Federal Democratic Republic of Ethiopia OCCUPATIONAL STANDARD



POWER TRANSMISSION, DISTRIBUTION, INSPECTION AND MAINTENANCE



NTQF Level II



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

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UNIT OF COMPETENCE CHART

Occupational Standard: P	Power Transmission, Distr Naintenance	ibution, Inspection and
Occupational Code: EIS T	DM	
NTQF Level II		
EIS TDM2 01 0612 Apply Environment and Sustainable Energy Procedures	EIS TDM2 02 0612 Lay Electrical Cables	EIS TDM2 03 0612 Installi and Maintain De-Energized LV Underground Polymeric Cables
EIS TDM2 04 0612 Operate Plant and Equipment near Live Electrical Conductors/ Apparatus	EIS TDM2 05 0612 Fix and Secure Equipment	EIS TDM2 06 0612 Lay Wiring and Terminate Accessories for Extra-Low Voltage Circuits
EIS TDM2 07 0612 Solve Problems in Single and Three Phase Low Voltage Circuits	EIS TDM2 08 0612 Install and Maintain Poles / Structures and Associated Hardware	EIS TDM2 09 0612 Install and Maintain Overhead Conductors and Cables (Poles and Structures)
EIS TDM2 10 0612 Erect and Maintain Transmission Towers and Associated Hardware	EIS TDM2 11 0612 Install and Maintain De-Energized LV Underground Paper Insulated Cables	EIS TDM2 12 0612 Joint and Maintain Energized LV Underground Polymeric Cables
EIS TDM2 13 0612 Perform LV Field Switching Operation to a Given Schedule	EIS TDM2 14 0612 Install and Maintain Public Lighting Systems	EIS TDM2 15 0612 Install and Maintain Low Voltage Services (Underground)
EIS TDM2 16 0612 Install and Maintain Low Voltage Services (Overhead)	EIS TDM2 17 0612 Install, Replace and Inspect Single and 3 Phase Energy Meters and Associated	EIS TDM2 18 0612 Install and Maintain Overhead Conductors and Cables (Towers)
EIS TDM2 19 0612 Inspect Overhead Structures and Electrical Apparatus (Towers)	EIS TDM2 20 0612 Inspect Overhead Structures and Electrical Apparatus (Poles and Structures)	EIS TDM2 21 0612 Maintain Overhead Energized LV Conductors and Cables

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EIS TDM2 22 0612 Work in Team Environment

EIS TDM2 23 0612 Participate in Workplace Communication EIS TDM2 24 0612 Develop Business Practice

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Occupational Standard: Power Transmission, Distribution, Inspection and Maintenance Level II		
Unit Title	Apply Environment and Sustainable Energy Procedures	
Unit Code	EIS TDM2 01 0612	
Unit Descriptor	This 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	Perfo	rmance Criteria
1. Prepare to implement environmental and sustainable	1.1	Works schedule(s), including drawings, plans, requirements, established procedures, and material lists, are received, analyzed and confirmed, if necessary, by site inspection.
energy procedures	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

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			C	obtained and confirmed in working order.	
			1.8 F e c r	Relevant personnel at worksite are confirmed cur environmental and sustainable energy procedure other related work procedures according to requirements.	rent in s and
	1.9 L p r	Liaison and communication issues with other/authorssonnel, authorities, clients and land owners ar resolved to carry out work where necessary.	norized e		
	1.10 S ii p t t	Site is prepared according to the work schedule, nto account environmental and sustainable energo procedures and the need to minimize risk and da to property, commerce, and individuals in accordation with established procedures.	taking gy mage ance		
			1.11 F c e r a	Personnel participating in the work, including plar operators and contractors, are fully briefed on environmental and sustainable energy procedure respective responsibilities confirmed where applic accordance with established procedures.	nt s and cable in
2. Carry out environmental and sustainable	2.1 (r a r	OHS and sustainable energy principles and pract reduce the incidents of accidents and minimize w are monitored and followed in accordance with requirements and/or established procedures.	ices to aste		
	energy procedures	2.2 L a e r	Use of power tools/equipment, techniques and pr are safely followed under environmental and sust energy procedures and, currency according to requirements confirmed.	actices ainable	
		2.3 E ti s a r	Essential knowledge and associated skills are ap the safe implementation of environmental and sustainable energy procedures to ensure comple an agreed timeframe and, to quality standards wi minimum of waste according to requirements.	plied in tion in th a	
			2.4 F	Relevant environmental procedures are applied to specific project(s)/site(s).	ра
			2.5 V s	Nork is conducted in accordance with the princip sustainable energy and energy conservation.	les of
			2.6 F	Provision for the re-cycling or re-use of materials undertaken where possible.	is
			2.7 F F ii t	Hazard warnings and safety signs are recognized nazards and assessed OHS risks are reported to mmediate authorized persons for directions acco to established procedures.	l and the rding
			2.8 l e	Unplanned events in the implementation of environmental and sustainable energy procedure	s are
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		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	On going checks of quality of the work are undertaken in accordance with instructions and established procedures.
3. Complete the environmental and sustainable energy	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.
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, <i>environmental risks/incidents</i> and potential impacts are reported and recorded according to requirements/established procedures.
	3.6	Works completion records, reports, as installed /modified drawing and/or <i>documentation</i> and information are finalized and processed and appropriate personnel notified.

Variable	Range		
Specific project(s)/si	te(s) te(s) May in buil plar wor cato floo wet drai was eas	clude but is not limited to: dings hts construction and maintenance sites kshops and laboratories chments d plains irrigation sites ands nage sites te disposal sites ements	
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Environmen	Ital	May incl	ude:	
risks		 impa 	ct of mismanagement of chemicals	
		 impa 	ct of mismanagement of biological agents	
		• detrir	mental impact on limited water resources	
		 spilla 	ge: waste disposal	
		 detrir 	mental impact on water catchment areas (urban	and
		non-i	urban)	
		 detrir 	mental impact on rivers	
		 wate 	rways and channels	
			tisfactory trade waste treatment and disposal	
		proce	Asses	
		 proor 	construction processes	
		 poor plant 	ning deficiencies	
			act of sustainable energy principles	
Environmen	tal	 Nav incl 		
	itai		ant fodoral logislation	
legislation			ant Petera registation	
		 relev 	ant local government by-laws	
		• relev	ant government or quasi government policies ar	na
		regui	ations	
		• relev	ant community planning and	
		• deve	lopment agreements (e.g. land care agreements	S)
Incidents of	(. I	May incl	ude:	
environmen	tal	• emis	sions to air	
Impact		• relea	ses to/of water	
		 relea 	ses to land	
		• vibra	tion and noise	
		 dispo 	osal of waste	
		 conta 	amination of land	
		 impa 	ct on communities	
		 destr 	uction of habitat	
		• use of	of energy sources	
		 waste 	e generation processes and technologies	
		 impa 	ct on culturally significant sites and	
		• may	involve the implementation of emergency respo	nses
Environmen	ital	May	include:	
managemer	nt	 information 	nation on applicable environmental laws or othe	er
documentat	ion:	requi	rements	
		• comp	plaint records	
		 traini 	ng records	
		 proce 	ess information	
		• proce	ess operational log books	
		• inspe	ection, maintenance and calibration records	
		 relev 	ant contractor and supplier information	
		 incide 	ent reports	
		 information 	nation on emergency preparedness and respon	se
				-
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	 records of significant environmental impacts
	 chain of custody and compliance records
	audit results
	management reviews
The following	Appropriate and relevant persons (see Personnel)
constants and	Appropriate authorities
variables included	Assessing risk
in this unit:	Assessment
	Authorization
	 Diagnostic testing and restoration
	 Diagnostic, testing and restoration Decumenting detail work events, record keeping and er
	• Documenting detail work events, record keeping and or
	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
	Ouality assurance systems
	Testing procedures
	I esung procedures
	Work clearance systems

Evidence C	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		DemonsOccuEnvi	strates knowledge of: upational health and safety principles ronmental Fundamentals	
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	 Material handling and the environment
	 Filtering and sampling oil and the environment
	Enterprise specific - OHS instructions
Underpinning	Demonstrates skills to:
Skills	 Occupational health and safety practices
	 Filtering and sampling oil and the environment
	Enterprise specific - OHS instructions
Resources	Access is required to real or appropriately simulated situations,
Implication	including work areas, materials and equipment, and to
	information on workplace practices and OHS practices.
Methods of	Competence may be assessed through:
Assessment	Interview / Written Test
	Observation / Demonstration with Oral Questioning
Context of	Competence may be assessed in the work place or in a
Assessment	simulated work place setting.

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Occupational Stan	Occupational Standard: Power Transmission, Distribution, Inspection and Maintenance Level II			
Unit Title	Lay Electrical Cables			
Unit Code	EIS TDM2 02 0612			
Unit Descriptor	This unit covers the laying of cables for electrical purposes and includes the laying of ducts and/or conduit for such cables. It could include direct laying of cables in trenches, on racks, in troughs and /or in conduit or ducts. It also encompasses cable pulling methods, pulling tensions, minimum bending radii, reduction of frictional forces, use of supporting plant (e.g. dynamometers, rigging, winches,), working on FRC, PVC, A/C ducted systems and the sealing of cables.			

Elements	Perfo	ormance Criteria
1. Prepare to lay electrical cables	1.1	Works schedule(s), including drawings, plans, requirements, established procedures, and material lists, are received and confirmed, if necessary, by site inspection
	1.2	Relevant requirements and established procedures for the work are discussed with other personnel and identified for all work sites
	1.3	OHS policies and procedures related to requirements and established procedures for the laying of electrical cables 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 work site are confirmed current in First Aid and other related work procedures according to requirements.

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			1.9	Liaison and communication issues with other/au personnel, authorities, clients and land owners a resolved to carry out work where necessary.	thorized ire
			1.10	Site is prepared according to the work schedule minimize risk and damage to property, commerc individuals in accordance with established proce	and to e, and dures.
			1.11	Personnel participating in the work, including pla operators and contractors, are fully briefed and respective responsibilities confirmed where appl accordance with established procedures.	int icable in
			1.12	Traffic management plan is identified and impler	nented.
2. Carry layin elect cable	y ou g of rical es	t the	2.1	OHS, Sustainable Energy and Environmental pr and practices to reduce the incidents of accident minimize waste are followed in accordance with requirements and/or established procedures.	inciples ts and
			2.2	Lifting, climbing, working in confined spaces and and use of power tools/equipment, techniques a practices are safely followed and, currency acco requirements confirmed.	l aloft, nd rding to
			2.3	Apply Essential Knowledge and Associated Skill safe laying electrical to ensure completion in an timeframe and, to quality standards with a minim waste according to requirements.	s in the agreed num of
			2.4	<i>Electrical cables</i> are laid in accordance with the schedule and requirements/established procedu	e work res.
			2.5	Hazard warnings and safety signs are recognize hazards and assessed OHS risks are reported to immediate authorized persons for directions acc to established procedures.	d and o the ording
			2.6	Unplanned events in the laying of electrical cable undertaken within the scope of established proce	es are edures.
			2.7	Known solutions to a variety of problems are appresed and the set appresed to a set appresed and the set of th	olied
			2.8	On going checks of quality of the work are under accordance with instructions and established procedures.	rtaken in
3. Com layin elect	plete g of rical	e the	3.1	Work undertaken is checked against works sche conformance with requirements and anomalies r in accordance with established procedures.	edule for reported
cable	es		3.2	Accidents and/or injuries are reported in accorda with requirements/established procedures, wher applicable.	ance e
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	3.3	Work site is rehabilitated, cleaned up and made safe in accordance with established procedures.
	3.4	Tools, equipment and any surplus resources and materials are, where appropriate, cleaned, checked and returned to storage or disposed of in accordance with established procedures.
	3.5	Relevant work permit(s), works completion records, reports, drawings and/or documentation and information are actually completed and appropriate personnel notified.
	3.6	Works completion records, reports, as installed / modified drawing/ and/or documentation and information are finalized and processed and appropriate personnel notified

Variance		Range		
Laying of ca may be in:	ables	 Dire On i trou cond duct 	ct trenches racks ghs and/or duit or ts	
Laying of ca encompass	ables es:	 Cab Pulli Mini Red Use wind Wor and 	le pulling methods ing tensions mum bending radii uction of frictional forces of supporting plant(e.g. dynamometers, rigging ches, etc) king on FRC, PVC, A/C ducted systems and the sealing of cables	, e cutting
Constants a variables ind in this unit a	and cluded are:	may inc App App App Asso Asso Auth Con Diag Doc stora Eme Env Env	clude: ropriate and relevant persons (see Personnel) ropriate authorities ropriate work platform essing risk essment norization fined space gnostic, testing and restoration umenting detail work events, record keeping and age of information. wings and specifications ergency ironmental and Sustainable Energy Procedures ironmental legislation	d or
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•	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

Evidence Guide	
Critical Aspects of	Evidence that shows a candidate is able to:
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.
	Demonstrated performance across a representative range of contexts from the prescribed items below:
	Knowledge and application of relevant sections of;
	Environmental Legislative requirements;
	 Environmental Statutory legislation;
	Enterprise/site Environmental and Sustainable energy
	principles and practice
	 Apply environmental risk assessment process
	Implement, monitor and review environmental procedures
	during the currency of the work
	Dealing with an unplanned event by drawing on essential
	knowledge and skills to provide appropriate solutions.
Underpinning	Demonstrates knowledge of:
Knowledge and	Stores procedures
Alliludes	Generation power systems
	Iransmission, distribution and rail power systems
	 Substations, power transformers and reactors fundamentals
	 Underground cable installation
	 Underground cable construction
Underninning	Pemonstrates skills to:
Skills	 Stores procedures
	Generation power systems
	Transmission distribution and rail power systems

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	 Substations, power transformers and reactors fundamentals. Underground cable installation Underground cable construction
Resources	Access is required to real or appropriately simulated situations,
Implication	including work areas, materials and equipment, and to
	information on workplace practices 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.

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Occupational Standard: Power Transmission, Distribution, Inspection and Maintenance Level II			
Unit Title	Install and Maintain De-Energized LV Underground Polymeric Cables		
Unit Code	EIS TDM2 03 0612		
Unit Descriptor	This covers the installation an maintenance of de-energized low voltage underground polymeric cables and covers the jointing, terminating, repair and replacement of cables. It includes the isolation of systems and circuits, the procedure of issuing/accepting electrical access permits, the undertaking of pre-commissioning and/or re commissioning tests and the updating of system data/ maintenance records.		

Elements		Perform	nance Criteria	
1. Prepare for the installation and maintenance of re-energized	1.1 W ree are sit	orks schedule(s), including drawings, plans, quirements, established procedures, and materia e received, analyzed and confirmed, if necessar e inspection	al lists, y, by	
LV unde ground polymeri cables	er ic	1.2 Re the ide	elevant requirements and established procedure e work are communicated to all personnel and entified for all work sites	s for
Cables	1.3 Of an ma po pu	HS policies and procedures related to requiremend d established procedures for the installation and aintenance of de-energized LV <i>underground</i> lymeric cables are obtained and confirmed for the rposes of the work to be performed and commu-	ents J ne nicated	
		1.4 W wi ^t an	ork is prioritized and sequenced following consu th others for completion within acceptable timefr d in accordance with established procedures	ltation ames
		1.5 Ha me inc es	azards are identified; OHS risks assessed and c easures are prioritized, implemented and monito cluding emergency exits kept clear according to tablished procedures.	ontrol ored
	1.6 Re pe es	elevant work permits are obtained to access and rform work according to requirements and/or tablished procedures.		
	1.7 Re pe ob	esources including personnel, <i>equipment</i> , tools ersonal protective equipment required for the job tained and confirmed in working order	and are	
		1.8 Re Fir ree	elevant personnel at work site are confirmed cur st Aid and other related work procedures accord quirements	rent in ding to
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		1.9 (Liaison and communication issues with other/authorized personnel, authorities, clients a owners are resolved to carry out work where new	nd land cessary
		1.10 i	Site is prepared according to the work schedule minimize risk and damage to property, commerc individuals in accordance with established proce	and to e, and dures
		1.11 (i	Personnel participating in the work, including pla operators and contractors, are fully briefed and respective responsibilities confirmed where appl in accordance with established procedures	nt icable
		1.12	Road signs, barriers and warning devices are positioned in accordance with requirements	
2. Carry out the installation and maintenance of re-energized LV underground polymeric cables		2.1	OHS and sustainable energy principles and pract to reduce the incidents of accidents and minimiz waste are monitored and followed in accordance requirements and/or established procedures	etices e with
		2.2	Lifting, climbing, working in confined spaces and working aloft, and use of power tools/equipment techniques and practices are safely followed and currency according to requirements confirmed	, 1,
		2.3	Systems and circuits are isolated as required, pr safe to work on in accordance with the requirements/permits and established procedure	oved s
		2.4	Essential knowledge and associated skills are ap for the safe installation and maintenance of re- energized LV underground polymeric cables to e completion in an agreed timeframe and, to qualit standards with a minimum of waste according to requirements	oplied ensure y
		2.5 i	De-energized LV underground polymeric cables installed according to the work schedule and requirements/established procedure	are
		2.6 	Maintenance, including repair and/or replacemen underground polymeric cables is carried out, in accordance with the work schedule and requirements/established procedures	nt of LV
		2.7 	Hazard warnings and safety signs are recognize hazards and assessed OHS risks are reported to immediate authorized persons for directions acc to established procedures.	d and the ording
		2.8	Unplanned events in the installation and mainter of de-energized LV underground polymeric cable undertaken within the scope of established proce	nance es are edures
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	2.9	Known solutions to a variety of problems are applied using acquired essential knowledge and associated skills
	2.10	On going checks of quality of the work are undertaken in accordance with instructions and established procedures
3. Complete the installation and maintenance of de energized LV underground polymeric cables	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 LV underground polymeric cables are returned to service in accordance with requirements
	3.6	Works completion records, reports, drawings and/or documentation and information are finalized and processed and appropriate personnel notified

Variable	Range
This shall/may be	the installation and maintenance of de-energized high veltage underground polymorie cobles and covers
relation to:	 the jointing,
	• terminating,
	 repair and replacement of cables used in systems and circuits and the issuing/accepting of relevant permits
Underground	• links,
equipment may	• fuses,
include:	ring main units,
	distribution fuse boxes,
	 Pad mount and ground transformers,
	chamber substations and bus bar/termination boxes
Test and recording	voltage detectors,
equipment	cable identification equipment,
includes:	• Cable spiking equipment and insulation resistance testers.

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Jointing and	compound and resin filled boxes.
terminating	 polymeric tape materials
materials include:	 polymeric heat shrink materials
	 "slip-on" molded, components and pre-stretched polymeric
	materials
	 compression and mechanical connectors
Accoccmont	
lointing and	
terminating	
locations include:	• fuses
	• ring main units
	distribution fuse boxes
	 pad mount and ground transformers
	 chamber substations and bus bar/termination boxes
The following	 Appropriate and relevant persons (see Personnel)
constants and	Appropriate authorities
variables included	 Appropriate work platform
in this unit:	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
	Eall prevention
	 Hazards
	 Identifying bazards
	 Inspect
	Mobo
	• Notification.
	 Ono issues Dermite and/or permite to work
	Quality assurance systems
	• Requirements.
	I esting procedures
	Work clearance systems

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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 Demonstrate performance across a representative range of contexts from the prescribed items below: Knowledge and application of relevant sections of; Environmental Legislative requirements; Environmental Statutory legislation; Enterprise/site Environmental and Sustainable energy principles and practice Apply environmental risk assessment process Implement, monitor and review environmental procedures during the currency of the work Dealing with an unplanned event by drawing on essential knowledge and skills to provide appropriate solutions.
Underpinning Knowledge and	 Demonstrates knowledge of: Alternating current circuit principles
Attitudes	 Magnetism
	Electromagnetic principles
	Underground cable installation
	Fundamentals of jointing LV polymeric cables.
Undorninning	Ly polymetric cable jointing principles
Skills	 Inderground cable installation
	Power line safety practices
	Alternating current circuit practices
	Electromagnetic practices
	LV polymeric cable jointing 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	Competence may be assessed through:
Assessment	Interview / Written Test
	Observation / Demonstration with Oral Questioning
Context of	Competence may be assessed in the work place or in a
Assessment	simulated work place setting.

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Occupational Standard: Power Transmission, Distribution, Inspection and Maintenance Level II			
Unit Title	Operate Plant and Equipment Near Live Electrical Conductors/ Apparatus		
Unit Code	EIS TDM2 04 0612		
Unit Descriptor	This 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 Commonwealth, State/Territory or 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 mate lists, are received, analyzed and confirmed, if necessary, by site inspection.	erial	
	1.2	Relevant requirements and established procedu the operation of plant and equipment earn energized and exposed electrical conductors apparatus are communicated to all personnel a identified for all work sites.	res for s/ nd	
		1.3	OHS policies and procedures related to requiren and established procedures for the operation of and equipment near energized and exposed ele conductors/apparatus are obtained and confirme the purposes of the work to be per formed and communicated.	nents <i>plant</i> ectrical ed for d
		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 measures are prioritized, implemented and mon including emergency exits kept clear according t established procedures.	control itored o
		1.6	Relevant work permits are obtained to access an perform work according to requirements and/or established procedures.	nd
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			1.7	Resources including personnel, equipment, tools personal protective equipment required for the jo obtained and confirmed in working order.	s and ob are
		1.8	Relevant personnel at worksite are confirmed cu First Aid, Pole Top Rescue and other related wo procedures according to requirements.	ırrent in rk	
		1.9	Liaison and communication issues with other/authorized personnel, authorities, clients a land owners are resolved to carry out work wher necessary.	ind e	
		1.10	Site is prepared according to the work schedule minimize risk and damage to property, commerc individuals in accordance with established proce	and to e, and dures.	
		1.11	Personnel participating in the work, including pla operators and contractors, are fully briefed and respective responsibilities confirmed where appl in accordance with established procedures.	int icable	
			1.12	Road signs, barriers and warning devices are positioned in accordance with requirements.	
2. Carry out the operation of plant and equipment near	2.1	OHS and sustainable energy principles and practor to reduce the incidents of accidents and minimiz waste are monitored and followed in accordance requirements and/or established procedures.	ctices e e with		
	energized and exposed electrical conductors/ apparatus	2.2	Lifting, climbing, working in confined spaces and and use of power tools/equipment, techniques a practices are safely followed and, currency acco to requirements confirmed.	l aloft, nd rding	
		2.3	2.3	Apply Essential Knowledge and Associated Skill safe operation of plant and equipment near ener and exposed electrical conductors/apparatus to completion in an agreed timeframe and, to quali- standards with a minimum of waste according to requirements.	s in the gized ensure ty
		2.4	Plant and equipment are safely operated near energized and exposed electrical conductors/ap according to requirements and established proce	paratus edures.	
		2.5	Hazard warnings and safety signs are recognize hazards and assessed OHS risks are reported to immediate authorized persons for directions acc to established procedures.	d and o the ording	
			2.6	Unplanned events in the operation of plant and equipment near energized and exposed electrica conductors/apparatus are undertaken within the	al scope
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		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	3.1	Work undertaken is checked against works schedule for conformance with requirements and anomalies reported in accordance with established procedures.
equipment near energized and exposed electrical	3.2	Accidents and/or injuries are reported in accordance with requirements/established procedures, where applicable.
conductors/ apparatus	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		Range		
This shall/m demonstrate relation to th operation of and equipm near live ele conductors apparatus. Support pla include:	hay be ed in plant ent ectrical and/or nt may	 elev bac eart tren exca hea cond comd comd comd cond cond	ating work platform k hoes th drilling rigs och avators vy vehicles crete cutters pressors, table generators ders per-cutters nps in-saws k-hammers	
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	 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
The following constants and variables included in:	 Appropriate and relevant persons (see Personnel) Appropriate authorities Appropriate work platform Assessing risk Assessment Authorization Confined space 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 Notification OHS practings

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: Basic electrical principles Magnetism Electromagnetic principles Electro technology science and materials Hand tools Power tools

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Underpinning Skills	 Occupational Health and Safety principles Engineering applications of mathematical principles Engineering applications of material properties Elevator 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 Enterprise specific - technical drawings and documents Demonstrates skills to: Electrical safe working practice Hand tools Power tools Material handling and the environment Chrinisaw practices Enterprise vehicles Ageneration procedure instructions Enterprise specific - technical drawings and documents
	 Engineering applications of material properties Hydraulic and pneumatic portable equipment
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.

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Occupational Standard: Power Transmission, Distribution, Inspection and Maintenance Level II		
Unit Title	Fix and Secure Equipment	
Unit Code	EIS TDM2 05 0612	
Unit Descriptor	This competence standard unit covers fixing, securing and mounting techniques as apply in the various electro technology work functions. It encompasses the safe use of hand and portable power tools, safe lifting techniques, safe use of ladders and elevated platforms and the selection and safe application of fixing devices and supporting accessories/equipment.	

Elements	Perfo	Performance Criteria		
1. Prepare to fix and secure	1.1	OHS procedures for a given work area are obtained and understood.		
equipment	1.2	OHS risk control work preparation measures and procedures are followed.		
	1.3	The scope of work to be undertaken is obtained from documentation or from work supervisor.		
	1.4	Advice is sought from the work supervisor to ensure the work is coordinated effectively with others.		
	1.5	Sources of materials that may be required for the work are established in accordance with established procedures.		
	1.6	Fixing devices are selected for their suitable ability for the environment, the load they are to support and substratum's into which they are to be installed.		
	1.7	Supporting accessories/equipment is selected for suitability for the environment and ability to support and protect from damage that which they are intended to support.		
	1.8	Tools, equipment and testing devices needed to carry out the work are obtained and checked for correct operation and safety.		
 Install fixing and support devices. 	2.1	Electrical isolation is arranged where work is within arms reach of exposed conductive parts, plant or machinery in strict accordance OHS requirements and procedures.		
	2.2	Other OHS risk control measures relevant to the work site are followed.		

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		2.3	Fixing devices are installed in accordance with manufacturers' instructions.
		2.4	Support accessories/equipment is install accurately and to comply with technical standards and job specifications.
		2.5	Work is carried out efficiently without unnecessary waste of materials or damage to apparatus, circuits, the surrounding environment or services and using sustainable energy principles.
3.	Complete fixing and support work.	3.1	OHS risk control work completion measures and procedures are followed.
		3.2	Work site is tidied and tools and equipment cleaned and securely stored.
		3.3	Appropriate personnel are notified of the work completion.

Variable	Range
This shall be demonstrated in relation to installation, fault finding, maintenance or development work functions 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	 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 Demonstrate performance across a representative range of contexts from the prescribed items below: Fix and secure equipment as Range Statement and including:

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	 Selecting fixing for loads of < 5 kg, < 20 kg and < 50 kg and suitable for the environment in which they are to be installed. Fixing to a hollow wall, brick, concrete and steel. Fixing support accessories/equipment relevant the discipline in which competence is sought. Dealing with unplanned events by drawing on essential knowledge and skills to provide appropriate solutions
Underpinning	Demonstrates knowledge of:
Knowledge and	Hand tools
Attitudes	Power tools
	Fixing and support devices and techniques
	Occupational Health and Safety principles
Underpinning	Demonstrates skills to:
OKIIIS	Allu tools Bower tools
	 Fower tools Fixing and support devices and techniques
	 Occupational Health and 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	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.

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Occupational Standard: Power Transmission, Distribution, Inspection and Maintenance Level II		
Unit Title	Lay Wiring and Terminate Accessories for Extra-Low Voltage Circuits	
Unit Code	EIS TDM2 06 0612	
Unit Descriptor	This unit covers the laying of wiring/cabling, connection of accessories and continuity and insulation resistance testing of circuits intended to operate at extra-low voltage. Typically this includes circuits and accessories for ELV powered devices, security, controls, integrated systems, audio/video systems and the like. It encompasses the principles of single source, single load power circuits, control circuits and communications circuits, safe working practices and following work processes that satisfy electrical principles for safety and functionality.	

Elements	Perfo	ormance Criteria
1. Prepare to lay wiring/cabling	1.1	OHS procedures for a given work area are obtained and understood through established routines.
and connect accessories for extra-low	1.2	Established OHS risk control measures in preparation for the work are followed.
voltage circuits.	1.3	Safety hazards not previously been identified are reported and advice on risk control measures are sought from the work supervisor.
	1.4	The nature and location of the work is obtained from work supervisor or other appropriate person to establish the scope of work to be undertaken.
	1.5	Advice is sought from the work supervisor or other appropriate person to ensure the work is coordinated effectively with others.
	1.6	Sources of materials that may be required for the work are established in accordance with established routines.
	1.7	Tools, equipment and testing devices needed to carry out the work are obtained and checked for correct operation and safety.
2. Lay wiring/cabling	2.1	Established OHS risk control measures for carrying out the work are followed.
and connect accessories for extra-low voltage	2.2	Circuits/machines/plant are checked as being isolated where necessary in strict accordance OHS requirements and procedures.
circuits.	2.3	<i>Wiring and accessories</i> are installed to comply standards and job specifications with sufficient excess

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			to affect terminations
		2.4	Accessories are installed straight and square in the required locations and within acceptable tolerances.
		2.5	Cables and conductors are terminated at accessories in accordance with manufacture's specifications and regulatory requirements.
		2.6	Cables installed for future service and marked in accordance with the cable identification scheme and terminated incompliance with regulatory requirements.
		2.7	Procedures for referring non-routine events to immediate supervisor for directions are followed.
		2.8	Cable installation and termination is carried out efficiently without unnecessary waste of materials or damage to apparatus, circuits or the surrounding environment and using sustainable energy practices.
3.	Complete and report work activities	3.1	OHS work completion risk control measures and procedures are followed.
		3.2	Work site is cleaned and made safe in accordance with established procedures.
		3.3	Work supervisor is notified of the completion of the installation work in accordance with established routines.

Variable	Range
This shall be demonstrated in relation to laying wiring/cabling and connecting accessories for extra-low voltage power and control cabling systems circuits using:	 cabling and connecting accessories for extra-low voltage power and At least one of the following wiring/cabling systems: Unenclosed thermoplastic sheathed (TPS) cable Enclosed thermoplastic insulated (TPI) or sheathed cables, and at least three of the following wiring/cabling systems: single cable flexible cable flexible cord shielded cable armoured cable ribbon cable other similar and like cable

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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 Demonstrate performance across a representative range of contexts from the prescribed items below: Lay wiring/cabling and terminate accessories for extra-low voltage in power and control circuits, Range Statement and including: understanding the nature of the work selecting appropriate tools, cables and accessories following appropriate cable routes installing cable and accessories to requirements terminating cables and accessories to manufacture's specifications and requirements cleaning worksite and notifying completion of work using established procedures
Underpinning Knowledge and Attitudes	 Demonstrates knowledge of: Cable protection and support Cables in buildings, structures and premises Basic cable and conductor terminations Technical standards, regulations and codes for extra-low voltage work Environmental and heritage awareness Occupational Health and Safety principles
Underpinning Skills	 Demonstrates skills to: Cable protection and support Cable types and applications Cables in buildings, structures and premises Basic cable and conductor terminations Environmental and heritage awareness Technical standards, regulations and codes for extra-low voltage work 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.

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Occupational Standard: Power Transmission, Distribution, Inspection and Maintenance Level II		
Unit Title	Solve Problems in Single and Three Phase Low Voltage Circuits	
Unit Code	EIS TDM2 07 0612	
Unit Descriptor	This unit covers ascertaining correct operation of single and three phase circuits and solving circuit problems as they apply to servicing, fault finding, and installation and compliance work functions. It encompasses safe working practices, multiphase circuit arrangements, issues related to protection, power factor and MEN systems and solutions to circuit problems derived from calculated and measured parameters.	

Elements	Perfo	ormance Criteria
1. Prepare to solve single	1.1	OHS procedures for a given work area are obtained and understood.
and three phase low voltage circuit	1.2	Established OHS risk control measures and procedures in preparation for the work are followed.
problems.	1.3	Safety hazards, which have not previously been identified, are noted and established risk control measures are implemented.
	1.4	The nature of the <i>circuit(s) problem</i> is obtained from documentation or 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	Sources of materials that may be required for the work are established in accordance with established procedures.
	1.7	Tools, equipment and testing devices needed to carry out the work are obtained and checked for correct operation and safety.
2. Solve single and three	2.1	OHS risk control measures and procedures for carrying out the work are followed.
phase low voltage Circuit problems.	2.2	The need to test or measure live is determined in strict accordance with OHS requirements and when necessary conducted within established safety procedures.
	2.3	Circuits/machines/plant is checked as being isolated where necessary in strict accordance OHS requirements and procedures.

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	2.4	Established methods are used to solve circuit problems from measure and calculated values as they apply to single and three-phase low voltage circuit.
	2.5	Established methods for dealing with unexpected situations are discussed with appropriate person or persons and documented.
	2.6	Unexpected situations are dealt with safely and with the approval of an authorized person.
	2.7	Problems are solved without unnecessary damage to apparatus, circuits, the surrounding environment or services and using sustainable energy practices.
3. Complete work and	3.1	OHS work completion risk control measures and procedures are followed.
document problem solving	3.2	Work site is cleaned and made safe in accordance with established procedures.
activities.	3.3	Justification for solutions used to solve circuit problems is documented.
	3.4	Work completion is documented and an appropriate person or persons notified in accordance with established procedures.

Variable	Range
This unit shall be demonstrated in relation to any four of the following problems for both single and three- phase circuit.	 Determining the operating parameters of existing circuits Alternating an existing circuit to comply with specified operating parameters Developing circuits to comply with a specified function and operating parameters Note: Operating parameters include: voltage, current, impedance, power and power factor Determining the cause of low power factor in an existing circuit. Determining conditions causing an existing circuit to be unsafe. Note: Examples of: unsafe circuits include: electric shock hazard from indirect contract with conductive parts, insufficiently low impedance of a fault current path and inadequate fault protection

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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 Demonstrate performance across a representative range of contexts from the prescribed items below: Solve problems in electromagnetic circuits as described as range statement and including Determining the operating parameters of existing circuits. Alternating an existing circuit to comply with specified operating parameters. Developing circuits to comply with a specified function and operating parameters. Determining the cause of low power factor in an existing circuit. Determining conditions causing an existing circuit to be unsafe. Dealing with unplanned events by drawing on essential knowledge and skills to provide appropriate solutions.
Underpinning Knowledge and Attitudes	 Demonstrates knowledge of: Alternating current principles - power Occupational health and safety principles Electrical safe working practice
Underpinning Skills	 Demonstrates skills to: Electrical safe working practice Occupational health and 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.

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Occupational Standard: Power Transmission, Distribution, Inspection and Maintenance Level II		
Unit Title	Install and Maintain Poles / Structures and Associated Hardware	
Unit Code	EIS TDM2 08 0612	
Unit Descriptor	This covers the installation and maintenance of poles and/or structures and associated hardware, other than towers, which may consist of wood, steel, concrete or composite type material. It includes the fixing and or securing of hardware associated as well as the repair and or replacement of poles and or structures used in the distribution and or rail traction industry sectors. It encompasses the implementation of a suitable traffic management plan.	

Elements		Performance Criteria			
1. Prepare f installatio maintena poles and	or the n and nce of d/or s and ed	1.1 V re lis n	Vorks schedule(s), including drawings, plans, equirements, established procedures, and mater sts, are received, analyzed and confirmed, if ecessary, by site inspection.	ial	
structures associate hardware		1.2 R th ic	Relevant requirements and established procedure ne work are communicated to all personnel and dentified for all work sites.	es for	
		1.3 C a m h o	OHS policies and procedures related to requirem nd established procedures the installation and naintenance of poles and/or structures and asso ardware are obtained and confirmed for the purp f the work to be performed and communicated.	ents ciated coses	
		1.4 V w a	Work is prioritized and sequenced following consultation with others for completion within acceptable timeframes and in accordance with established procedures.		
		1.5 H m ir e	lazards are identified; OHS risks assessed and neasures are prioritized, implemented and monit ncluding emergency exits kept clear according to stablished procedures.	control ored	
		1.6 R p o	Resources including personnel, equipment, tools and personal protective equipment required for the job are obtained and confirmed in working order.		
		1.7 R p e	Relevant work permits are obtained to access and perform work according to requirements and/or established procedures.		
		1.8 Relevant personnel at worksite are confirmed current in First Aid, Pole Top Rescue and other related work			
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		procedures according to requirements.
	1.9	Liaison and communication issues with other/ authorized 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 here applicable in accordance with established procedures.
	1.12	Traffic management plan is identified and implemented.
2. Carry out installation and maintenance of poles and/or	2.1	OHS, Sustainable Energy and Environmental principles and practices to reduce the incidents of accidents and minimize waste are monitored and followed in accordance with requirements and/or established procedures.
structures and associated hardware	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	Lifting, climbing, working aloft, and use of power tools/equipment, techniques and practices are safely followed and, currency according to requirements confirmed.
	2.4	Apply Essential Knowledge and Associated Skills in the safe installation of poles and/or structures and their associated hardware to ensure completion in an agreed timeframe and, to quality standards with a minimum of waste according to requirements.
	2.5	Poles and/or structures and their associated hardware to be installed are stabilized according to requirements.
	2.6	<i>Installation</i> is carried out, in accordance with the work schedule and requirements/established procedures.
	2.7	Maintenance, including repair and/or replacement of poles and/or structures is carried out, in accordance with the work schedule and requirements/established procedures.
	2.8	Unplanned events in the installation of poles and/or structures and associated hardware are undertaken within the scope of established procedures.
	2.9	Known solutions to a variety of problems are applied

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			using acquired essential knowledge and associated skills
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		2.10	On going checks of quality of the work are undertaken in accordance with instructions and established procedures.
3.	Complete the installation and maintenance of poles and/or structures and associated hardware.	3.1	Work undertaken is checked against works schedule for conformance with requirements and anomalies reported in accordance with established procedures.
		3.2	Accidents and/or injuries are reported in accordance with requirements/established procedures, where applicable.
		3.3	Work site is rehabilitated, cleaned up and made safe in accordance with established procedures.
		3.4	Tools, equipment and any surplus resources and materials are, where appropriate, cleaned, checked and returned to storage or disposed of in accordance with established procedures.
		3.5	Relevant work permit(s) are signed off and, poles and/or structures and their associated hardware 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
This shall/may be demonstrated in relation to the installation of poles and or structures which may include :	 basic inspection removal repair and replacement of poles and/or structures including welding pole staking and rebutting
Pole types and structures Equipment may include:	 Pole types and structures: wood concrete steel and composite Maintenance may include: the basic inspection removal repair and replacement of poles including welding, pole staking and rebutting Associated hardware includes:

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	insulators
	cross arms
	stavs
	 earth down leads and bond wires
	cross arm braces
	pole steps
	 shackle straps and associated bolts and clamps
	 cantilever
	• pull off
	 bead span
	nead span nortal
	dron tubo
	 Group table Pole stabilization techniques include:
	 back-fill consolidation
	concreting
	baulking
	reinforcement nailing
	 reinforcement halling approved steel reinforcing and temporary and permanent
	• approved steel reinforcing and temporary and permanent
	Methods of erection may include:
	 winch/'A' frame
	 lifting apparatus and
	 helicopter lift
The following	Appropriate and relevant persons (see Personnel)
constants and	 Appropriate authorities
variables included	Appropriate work platform
in the	Assessing risk
element/Performa	Assessment
nce Criteria in this	Authorization
unit	Confined space
are fully	 Diagnostic, testing and restoration
described and	 Documenting detail work events.
form an integral	 record keeping and or storage of information
Part of the Pango Statement	Drawings and specifications
of this unit	Emergency
or this drift.	 Environmental and sustainable energy procedure
	Environmental legislation
	 Environmental management documentation
	Established procedures
	Fall prevention
	Hazards
	Identifying hazards
	 Established procedures Fall prevention Hazards Identifying hazards

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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	Assessi Imple proce meas Apply Conc regul	ment requires evidence that the candidate: ement Occupational Health and Safety wo edures and practices including the use of risk sures y sustainable energy principles and practices luct work observing the relevant leg ations polices and workplace procedures	rkplace control islation,	
Underpinning Knowledge and Attitudes	Demons Altern Elect Engin Engin Engin Basic Store Gene Trans Subs Pole Powe	trates knowledge of: nating current circuit principles romagnetic principles neering applications of mathematical principles neering applications of mechanical principles neering applications of material properties crigging techniques es procedures eration power systems smission, distribution and rail power systems tations, power transformers and reactors and hardware installation er line safety practices		
Underpinning Skills Resources	Demons Basic Store Gene Trans Subs Pole Powe Subs Access	trates skills to: c rigging techniques es procedures eration power systems smission, distribution and rail power systems tations, power transformers and reactors and hardware installation er line safety practices tations, power transformers and reactors is required to real or appropriately simulated sit	uations,	
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	information on workplace practices and OHS practices.
Methods of	Competence may be assessed through:
Assessment • Interview / Written Test	
	Observation / Demonstration with Oral Questioning
Context of	Competence may be assessed in the work place or in a
Assessment	simulated work place setting.

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Occupational Standard: Power Transmission, Distribution Inspection and Maintenance Level II			
Unit Title	Install and Maintain Overhead Conductors and Cables (Poles and Structures)		
Unit Code	EIS TDM2 09 0612		
Unit Descriptor	This covers the installation and maintenance of overhead conductors and cables used on poles and structures (excluding towers) which includes the stringing, tensioning and terminating of the conductor/cable, as well as the cleaning of insulators (de-energized), the securing of the conductor to the insulators or supports and the undertaking of the electrical connections. It also covers maintenance work associated with the diagnosing of faults, the conducting of visual inspections, the confirmation of phasing and the completion of other enterprise tests. It also encompasses the isolation of systems and circuits, the procedure of issuing/accepting electrical access permits and the updating of system data/maintenance records according to requirements and established procedures.		

Elements	Performance Criteria	
1. Prepare for the installation and maintenance of	1.1	Plans, requirements, established procedures, and material lists, are received, analyzed and confirmed, if necessary, by site inspection.
overhead conductors and cables used on poles and/or	1.2	Relevant requirements and established procedures for the work are communicated to all personnel and identified for all work sites.
structures	1.3	OHS policies and procedures related to requirements and established procedures for the installation and maintenance of overhead conductors and cables used on poles and/or structures 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.

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			1.7	Res per obt	sources including personnel, equipment, tools an sonal protective equipment required for the job a ained and confirmed in working order.	nd are
			1.8	Rel Firs pro	evant personnel at worksite are confirmed curre at Aid, Pole Top Rescue and other related work cedures according to requirements.	nt in
			1.9	Liai per res	son and communication issues with other/autho sonnel, authorities, clients and land owners are olved to carry out work where necessary.	rized
			1.10	Site min indi	e is prepared according to the work schedule and imize risk and damage to property, commerce, a viduals in accordance with established procedu	d to and res.
			1.11	Per ope res with	sonnel participating in the work, including plant erators and contractors, are fully briefed and responsibilities confirmed where applicable in accontent of the stablished procedures.	oective rdance
			1.12	Tra	ffic management plan is identified and implemer	nted.
2.	Carry ou installation maintena of overhe	t on and ance ead	2.1	OH anc min with	S, Sustainable Energy and Environmental princ I practices to reduce the incidents of accidents a imize waste are monitored and followed in acco n requirements and/or established procedures.	ples ind rdance
	conductors and cables used on poles and/or structures		2.2	Lifti tool follo con	ng, climbing, working aloft, rescue and use of po ls/equipment, techniques and practices are safe owed and, currency according to requirements firmed.	ower ly
			2.3	Cor pro req	nfirm systems and circuits are isolated as require ved safe to work on in accordance with the uirements/permits and established procedures.	ed,
			2.4	App safe and con star req	bly Essential Knowledge and Associated Skills in e installation and maintenance of overhead cond l cables used on poles and/or structures to ensu- npletion in an agreed timeframe and, to quality ndards with a minimum of waste according to uirements.	n the ductors ire
			2.5	Ov terr	erhead conductor/cables are strung, tensioned ninated as per requirements/established proced	and ures.
			2.6	Insi dev pro	ulators are cleaned and conductors and anti vibr rices, spaces/spreaders are secured as per esta cedures.	ation blished
		2.7	Ele req	ctrical connections are made in accordance with uirements/ established procedures.	the	
			2.8	Ма	intenance, including repair and/or replacement	of
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			overhead conductors and cables used on poles and/or structures is carried out, in accordance with the work schedule and requirements/established procedures.
		2.9	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.
		2.10	Unplanned events in the installation and maintenance of overhead conductors and cables used on poles and/or structures are undertaken within the scope of established procedures.
		2.11	Known solutions to a variety of problems are applied using acquired essential knowledge and associated skills
		2.12	2 On going checks of quality of the work are undertaken in accordance with instructions and established procedures.
3.	Complete the installation and maintenance	3.1	Work undertaken is checked against works schedule for confirmation of phasing and conformance with requirements and, anomalies reported in accordance with established procedures.
	of overhead conductors and cables used on poles and/or	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.
	structures	3.4	Tools, equipment and any surplus resources and materials are, where appropriate, cleaned, checked and returned to storage or disposed of in accordance with established procedures.
		3.5	Relevant work permit(s) are signed off and, overhead conductors and cables used on poles and/or structures are returned to service in accordance with requirements.
		3.6	Conductors/Cables are tested and commissioned in accordance with enterprise requirements and procedures.
		3.7	Works completion records, reports, as installed /modified drawing and/or documentation and information are finalized and processed and appropriate personnel notified.

Variable	Range		
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This shall/may be demonstrated in	the installation and maintenance of overhead conductors and cables used on poles and structures
relation to:	•
Installation and maintenance may include:	 the stringing tensioning terminating of the conductor/cable and the removal repair and replacement of cables conductors and associated hardware and includes the cleaning of insulators May include: pre-energized/ energisation checks and tests visual inspections diagnosing maintenance work associated with the fault diagnosis, conducting of visual inspections confirmation of phasing and the completion of other enterprise tests is also included it also encompasses the isolation of systems and circuits, the procedure of issuing/accepting electrical access permits and the updating of system data/maintenance records according to requirements and established procedures Structures include poles and columns
Types of conductor include:	 copper aluminum steel aluminum conductor steel reinforced (ACSR) low voltage aerial bundled cable (LVABC) high voltage aerial bundled cable(HVABC) insulated unscreened cable (IUC) service cable and fiber optic pilot and control cables Overhead systems includes: their associated earthing systems, e.g. MEN and CMEN LV systems bridging/ bonding and conventional and SWER HV systems
Overhead	 their associated earthing systems, e.g. MEN and CMEN LV
systems include:	systems
	bridging/ bonding and conventional and SWER HV systems
Plant may	elevating work platform
include:	winches and capstans
	specialist tension stringing
	equipment
	cable trailers and cable drum stands

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Testing and	(LV) includes:
recording	voltage detectors
equipment	tong ammeters
includes:	polarity testers
	 insulation resistance testers
	 recording meters and phase sequence indicators
	(HV) includes:
	 phasing sticks
	fault indicators
	 radio frequency interference detectors and voltage
	detectors
The following	Appropriate and relevant persons (see Personnel)
constants and	Appropriate authorities
variables included	Appropriate work platform
in the	Assessing risk
Range Statement	Assessment
of this unit:	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
	MSDS
	Notification
	OHS practices
	OHS issues
	 Permits and/or permits to work
	Personnel
	Quality assurance systems
	Requirements
	Testing procedures
	Work clearance systems

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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	Demonstrates knowledge of:
Knowledge and	Power line distribution installation
Attitudes	Power line installation safety
	Low voltage electrical service installation
Underpinning	The following skills must be assessed as part of this unit:
Skills	Power line distribution installation
	Power line installation safety
	Low voltage electrical service installation
Resources	Access is required to real or appropriately simulated situations,
Implication	including work areas, materials and equipment, and to
	information on workplace practices and OHS practices.
Methods of	Competence may be assessed through:
Assessment	Interview / Written Test
	Observation / Demonstration with Oral Questioning
Context of	Competence may be assessed in the work place or in a
Assessment	simulated work place setting.

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Occupational Star	Occupational Standard: Power Transmission, Distribution, Inspection and Maintenance Level II			
Unit Title	Erect and Maintain Transmission Towers and Associated Hardware			
Unit Code	EIS TDM2 10 0612			
Unit Descriptor	This covers the erection and maintenance of non-energized, pyramid, delta, Pi or enterprise specific transmission towers and associated hardware. It includes the erection, repair, and or replacement of components in accordance with construction plans, specifications, work orders and standing enterprise requirements. Erection and maintenance could also involve cleaning and welding. The updating of system data, records and or completion of relevant documentation in accordance with enterprise requirements also forms part of this competence.			

Elements	Performance Criteria		
1. Prepare to erect and maintain transmission	1.1	Works schedule(s), including drawings, plans, requirements, established procedures, and material lists, are received, analyzed and confirmed, if necessary, by site inspection.	
towers and associated hardware	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 erection and maintenance of towers and associated hardware 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.	

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	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 where necessary.
	1.10	Personnel participating in the work, including plant operators and contractors, are fully briefed and respective responsibilities confirmed where applicable in accordance with established procedures.
	1.11	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	Traffic management plan is identified and implemented
2. Carry out the erection and maintenance of transmission towers and	2.1	OHS, sustainable energy and environmental principles and practices to reduce the incidents of accidents and minimize waste are monitored and followed in accordance with requirements and/or established procedures.
associated hardware	2.2	Towers and associated hardware to be erected are stabilized according to requirements.
	2.3	Lifting, climbing, working aloft, and use of power tools/equipment, techniques and practices are safely followed and, currency according to requirements confirmed.
	2.4	Essential knowledge and associated skills are applied in the safe erection and <i>maintenance</i> of towers and associated hardware to ensure completion in an agreed timeframe and, to quality standards with a minimum of waste according to requirements.
	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	Erection and maintenance, including repair and/or replacement of towers is carried out, in accordance with the work schedule and requirements/established procedures.
	2.7	Unplanned events in the erection and maintenance of towers and associated hardware are undertaken within the scope of established procedures.
	2.8	Known solutions to a variety of problems are applied

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		using acquired essential knowledge and associated skills.
	2.9	On going checks of quality of the work are undertaken in accordance with instructions and established procedures.
3. Complete the erection and maintenance of transmission towers and associated hardware	3.1	Work undertaken is checked against works schedule for conformance with requirements and anomalies reported in accordance with established procedures.
	3.2	Accidents and/or injuries are reported in accordance with requirements/established procedures, where applicable.
	3.3	Work site is rehabilitated, cleaned up and made safe in accordance with established procedures.
	3.4	Tools, equipment and any surplus resources and materials are, where appropriate, cleaned, checked and returned to storage or disposed of in accordance with established procedures.
	3.5	Relevant work permit(s) are signed off and, towers and associated hardware 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
Tower types	May include: pyramid delta and pi and ather enterprise energific types
Maintenance	 Other enterprise specific types May include: the removal, repair and replacement of tower components, including welding where appropriate; and the replacement, repair and cleaning of associated hardware
The following constants and variables included in 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

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 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 G	Buide			
Critical Asp Competence	ects of e	Assessn Imple proce meas Apply Conc regul	nent requires evidence that the candidate: ement Occupational Health and Safety wo edures and practices including the use of risk sures y sustainable energy principles and practices duct work observing the relevant leg ations, polices and workplace procedures	orkplace control islation,
Underpinning Knowledge and Attitudes		Demons Basic Store Subs Altern Magr Elect	etrates knowledge of: c rigging techniques es procedures etations, power transformers and reactors nating current principles - power netism romagnetic principles	
Underpinnir Skills	ng	Demons Gene Trans Trans Powe Rout Altern Magr	strates skills to: eration power systems smission, distribution and rail power systems smission structures and hardware er line safety practices ine maintenance on transmission structures nating current practices - power metism	
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	Electromagnetic practices
Resources	Access is required to real or appropriately simulated situations,
Implication	including work areas, materials and equipment, and to
	information on workplace practices and OHS practices.
Methods of	Competence may be assessed through:
Assessment	Interview / Written Test
	Observation / Demonstration with Oral Questioning
Context of	Competence may be assessed in the work place or in a
Assessment	simulated work place setting.

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Occupational Star	Occupational Standard: Power Transmission, Distribution, Inspection and Maintenance Level II			
Unit Title	Install and Maintain De-Energized LV Underground Paper Insulated Cables			
Unit Code	EIS TDM2 11 0612			
Unit Descriptor	This covers the installation and maintenance of de-energized low voltage underground paper insulated cables and covers the jointing, terminating, repair and replacement of cables. It includes the isolation of systems and circuits, the procedure of issuing/accepting electrical access permits, the undertaking of pre-commissioning tests and the updating of system data/maintenance records.			

Elements	Perf	ormance Criteria
 Prepare for the installation and maintenance of de- energized LV underground paper insulated cables 	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 installation and maintenance of de-energised LV <i>underground</i> paper insulated cables 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 work site are confirmed current in First Aid and other related work procedures according to requirements

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			1.9 L p r	_iaison and communication issues with other/authores and communication issues with other/authores are personnel, authorities, clients and land owners are resolved to carry out work where necessary.	orized
			1.10 S n ii	Site is prepared according to the work schedule ar minimize risk and damage to property, commerce, ndividuals in accordance with established procedu	nd to and ures
			1.11 F c r a	Personnel participating in the work, including plant operators and contractors, are fully briefed and respective responsibilities confirmed where applica accordance with established procedures	able in
			1.12 T	Traffic management plan is identified and impleme	ented.
2.	Carry ou installation and maintenat of de-	t on ance	2.1	OHS, sustainable energy and environmental prine and practices to reduce the incidents of accidents minimize waste are monitored and followed in accordance with requirements and/or established procedures	ciples and
	energized LV underground paper insulated	2.2	Lifting, climbing, working in confined spaces and and use of power tools/ <i>equipment</i> , techniques a practices are safely followed and, currency accorr requirements confirmed	aloft, nd ding to	
	Cables		2.3	Systems and circuits are isolated as required, prosafe to work on in accordance with the requirements/permits and established procedures	oved
			2.4	Essential knowledge and associated skills are ap the safe <i>installation and maintenance</i> of de-ene LV underground paper insulated <i>cables</i> to ensure completion in an agreed timeframe and, to quality standards with a minimum of waste according to requirements	plied in ergised e
		2.5	2.5	De-energised LV underground paper insulated ca are installed according to the work schedule and requirements/established procedures	ables
			2.6	Maintenance, including repair and/or replacement energised LV underground paper insulated cables carried out, in accordance with the work schedule requirements/established procedures	t of de- s is e and
			2.7	Hazard warnings and safety signs are recognized hazards and assessed OHS risks are reported to immediate authorized persons for directions acco to established procedures.	l and the ording
			2.8	Unplanned events in the installation and maintena de-energised LV underground paper insulated ca are undertaken within the scope of established	ance of bles
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		procedures
	2.9	Known solutions to a variety of problems are applied using acquired essential knowledge and associated skills
	2.10	On going checks of quality of the work are undertaken in accordance with instructions and established procedures
3. Complete the installation and	3.1	Work site is rehabilitated, cleaned up and made safe in accordance with established procedures.
maintenance of de-energized LV underground paper insulated	3.2	Tools, equipment and any surplus resources and materials are, where appropriate, cleaned, checked and returned to storage or disposed of in accordance with established procedures
cables	3.3	Relevant work permit(s) are signed off and, the LV underground paper insulated cables are returned to service in accordance with requirements
	3.4	Works completion records, reports, as installed /modified drawing and/or documentation and information are finalized and processed and appropriate personnel notified

Variable	Range
This shall/may be demonstrated in relation to:	• the installation and maintenance of de-energized low voltage underground paper insulated cables and covers the jointing, terminating, repair and replacement of cables
Installation and Maintenance may include:	the repair and replacement of cables and associated hardware
Types of cables includes:	 Paper-Insulated which refers to LV solid paper insulated metal sheathed. Underground equipment may include links, fuses, disconnect boxes, ring main units, distribution fuse boxes, pad mount and ground transformers, chamber substations, LV
Underground equipment may include:	 links, fuses, disconnect boxes, ring main units, distribution fuse boxes,

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		 pad r cham LV sv pillars bus h 	nount and ground transformers, her substations, witchboards, s/turrets, par/termination boxes			
Test and		 stree volta 	t lighting control gear and street lighting column	S		
recording		• tong	ammeters,			
equipment r	may	Cable	e identification equipment,			
include.		 cable insula 	ation resistance testers			
Jointing and	k	com	bound and resin filled boxes.			
terminating		 pape 	r tape materials,			
materials m	ay	 polyr 	neric tape materials,			
include:		• polyr	neric heat shrink materials,			
		• "slip-	on" molded			
		• comr	pression mechanical			
		 welde 	ed and solder lugs and ferrules			
Jointing and	ł	 links, 				
terminating		 fuses 	б,			
include:	ay	• disco	nnect boxes,			
include.		 ring r diatri 	nain units, bution fuse boxes			
		 astribution ruse boxes, pad mount and ground transformers. 				
		 char 	nber substations.			
		• LV s	witchboards,			
		• pilla	 pillars/turrets, bus bar/termination boxes, 			
		 street 	et lighting control points and street lighting colun	nns		
The followin	ng nd	 Appr 	opriate and relevant persons (see Personnel)			
variables in	na cluded	Appropriate authorities Appropriate work platform				
in the Rand	ae	 Appropriate work platform. Assessing risk 				
Statement of	of this	Assessment				
unit:		Authorization				
		Confined space				
		 Diagi 	nostic, testing and restoration.			
		Docu	menting detail work events, record keeping	and or		
		Storage of information Drawings and specifications				
		Emergency				
		Environmental and Sustainable Energy Procedures				
		Environmental legislation				
		• Envir	onmental management documentation			
		 Estal 	Disned procedures			
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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 Implement Occupational Health and Safety workp procedures and practices including the use of risk co measures Apply sustainable energy principles and practices Conduct work observing the relevant legisla regulations, polices and workplace procedures 				
Underpinning	Demonstrates knowledge of:			
Knowledge and	Alternating current principles - power			
Alliludes	Magnetism Electromagnetic principles			
	Electromagnetic principles			
Underpinning Skills	 Demonstrates skills to: LV Paper lead cable jointing practices Electromagnetic practices Alternating current practices – power 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	Competence may be assessed through:			
Assessment	Interview / Written Test			
	Observation / Demonstration with Oral Questioning			
Context of	Competence may be assessed in the work place or in a			
Assessment	simulated work place setting.			

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Occupational Standard: Power Transmission, Distribution, Inspection and Maintenance Level II				
Unit Title	Joint and Maintain Energized LV Underground Polymeric Cables			
Unit Code	EIS TDM2 12 0612			
Unit Descriptor	This covers the jointing and maintenance of energised low voltage underground polymeric cables according to established enterprise procedures. It covers the use of specialised live working equipment, tools and devices, the issuing and/or accepting electrical access permits and or relevant working documentation and the undertaking of authorized cable testing procedures. It also encompasses the pre-commissioning and/or re-commissioning tests and the updating of system data/maintenance records.			

Elements	Perfo	ormance Criteria
1. Prepare for the jointing and maintenance	1.1	Works schedule(s), including drawings, plans, requirements, established procedures, and material lists, are received, analyzed and confirmed, if necessary, by site inspection.
of energised LV underground	1.2	Relevant requirements and established procedures for the work are communicated to all personnel and identified for all work sites.
cables	1.3	OHS policies and procedures related to requirements and established procedures for the jointing and maintenance of energised LV <i>underground</i> polymeric cables 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	Specialist equipment for live working is inspected and

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			c e	onfirmed in working order as per requirements a stablished procedures.	nd	
		1	1.9 R F p	Relevant personnel at work site are confirmed cu First Aid, Pole Top Rescue and other related wor procedures according to requirements.	rrent in k	
			1.10 L p re	iaison and communication issues with other/authersonnel, authorities, clients and land owners ar esolved to carry out work where necessary.	norized e	
			1.11 S m ir	Site is prepared according to the work schedule a ninimize risk and damage to property, commerce ndividuals in accordance with established proced	ind to e, and lures.	
			1.12 P o re a	Personnel participating in the work, including plar operators and contractors, are fully briefed and espective responsibilities confirmed where applic accordance with established procedures.	nt cable in	
			1.13 R ir	Road signs, barriers and warning devices are posin accordance with requirements.	sitioned	
2. Carry out jointing and maintenance of energised LV underground polymeric cables		t and ance ised	2.1 C re a re	OHS and sustainable energy principles and pract educe the incidents of accidents and minimize w are monitored and followed in accordance with equirements and/or established procedures.	ices to aste	
		2.2 L a p re	ifting, climbing, working in confined spaces and and use of power tools/ <i>equipment</i> , techniques a practices are safely followed and, currency accor- equirements confirmed.	aloft, nd ding to		
			2.3 E th a n	Essential knowledge and associated skills are ap the safe jointing and <i>maintenance</i> of energised L <i>Inderground</i> polymeric cables to ensure completin agreed timeframe and, to quality standards with ninimum of waste according to requirements.	plied in -V etion in th a	
		2.4	2.4 C h w	Cable(s), <i>underground equipment</i> , associated ardware and surrounds are prepared in accorda vith established procedures.	nce	
			2.5 J c s	<i>Joint and termination procedures</i> of energised LV cable(s) are carried out in accordance with the work schedule and requirements/established procedures.		
		2.6 A ic a p	Authorized cable testing procedures and fault dentification and location process are implement accordance with requirements and established procedures.	ed in		
			2.7 N e o	Aaintenance, including repair and/or replacemen energised LV underground polymeric cables is ca but, in accordance with the work schedule and	t of Irried	
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		requirements/established procedures.
	2.8	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.
	2.9	Unplanned events in the jointing and maintenance of energised LV underground polymeric cables are undertaken within the scope of established procedures.
	2.10	Known solutions to a variety of problems are applied using acquired essential knowledge and associated skills.
	2.11	On going checks of quality of the work are undertaken in accordance with instructions and established procedures.
3. Complete the jointing and maintenance of energised LV underground	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.
cables	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, LV underground polymeric cables 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	
This shall/may be demonstrated in relation to:	 the jointing and maintenance of energized low voltage underground polymeric cables and covers the jointing, repair and replacement of cables using specialized live working equipment, tools and devices 	
Maintenance	 My include: the repair and replacement of cables and associated hardware 	

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Underground	May include:		
equipment	 ring main units, 		
	 distribution fuse boxes, 		
	 pad mount and ground transformers, 		
	chamber substations,		
	LV switchboards,		
	• pillars/turrets,		
	 bus bar/termination boxes, 		
	 street lighting control gear and 		
	street lighting columns		
Test and	voltage detectors,		
recording	 tong ammeters, 		
equipment	 cable identification equipment, and 		
includes:	insulation resistance testers		
Jointing and	 compound and resin filled boxes, 		
terminating	 polymeric tape materials, 		
materials include:	 polymeric heat shrink materials, 		
	 "slip-on" molded components and pre-stretched 		
	 polymeric materials, 		
	 compression and mechanical connectors 		
Jointing and	 ring main units, 		
terminating	distribution fuse boxes,		
locations include:	 pad mount and ground transformers, 		
	 chamber substations, 		
	LV switchboards,		
	• pillars/turrets,		
	 bus bar/termination boxes, 		
	 street lighting control points and 		
	street lighting columns		
The following	 Appropriate and relevant persons (see Personnel) 		
constants and	Appropriate authorities		
variables included	Appropriate work platform		
this unit:	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		

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•	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, polices and workplace procedures
Underpinning	Demonstrates knowledge of:
Knowledge and	Low voltage - energized working practices for substations
Attitudes	Power line safety practices
Underpinning	Demonstrates skills to:
Skills	 Low voltage - energized working practices for substations Power line safety practices
Resources	Access is required to real or appropriately simulated situations,
Implication	including work areas, materials and equipment, and to
	information on workplace practices and OHS practices.
Methods of	Competence may be assessed through:
Assessment	Interview / Written Test
	Observation / Demonstration with Oral Questioning
Context of	Competence may be assessed in the work place or in a
Assessment	simulated work place setting.

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Occupational Standard: Power Transmission, Distribution, Inspection and Maintenance Level II		
Unit Title	Perform LV Field Switching Operation to a Given Schedule	
Unit Code	EIS TDM2 13 0612	
Unit Descriptor	This covers the conducting of low voltage switching operations involving the operation of circuit breaking and isolation devices from a given switching schedule and in accordance with enterprise procedures. It covers low voltage distribution systems in field situations but also includes paralleling in accordance with the switching schedule. It also encompasses the procedure of; communicating with the Switching Control Officer or Electrical Control Officer, isolating the electrical equipment and the line or work site, as well as proving that the area is de-energized and earthed, issuing/ accepting electrical permits and the returning of the affected circuits to service.	

Elements	nts Performance Criteria			
1. Prepare f LV field switching given sch	or the to a ledule	1.1 S m n	Switching and work schedule(s), including drawi lans, requirements, established procedures, and naterial lists, are received, analyzed and confirm ecessary, by site inspection.	ngs, 1 ed, if
		1.2 R th ic	Relevant requirements and established procedur ne work are communicated to all personnel and dentified for all work sites.	es for
		1.3 C a o b	OHS policies and procedures related to requirem nd established procedures for LV switching are btained and confirmed for the purposes of the w e performed and communicated.	ents ork to
		1.4 V w a	Vork is prioritized and sequenced following cons /ith others for completion within acceptable time nd in accordance with established procedures.	ultation rames
		1.5 H m ir e	lazards are identified; OHS risks assessed and neasures are prioritized, implemented and monit ncluding emergency exits kept clear according to stablished procedures.	control ored
		1.6 R a p	Relevant authority is obtained to perform work ccording to requirements and/or established rocedures.	
		1.7 R p o	Resources including personnel, equipment, tools ersonal protective equipment required for the job btained and confirmed in working order.	and o are
		1.8 R	Relevant personnel at worksite are confirmed cur	rent in
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		F re	First Aid and other related work procedures accore equirements.	rding to	
		1.9 L p re	iaison and communication issues with other/auth personnel, authorities, clients and land owners ar esolved to carry out work where necessary.	norized e	
		1.10 S m ir	Site is prepared according to the work schedule a ninimize risk and damage to property, commerce ndividuals in accordance with established proced	and to e, and lures.	
		1.11 P o re a	Personnel participating in the work, including plar operators and contractors, are fully briefed and espective responsibilities confirmed where applic accordance with established procedures.	nt cable in	
		1.12 R ir	Road signs, barriers and warning devices are posin accordance with requirements.	sitioned	
2. Carry out LV field switching to a given schedule		2.1 C re a re	OHS and Sustainable Energy principles and prace educe the incidents of accidents and minimize w are monitored and followed in accordance with equirements and/or established procedures.	tices to aste	
		2.2 L a p	ifting, climbing, working in confined spaces and and use of power tools/equipment, techniques an practices are safely followed and, currency accor- equirements confirmed.	aloft, d ding to	
		2.3 A s c s	apply Essential Knowledge and Associated Skills afe LV field switching to a given schedule to ens completion in an agreed timeframe and, to quality tandards with a minimum of waste according to equirements.	in the ure ⁄	
		2.4 C e o	Communications with Switching Control Officer a stablished and maintained throughout the isolati peration according to established procedures.	re on	
		2.5 E lii p a a	Electrical equipment and associated circuits line/network or work site to be switched including paralleling is isolated and proved de-energized using appropriate devices and earthed where required according to requirements and established procedures.		
		2.6 H h ir to	lazard warnings and safety signs are recognized azards and assessed OHS risks are reported to mmediate authorized persons for directions acco o established procedures.	l and the rding	
		2.7 U a w	Inplanned events occurring during LV field switc given schedule are responded to and undertake vithin the scope of established procedures.	hing to en	
		2.8 K	Known solutions to a variety of problems are app	lied	
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-			
			using acquired essential knowledge and associated skills.
		2.9	On going checks of quality of the work are undertaken in accordance with instructions and established procedures
3.	 Complete the LV field switching to a 	3.1	Work undertaken is checked against works schedule for conformance with requirements and anomalies reported in accordance with established procedures.
	given schedule	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 permit(s) are signed off, safety devices are removed, and the system is re-energized and returned to service in accordance with 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 and authority notified.

Variable	Range
This shall/may be demonstrated in relation to:	• the conducting of low voltage switching operations involving the operation of circuit breaking and isolation devices from a given switching schedule as it relates to low voltage distribution systems in Field situations but also includes paralleling in accordance with the switching schedule
Operation of circuit isolation devices associated with energy reticulation systems/networks is confined to:	 low voltage systems in field situations which are performed in accordance with a switching schedule and established procedures

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Switching Control Officer refers to: Switchgear may include: Specialist tools and devices may include: Switching program/schedule refers to:	 an appropriate person designated as such by regulations, codes or enterprise arrangements who is responsible for coordinating and directing switching activities in consultation with field operatives Low Voltage fuses Low Voltage links and bridges Low Voltage detectors Low Voltage polarity testers Low Voltage phase rotation indicators structure, switch or equipment number and locations low voltage distributor spur or feeder outage times works order/plan
The following constants and variables included in the Range Statement of this unit:	 works order/pian Appropriate and relevant persons (see Personnel) Appropriate authorities Appropriate work platform Assessing risk 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 OHS practices OHS issues Permits and/or permits to work Personnel Quality assurance systems Requirements Testing procedures

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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: Switchgear installation Low voltage switching principles
Skills	 Demonstrates skills to: Switchgear installation Low voltage 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.

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Occupational Standard: Power Transmission, Distribution, Inspection and Maintenance Level II			
Unit Title	Install and Maintain Public Lighting Systems		
Unit Code	EIS TDM2 14 0612		
Unit Descriptor	This covers the installation maintenance and repair of public lighting systems. This also includes the inspection, testing and commissioning of the system associated with the street lighting circuit, the associated hardware and the earthling system. Installation will include the installation of, the associated hardware and components and, the wiring and earthling system. Maintenance may also include work on energized LV overhead or underground public lighting systems including the diagnosis of faults and the updating of relevant system data and or public lighting maintenance records.		

Elements Performance Criteria				
1. Prepare installati mainten of public	epare for the tallation and intenance	1.1 W re lis	Vorks schedule(s), including drawings, plans, equirements, established procedures, and mater sts, are received, analyzed and confirmed, if ecessary, by site inspection.	rial
lighting systems		1.2 R th ic	elevant requirements and established procedur ne work are communicated to all personnel and lentified for all work sites.	es for
		1.3 C a m cu a	OHS policies and procedures related to requirem nd established procedures for the installation an naintenance of public lighting systems are obtain onfirmed for the purposes of the work to be perform nd communicated.	ents id ied and ormed
		1.4 W w a	Vork is prioritized and sequenced following cons vith others for completion within acceptable time nd in accordance with established procedures.	ultation frames
		1.5 H m ir e	lazards are identified; OHS risks assessed and neasures are prioritized, implemented and monit ncluding emergency exits kept clear according to stablished procedures.	control ored
		1.6 R p e	elevant work permits are obtained to access an erform work according to requirements and/or stablished procedures.	d
		1.7 R p o	esources including personnel, equipment, tools ersonal protective equipment required for the jol btained and confirmed in working order.	and b are
		1.8 R	elevant personnel at worksite are confirmed cur	rent in
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		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	Traffic management plan is identified and implemented.
2. Carry out installation and maintenance of public lighting systems	2.1	OHS, Sustainable Energy and Environmental principles and practices to reduce the incidents of accidents and minimize waste are monitored and followed in accordance with requirements and/or established procedures.
Systems	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 installation and <i>maintenance</i> of <i>public lighting</i> systems to ensure completion in an agreed timeframe and, to quality standards with a minimum of waste according to requirements.
	2.4	Excavation/foundation construction is inspected, and confirmed as being in accordance with established procedures.
	2.5	Associated hardware, fittings and control gear are installed as per established procedures.
	2.6	Earthling system and street lighting circuit is installed as per established procedures.
	2.7	Inspection of public lighting and associated hardware is conducted to ascertain that it conforms to requirements/established procedures.
	2.8	Maintenance, including repair and/or replacement of the public lighting system is carried out, in accordance with the work schedule and requirements/established procedures.
	2.9	Hazard warnings and safety signs are recognized and

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

Variable		Range			
Competence shall be demonstrated in relation to:		 the installation, maintenance and repair of public lighting systems, including the inspection, testing and commissioning of the system associated with the street lighting circuit, the associated hardware and the earthing system 			
Maintenance may include:		 the repairs replation association 	removal, hir, acement and cleaning of public lighting and bociated hardware		
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Public lighting	lanterns/luminaires,
system may	 lamps or control equipment in overhead and underground
include:	reticulated areas.
	• poles and
	• columns
Associated	brackets, choke boxes,
hardware may	 photo-electric cells
include:	 time switches
	 contactor boxes and appropriate nuts and bolts
Testing	LV detectors and fault indicators
equipment may	
include:	
The following	 Appropriate and relevant persons (see Personnel)
constants and	 Appropriate authorities
variables included	Appropriate additionales
in the Range	
Statement of this	
unit:	Assessment
	Authonization
	Contined 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

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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 Underpinning	 Demonstrates knowledge of: Installation and maintenance of public lighting and associated equipment Demonstrates skills to: 		
Skills	 Installation and maintenance of public lighting and associated equipment 		
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.		

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Occupational Standard: Power Transmission, Distribution, Inspection and Maintenance Level II			
Unit Title	Install and Maintain Low Voltage Services (Underground)		
Unit Code	EIS TDM2 15 0612		
Unit Descriptor	This unit covers the installation; maintenance and connection of low voltage underground service lines and associated equipment (between the connection point and the point of supply - customers' premises). Maintenance includes the repair and replacement of service cables, service fuses and the replacement and repair of service hardware, the identification and rectification of faults. It also covers insulation, voltage, and polarity testing and phase rotation.		

Elements	Elements Performance Criteria				
1. Prepare for the installation and maintenance of LV underground services and associated equipment	or the n and nce of	1.1 V re lis n	Vorks schedule(s), including drawings, plans, equirements, established procedures, and mater sts, are received, analyzed and confirmed, if ecessary, by site inspection.	rial	
	und and d	1.2 R th ic	elevant requirements and established procedure ne work are communicated to all personnel and lentified for all work sites.	es for	
		1.3 C a <i>n</i> a th c	OHS policies and procedures related to requirem nd established procedures for the <i>installation</i> a <i>maintenance</i> of LV underground <i>services</i> and ssociated equipment are obtained and confirme ne purposes of the work to be performed and communicated.	ents ınd d for	
		1.4 V w a	Vork is prioritized and sequenced following cons with others for completion within acceptable times nd in accordance with established procedures.	ultation frames	
		1.5 H m ir e	lazards are identified; OHS risks assessed and neasures are prioritized, implemented and monit including emergency exits kept clear according to stablished procedures.	control ored	
	1.6 R p e	elevant work permits are obtained to access an erform work according to requirements and/or stablished <i>procedures.</i>	d		
		1.7 R p o	esources including personnel, equipment, tools ersonal protective equipment required for the jol btained and confirmed in working order.	and b are	
		1.8 R F	elevant personnel at worksite are confirmed cur irst aid, rescue and other related work procedur	rent in es	
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		a	according to requirements.		
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		1.9 L p re	iaison and communication issues with other/auth bersonnel, authorities, clients and land owners ar esolved to carry out work where necessary.	norized e	
		1.10 S n ir	Site is prepared according to the work schedule a ninimize risk and damage to property, commerce ndividuals in accordance with established proced	and to e, and lures	
		1.11 F o ro a	Personnel participating in the work, including plar operators and contractors, are fully briefed and espective responsibilities confirmed where applic accordance with established procedures.	nt cable in	
		1.12 F ir	Road signs, barriers and warning devices are posin accordance with requirements.	sitioned	
2. Carry ou installati and mainten	ıt on ance	2.1 C re a re	DHS and sustainable energy principles and pract educe the incidents of accidents and minimize w are monitored and followed in accordance with equirements and/or established procedures.	ices to aste	
of LV underground services and associated equipment	ound and ed	2.2 L a p re	ifting, climbing, working in confined spaces and and use of power tools/equipment, techniques an practices are safely followed and, currency accor- equirements confirmed.	aloft, d ding to	
		2.3 A s c w	Apply essential knowledge and associated skills i safe installation and maintenance of LV undergro services and associated equipment to ensure completion to quality standards with a minimum c vaste according to requirements.	n the und ıf	
		2.4 L ir	V underground services and associated equipm nstalled according to the work schedule and equirements/established procedures.	ent are	
	2.5	2.5 N s a r	Maintenance, including repair and/or replacement of LV services and associated equipment is carried out, in accordance with the work schedule and requirements/established procedures.		
		2.6 F h ir to	Hazard warnings and safety signs are recognized nazards and assessed OHS risks are reported to mmediate authorized persons for directions acco o established procedures.	erecognized and reported to the ections according	
		2.7 L n a p	Jnplanned events during the installation and naintenance of LV services and associated equip are undertaken within the scope of established procedures.	oment	
		2.8 k u	Known solutions to a variety of problems are app using acquired essential knowledge and associat	lied ed	
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		skills.
	2.9	On going checks of quality of the work are undertaken in accordance with instructions and established procedures.
3. Complete the installation and maintenance of LV	3.1	Work undertaken is checked /tested against works schedule for conformance with requirements and anomalies reported in accordance with established procedures.
underground services and associated equipment	3.2	Accidents and/or injuries are reported in accordance with requirements/established procedures, where applicable.
equipment	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, the LV services and associated equipment 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
This shall/may be demonstrated in relation to:	 the installation and maintenance of underground low voltage services as they relate to distribution circuits and associated equipment and includes the identification of faults
Installation may include:	 the laying and connection of service cables connection of the service cable to underground equipment the fitting and connection of fuses or circuit breakers and the testing and commissioning of the service
Service includes:	 the connection between the customers' point of supply and the underground pillar/pit connection (single phase), underground pillar/pit connection (three phase) and or underground to overhead connection
Maintenance may include:	 the identification and diagnosis of faults the removal, replacement or repair of service cables and associated hardware

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	the temporary installation of services and associated
	equipment and
	 the testing and commissioning of the service
Testing	continuity
procedures may	polarity
include:	phase rotation
	 insulation resistance and voltage
Testing	digital/analogue voltage testers
equipment may	multi meters
include:	phase rotation testers
	load testers
	 insulation resistance and
	continuity testers
Associated	fuse units
hardware may	circuit breakers
include:	contactors
	mains connection boxes
The following	Appropriate and relevant persons (see Personnel)
constants and	Appropriate authorities
variables included	Appropriate work platform
in the	Assessing risk
Range Statement	Assessment
of this unit:	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
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•	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, polices and workplace procedures
Underpinning Knowledge and Attitudes	 Demonstrates knowledge of: Power line installation safety Low voltage electrical underground service installation
Underpinning Skills	 Demonstrates skills to: Power line installation safety Low voltage electrical underground service installation
Resources Implication	 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
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.

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Occupational Standard: Power Transmission, Distribution, Inspection and Maintenance Level II			
Unit Title	Install and Maintain Low Voltage Services (Overhead)		
Unit Code	EIS TDM2 16 0612		
Unit Descriptor	This covers the installation, maintenance and connection of low voltage overhead service lines and associated equipment (between the connection point and the point of supply - customers' premises). Maintenance includes the repair and replacement of service cables, service fuses and the replacement and repair of service hardware, the identification and rectification of faults. It also covers insulation, voltage, and polarity testing and phase rotation.		

Elements	Perfo	ormance Criteria
1. Prepare for the installation and maintenance of LV overhead	1.1	Works schedule(s), including drawings, plans, requirements, established procedures, and material lists, are received, analyzed and confirmed, if necessary, by site inspection.
services and associated equipment	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 <i>installation</i> and <i>maintenance</i> of LV overhead services and associated <i>equipment</i> 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 <i>procedures</i> .
	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

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		F p	First aid, pole top rescue and other related work procedures according to requirements.	
		1.9 L p re	iaison and communication issues with other/auth personnel, authorities, clients and land owners ar esolved to carry out work where necessary.	norized e
		1.10 S n ir	Site is prepared according to the work schedule a ninimize risk and damage to property, commerce ndividuals in accordance with established proced	and to e, and lures.
		1.11 F o re a	Personnel participating in the work, including plar operators and contractors, are fully briefed and espective responsibilities confirmed where applic accordance with established procedures.	nt cable in
		1.12 F ir	Road signs, barriers and warning devices are posin accordance with requirements.	sitioned
2. Carry ou installati and mainten	ıt on ance	2.1 C re a re	DHS and Sustainable Energy principles and prace educe the incidents of accidents and minimize ware monitored and followed in accordance with equirements and/or established procedures.	tices to aste
of LV overhea services associat	d and	2.2 L e a	ifting, climbing, working aloft, and use of power tequipment, techniques and practices are safely found, currency according to requirements confirme	ools/ bllowed ed.
equipme	ent	2.3 A s c w	Apply essential knowledge and associated skills i afe installation and maintenance of LV overhead services and associated equipment to ensure completion to quality standards with a minimum of vaste according to requirements.	n the I
		2.4 L ir	V overhead services and associated equipment nstalled according to the work schedule and equirements/established procedures.	are
		2.5 N 0 0 re	Maintenance, including repair and/or replacemen overhead services and associated equipment is o out, in accordance with the work schedule and equirements/established procedures.	t of LV arried
		2.6 ⊢ h ir to	Hazard warnings and safety signs are recognized nazards and assessed OHS risks are reported to mmediate authorized persons for directions acco o established procedures.	l and the rding
		2.7 L n a p	Unplanned events during the installation and naintenance of LV services and associated equip are undertaken within the scope of established procedures.	oment
		2.8 K u	Known solutions to a variety of problems are app using acquired essential knowledge and associat	lied ed
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		skills.
	2.9	On going checks of quality of the work are undertaken in accordance with instructions and established procedures.
3. Complete the installation and maintenance	3.1	Work undertaken is checked/ tested against works schedule for conformance with requirements and anomalies reported in accordance with established procedures.
of LV overhead services and associated	3.2	Accidents and/or injuries are reported in accordance with requirements/established procedures, where applicable.
equipment	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, the LV overhead services and associated equipment 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		
This shall/m demonstrate relation to:	nay be ed in	 the isserv assortation 	nstallation and maintenance of overhead low vo ices as they relate to distribution circuits and ociated equipment and includes the identification is	Itage
Installation may include:		 the end the and com 	erection and connection of service lines, fitting and connection of pole fuses or circuit bre the testing and missioning of the service	akers
Maintenance may include:		 the i the i asso the i asso com 	dentification and diagnosis of faults, removal, replacement or repair of service lines ociated hardware, temporary installation of services ociated equipment and the testing and missioning of the service	and
Testing procedures may include:		contpolaphase	inuity rity se rotation	
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	insulation resistance and voltage
Testing	digital/analogue voltage testers
equipment may	multi meters
include:	phase rotation testers
	load testers
	 insulation resistance and
	continuity testers
Associated	pole fuse units
hardware may	circuit breakers
include:	contactors
	mains connection boxes
The following	Appropriate and relevant persons (see Personnel)
constants and	Appropriate authorities
variables included	Appropriate work platform
in the	Assessing risk
Range Statement	Assessment
of this unit:	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

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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: Power line distribution installation Power line installation safety Low voltage electrical overhead service installation
Underpinning Skills	 Demonstrates skills to: Power line distribution installation Power line installation safety Low voltage electrical overhead service installation
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.

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Occupational Star	ndard: Power Transmission, Distribution, Inspection and Maintenance Level II
Unit Title	Install, Replace and Inspect Single and 3 Phase Energy Meters and Associated Equipments
Unit Code	EIS TDM2 17 0612
Unit Descriptor	This unit covers the installation and/or replacement of low voltage CT metering for measurement of energy use by consumers under choice of supplier arrangement. It encompasses working safely and to installation and set up standards, evaluating the integrity of metering wiring and earthing systems, fixing metering, making power and communication connections, setting meter parameters and completing the necessary documentation.

Elements	Performance Criteria			
1. Prepare install or	to	1.1 C 0	OHS procedures for a given work area are identif btained and understood.	ied,
replace energy metering	CT g.	1.2 H ri th	lealth and safety risks are identified and establis sk control measures and procedures in preparation work are followed.	hed tion for
		1.3 S a ir e p lo	Cafety hazards that have not previously been ide re noted and established risk control measures inplemented. (Note 1: Examples of hazards likely ncountered are asbestos reinforced switchboard anels, deteriorating switchgear and cabling and ocation of the switchboard.)	ntified are / to be l
		1.4 S ir s fu s e M a	witchboard on which the meter(s)/CTs is/are to nstalled is inspected and evaluated for compliance afety and functionality standards. (Note 2: Safety unctionality standards include the clear identification witchboard components and their function, sound lectrical insulation of wiring and components, so IEN and main earth connections, fire integrity ar ccess.)	be ce with y and tion of d und nd
		1.5 A tř a	approval to rectify safety and/or functionality defense switchboard is sought from person of higher uthority in accordance with established procedu	ects of res.
		1.6 Ir p w	nstallation of the meter and rectification work is repared in consultation with others affected by the vork and sequenced appropriately.	ne
		1.7 M w re	Aterial needed for the work is obtained in accord with established procedures and checked agains equirements.	dance t job
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		1.8	Tools, equipment and testing devices needed to for the work are obtained in accordance with established procedures and checked for correct operation and safety.
2.	Install or replace CT	2.1	OHS risk control measures and procedures for carrying out the work are followed.
	metering.	2.2	The need to test or measure live is determined in strict accordance with OHS requirements and when necessary conducted within established safety procedures.
		2.3	Existing metering is checked as being isolated in strict accordance OHS requirements and procedures.
		2.4	Approved rectification work is carried out to comply with standards and in accordance with established procedures.
		2.5	Meters and CTs are installed/ replaced to comply with technical standards and job specifications and requirements.
		2.6	Metering power and communication connections (where necessary) are made in accordance with manufacturer's specifications and functional and regulatory requirements.
		2.7	Meter operating parameters are set in accordance with manufacturer's specifications and functional and regulatory requirements.
		2.8	Unexpected situations are dealt with safely and with the approval of an authorized person
		2.9	Ongoing checks of the quality of installed apparatus are undertaken in accordance with established procedures.
		2.10	Metering/CT installation is carried out efficiently without unnecessary waste of materials or damage to apparatus, circuits, the surrounding environment or services and using sustainable energy principles.
3.	Complete and report metering	3.1	OHS work completion risk control measures and procedures are followed and supply is reinstated to the installation.
	installation activities.	3.2	Work site is cleaned and made safe in accordance with established procedures.
		3.3	Final checks are made to that the installed metering and CTs conform to requirements.
		3.4	'As-installed' metering and CTs and rectification work is

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documented and appropriate persons notified in
accordance with established procedures.

Variable	Range
This unit shall be demonstrated in relation to the installation of at least :	 low voltage CT installation using single phase meters low voltage CT installation using a poly phase meter metering installation where compliance rectification work is required

Evidence Guide	
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 Demonstrate consistent performance across a representative range of contexts from the prescribed items below: Install /replace low voltage CT metering and including: Inspecting and evaluating safety and functionality compliance of the switchboard accurately. Following established procedures to obtain approval to rectify non-compliance aspects of the switchboard. Carrying out preparation work effectively. Rectifying compliance defects.
	 Placing and securing metering correctly. Making power and communications connections in accordance with manufacture's specifications and functional and regulatory requirements.
	 Setting meter parameters in accordance with manufacture's specifications and functional and regulatory requirements.
	 Reinstating supply to the installation safely. Documenting CT metering and rectification work and notifying appropriate persons in accordance with established procedures.
	 Dealing with unplanned events by drawing on essential knowledge and skills to provide appropriate solutions.

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Underpinning	Demonstrates knowledge of:		
Knowledge and	low voltage CT installation using single phase meters		
Attitudes	 voltage low CT installation using a poly phase meter 		
	 metering installation where compliance rectification work is required 		
Underpinning	Demonstrates skills to:		
Skills	low voltage CT installation using single phase meters		
	low voltage CT installation using a poly phase meter		
	• metering installation where compliance rectification work is		
	required		
Resources	Access is required to real or appropriately simulated situations,		
Implication	including work areas, materials and equipment, and to		
	information on workplace practices and OHS practices.		
Methods of	Competence may be assessed through:		
Assessment	Interview / Written Test		
	Observation / Demonstration with Oral Questioning		
Context of	Competence may be assessed in the work place or in a		
Assessment	simulated work place setting.		

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Occupational Standard: Power Transmission, Distribution, Inspection and Maintenance Level II		
Unit Title	Install and Maintain Overhead Conductors and Cables (Towers)	
Unit Code	EIS TDM2 18 0612	
Unit Descriptor	This covers the installation and maintenance of overhead conductors and cables used on towers which includes the stringing, tensioning and terminating of the conductor/cable while de energized, securing of the conductor to the insulators or supports and the undertaking of the electrical connections. It also covers maintenance work associated with the diagnosing of faults, the conducting of visual inspections, the confirmation of phasing and the completion of other enterprise tests. It also encompasses confirming isolation of systems and circuits, and/accepting/ issuing electrical permits and the updating of system data/ maintenance records.	

Elements		Performance Criteria		
1. Prepare for the installation and maintenance of overhead	1.1 V re a n	Vorks schedule(s), including drawings, plans, equirements, established procedures, and mater re received/ sourced, analyzed and confirmed, it ecessary, by site inspection.	ial lists	
conducto cables us towers	rs and sed on	1.2 R th ic	elevant requirements and established procedure ne work are communicated to all personnel and lentified for all work sites.	es for
		1.3 C a <i>n</i> o o	OHS policies and procedures related to requirem nd established procedures for the <i>installation</i> a <i>naintenance</i> of overhead <i>conductors</i> and cable n towers are obtained and confirmed for the pur f the work to be performed and communicated.	ents Ind es used poses
		1.4 V w a	Vork is prioritized and sequenced following cons with others for completion within acceptable times nd in accordance with established procedures.	ultation rames
		1.5 H m ir e	lazards are identified; OHS risks assessed and one asures are prioritized, implemented and monit including emergency exits kept clear according to stablished procedures.	control ored
		1.6 R p e	elevant work permits are obtained to access an erform work according to requirements and/or stablished procedures.	d
		1.7 R p o	esources including personnel, equipment, tools ersonal protective equipment required for the jol btained and confirmed in working order.	and o are
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	1.8	Relevant personnel at work site are confirmed current in First Aid, Rescue and other related 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, environment 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 installation and maintenance of overhead	2.1	OHS, Sustainable Energy and Environmental principles and practices to reduce the incidents of accidents and minimize waste are monitored and followed in accordance with requirements and/or established procedures.
conductors and cables used on towers	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	Systems and circuits are isolated as required, proved safe to work on in accordance with the requirements /permits and established procedures.
	2.4	Apply Essential Knowledge and Associated Skills in the safe installation and maintenance of overhead conductors and cables used on towers to ensure completion in an agreed timeframe to quality standards with a minimum of waste according to requirements.
	2.5	Overhead conductor/cables are strung, tensioned and terminated as per requirements/established procedures.
	2.6	Conductors and anti-vibration devices, spaces/spreaders are secured as per established procedures.
	2.7	Electrical connections are made in accordance with the requirements/established procedures.
	2.8	Maintenance, including repair and/or replacement of overhead conductors and cables used on towers is carried out, in accordance with the work schedule and

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		requirements/established procedures.
	2.9	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.
	2.10	Unplanned events in the installation and maintenance of overhead conductors and cables used on towers are undertaken within the scope of established procedures.
	2.11	Known solutions to a variety of problems are applied using acquired essential knowledge and associated skills
	2.12	On going checks of quality of the work are undertaken in accordance with instructions and established procedures.
3. Complete the installation and maintenance of overhead conductors and cables used on towers	3.1	Work undertaken is checked against works schedule for confirmation of phasing and 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 <i>materials</i> are, where appropriate, cleaned, checked and returned to storage or disposed of in accordance with established procedures.
	3.5	Relevant work permit(s) are signed off and, overhead conductors and cables 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
This shall/may be demonstrated in relation to:	 the installation and maintenance of overhead conductor and or cables used on transmission towers
Installation and maintenance may include :	 the stringing, tensioning, terminating,

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		• remo	oval,	
		• repai	ring and replacement of the conductors/cables	
		VISU	al inspections and	
Structures		 tne d towo 	re and columns	
include:		• lowe		
Types of		 copp 	er	
conductor		 alum 	inum	
include:		• steel	and composites	
		Conc	ductor configurations may be single or bundled a	and
			De pilot capies	
Plant may			ating work platform	
include:		 wincl 	nes and capstans	
		 spec 	ialist tension stringing equipment.	
		 cable 	e trailers.	
		• cabl	e drum stands and	
		equip	potential equipment	
Testing and		• insul	ation resistance testers,	
recording		• reco	ding meters and other approved devices and	
equipment		 techr 	niques applicable to the voltage	
The followin	a	• Appr	opriate and relevant persons (see Personnel)	
constants a	nd	 Appi Appr 	opriate authorities	
variables in	cluded	 Appr 	opriate work platform	
in the this unit:		 Asse 	ssing risk	
		 Asse 	ssment	
		Auth	orization	
		Diag	nostic, testing and restoration	
		Docu	menting detail work events, record keeping and	lor
		 Draw 		
		• Eme	rgency	
		Envi	conmental and sustainable energy procedures	
		 Envir 	onmental legislation	
		 Envir 	onmental management documentation	
		Esta	blished procedures	
		 Fall p 	prevention	
		• Haza	urds	
		ldent	itying hazards	
		 Inspect Legislation 		
		 Noti 	fication	
			practices and OHS issues	
		Perm	hits and/or permits to work	
		<u> </u>		
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Personnel
Quality assurance systems
Requirements.
Testing procedures
Work clearance systems

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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: Routine maintenance on transmission structures Installation and maintenance on transmission lines and associated equipment Power line transmission installation safety
Underpinning Skills	 Demonstrates skills to: Routine maintenance on transmission structures Installation and maintenance on transmission lines and associated equipment Power line transmission 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.
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.

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Occupational Standard: Power Transmission, Distribution, Inspection and Maintenance Level II		
Unit Title	Inspect Overhead Structures and Electrical Apparatus (Towers)	
Unit Code	EIS TDM2 19 0612	
Unit Descriptor	This 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	Performanc	e Criteria
1. Prepare for the inspection of overhead structures and	1.1 Works requir lists, a neces	s schedule(s), including drawings, plans, ements, established procedures, and material are received, analyzed and confirmed, if sary, by site inspection.
electrical apparatus used on towers	1.2 Relev the we identif	ant requirements and established procedures for ork are communicated to all personnel and fied for all work sites.
	1.3 OHS and e overh towers the we	policies and procedures related to requirements stablished procedures for the <i>inspection</i> of ead structures and <i>electrical apparatus</i> used on s are obtained and understood for the purposes of ork to be performed.
	1.4 Work with o and ir	is prioritized and sequenced following consultation thers for completion within acceptable timeframes accordance with established procedures.
	1.5 Hazaı meas includ estab	rds are identified; OHS risks assessed and control ures are prioritized, implemented and monitored ling emergency exits kept clear according to lished procedures.
	1.6 Relev perfor estab	ant work permits are obtained to access and m work according to requirements and/or lished procedures.
	1.7 Resou perso identit order.	urces including personnel, equipment, tools and nal protective equipment required for the job are fied, scheduled and obtained and, in working
	1.8 Relev First A	ant personnel at work site are confirmed current in Aid, Pole Top Rescue and other related work
rr		

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		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	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.
electrical apparatus used on towers	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 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.

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 Complete the inspection of overhead 	9 3.1	Work undertaken is checked against works schedule for conformance with requirements and anomalies reported in accordance with established procedures.
structures and electrical apparatus	d 3.2	Accidents and/or injuries are reported in accordance with requirements/established procedures.
used on towers	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, 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		
This shall/m demonstrate relation to:	nay be ed in	 the in elect 	nspection of overhead structures such as towers rical apparatus and equipment	and
Inspection r be carried o	nay out:	on forFrom	oot, and/or by conventional ground-based vehicle the air. Aircraft may be helicopters or fixed-win	ə, or g types
Inspection techniques include:		• use (of X-ray and infrared camera	
Items to be inspected may include:		 towers but not overhead poles and or structures 		
Types of electrical apparatus to be inspected include:		 overl cable hard unde elect and a hard 	head conductors, es, ware and footings, erground cables and overhead transition points a rical equipment such as pole-mounted transforn air-break switches, ware and or hing systems	ınd, ners
The following constants and variables included in the Range Statement		 Appr Appr Appr Appr Asse 	opriate and relevant persons (see Personnel) opriate authorities opriate work platform essing risk	
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of this unit	• Assessment
or this drift.	
	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 system

Evidence Guide				
Critical Aspects of Competence		Assessn Imple proce meas Appl Conc regul	nent requires evidence that the candidate: ement Occupational Health and Safety workplace edures and practices including the use of risk co sures y sustainable energy principles and practices duct work observing the relevant legislation, ations, polices and workplace procedures	e ntrol
Underpinning Knowledge and Attitudes		Demons Tran Towe Tran 	trates knowledge of: smission structures and hardware ers and structures inspection principles smission Power line inspection principles	
Underpinning Skills		Demons Tran Towe Tran 	trates skills to: smission structures and hardware ers and structures inspection practices smission Power line inspection practices	
Resources Implication		Access i	s required to real or appropriately simulated situ g work areas, materials and equipment, and to	iations,
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	information on workplace practices and OHS practices.	
Methods of	Competence may be assessed through:	
Assessment	Interview / Written Test	
	Observation / Demonstration with Oral Questioning	
Context of	Competence may be assessed in the work place or in a	
Assessment	simulated work place setting.	

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Occupational Star	Occupational Standard: Power Transmission, Distribution, Inspection and Maintenance Level II		
Unit Title	Inspect Overhead Structures and Electrical Apparatus (Poles and Structures)		
Unit Code	EIS TDM2 20 0612		
Unit Descriptor	This Unit covers the inspection as per requirements of overhead structures such as poles and/or other structures other than towers. It also includes inspection of electrical apparatus such as, overhead conductors and or cables, underground and overhead transition points, electrical equipment, such as pole-mounted transformers, switchgear, hardware and or earthing systems. It encompasses the completion of inspection reports and other relevant documentation in accordance with requirements.		

Elements	Perfo	rmance Criteria
1. Prepare for the inspection of overhead structures and electrical apparatus used	1.1	Works schedule(s), including drawings, plans, requirements, established procedures, and material lists, are received, analyzed and confirmed, if necessary, by site inspection. Prepare for the inspection of overhead structures and electrical apparatus used on poles and/or structures
on poles and/or structures	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 <i>inspection</i> of overhead structures and <i>electrical apparatus</i> used on poles and/or structures 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

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			C	btained and confirmed in working order.	
			1.8 F F p	Relevant personnel at worksite are confirmed cur First Aid, Pole Top Rescue and other related wor procedures according to requirements.	rent in k
			1.9 L p r	iaison and communication issues with other/autl personnel, authorities, clients and land owners ar esolved to carry out work where necessary.	norized e
			1.10 S n ir	Site is prepared according to the work schedule a ninimize risk and damage to property, commerce ndividuals in accordance with established proced	and to e, and lures.
			1.11 F c r a	Personnel participating in the work, including plar operators and contractors, are fully briefed and espective responsibilities confirmed where applicaccordance with established procedures.	nt cable in
			1.12 T	Fraffic management plan is identified and implem	ented.
2.	Carryout inspectic overhead structure electrica	on of d s and l	2.1 C a n a p	DHS, sustainable energy and environmental prine and practices to reduce the incidents of accidents ninimize waste are monitored and followed in accordance with requirements and/or established procedures.	ciples and
	apparatu used on and/or structure	is poles es	2.2 L a p r	lifting, climbing, working in confined spaces and and use of power tools/equipment, techniques an practices are safely followed and, currency accor equirements confirmed.	aloft, d ding to
			2.3 A s a c s	Apply essential knowledge and associated skills is afe inspection of overhead structures and electric apparatus used on poles and/or structures to ensi- completion in an agreed timeframe and, to quality standards with a minimum of waste according to equirements.	n the ical ure ⁄
			2.4 li a c r	nspection of overhead structures and electrical apparatus used on poles and/or structures is carr but, in accordance with the work schedule and equirements/established procedures.	ied
			2.5 F h ir te	Hazard warnings and safety signs are recognized nazards and assessed OHS risks are reported to mmediate authorized persons for directions acco o established procedures.	l and the ording
			2.6 L s s	Unplanned events during the inspection of overheatructures and electrical apparatus used on poles atructures are undertaken within the scope of established procedures.	ead and/or
			2.7 k	Known solutions to a variety of problems are app	lied
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			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.
 Complete the inspection of overhead 	3.1	Work undertaken is checked against works schedule for conformance with requirements and anomalies reported in accordance with established procedures.	
	structures and electrical apparatus used on poles	3.2	Accidents and/or injuries are reported in accordance with requirements/established procedures, where applicable.
	and/or structures	3.3	Work site is rehabilitated, cleaned up and made safe in accordance with established procedures.
		3.4	Tools, equipment and any surplus resources and materials are, where appropriate, cleaned, checked and returned to storage or disposed of in accordance with established procedures.
		3.5	Relevant work permit(s) are signed off and, overhead structures and electrical apparatus used on poles and/or structures 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
This shall/may be demonstrated in relation to:	• The 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

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	and air-break switches, hardware, such as insulators,
	surge arrestors and
	Cross-arms and or earthing systems
The following	Appropriate and relevant persons (see Personnel)
constants and	Appropriate authorities
variables included	Appropriate work platform
in the Range	Assessing risk
Statement of this	Assessment
unit:	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, polices and workplace procedures

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Underpinning	Demonstrates knowledge of:
Knowledge and	Poles and structures inspection principles
Attitudes	Power line inspection principles
Underpinning	Demonstrates skills to:
Skills	Poles and structures inspection
	Power line inspection
Resources	Access is required to real or appropriately simulated situations,
Implication	including work areas, materials and equipment, and to
	information on workplace practices and OHS practices.
Methods of	Competence may be assessed through:
Assessment	Interview / Written Test
	Observation / Demonstration with Oral Questioning
Context of	Competence may be assessed in the work place or in a
Assessment	simulated work place setting.

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Occupational Standard: Power Transmission, Distribution, Inspection and Maintenance Level II			
Unit Title	Maintain Overhead Energized LV Conductors and Cables		
Unit Code	EIS TDM2 21 0612		
Unit Descriptor	This covers the maintenance of overhead energized low voltage conductors and cables and includes the verification of the site conditions and the potential hazards, the confirmation and calculation of energy flow, including an understanding of the effects of traffic loads and de- rating of circuits. It also encompasses the selection of appropriate and authorized work method using specialized equipment, the diagnosis of faults, the undertaking of electrical tests and the updating of system data/maintenance records.		

Elements	Perfo	rmance Criteria
1. Prepare for the maintenance of overhead energized LV	1.1	Works schedule(s), including drawings, plans, requirements, established procedures, and material lists, are received, analyzed and confirmed, if necessary, by site inspection.
conductors and cables.	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 <i>maintenance</i> of overhead energized LV conductors and cables are obtained and confirmed for the purposes of the work to be performed and communicated.
	1.4	Physical loads and calculations are confirmed according to requirements, using essential knowledge and appropriate skill.
	1.5	<i>Work</i> is prioritized and sequenced following consultation with others for completion within acceptable timeframes and in accordance with established procedures.
	1.6	Hazards are identified; OHS risks assessed and control measures are prioritized, implemented and monitored including emergency exits kept clear according to established procedures.
	1.7	Relevant work permits are obtained to access and perform work according to requirements and/or established procedures.
	1.8	Resources including personnel, equipment, tools and

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			p o	personal protective equipment required for the job obtained and confirmed in working order.	o are
			1.9 S c e	Specialist equipment for live working is inspected confined in working order as per requirements an established procedures.	and d
			1.10 R F p	Relevant personnel at worksite are confirmed cur First Aid, Pole Top Rescue and other related wor procedures according to requirements.	rent in k
			1.11 L p re	iaison and communication issues with other/auth personnel, authorities, clients and land owners ar esolved to carry out work where necessary.	norized e
			1.12 S n ir	Site is prepared according to the work schedule a ninimize risk and damage to property, commerce ndividuals in accordance with established proced	and to e, and lures.
			1.13 F o re a	Personnel participating in the work, including plar operators and contractors, are fully briefed and espective responsibilities confirmed where applic accordance with established procedures.	nt cable in
			1.14 T	raffic management plan is identified and implem	ented.
2.	Carry ou maintena of overhe energize	t ance ead d LV	2.1 E ir m	Environmental principles and practices to reduce ncidents of accidents and minimize waste are nonitored and followed in accordance with equirements and/or established procedures.	the
	conducto and cabl	ors es.	2.2 L a p	ifting, climbing, working in confined spaces and and use of power tools/equipment, techniques an practices are safely followed and, currency accor equirements confirmed.	aloft, d ding to
			2.3 A s a a a	Apply essential knowledge and associated skills in afe maintenance of overhead energized LV con- and cables to ensure completion in an agreed time and, to quality standards with a minimum of waste according to requirements.	n the ductors eframe e
			2.4 M p w p	Aaintenance, including repair and/or replacemen poles and/or structures is carried out, in accordar with the work schedule and requirements/establis procedures.	t of ice shed
			2.5 ⊢ h ir to	lazard warnings and safety signs are recognized azards and assessed OHS risks are reported to mmediate authorized persons for directions acco o established procedures.	l and the ording
			2.6 L e w	Inplanned events in the maintenance of overhea energized LV conductors and cables are undertal vithin the scope of established procedures.	id ken
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	2.7	Known solutions to a variety of problems are applied using acquired essential knowledge and associated skills
	2.2	On going checks of quality of the work are undertaken in accordance with instructions and established procedures.
3. Complete the maintenance of overhead	3.1	Work undertaken is checked against works schedule for conformance with requirements and anomalies reported in accordance with established procedures.
conductors and cables.	3.2	Accidents and/or injuries are reported in accordance with requirements/established procedures, where applicable.
	3.3	Work site is rehabilitated, cleaned up and made safe in accordance with established procedures.
	3.4	Tools, equipment and any surplus resources and materials are, where appropriate, cleaned, checked and returned to storage or disposed of in accordance with established procedures.
	3.5	Relevant work permit(s) are signed off and, overhead energized LV conductors and cables 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
This shall/may be demonstrated in relation to:	 the maintenance of overhead energized low voltage conductors and cables taking into account the potential hazards, the calculation of physical loads, including an understanding of the effects of traffic loads and de-rating of circuits
Maintenance may include:	 the removal, repair and replacement of cables, conductors and associated hardware
Structures include:	poles, and columns
Work methods require:	 the use of insulating gloves and specialized live working equipment and tools

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Work may be performed: Testing and recording devices include:	 from elevating work platform, ladder, portable pole platform, or the ground voltage detectors, tong ammeters, polarity testers,
Specialized live working equipment includes:	 recording meters and phase sequence indicators insulating mats and sleeves, insulating gloves, temporary bridges/hoppers, insulated cable tensioning devices and ladder/pole shrouds and equipotential bonding
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 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 legislation Established procedures Fall prevention Hazards Identifying hazards Inspect Legislation OHS practices OHS issues Permits and/or permits to work Personnel Quality assurance systems Requirements. Testing procedures Work clearance systems

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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	Demonstrates knowledge of:
Knowledge and	• Low voltage - energized working practices for substations.
Attitudes	Low voltage switching principles
Underpinning	Demonstrates skills to:
Skills	 working practices for substations
	Low voltage - energized Power line safety practices.
	Low voltage switching principles
	Power line safety practices
Resources	Access is required to real or appropriately simulated situations,
Implication	including work areas, materials and equipment, and to
	information on workplace practices and OHS practices.
Methods of	Competence may be assessed through:
Assessment	Interview / Written Test
	Observation / Demonstration with Oral Questioning
Context of	Competence may be assessed in the work place or in a
Assessment	simulated work place setting.

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Occupational Standard: Power Transmission, Distribution, Inspection and Maintenance Level II		
Unit Title	Work in Team Environment	
Unit Code	EIS TDM2 22 0612	
Unit Descriptor	This unit of competence covers the skills, knowledge and attitudes to identify role and responsibility as a member of a team.	

Elements Performance Criteria		ormance Criteria	
1.	Describe team role and scope	1.1	The <i>role and objective of the team</i> is identified from available <i>sources of information</i> .
		1.2	Team parameters, reporting relationships and responsibilities are identified from team discussions and appropriate external sources.
2. Identify own role and	2.1	Individual role and responsibilities within the team environment are identified.	
	responsibility within team	2.2	Roles and responsibility of other team members are identified and recognized.
		2.3	Reporting relationships within team and external to team are identified.
3.	3. Work as a team member		Effective and appropriate forms of communications used and interactions undertaken with team members who contribute to known team activities and objectives.
		3.2	Effective and appropriate contributions made to complement team activities and objectives, based on individual skills and competencies and <i>workplace context.</i>
		3.3	Observed protocols in reporting using standard operating procedures.
		3.4	Contribute to the development of team work plans based on an understanding of team's role and objectives and individual competencies of the members.

Variable	Range
Role and objective of team	 Work activities in a team environment with enterprise or specific sector Limited discretion, initiative and judgment maybe demonstrated on the job, either individually or in a team environment

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Sources of information	 Standard operating and/or other workplace procedures Job procedures Machine/equipment manufacturer's specifications and instructions Organizational or external personnel Client/supplier instructions Quality standards OHS and environmental standards
Workplace context	 Work procedures and practices Conditions of work environments Legislation and industrial agreements Standard work practice including the storage, safe handling and disposal of chemicals Safety, environmental, housekeeping and quality guidelines

Evidence Guide	
Critical Aspects of competence	 Assessment requires evidence that the candidate: Operated in a team to complete workplace activity Worked effectively with others Conveyed information in written or oral form Selected and used appropriate workplace language Followed designated work plan for the job Reported outcomes
Underpinning Knowledge and Attitude	 Demonstrates knowledge of: Communication process Team structure Team roles Group planning and decision making
Underpinning Skills	 Demonstrates skills to: Communicate appropriately, consistent with the culture of the workplace
Resource Implications	 The following resources must be provided: Access to relevant workplace or appropriately simulated environment where assessment can take place
Methods of Assessment	Competence may be assessed through:Interview/ Written TestObservation/Demonstration with Oral Questioning
Context for Assessment	Competence may be assessed in workplace or in a simulated workplace setting.

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Occupational Standard: Power Transmission, Distribution, Inspection and Maintenance Level II		
Unit Title	Participate in Workplace Communication	
Unit Code	EIS TDM2 23 0612	
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to gather, interpret and convey information in response to workplace requirements.	

Elements		Performance Criteria
1.	Obtain and convey	1.1 Specific and relevant information is accessed from <i>appropriate sources</i>
	workplace information	1.2 Effective questioning , active listening and speaking skills are used to gather and convey information
		1.3 Appropriate <i>medium</i> is used to transfer information and ideas
		1.4 Appropriate non- verbal communication is used
		1.5 Appropriate lines of communication with supervisors and colleagues are identified and followed
		1.6 Defined workplace procedures for the location and <i>storage</i> of information are used
		1.7 Personal interaction is carried out clearly and concisely
2.	Participate in	2.1 Team meetings are attended on time
	workplace meetings and discussions	2.2 Own opinions are clearly expressed and those of others are listened to without interruption
	013003310113	2.3 Meeting inputs are consistent with the meeting purpose and established protocols
		2.4 Workplace interactions are conducted in a courteous manner
		2.5 Questions about simple routine workplace procedures and matters concerning working conditions of employment are asked and responded to.
		2.6 Meetings outcomes are interpreted and implemented
3.	Complete relevant work	3.1 Range of <i>forms</i> relating to conditions of employment are completed accurately and legibly
	related documents	3.2 Workplace data is recorded on standard workplace forms and documents
		3.3 Basic mathematical processes are used for routine calculations

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3.4 Errors in recording information on forms/ documents are identified and properly acted upon			
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3.5 Reporting requirements to supervisor are completed according to organizational guidelines			

Variable	Range
Appropriate	Team members
sources	Suppliers
	Trade personnel
	Local government
	Industry bodies
Medium	Memorandum
	Circular
	Notice
	Information discussion
	Follow-up or verbal instructions
Charace	Face to face communication
Storage	Manual filing system
	Computer-based filing system
Forms	Personnel forms, safety reports
vvorkplace	Face to face
Interactions	I elephone
	Electronic and two way radio
	Written including electronic, memos, instruction and forms,
Drotocolo	non-verbal including gestures, signals, signs and diagrams
PTOLOCOIS	Observing meeting Compliance with monthing decisions
	Compliance with meeting decisions
	Obeying meeting instructions

Evidence Guide	
Critical Aspects of Competence	 Assessment requires evidence that the candidate: Prepared written communication following standard format of the organization Accessed information using communication equipment Made use of relevant terms as an aid to transfer information effectively Conveyed information effectively adopting the formal or
Underpinning Knowledge and Attitudes	 Demonstrates knowledge of: Effective communication Different modes of communication Written communication
	Organizational policies

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	Communication procedures and systems
	 Technology relevant to the enterprise and the individual's work responsibilities
Underpinning	Demonstrates skills to:
Skills	 Follow simple spoken language
	 Perform routine workplace duties following simple written notices
	 Participate in workplace meetings and discussions
	 Complete work related documents
	• Estimate, calculate and record routine workplace measures
	• Basic mathematical processes of addition, subtraction,
	division and multiplication
	 Ability to relate to people of social range in the workplace
	 Gather and provide information in response to workplace Requirements
Resource	The following resources must be provided:
Implications	Fax machine
	Telephone
	Writing materials
	Internet
Methods of	Competence may be assessed through:
Assessment	Interview/Written Test
	Observation/Demonstration with Oral Questioning
Context of	Competence may be assessed individually in the actual
Assessment	workplace or through accredited institution.

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Occupational Standard: Power Transmission, Distribution, Inspection and Maintenance Level II		
Unit Title	Develop Business Practice	
Unit Code	EIS TDM2 24 0612	
Unit Descriptor	This unit of competence specifies the outcomes required to establish a business operation from a planned concept. It includes researching the feasibility of establishing a business operation, planning the setting up of the business, implementing the plan and reviewing operations once commenced.	

Elements	Performance Criteria		
1. Identify	1.1	Business opportunities are investigated and identified	
business opportunity	1.2	Feasibility study is undertaken to determine likely business viability	
	1.3	Market research on product or service is undertaken	
	1.4	Assistance with feasibility study of <i>specialist and</i> <i>relevant parties</i> is sought as required	
	1.5	Impact of emerging or changing technology including e- commerce, on business operations are evaluated	
	1.6	Practicability of business opportunity assessed in line with perceived risks, returns sought and resources available	
	1.7	Business plan for operation is completed	
2. Identify personal business skills	2.1	Financial and business skills available are identified and taken into account when business opportunities are researched	
	2.2	Personal skills/attributes are assessed and matched against those perceived as necessary for a particular business opportunity	
	2.3	Business risks are identified and assessed according to resources available and personal preferences	
3. Plan for establishment of business operation	3.1	Business structure and operations are determined and documented	
	3.2	Procedures to guide operations are developed and documented	
	3.3	Financial backing for business operation is secured	
	3.4	Business legal and regulatory requirements are identified and complied	

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	3.5	Human and physical resources required to commence business operation are determined
	3.6	Recruitment strategies are developed and implemented
4. Implement	4.1	Marketing of business operation is undertaken
establishment plan	4.2	Physical and human resources to implement business operation are obtained
	4.3	Operational unit to support and coordinate business operation is established
	4.4	Monitoring process for managing operation is developed and implemented
	4.5	Legal documents are carefully maintained and relevant records are kept and updated to ensure validity and accessibility
	4.6	Contractual procurement rights for goods and services including <i>contracts with relevant people</i> , negotiated and secured as required in accordance with the business plan
	4.7	Options for leasing/ownership of business premises identified and contractual arrangements completed in accordance with the business plan
5. Review implementatio n process	5.1	Review process for implementation of business operation is developed and implemented
	5.2	Improvements in business operation and associated management process are identified
	5.3	Identified improvements are implemented and monitored for effectiveness
	5.4	Necessary documentation is completed and records organized and kept securely.

Variable		Range		
Business opportunitie maybe influenced b	es by:	 expected financial viability skills of operator amount and types of finance available returns expected or required by owners likely return on investment finance required 		
IITESTYle Issues Business viability may include:		unities available competition cyclical considerations vailable		
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	 resources available
	 location and/ or premises available
	 risk related to a particular business opportunity, especially
	 in regard to Occupational Health and Safety and
	environmental considerations
Specialist and	Chamber of commerce
relevant parties	• Financial planners and financial institution representatives,
	business planning specialists and marketing specialists
	accountants
	 lawyers and providers of legal advice
	government agencies
	 industry/trade associations
	online gateways
	 business brokers/business consultants
Human and	software and hardware
physical	office premises
resources may	 communications equipment
include:	 specialist services through outsourcing, contracting and
	• consultancy
	• staff
	vehicles
Personal	 technical and/ or specialist skills
skills/attributes	 business knowledge and skills
may include:	entrepreneurship
	 willingness to take risks
Business risks	 occupational health and safety and environmental
may be affected	considerations
by and may	 relevant legislative requirements
include but are	 security of investment
not restricted to:	market competition
	 security of premises/ location
	 supply and demand
	resources available
Resources may	• staff
include:	• money
	• time
	equipment
	• space
Operational unit	• office location staffed with required personnel and equipped
refers to:	to service and support business
	 home-based site or other location such as leased or owned
	property
Legal documents	• partnership agreements, constitution documents, statutory
may include:	books for companies (Register of Members, Register of
	Directors and Minute Books), Certificate of Incorporation,
Legal documents may include:	 ottice location statted with required personnel and equipped to service and support business home-based site or other location such as leased or owned property partnership agreements, constitution documents, statutory books for companies (Register of Members, Register of Directors and Minute Books), Certificate of Incorporation,

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	Franchise Agreements and financial documentation,
	 recordkeeping including personnel, financial, taxation, OHS and environmental
Contracts with relevant people may include:	• owners, suppliers, employees, landlords, agents, distributors, customers or any person with whom the business has, or seeks to have, a performance-based relationship

Evidence G	Buide			
Critical Aspo of Compete	ects A person nce • that imple busine imple • the at likely taking resou	n must be able to provide evidence: a business operation has been planne- mented from initial research into feasibility ess and completion of the plan, throu- menting the plan and commencing operations bility to evaluate the results of research and ass viability and practicability of a business oppo- plinto account the current business/market clima- rces available	d and of the ugh to ess the ortunity, ate and	
Underpinnir Knowledge Attitudes	ng Demons and Peder affect occup oppor • Techr opera • Finan • Busin • Relev conce • Metho comp • Forms • Servio • Plann • Adver • Finan • Legal • Recor • Opera	trate knowledge on: al and regional government legislative requir ing business operations, especially in reg bational health and safety (OHS), equal empl tunity (EEO), industrial relations and anti-discrim- nical or specialist skills relevant to the bu- tion cing options ess systems and operations ant marketing, management, sales and fi- pts ods for researching business opportunities ples of risk management relevant to the business ods of identifying relevant specialist service lement the business ing and control systems ces available and charges ing and control systems (sales, tising and promotion, distribution and logistics cial recording systems rights and responsibilities rd keeping duties ational factors relating to the business (provi- asional services, products) atrate skills of:	ements ard to oyment ination usiness inancial ces to sion of	
Skills	 Litera policie Market 	 Literacy skills to interpret legal requirements, company policies and procedures and immediate, day-to-day demands Marketing skills 		
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	 Business planning skills Entrepreneurial skills Problem-solving skills OHS skills Time management skills Belief in services and products offered by the business Communication skills including questioning, clarifying, reporting, and giving and receiving constructive feedback Technical and analytical skills to interpret business documents, 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 Literacy skills for data analysis to aid research Research skills to identify a business opportunity and to conduct a feasibility study Analytical skills to assess personal attributes and to identify business risks Observation skills for identifying appropriate people.
	 Observation skills for identifying appropriate people, resources and to monitor work
Resource Implications	The following resources should be provided:Access to relevant workplace documentation, financial records, and equipment
Methods of Assessment	Competence may be assessed through:Interview / Written TestObservation/Demonstration with Oral questioning
Context for Assessment	Competence may be assessed in the workplace or in a simulated work environment.

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



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

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