely monitored to ensure compliance with quality requirements 6.2 Non-conformance in inputs, process, product and/or service is identified and reported according to workplace reporting requirements 6.3 Corrective action is taken within level of responsibility, to maintain quality standards 6.4 Quality issues are raised with designated personnel
7. Report problems that affect quality	7.1 Recognize potential or existing quality problems. 7.2 Identify instances of variation in quality from specifications or work instructions. 7.3 Report variation and potential problems to supervisor/manager according to enterprise guidelines.

Variable	**Range**
Sourced	• End-users • Customers or stakeholders
Legislated requirements	• Verification of product quality as part of consumer legislation or specific legislation related to product content or composition.
Safety procedures.	• Use of tools and equipment for fabrication/production/ manufacturing works • Workplace environment and handling of material safety, • Following occupational health and safety procedures designated for the task • Respect the policies, regulations, legislations, rule and procedures for manufacturing/production/fabrication works

Evidence Guide	
Critical Aspect of Competence	Assessment requires evidence that the candidate: • Monitored quality of work • Established quality specifications for product • Participated in maintaining and improving quality at work

	• Identified hazards and critical control points in the production of quality product • Assisted in planning of quality assurance procedures • Reported problems that affect quality • Implemented quality assurance procedures
Underpinning Knowledge	Demonstrates knowledge of: • work and product quality specifications • quality policies and procedures • improving quality at work • hazards and critical points of operation • obtaining and using information • applying federal and regional legislation within day-today work activities • accessing and using management systems to keep and maintain accurate records • requirements for correct preparation and operation • technical writing
Underpinning Skills	Demonstrates skills in: • monitoring quality of work • establishing quality specifications for product • participating in maintaining and improving quality at work • identifying hazards and critical control points in the production of quality product • assisting in planning of quality assurance procedures • reporting problems that affect quality • implementing quality assurance procedures
Resource Implications	The following resources must be provided: • Workplace or fully equipped environment with necessary tools and equipment as well as consumable materials
Methods of Assessment	Competence may be assessed through: • Interview/ Written Test • Observation/Demonstration with Oral questioning
Context of Assessment	Competence may be assessed in the workplace or in a simulated workplace setting.

Occupational Standard: Power Transmission Systems Installation and Maintenance Level IV	
Unit Title	**Develop Individuals and Team**
Unit Code	**EIS TIM4 21 0612**
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to determine individual and team development needs and facilitate the development of the workgroup.

Elements	Performance Criteria
1. Provide team leadership	1.1 ***Learning and development needs*** are systematically identified and implemented in line with ***organizational requirements*** 1.2 Learning plan to meet individual and group training and developmental needs is collaboratively developed and implemented 1.3 Individuals are encouraged to self-evaluate performance and identify areas for improvement 1.4 ***Feedback on performance*** of team members is collected from relevant sources and compared with established team learning process
2. Foster individual and organizational growth	2.1 Learning and development program goals and objectives are identified to match the specific knowledge and skills requirements of Competence standards *2.2* ***Learning delivery methods*** are appropriate to the learning goals, the learning style of participants and availability of equipment and resources *2.3* Workplace learning opportunities and coaching/ mentoring assistance are provided to facilitate individual and team achievement of competencies *2.4* Resources and timelines required for learning activities are identified and approved in accordance with organizational requirements
3. Monitor and evaluate workplace learning	3.1 Feedback from individuals or teams is used to identify and implement improvements in future learning arrangements 3.2 Outcomes and performance of individuals/teams are assessed and recorded to determine the effectiveness of development programs and the extent of additional support 3.3 Modifications to learning plans are negotiated to improve the efficiency and effectiveness of learning

	3.4 Records and reports of Competence are maintained within organizational requirement
4. Develop team commitment and cooperation	4.1 Open communication processes to obtain and share information is used by team 4.2 Decisions are reached by the team in accordance with its agreed roles and responsibilities 4.3 Mutual concern and camaraderie are developed in the team
5. Facilitate accomplish-ment of organizational goals	5.1 Team members actively participated in team activities and communication processes 5.2 Teams members developed individual and joint responsibility for their actions 5.3 Collaborative efforts are sustained to attain organizational goals

Variable	**Range**
Learning and development needs	• Coaching, monitoring and/or supervision • Formal/informal learning program • Internal/external training provision • Work experience/exchange/opportunities • Personal study • Career planning/development • Performance evaluation • Workplace skills assessment • Recognition of prior learning
Organizational requirements	• Quality assurance and/or procedures manuals • Goals, objectives, plans, systems and processes • Legal and organizational policy/guidelines and requirements • Safety policies, procedures and programs • Confidentiality and security requirements • Business and performance plans • Ethical standards • Quality and continuous improvement processes and standards
Feedback on performance	• Formal/informal performance evaluation • Obtaining feedback from supervisors and colleagues • Obtaining feedback from clients • Personal and reflective behavior strategies • Routine and organizational methods for monitoring service delivery
Learning delivery methods	• On the job coaching or monitoring • Problem solving • Presentation/demonstration

	• Formal course participation • Work experience and involvement in professional networks • Conference and seminar attendance

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • identified and implemented learning opportunities for others • gave and received feedback constructively • facilitated participation of individuals in the work of the team • negotiated plans to improve the effectiveness of learning • prepared learning plans to match skill needs • accessed and designated learning opportunities
Underpinning Knowledge and Attitude	Demonstrates knowledge of: • coaching and monitoring principles • understanding how to work effectively with team members who have diverse work styles, aspirations, cultures and perspective • understanding how to facilitate team development and improvement • understanding methods and techniques to obtain and interpreting feedback • understanding methods for identifying and prioritizing personal development opportunities and options • knowledge of career paths and competence standards in the industry
Underpinning Skills	Demonstrates skills in: • reading and understanding a variety of texts, preparing general information and documents according to target audience; spell with accuracy; use grammar and punctuation effective relationships and conflict management • communication including receiving feedback and reporting, maintaining effective relationships and conflict management • planning skills to organize required resources and equipment to meet learning needs • coaching and mentoring skills to provide support to colleagues • reporting to organize information; assess information for relevance and accuracy; identify and elaborate on learning outcomes • facilitation to conduct small group training sessions • relating to people from a range of social, cultural, physical

	and mental backgrounds
Resource Implications	Access to relevant workplace or appropriately simulated environment where assessment can take place
Methods of Assessment	Competence may be accessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the workplace or in a simulated workplace setting.

Occupational Standard: Power Transmission Systems Installation and Maintenance Level IV	
Unit Title	**Utilize Specialized Communication Skills**
Unit Code	**EIS TIM4 22 0612**
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to use specialized communication skills to meet specific needs of internal and external clients, conduct interviews, facilitate group discussions, and contribute to the development of communication strategies.

Elements	Performance Criteria
1. Meet common and specific communication needs of clients and colleagues	1.1 Specific communication needs of clients and colleagues are identified and met 1.2 Different approaches are used to meet communication needs of clients and colleagues 1.3 Conflict is addressed promptly and in a timely way and in a manner which does not compromise the standing of the organization
2. Contribute to the development of communication strategies	2.1 ***Strategies*** for internal and external dissemination of information are developed, promoted, implemented and reviewed as required 2.2 Channels of communication are established and reviewed regularly 2.3 Coaching in effective communication is provided 2.4 Work related network and relationship are maintained as necessary 2.5 Negotiation and conflict resolution strategies are used where required 2.6 Communication with clients and colleagues is appropriate to individual needs and organizational objectives
3. Represent the organization	3.1 When participating in internal or external fora, presentation is relevant, appropriately researched and presented in a manner to promote the organization 3.2 Presentation is clear and sequential and delivered within a predetermined time 3.3 Appropriate media is utilized to enhance presentation 3.4 Differences in views are respected 3.5 Written communication is consistent with organizational standards

	3.6 Inquiries are responded in a manner consistent with organizational standard
4. Facilitate group discussion	4.1 Mechanisms which enhance ***effective group interaction*** are defined and implemented 4.2 Strategies which encourage all group members to participate are used routinely 4.3 Objectives and agenda for meetings and discussions are routinely set and followed 4.4 Relevant information are provided to group to facilitate outcomes 4.5 Evaluation of group communication strategies is undertaken to promote participation of all parties 4.6 Specific communication needs of individuals are identified and addressed
5. Conduct interview	5.1 A range of appropriate communication strategies are employed in ***interview situations*** 5.2 Records of interviews are made and maintained in accordance with organizational procedures 5.3 Effective questioning, listening and nonverbal communication techniques are used to ensure that required message is communicated

Variable	**Range**
Strategies	• Recognizing own limitations • Utilizing techniques and aids • Providing written drafts • Verbal and non-verbal communication
Effective group interaction	• Identifying and evaluating what is occurring within an interaction in a non-judgmental way • Using active listening • Making decision about appropriate words, behavior • Putting together response which is culturally appropriate • Expressing an individual perspective • Expressing own philosophy, ideology and background and exploring impact with relevance to communication
Types of Interview	• Related to staff issues • Routine • Confidential • Evidential • Non-disclosure • Disclosure

Interview situations	• Establish rapport • obtain facts and information • Facilitate resolution of issues • Develop action plans • Diffuse potentially difficult situation

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • Demonstrated effective communication skills with clients and work colleagues accessing service • Adopted relevant communication techniques and strategies to meet client particular needs and difficulties
Underpinning Knowledge and Values	Demonstrates knowledge of: • communication process • dynamics of groups and different styles of group leadership • communication skills relevant to client groups

Underpinning Skills	Demonstrates skills to:
	• full range of communication techniques including:
	  • active listening
	  • feedback
	  • interpretation
	  • role boundaries setting
	  • negotiation
	  • establishing empathy
	  • communication strategies
	• communication required to fulfill job roles as specified by the organization

Resource Implications	Access to appropriate workplace where assessment can take place.
Methods of Assessment	Competence may be assessed through • Interview/Written Test • Direct Observation / Demonstration with Oral Questioning
Context for Assessment	Competence may be assessed in the workplace or in a simulated workplace setting.

Occupational Standard: Power Transmission Systems Installation and Maintenance Level IV	
Unit Title	**Manage and Maintain Small/Medium Business Operation**
Unit Code	**EIS TIM4 23 0612**
Unit Descriptor	This unit covers the operation of day-to-day business activities in a micro or small business. The strategies involve developing, monitoring and managing work activities and financial information, developing effective work habits, and adjusting work schedules as needed.

Elements	Performance Criteria
1. Identify daily work requirements	1.1 Work requirements for a given time period are identified taking into consideration ***resources*** and constraints 1.2 Work activities are prioritized based on business needs, requirements and deadlines 1.3 If appropriate, work is allocated to relevant staff or contractors to optimize efficiency
2. Monitor and manage work	2.1 People, resources and/or equipment are coordinated to provide optimum results 2.2 Staff, clients and/or contractors are communicated within a clear and regular manner, to monitor work in relation to ***business goals*** or timelines 2.3 ***Problem solving techniques*** are applied to work situations to overcome difficulties and achieve positive outcomes
3. Develop effective work habits	3.1 Work and personal priorities are identified and a balance is achieved between competing priorities using appropriate ***time management strategies*** 3.2 Input from ***internal and external sources*** is sought and used to develop and refine new ideas and approaches 3.3 Business or inquiries are responded to promptly and effectively 3.4 Information is presented in a format appropriate to the industry and audience
4. Interpret financial information	4.1 Relevant documents and reports are identified 4.2 Documents and reports are read and understood and any implications discussed with appropriate persons 4.3 Data and numerical calculations are analyzed, checked, evaluated, organized and reconciled 4.4 Daily financial records and cash flow are maintained

		correctly and in accordance with legal and accounting requirements
	4.5	Invoices and payments are prepared and distributed in a timely manner and in accordance with legal requirements
	4.6	Outstanding accounts are collected or followed-up on
5. Evaluate work performance	5.1	Opportunities for improvements are monitored according to business demands
	5.2	Work schedules are adjusted to incorporate necessary modifications to existing work and routines or changing needs and requirements
	5.3	Proposed changes are clearly communicated and recorded to aid in future planning and evaluation
	5.4	Relevant codes of practice are used to guide an ethical approach to workplace practices and decisions

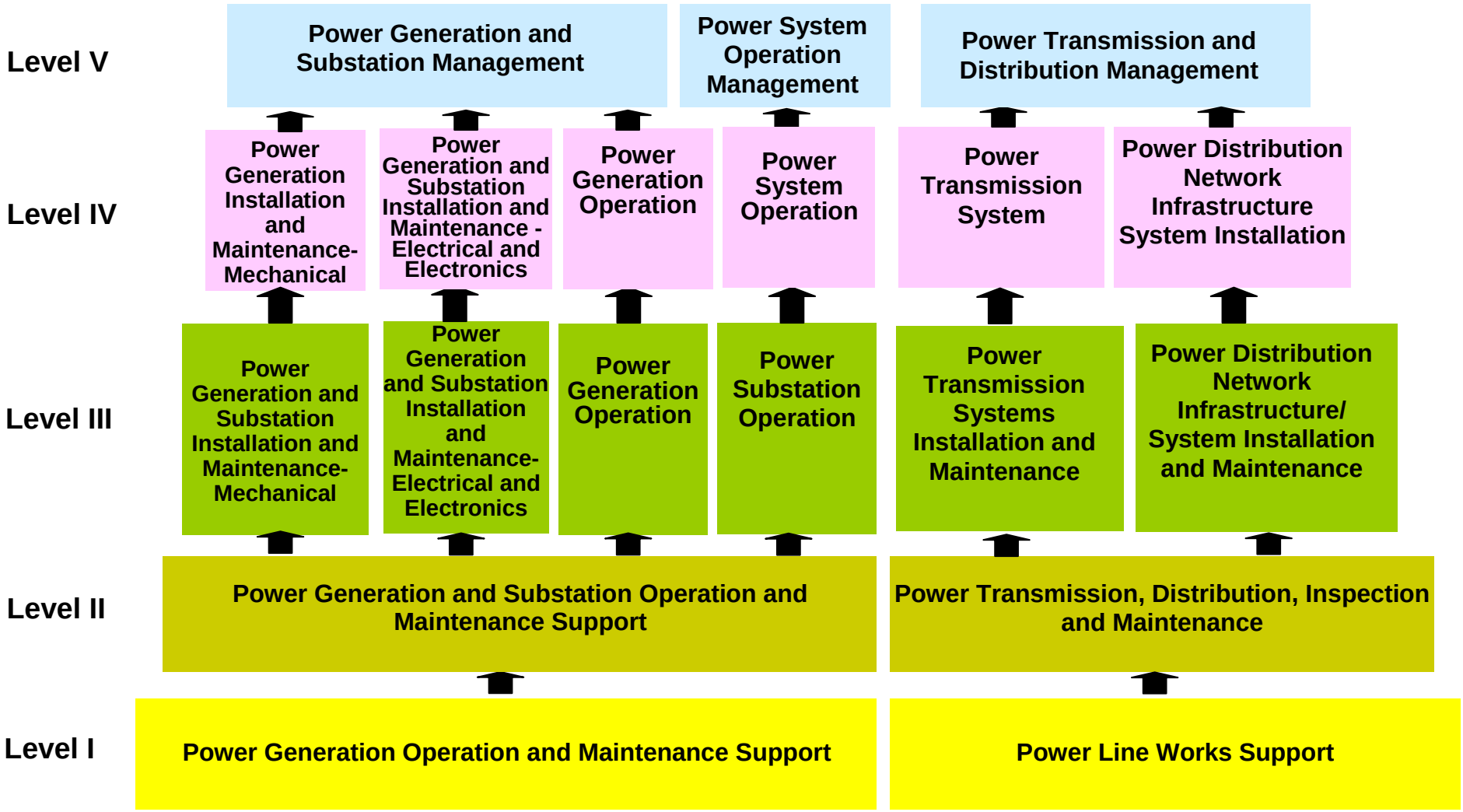
Variable	**Range**
Resources may include:	• staff • money • time • equipment • space
Business goals may include:	• sales targets • budgetary targets • team and individual goals • production targets • reporting deadlines
Problem solving techniques may include:	• gaining additional research and information to make better informed decisions • looking for patterns • considering related problems or those from the past and how they were handled • eliminating possibilities • identifying and attempting sub-tasks • collaborating and asking for advice or help from additional sources
Time management strategies may include:	• prioritizing and anticipating • short term and long term planning and scheduling • creating a positive and organized work environment • clear timelines and goal setting that is regularly reviewed and adjusted as necessary • breaking large tasks into smaller tasks • getting additional support if identified and necessary
Internal and	• staff and colleagues

external sources may include:	• management, supervisors, advisors or head office • relevant professionals such as lawyers, accountants, management consultants • professional associations

Evidence Guide	
Critical Aspects of Competence	A person must be able to demonstrate: • ability to identify daily work requirements and allocate work appropriately • ability to interpret financial documents in accordance with legal requirements
Underpinning Knowledge and Attitudes	Demonstration knowledge on: • Federal and Local Government legislative requirements affecting business operations, especially in regard to occupational health and safety (OHS), equal employment opportunity, industrial relations and anti-discrimination • technical or specialist skills relevant to the business operation • relevant industry code of practice • planning techniques to establish realistic timelines and priorities • identification of relevant performance measures • quality assurance principles and methods • relevant marketing, management, sales and financial concepts • methods for monitoring performance and implementing improvements • structured approaches to problem solving, idea management and time management
Underpinning Skills	Demonstrate skills to: • interpret legal requirements, company policies and procedures and immediate, day-to-day demands • communication skills including questioning, clarifying, reporting, and giving and receiving constructive feedback • numeracy skills for performance information, setting targets and interpreting financial documents and reports • technical and analytical skills to interpret business document, reports and financial statements and projections • ability to relate to people from a range of social, cultural and ethnic backgrounds and physical and mental abilities • problem solving skills to develop contingency plans • using computers and software packages to record and manage data and to produce reports • evaluation skills for assessing work and outcomes • observation skills for identifying appropriate people, resources and to monitor work
Resource	The following resources should be provided:

Implications	• Access to relevant workplace documentation, financial records, and equipment
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation/Demonstration with Oral questioning
Context for Assessment	Competence may be assessed in the workplace or in a simulated work environment.

Sector: Economic Infrastructure
Sub-Sector: Power Generation, Transmission and Distribution



Acknowledgement

We wish to extend thanks and appreciation to the many representatives of business, industry, academe and government agencies who donated their time and expertise to the development of this occupational standard.

We would like also to express our appreciation to the Experts of EEPCo, Ministry of Education (MoE) and Engineering Capacity Building Program (ECBP) who made the development of this occupational standard possible.

This occupational standard was developed on the June 2012 at Gibe, Ethiopia.