

Level 2 Diploma in Electrical Power Engineering (2304-21)

June 2021 Version 1.2

Unit Pack

Qualification at a glance

Subject area	Electrical Power Engineering
City & Guilds number	2304
Age group approved	16+
Entry requirements	None
Assessment	Portfolio of evidence
Approvals	Auto
Support materials	Centre handbook Unit Pack
Registration and certification	Consult the Walled Garden/Online Catalogue for last dates

Title and level	City & Guilds number	Accreditation number
Diploma in Electrical Power Engineering at Level 2	2304-21	603/7184/5

Version and date	Change detail	Section
1.0 February 2021	First published	
1.1 22 February 2021	QAN added Credit from SCQF structures removed	Page 2 All units 1
1.2 June 2021	Added polymeric straight joint to AC3.1	Unit 220

Contents

Qualification at a glance	2	
Contents	3	
1 Units	5	
Availability of units	5	
Unit 201	Working safely in the power sector	6
Unit 202	Working efficiently and effectively in the power sector	10
Unit 203	Using and communicating technical information in the power sector	13
Unit 204	Install overhead steelwork, fittings and conductors on wood pole structures	16
Unit 205	Dismantle overhead steelwork, fittings and conductors on wood pole structures	19
Unit 206	Install and configure distribution apparatus on wood pole structures	22
Unit 207	Fault repair of overhead line distribution assets	25
Unit 208	Live low voltage distribution work	28
Unit 209	Install and replace fittings on steel tower structures	31
Unit 210	Install extra high voltage conductors on steel tower structures	34
Unit 211	Dismantle extra high voltage conductors on steel tower structures	37
Unit 212	Maintain apparatus on steel tower structures	40
Unit 213	Install distribution substation plant and apparatus	43
Unit 214	Dismantle distribution substation plant and apparatus	46
Unit 215	Maintain distribution substation plant and apparatus	49
Unit 216	Install primary and extra high voltage substation plant and apparatus	52
Unit 217	Dismantle primary and extra high voltage substation plant and apparatus	55
Unit 218	Maintain primary and extra high voltage substation plant and apparatus	58
Unit 219	Fault repair of distribution and high voltage substation plant and apparatus	61
Unit 220	Service jointing on low voltage underground cables	64
Unit 221	Jointing and termination of low voltage mains underground cables	67
Unit 222	Jointing and termination of high voltage (up to 25 kV) underground cables	70
Unit 223	Repairs to faulted or damaged low voltage service and mains cables (non-diagnosis)	73
Unit 224	Repairs to faulted or damaged high voltage cables (non-diagnosis)	76

Unit 225	Movement of cable, plant and apparatus	79
Unit 226	Access, egress and movement in substations	82
Unit 227	Electrical and functional testing of fitting plant and apparatus	85
Unit 228	Inspection and maintenance of battery systems	88
Unit 229	Substation earthing installation and testing	91
Unit 230	Inspection of substation plant and apparatus	94
Unit 231	Maintain compressed air systems	97
Unit 232	Location and identification of underground utility services	100
Unit 233	Access egress and movement within the working area	103
Unit 234	Electrical testing of underground cables and apparatus	106
Unit 235	Carry out excavation activities on underground cables	109
Unit 236	Inspect the installation of underground cables	112
Unit 237	Install underground cables	115
Unit 238	Carry out jointing on pilot/telephone cables	118
Unit 239	Carry out jointing on low voltage concentric cables	121
Unit 240	Carry out jointing on low voltage consac cables	124
Unit 241	Movement of overhead line plant and apparatus	127
Unit 242	Access and egress and work on wood pole structures	130
Unit 243	Access and egress and work on steel tower structures	133
Unit 244	Excavate and install distribution wood poles and stays	136
Unit 245	Electrical testing of overhead line distribution equipment	139
Unit 246	Inspection of overhead line wood pole networks	142
Unit 247	Earthing of overhead line conductors on steel tower structures	145
Unit 248	Jointing of overhead line extra high voltage conductors	148
Appendix 1	Sources of general information	151

1 Units

Availability of units

All units will follow.

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is designed to ensure that operatives working within an electrical power engineering environment apply safe working practices in accordance with company procedures and legislative requirements.</p> <p>By completing this unit, learners will demonstrate competence in:</p> <ul style="list-style-type: none">• recognising hazards and risks• demonstrating understanding of a range of information sources supporting safe working practices• recognising the range of Personal Protective Equipment relevant to the task being completed• taking appropriate action in the event of emergencies• working safely and maintain a safe working environment
Assessment criteria:	To perform effectively in this unit, learners need to evidence competent performance criteria through completion of the mandatory and optional skill-based unit on two separate occasions.

Learning outcomes:

The learner will be able to:

1. recognise hazards and risks
2. demonstrate understanding of a range of information sources supporting safe working practices
3. recognise the range of Personal Protective Equipment relevant to the task being completed
4. take appropriate action in the event of emergencies
5. work safely and maintain a safe working environment
6. demonstrate an understanding of lifting techniques
7. demonstrate an understanding of relevant health and safety legislation and procedures
8. demonstrate an understanding of relevant health and safety work practices

Learning outcome:

The learner will be able to:

1. recognise hazards and risks

The learner can:

- 1.1 identify hazards and risks and take appropriate action, **all** of the following **must** be included:
 - a. environment
 - b. use of tools and equipment
 - c. materials and substances
 - d. electrical working practices

Learning outcome:

The learner will be able to:

2. demonstrate understanding of a range of information sources supporting safe working practices

This means you:

- 2.1 work in accordance with approved procedures. Evidence must include a minimum of **two** of the following:
 - a. operating procedures
 - b. method statements
 - c. COSHH statements
 - d. Health & Safety at Work Act 1974
- 2.2 identify and comply with safety signs and labels
- 2.3 work in accordance with requirements of risk assessments

Learning outcome:

The learner will be able to:

3. recognise the range of personal protective equipment relevant to the task being completed

The learner can:

- 3.1 select appropriate personal protective equipment
- 3.2 carry out agreed pre-use checks on personal protective equipment
- 3.3 use personal protective equipment in accordance with company instructions
- 3.4 store personal protective equipment in accordance with agreed procedure

Learning outcome:

The learner will be able to:

4. take appropriate action in the event of emergencies

The learner can:

- 4.1 identify qualified first aiders or appointed person
- 4.2 locate first aid facilities
- 4.3 respond in accordance with company procedure to emergency situations e.g. injury to self or others, fire
- 4.4 report accidents, injuries, hazardous or dangerous occurrences to appropriate personnel

Learning outcome:

The learner will be able to:

5. work safely and maintain a safe working environment

The learner can:

- 5.1 establish and maintain appropriate access and egress routes to working locations
- 5.2 store resources safely, all of the following **must** be included:
 - a. tools
 - b. equipment
 - c. materials
- 5.3 use resources safely and for the purpose intended, all of the following **must** be included:
 - a. tools
 - b. equipment
 - c. materials
- 5.4 dispose of hazardous substances/waste materials in accordance with approved company procedures

Knowledge and understanding:

Learning outcome:

To perform effectively in this unit, you need to have evidence in the following areas.

6. general

- 6.1 the main principles of health and safety and environmental legislation and regulations
- 6.2 the company reporting procedures and authorisation roles and responsibilities
- 6.3 define company policies and procedures that directly impact on the work to be undertaken

Learning outcome

To perform effectively in this unit, you need to have evidence in the following area.

7. Work area

- 7.1 the company procedures and processes for reporting problems with tools and equipment
- 7.2 how to read and interpret procedures and information sources used to ensure that tools and equipment are safe and fit for purpose
- 7.3 what processes and procedures to be followed when inspecting and preparing tools and equipment prior to use
- 7.4 read and interpret instructions on how to use tool and equipment safely and the processes and requirements for undertaking routine checks
- 7.5 what personal protective equipment needs to be worn when undertaking work activities
- 7.6 what materials and substances are dangerous and hazardous to health
- 7.7 how to maintain safe working and environmental practices throughout the duration of work operations
- 7.8 how to minimise risks to self and others when undertaking work activities
- 7.9 work authorisation documentation and permits to work procedures
- 7.10 company work instructions, information and reporting systems
- 7.11 how to respond to different types and categories of emergency situations that might occur
- 7.12 what handling techniques and equipment to be adopted when earthing plant and apparatus
- 7.13 know what the tools, techniques and processes used when earthing plant and apparatus
- 7.14 what different access arrangements need to be complied within different areas

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is designed to ensure that operatives working within an electrical power engineering environment apply effective and efficient working practices in accordance with company procedures.</p> <p>By completing this unit, learners will demonstrate competence in:</p> <ul style="list-style-type: none"> • applying appropriate planning processes whilst preparing to complete allocated tasks • maintaining effective and efficient working practices whilst completing allocated tasks • recognising problems or areas for improvement and respond appropriately • creating and maintain effective working relationships • contribute to own development programme
Assessment criteria:	To perform effectively in this unit, learners need to evidence competent performance criteria through completion of the mandatory and optional skill-based unit on two separate occasions.

Learning outcomes:

The learner will be able to:

1. apply appropriate planning processes whilst preparing to complete allocated tasks
2. maintain effective and efficient working practices whilst completing allocated tasks
3. recognise problems or areas for improvement and respond appropriately
4. create and maintain effective working relationships

Learning outcome:

The learner will be able to:

1. apply appropriate planning processes whilst preparing to complete allocated tasks

Assessment criteria

The learner can:

- 1.1 select appropriate resources and ensure suitability. Evidence must include a minimum of **two** of the following:
 - a. tools
 - b. equipment
 - c. materials
 - d. PPE
 - 1.2 prepare working area
 - 1.3 obtain authorisation to complete work operations
-

Learning outcome:

The learner will be able to:

2. maintain effective and efficient working practices whilst completing allocated tasks

Assessment criteria

The learner can:

- 2.1 adhere to all approved practices whilst completing allocated tasks
 - 2.2 return information sources to designated personnel on completion of activities
 - 2.3 return resources to designated locations on completion of activities
-

Learning outcome:

The learner will be able to:

3. recognise problems or areas for improvement and respond appropriately

Assessment criteria

The learner can:

- 3.1 recognise and respond to problems or areas for improvement within the engineering environment and report to the appropriate person. Problems relating to **two** of the following must be evidenced:
 - a. materials
 - b. tools and equipment
 - c. information sources
 - d. people
 - e. safety procedures
 - f. workmanship
 - g. time
 - h. weather
-

Learning outcome:

The learner will be able to:

4. Create and maintain effective working relationships

Assessment criteria

The learner can:

- 4.1 dress appropriately for the working activity
 - a. communicate effectively with at least **one** of the following colleagues
 - b. line managers
 - c. members of the public
- 4.2 resolve issues/problems amicably and through appropriate channels

Unit 203

Using and communicating technical information in the power sector

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is designed to ensure that operatives working within the electrical power engineering environment are able to (i) identify and interpret information contained in written, diagrammatic and pictorial sources, and (ii) produce and communicate this information to other parties.</p> <p>By completing this unit, learners will demonstrate competence in:</p> <ul style="list-style-type: none">• recognising information sources• obtaining information contained in information sources• recording and communicating technical information
Assessment criteria:	To perform effectively in this unit, learners need to evidence competent performance criteria through completion of the mandatory and optional skill-based unit on two separate occasions.

Learning outcomes:

The learner will be able to:

1. recognise information sources
2. obtain information contained in information sources
3. record and communicate technical information
4. interpret technical information

Learning outcome:

The learner will be able to:

1. recognise information sources

Assessment criteria

The learner can:

- 1.1 identify written information sources. Evidence **must** include a minimum of **three** of the following:
 - a. job instructions
 - b. test schedules
 - c. company information
 - d. material specifications
 - e. reference table/chart
 - f. planning documentation
 - g. operating sheets
 - h. process specification
 - i. risk assessments
 - j. method statements
- 1.2 identify diagrammatic/pictorial information sources. Evidence **must** include a minimum of **two** of the following:
 - a. detailed component drawings
 - b. general assembly drawings
 - c. repair drawings
 - d. wiring/circuit diagrams
 - e. installation drawings
 - f. approved sketches
 - g. illustrations
 - h. visual display screens
 - i. modification drawings
 - j. sub-assembly drawings
 - k. schematic drawings
 - l. fabrication drawings
 - m. operational diagrams
 - n. physical layouts
 - o. manufacturers manuals/drawings
 - p. photographic representations

Learning outcome:

The learner will be able to:

2. obtain information contained in information sources

Assessment criteria

The learner can:

- 2.1 describe Identify required resources to complete allocated tasks from interpretation of information sources, minimum of **one** of the following **must** be included:
 - a. tools
 - b. equipment
 - c. materials

- d. PPE
 - 2.2 determine from information sources. Evidence of a minimum of **one** of the following **must** be included:
 - a. dimensions
 - b. installation process
 - c. connections to be made
 - d. assembly sequence
 - e. operations required
 - f. test points to be used
 - g. job duration
 - 2.3 report to the appropriate person where inconsistencies or inaccuracies in information sources are identified
-

Learning outcome:

The learner will be able to:

- 3. record and communicate technical information

Assessment criteria

The learner can:

- 3.1 complete/produce documentation to communicate information and/or to record activities completed; Evidence **must** include minimum of **one** of the following:
 - a. fully detailed sketch of work/circuits required or completed
 - b. planning documentation
 - c. resource requisitions
 - d. data from completed testing activities
 - e. risk assessment
 - f. training records
 - g. reporting problems/areas for improvement
-

Knowledge and understanding

To perform effectively in this unit, learners need to have evidence in the following

Learning outcome:

- 4. Work area

- 4.1 how to recognise and report inaccurate and incorrect work instructions and documentation

Unit 204

Install overhead steelwork, fittings and conductors on wood pole structures

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is about installing overhead steelworks, fittings and conductors on wood pole structures in an electrical power engineering environment. It involves completing installation activities in a rigorous and methodical manner and the following of processes and procedures to make sure that the finishes work meets the quality assurance and operating specifications set by the organisation.</p> <p>By completing this unit you show you are competent to:</p> <ul style="list-style-type: none">• plan to install steelworks, fittings and conductors on wood pole structures• prepare to install steelworks, fittings and conductors on wood pole structures• install steelworks, fittings and conductors on wood pole structures• use and communicate data and information• resolve problems effectively and efficiently
Assessment criteria:	To achieve this unit, learners are required to evidence competence in the following performance-based assessment criteria.

Learning outcomes:

The learner will be able to:

1. plan for work activities to install overhead steelwork, fittings and conductors on wood pole structures
2. prepare resources to install overhead steelwork, fittings and conductors on wood pole structures
3. carry out the installation of overhead steelwork, fittings and conductors on wood pole structures

Learning outcome:

The learner will be able to:

1. plan for work activities to install overhead steelwork, fittings and conductors on wood pole structures

Assessment criteria

The learner can:

- 1.1 identify the correct work location using available information
 - 1.2 conduct a site-specific risk assessment, completing required documentation, in accordance with health and safety regulations
 - 1.3 plan work to be undertaken to comply with company procedures in accordance with risk the assessment, taking into account factors such as location, content, sequence of tasks and personnel
 - 1.4 inform all affected parties of intended work plans, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

2. prepare resources to install overhead steelwork, fittings and conductors on wood pole structures

Assessment criteria

The learner can:

- 2.1 select, inspect and wear personal protective equipment (PPE) compatible with the work plan, risk assessment and health and safety regulations
 - 2.2 select and prepare tools and equipment compatible with the work plan and risk assessment
 - 2.3 check tools and equipment are fit for purpose to carry out the identified work in accordance with company procedures
 - 2.4 select, inspect and prepare suitable access and egress equipment to carry out the identified work in accordance with company procedures
 - 2.5 identify the structure to be worked on and carry out a pre work inspection, reporting identified defects in accordance with company procedures
 - 2.6 apply appropriate control measures in accordance with risk assessment requirements and company procedures (e.g. person in attendance when working at height, control/removal of hazards, rescue equipment available, identification of isolation/earthing points)
 - 2.7 report faults with tools, equipment and PPE, including that which is unavailable, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

3. carry out the installation of overhead steelwork, fittings and conductors on wood pole structures

Assessment criteria

The learner can:

- 3.1 install all steelwork and fittings safely and effectively in accordance with company procedures. Evidence **must** include a minimum of **two** of the following:
 - a. intermediate pole
 - b. angle pole
 - c. section pole
-

- d. terminal pole
 - 3.2 fit and secure conductors to insulators safely and effectively in accordance with company procedures on a minimum of **two** of the following:
 - a. intermediate pole
 - b. angle pole
 - c. section pole
 - d. terminal pole
 - 3.3 check the finished product meets company standards and is compliant with required specifications
 - 3.4 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person; evidence to include **one** of the following problems:
 - a. equipment use
 - b. environmental conditions
 - c. material condition
 - d. resources
 - e. effects of other people
 - 3.5 work throughout the duration of operations in accordance with safe working and environmental practices, company procedures and health and safety regulations and environmental legislation
 - 3.6 confirm the completion of the work activity with relevant parties in accordance with company procedures
 - 3.7 ensure all tools and equipment are stored safely and appropriately in accordance with company procedures
 - 3.8 ensure hazardous/non-hazardous waste materials are dealt with and disposed of in accordance with company and statutory procedures
 - 3.9 ensure the work area is left in a safe and tidy condition compatible with company procedures
-

Additional requirements:

To complete this unit, the learner must also:

- carry out the tensioning and termination of conductors on **two** occasions
- install tension joints to connect conductors on **two** occasions
- install non-tension joints to connect conductors on **two** occasions

Unit 205

Dismantle overhead steelwork, fittings and conductors on wood pole structures

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is about dismantling overhead steelworks, fittings and conductors on wood pole structures in an electrical power engineering environment. It involves the rigorous and methodical following of processes and procedures to make sure that the completed work meets the quality assurance and operating specifications set by the organisation. It also involves using a range of tools and equipment and the wearing of Personal Protective Equipment whilst carrying out the work.</p> <p>By completing this unit, learners will demonstrate competence in:</p> <ul style="list-style-type: none">• planning to dismantle steelworks, fittings and conductors on wood pole structures• preparing to dismantle steelworks, fittings and conductors on wood pole structures• dismantling steelworks, fittings and conductors on wood pole structures• using and communicating data and information• resolving problems effectively and efficiently
Assessment criteria:	To achieve this unit, learners are required to evidence competence in the following performance-based assessment criteria.

Learning outcomes:

The learner will be able to:

1. plan for work activities to dismantle overhead steelwork, fittings and conductors on wood pole structures
2. demonstrate Prepare resources to dismantle overhead steelwork, fittings and conductors on wood pole structures
3. carry out the dismantlement of overhead steelwork, fittings and conductors on wood pole structures

Learning outcome:

The learner will be able to:

1. plan for work activities to dismantle overhead steelwork, fittings and conductors on wood pole structures

Assessment criteria

The learner can:

- 1.1 identify the correct work location using available information
- 1.2 conduct a site-specific risk assessment, completing required documentation, in accordance with health and safety regulations
- 1.3 plan work to be undertaken to comply with company procedures in accordance with the risk assessment, taking into account factors such as location, content, sequence of tasks and personnel
- 1.4 inform all affected parties of intended work plans, in accordance with company procedures

Learning outcome:

The learner will be able to:

2. prepare resources to dismantle overhead steelwork, fittings and conductors on wood pole structures

Assessment criteria

The learner can:

- 2.1 select, inspect and wear personal protective equipment (PPE) compatible with the work plan, risk assessment and health and safety regulations
- 2.2 select and prepare tools and equipment compatible with the work plan and risk assessment
- 2.3 check tools and equipment are fit for purpose to carry out the identified work in accordance with company procedures
- 2.4 select, inspect and prepare suitable access and egress equipment to carry out the identified work in accordance with company procedures
- 2.5 identify the structure to be worked on and carry out a pre work inspection, reporting identified defects in accordance with company procedures
- 2.6 apply appropriate control measures in accordance with risk assessment requirements and company procedures (e.g. person in attendance when working at height, control/removal of hazards, rescue equipment available, identification of isolation/earthing points)
- 2.7 report faults with tools, equipment and PPE, including that which is unavailable, in accordance with company procedures

Learning outcome:

The learner will be able to:

3. carry out the dismantlement of overhead steelwork, fittings and conductors on wood pole structures
-

Assessment criteria

The learner can:

- 3.1 de-tension and lower conductors safely and effectively ensuring any stored energy is released in a controlled manner on a minimum of **two** different wood pole constructions
- 3.2 dismantle and remove all identified steelwork and fittings safely and effectively in accordance with work plans, risk assessments and company procedures on a minimum of **two** different wood pole constructions
- 3.3 check the finished product is compliant with the required work specification
- 3.4 identify and store safely re-usable plant, apparatus and components in a designated area
- 3.5 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person; evidence to include a minimum of **one** of the following problems:
 - a. equipment use
 - b. environmental conditions
 - c. material condition
 - d. resources
 - e. effects of other people
- 3.6 work throughout the duration of operations in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
- 3.7 confirm the completion of the work activity with relevant parties in accordance with company procedures
- 3.8 ensure all tools and equipment are stored safely and appropriately in accordance with company procedures
- 3.9 ensure hazardous/non-hazardous waste materials are dealt with and disposed of in accordance with company and statutory procedures
- 3.10 ensure the work area is left in a safe and tidy condition compatible with company procedures

Unit 206

Install and configure distribution apparatus on wood pole structures

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is about installing and configuring distribution apparatus on wood pole structures in an electrical power engineering environment. It includes the processes and procedures to be followed to make sure that the plant and apparatus to be configured meets the quality assurance and operating specifications set by the organisation.</p> <p>By completing this unit, learners will demonstrate competence in:</p> <ul style="list-style-type: none">• planning to install and configure distribution apparatus at height on wood pole structures• preparing to install and configure distribution apparatus at height on wood pole structures• installing and configuring distribution apparatus at height on wood pole structures• using and communicating data and information• resolving problems effectively and efficiently
Assessment criteria:	To achieve this unit, learners are required to evidence competence in the following performance-based assessment criteria.

Learning outcomes:

The learner will be able to:

1. plan for work activities to install and configure overhead line apparatus at height on wood pole structures
2. prepare resources to install and configure overhead line apparatus at height on wood pole structures
3. carry out the installation and configure overhead line apparatus at height on wood pole structures

Learning outcome:

The learner will be able to:

1. plan for work activities to install and configure overhead line apparatus at height on wood pole structures

Assessment criteria

The learner can:

- 1.1 identify the correct work location using available information
 - 1.2 conduct a site-specific risk assessment, completing the required documentation, in accordance with health and safety regulations
 - 1.3 plan work to be undertaken to comply with company procedures in accordance with the risk assessment, taking into account factors such as location, content, sequence of tasks and personnel
 - 1.4 inform all affected parties of intended work plans, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

2. prepare resources to install and configure overhead line apparatus at height on wood pole structures

Assessment criteria

The learner can:

- 2.1 select, inspect and wear personal protective equipment (PPE) compatible with the work plan, risk assessment and health and safety regulations
 - 2.2 select and prepare tools and equipment compatible with the work plan and risk assessment
 - 2.3 check tools and equipment are fit for purpose to carry out the identified work in accordance with company procedures
 - 2.4 select, inspect and prepare suitable access and egress equipment to carry out the identified work in accordance with company procedures
 - 2.5 identify the structure to be worked on, including points of isolation and earthing arrangements
 - 2.6 carry out a pre work inspection of the structure, reporting identified defects in accordance with company procedures
 - 2.7 apply appropriate control measures in accordance with risk assessment requirements and company procedures (e.g. person in attendance when working at height, control/removal of hazards, rescue equipment available)
 - 2.8 report faults with tools, equipment and PPE, including that which is unavailable, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

3. carry out the installation and configure overhead line apparatus at height on wood pole structures
-

Assessment criteria

The learner can:

- 3.1 perform the installation and securing of the plant and apparatus in accordance with work plan, risk assessment and company procedures on a minimum of **two** different types of plant e.g. ABSD, auto recloser, HV fuses, cable termination, sectionaliser, transformer
- 3.2 carry out the connection of the plant in accordance with company procedures and specifications
- 3.3 check the finished product is compliant with maintenance specifications and work instruction requirements
- 3.4 perform testing procedures in accordance with company procedures to ensure the completed installation meets company requirements, where applicable
- 3.5 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person; evidence to include a minimum of **one** of the following problems:
 - a. plant/apparatus
 - b. environmental conditions
 - c. structure condition
 - d. effects of other people
 - e. electrical connections
- 3.6 work throughout the duration of operations in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
- 3.7 confirm the completion of the work activity with relevant parties in accordance with company procedures
- 3.8 ensure all tools and equipment are stored safely and appropriately in accordance with company procedures
- 3.9 ensure waste materials are dealt with and disposed of in accordance with company and statutory procedures
- 3.10 ensure the work area is left in a safe and tidy condition compatible with company procedures

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is about repairing faults of overhead line distribution assets in an electrical power engineering environment. It involves following routine fault rectification and repair procedures. It also involves inspecting the finished repair and rectification work to make sure it operates in a manner that meets operating specifications and quality standards and criteria set by the organisation.</p> <p>By completing this unit, learners will demonstrate competence in:</p> <ul style="list-style-type: none"> • planning to repair faults of overhead line assets at height • preparing to repair faults of overhead line assets at height • repairing faults of overhead line assets at height • using and communicate data and information • resolving problems effectively and efficiently
Assessment criteria:	To achieve this unit, learners are required to evidence competence in the following performance-based assessment criteria.

Learning outcomes:

The learner will be able to:

1. plan for work activities to repair faults overhead line assets at height
2. prepare resources to repair faults overhead line assets at height
3. carry out the repair faults overhead line assets at height

Learning outcome:

The learner will be able to:

1. plan for work activities to repair faults overhead line assets at height

Assessment criteria

The learner can:

- 1.1 identify the correct work location using available information
- 1.2 conduct a site-specific risk assessment, completing required documentation, in accordance with health and safety regulations

- 1.3 plan work to be undertaken to comply with company procedures in accordance with the risk assessment, taking into account factors such as location, content, sequence of tasks and personnel
 - 1.4 inform all affected parties of intended work plans, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

2. prepare resources to repair faults overhead line assets at height

Assessment criteria

The learner can:

- 2.1 select, inspect and wear Personal Protective Equipment (PPE) compatible with the work plan, risk assessment and health and safety regulations
 - 2.2 select and prepare tools and equipment compatible with the work plan and risk assessment
 - 2.3 check tools and equipment are fit for purpose to carry out the identified work in accordance with company procedures
 - 2.4 select, inspect and prepare suitable access and egress equipment to carry out the identified work in accordance with company procedures
 - 2.5 identify the structure to be worked on and carry out a pre work inspection, reporting identified defects in accordance with company procedures
 - 2.6 apply appropriate control measures in accordance with risk assessment requirements and company procedures (e.g. person in attendance when working at height, control/removal of hazards, rescue equipment available, lighting, traffic control and identification of circuit isolation points)
 - 2.7 report faults with tools, equipment and PPE, including that which is unavailable, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

3. carry out the repair faults overhead line assets at height

Assessment criteria

The learner can:

- 3.1 carry out fault repair, safely and efficiently on identified asset in accordance with the work plan, risk assessment and company procedures for a minimum of **two** of the following jointing operations:
 - a. HV conductors
 - b. HV apparatus
 - c. LV mains conductors
 - d. LV apparatus
 - e. LV service conductors
 - f. LV service apparatus
-

- 3.2 check the finished product meets company specifications, using relevant testing procedures to confirm correct operation of equipment where applicable
- 3.3 report and record the repair in accordance with company procedures
- 3.4 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person; including a minimum of **one** of the following problems:
 - a. plant/apparatus
 - b. environmental conditions
 - c. structure condition
 - d. safety or earthing/bonding arrangements
 - e. effects of other people
- 3.5 work throughout the duration of operations in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
- 3.6 confirm the completion of the work activity with relevant parties in accordance with company procedures
- 3.7 ensure all tools and equipment are stored safely and appropriately in accordance with company procedures
- 3.8 ensure hazardous/non-hazardous waste materials are dealt with and disposed of in accordance with company and statutory procedures
- 3.9 ensure the work area is left in a safe and tidy condition compatible with company procedures

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is about live low voltage operations in an electrical power engineering environment. It involves inspecting the completed work to make sure it meets quality assurance and operating requirements. It also involves the following of procedures to ensure that safe working practices are adopted throughout the duration of the work.</p> <p>By completing this unit, learners will demonstrate competence in:</p> <ul style="list-style-type: none">• planning for work on live low voltage equipment at height• preparing resources for work on live low voltage equipment at height• performing work on live low voltage equipment at height• using and communicating data and information• resolving problems effectively and efficiently
Assessment criteria:	To achieve this unit, learners are required to evidence competence in the following performance-based assessment criteria.

Learning outcomes:

The learner will be able to:

1. plan for work activities to work on live low voltage equipment at height
2. prepare resources to work on live low voltage equipment at height
3. work on live low voltage equipment at height

Learning outcome:

The learner will be able to:

1. plan for work activities to work on live low voltage equipment at height

Assessment criteria

The learner can:

- 1.1 identify the correct work location using available information

- 1.2 conduct a site-specific risk assessment, completing required documentation, in accordance with health and safety regulations
 - 1.3 plan work to be undertaken to comply with company procedures in accordance with the risk assessment, taking into account factors such as location, content, sequence of tasks and personnel
 - 1.4 inform all affected parties of intended work plans, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

2. prepare resources to work on live low voltage equipment at height

Assessment criteria

The learner can:

- 2.1 select, inspect and wear Personal Protective Equipment (PPE) compatible with work plan, risk assessment and health and safety regulations
 - 2.2 select and prepare tools and equipment compatible with the work plan and risk assessment
 - 2.3 check tools and equipment are fit for purpose to carry out the identified work in accordance with company procedures
 - 2.4 select, inspect and prepare suitable access and egress equipment to carry out the identified work in accordance with company procedures
 - 2.5 identify the structure and apparatus to be worked on and carry out a pre work inspection, reporting identified defects in accordance with company procedures
 - 2.6 apply appropriate control measures in accordance with risk assessment requirements and company procedures (e.g. Identification of circuit isolation points, person in attendance when working at height, control/removal of hazards, shrouding, rescue equipment available, identification of circuit isolation points)
 - 2.7 report faults with tools, equipment and PPE, including that which is unavailable, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

3. work on live low voltage equipment at height

Assessment criteria

The learner can:

- 3.1 perform live work safely and efficiently in accordance with the work plan, risk assessment and company procedures for a minimum of **two** of the following LV configurations:
 - a. aerial bundled mains network
 - b. open wire mains network
 - c. service connections
 - d. under eaves wiring
 - 3.2 check the finished product meets company specifications, using relevant testing procedures to confirm correct operation of equipment where applicable
-

- 3.3 report and record the repair in accordance with company procedures where applicable
- 3.4 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person; including a minimum of **one** of the following problems:
 - a. environmental conditions
 - b. structure condition
 - c. phase rotation or polarity
 - d. voltage/current loading
 - e. effects of other people
- 3.5 work throughout the duration of operations in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
- 3.6 confirm the completion of the work activity with relevant parties in accordance with company procedures
- 3.7 ensure all tools and equipment are stored safely and appropriately in accordance with company procedures
- 3.8 ensure hazardous/non-hazardous waste materials are dealt with and disposed of in accordance with company and statutory procedures
- 3.9 ensure the work area is left in a safe and tidy condition compatible with company procedures

Unit 209

Install and replace fittings on steel tower structures

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is about installing and replacing fittings on steel tower structures in an electrical power engineering environment. It involves completing installation activities in a rigorous and methodical manner and the following processes and procedures to make sure that the finished work meets the quality assurance and operating specifications set by the organisation.</p> <p>By completing this unit, learners will demonstrate competence in:</p> <ul style="list-style-type: none">• planning to install/replace fittings on steel tower structures• preparing to install/replace fittings on steel tower structures• installing/replacing fittings on steel tower structures• using and communicating data and information• resolving problems effectively and efficiently
Assessment criteria:	To achieve this unit, learners are required to evidence competence in the following performance-based assessment criteria.

Learning outcomes:

The learner will be able to:

1. plan for work activities to install/replace fittings on steel tower structures
2. prepare resources to install/replace fittings on steel tower structures
3. carry out the installation/replacement of fittings on steel tower structures

Learning outcome:

The learner will be able to:

1. plan for work activities to install/replace fittings on steel tower structures

Assessment criteria

The learner can:

- 1.1 identify the correct work location using available information
 - 1.2 conduct a site-specific risk assessment, completing required documentation, in accordance with health and safety regulations
 - 1.3 plan work to be undertaken to comply with company procedures in accordance with the risk assessment, taking into account factors such as location, content, sequence of tasks and personnel
 - 1.4 inform all affected parties of intended work plans, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

2. prepare resources to install/replace fittings on steel tower structures

Assessment criteria

The learner can:

- 2.1 select, inspect and wear personal protective equipment (PPE) compatible with work plan, risk assessment and health and safety regulations
 - 2.2 identify the correct structure and circuit to be worked on, in accordance with company procedures and work plan
 - 2.3 confirm the system is safe to work on in accordance with company procedures
 - 2.4 select and prepare tools and equipment compatible with the work plan and risk assessment
 - 2.5 check tools and equipment are fit for purpose to carry out the identified work in accordance with company procedures
 - 2.6 select, inspect and prepare suitable access and egress equipment to carry out the identified work in accordance with company procedures
 - 2.7 perform a pre work inspection of the structure, reporting identified defects in accordance with company procedures
 - 2.8 apply appropriate control measures in accordance with risk assessment requirements and company procedures (e.g. person in attendance when working at height, control/removal of hazards, pennants/flags, rescue equipment available)
 - 2.9 report faults with tools, equipment and PPE, including that which is unavailable, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

3. carry out the installation/replacement of fittings on steel tower structures

Assessment criteria

The learner can:

- 3.1 ensure resources are raised, lowered and used safely in accordance with company procedures
 - 3.2 install and replace fittings in accordance with work plan, risk assessment and company procedures on a minimum of **two** different steel tower structures
-

- 3.3 Install and replace a minimum of two of the following:
 - a. vibration dampers
 - b. conductor spacers
 - c. tension insulators
 - d. suspension insulators
 - e. tower furniture
 - f. anti-climbing devices
 - g. suspension/tension fittings
 - h. tower steelwork
 - i. earth wire fitting
- 3.4 check the finished product for compliance with job requirements, referring to specifications where applicable
- 3.5 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person; including a minimum of one of the following problems:
 - a. equipment use
 - b. environmental conditions
 - c. material condition
 - d. resources
 - e. effects of other people
- 3.6 work throughout the duration of operations in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
- 3.7 confirm the completion of the work activity with relevant parties in accordance with company procedures
- 3.8 ensure all tools and equipment are stored safely and appropriately in accordance with company procedures
- 3.9 ensure hazardous/non-hazardous waste materials are dealt with and disposed of in accordance with company and statutory procedures
- 3.10 ensure the work area is left in a safe and tidy condition compatible with company procedures

Unit 210

Install extra high voltage conductors on steel tower structures

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is about installing EHV conductors on steel tower structures in an electrical power engineering environment. It involves completing installation activities in a rigorous and methodical manner and the following of processes and procedures to make sure that the finished work meets the quality assurance and operating specifications set by the organisation.</p> <p>By completing this unit, learners will demonstrate competence in:</p> <ul style="list-style-type: none">• planning to install transmission conductors on steel tower structures• preparing to install transmission conductors on steel tower structures• installing transmission conductors on steel tower structures• using and communicating data and information• resolving problems effectively and efficiently
Assessment criteria:	To achieve this unit, learners are required to evidence competence in the following performance-based assessment criteria.

Learning outcomes:

The learner will be able to:

1. plan for work activities to install transmission conductors on steel tower structures
 2. prepare resources to install transmission conductors on steel tower structures
 3. carry out the installation of transmission conductors on steel tower structures
-

Learning outcome:

The learner will be able to:

1. plan for work activities to install transmission conductors on steel tower structures
-

Assessment criteria

The learner can:

- 1.1 identify the correct work location using available information
 - 1.2 conduct a site-specific risk assessment, completing required documentation, in accordance with health and safety regulations
 - 1.3 plan work to be undertaken to comply with company procedures in accordance with the risk assessment, taking into account factors such as location, content, sequence of tasks and personnel
 - 1.4 inform all affected parties of intended work plans, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

2. prepare resources to install transmission conductors on steel tower structures

Assessment criteria

The learner can:

- 2.1 select, inspect and wear personal protective equipment (PPE) compatible with work plan, risk assessment and health and safety regulations
 - 2.2 identify the correct structure and circuit to be worked on, in accordance with company procedures and work plan
 - 2.3 confirm the system is safe to work on in accordance with company procedures
 - 2.4 select and prepare tools and equipment compatible with the work plan and risk assessment
 - 2.5 check tools and equipment are fit for purpose to carry out the identified work in accordance with company procedures
 - 2.6 select, inspect and prepare suitable access and egress equipment to carry out the identified work in accordance with company procedures
 - 2.7 perform a pre work inspection of the structure, reporting identified defects in accordance with company procedures
 - 2.8 apply appropriate control measures in accordance with risk assessment requirements and company procedures (e.g. person in attendance when working at height, control/removal of hazards, pennants/flags, rescue equipment available)
 - 2.9 report faults with tools, equipment and PPE, including that which is unavailable, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

3. carry out the installation of transmission conductors on steel tower structures

Assessment criteria

The learner can:

- 3.1 ensure resources are raised, lowered and used safely in accordance with company procedures
-

- 3.2 install and secure conductors to suspension insulators safely and effectively in accordance with work plan, risk assessment and company procedures and specification documents on a minimum of **two** different occasions
- 3.3 carry out the tensioning and termination of conductors in accordance with company procedures and specification documents on a minimum of **two** different occasions
- 3.4 check the finished product for compliance with job requirements, referring to specifications where applicable
- 3.5 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person; including a minimum of **one** of the following problems:
 - a. equipment use
 - b. environmental conditions
 - c. material condition
 - d. resources
 - e. effects of other people
- 3.6 work throughout the duration of operations in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
- 3.7 confirm the completion of the work activity with relevant parties in accordance with company procedures
- 3.8 ensure all tools and equipment are stored safely and appropriately in accordance with company procedures
- 3.9 ensure hazardous/non-hazardous waste materials are dealt with and disposed of in accordance with company and statutory procedures
- 3.10 ensure the work area is left in a safe and tidy condition compatible with company procedures

Unit 211

Dismantle extra high voltage conductors on steel tower structures

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is about installing EHV conductors on steel tower structures in an electrical power engineering environment. It involves the rigorous and methodical following of processes and procedures to make sure that the completed work meets the quality assurance and operating specifications set by the organisation. It also involves using a range of tools and equipment and the wearing of Personal Protective Equipment whilst carrying out the work.</p> <p>By completing this unit, learners will demonstrate competence in:</p> <ul style="list-style-type: none">• planning to dismantle transmission conductors on steel tower structures• preparing to dismantle transmission conductors on steel tower structures• dismantling transmission conductors on steel tower structures• using and communicating data and information• resolving problems effectively and efficiently
Assessment criteria:	To achieve this unit, learners are required to evidence competence in the following performance-based assessment criteria.

Learning outcomes:

The learner will be able to:

1. plan for work activities to dismantle transmission conductors on steel tower structures
2. prepare resources to dismantle transmission conductors on steel tower structures
3. carry out the dismantlement of transmission conductors on steel tower structures

Learning outcome:

The learner will be able to:

1. plan for work activities to dismantle transmission conductors on steel tower structures

Assessment criteria

The learner can:

- 1.1 identify the correct work location using available information
 - 1.2 conduct a site-specific risk assessment, completing required documentation, in accordance with health and safety regulations
 - 1.3 plan work to be undertaken to comply with company procedures in accordance with the risk assessment, taking into account factors such as location, content, sequence of tasks and personnel
 - 1.4 inform all affected parties of intended work plans, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

2. prepare resources to dismantle transmission conductors on steel tower structures

Assessment criteria

The learner can:

- 2.1 select, inspect and wear personal protective equipment (PPE) compatible with work plan, risk assessment and health and safety regulations
 - 2.2 identify the correct structure and circuit to be worked on, in accordance with company procedures and work plan
 - 2.3 confirm the system is safe to work on in accordance with company procedures
 - 2.4 select and prepare tools and equipment compatible with the work plan and risk assessment
 - 2.5 check tools and equipment are fit for purpose to carry out the identified work in accordance with company procedures
 - 2.6 select, inspect and prepare suitable access and egress equipment to carry out the identified work in accordance with company procedures
 - 2.7 perform a pre work inspection of the structure, reporting identified defects in accordance with company procedures
 - 2.8 apply appropriate control measures in accordance with risk assessment requirements and company procedures (e.g. person in attendance when working at height, control/removal of hazards, pennants/flags, rescue equipment available)
 - 2.9 report faults with tools, equipment and PPE, including that which is unavailable, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

3. carry out the dismantlement of transmission conductors on steel tower structures

Assessment criteria

The learner can:

- 3.1 ensure resources are raised, lowered and used safely in accordance with company procedures
 - 3.2 disconnect and reconnect conductors in accordance with company procedures
-

- 3.3 dismantle, remove and lower conductors from suspension insulators safely and effectively in accordance with company procedures on **two** different occasions ensuring any stored energy is released in a controlled manner
- 3.4 dismantle and de-tension conductors from tension insulators safely and effectively in accordance with company procedures on **two** different occasions ensuring any stored energy is released in a controlled manner
- 3.5 check the finished product for compliance with job requirements, referring to specifications where applicable
- 3.6 identify and store safely re-usable plant, apparatus and components in a designated area
- 3.7 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person; evidence to include **one** of the following problems:
 - a. equipment use
 - b. environmental conditions
 - c. material condition
 - d. resources
 - e. effects of other people
- 3.8 work throughout the duration of operations in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
- 3.9 confirm the completion of the work activity with relevant parties in accordance with company procedures
- 3.10 ensure all tools and equipment are stored safely and appropriately in accordance with company procedures
- 3.11 ensure hazardous/non-hazardous waste materials are dealt with and disposed of in accordance with company and statutory procedures
- 3.12 ensure the work area is left in a safe and tidy condition compatible with company procedures

Unit 212

Maintain apparatus on steel tower structures

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is about maintaining apparatus on steel tower structures in an electrical power engineering environment. It includes the processes and procedures to be followed to make sure that the completed maintenance work meets the quality assurance and operating specifications set by the organisation. It includes aspects of communication and the safe working practices that need to be followed in the workplace.</p> <p>By completing this unit, learners will demonstrate competence in:</p> <ul style="list-style-type: none">• planning to maintain overhead line transmission apparatus• preparing to maintain overhead line transmission apparatus• maintaining overhead line transmission apparatus• using and communicating data and information• resolving problems effectively and efficiently
Assessment criteria:	<p>To achieve this unit, learners are required to evidence competence in the following performance-based assessment criteria.</p> <p>.</p>

Learning outcomes:

The learner will be able to:

1. plan for work activities to maintain overhead line transmission apparatus
2. prepare resources to maintain overhead line transmission apparatus
3. carry out the maintenance of overhead line transmission apparatus

Learning outcome:

The learner will be able to:

1. plan for work activities to maintain overhead line transmission apparatus

Assessment criteria

The learner can:

- 1.1 identify the correct work location using available information
 - 1.2 conduct a site-specific risk assessment, completing required documentation, in accordance with health and safety regulations
 - 1.3 plan work to be undertaken to comply with company procedures in accordance with the risk assessment, taking into account factors such as location, content, sequence of tasks and personnel
 - 1.4 inform all affected parties of intended work plans, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

2. prepare resources to maintain overhead line transmission apparatus

Assessment criteria

The learner can:

- 2.1 select, inspect and wear Personal Protective Equipment (PPE) compatible with work plan, risk assessment and health and safety regulations
 - 2.2 identify the correct structure and circuit to be worked on, in accordance with company procedures and work plan
 - 2.3 confirm the system is safe to work on in accordance with company procedures
 - 2.4 select and prepare tools and equipment compatible with the work plan and risk assessment
 - 2.5 check tools and equipment are fit for purpose to carry out the identified work in accordance with company procedures
 - 2.6 select, inspect and prepare suitable access and egress equipment to carry out the identified work in accordance with company procedures
 - 2.7 perform a pre work inspection of the structure and apparatus to be worked on, reporting identified defects in accordance with company procedures
 - 2.8 apply appropriate control measures in accordance with risk assessment requirements and company procedures (e.g. person in attendance when working at height, control/removal of hazards, pennants/flags, rescue equipment available)
 - 2.9 report faults with tools, equipment and PPE, including that which is unavailable, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

3. carry out the maintenance of overhead line transmission apparatus

Assessment criteria

The learner can:

- 3.1 ensure resources are raised, lowered and used safely in accordance with company procedures
 - 3.2 perform the maintenance operations in accordance with work plan, risk assessment and company procedures on a minimum of **two** of the following different types of apparatus:
-

- a. earth wire fittings
 - b. access/egress fittings
 - c. tower furniture
 - d. tension fittings
 - e. suspension fittings
 - f. anti-climbing devices
 - g. conductor fitting
 - h. conductor
 - i. tower steelwork
 - j. tower foundations
- 3.3 check the finished product for compliance with company standards, referring to the specification where applicable
- 3.4 report and record the repair in accordance with company procedures where applicable
- 3.5 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person; evidence to include **one** of the following problems:
- a. apparatus/materials
 - b. structure condition
 - c. safety arrangements
 - d. environmental/site conditions
 - e. effects of other people
- 3.6 work throughout the duration of operations in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
- 3.7 confirm the completion of the work activity with relevant parties in accordance with company procedures
- 3.8 ensure all tools and equipment are stored safely and appropriately in accordance with company procedures
- 3.9 ensure hazardous/non-hazardous waste materials are dealt with and disposed of in accordance with company and statutory procedures
- 3.10 ensure the work area is left in a safe and tidy condition compatible with company procedures

Unit 213

Install distribution substation plant and apparatus

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is about installing distribution substation plant and apparatus in an electrical power engineering environment. It involves completing installation activities in a rigorous and methodical manner and the following of processes and procedures to make sure that the finishes work meets the quality assurance and operating specifications set by the organisation.</p> <p>By completing this unit, learners will demonstrate competence in:</p> <ul style="list-style-type: none">• planning to install distribution substation plant apparatus• preparing to install distribution substation plant and apparatus• installing distribution substation plant and apparatus• using and communicate data and information• resolving problems effectively and efficiently
Assessment criteria:	To achieve this unit, learners are required to evidence competence in the following performance-based assessment criteria.

Learning outcomes:

The learner will be able to:

1. plan for work activities to install distribution substations plant and apparatus
2. prepare resources to install distribution substations plant and apparatus
3. carry out the installation distribution substations plant and apparatus

Learning outcome:

The learner will be able to:

1. be able to plan for work activities to install distribution substations plant and apparatus

Assessment criteria

The learner can:

- 1.1 identify the correct work location using available information
 - 1.2 conduct a site-specific risk assessment, completing required documentation, in accordance with health and safety regulations
 - 1.3 plan work to be undertaken to comply with company procedures in accordance with risk assessment, taking into account factors such as location, content, sequence of tasks and personnel
 - 1.4 inform all affected parties of intended work plans, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

2. be able to prepare resources to install distribution substations plant and apparatus

Assessment criteria

The learner can:

- 2.1 select, inspect and wear Personal Protective Equipment (PPE) compatible with work plans, risk assessments and health and safety regulations
 - 2.2 apply appropriate control measures to ensure the work area is in a safe and suitable condition for work to commence in accordance with risk assessment requirements and company procedures (e.g. signs/barriers, demarcation of work area, control/removal of hazards, contamination protection)
 - 2.3 confirm the system is safe to work on, including points of isolation and earthing arrangements, in accordance with company procedures
 - 2.4 select and prepare tools and equipment compatible with work plans, risk assessments and company procedures
 - 2.5 check tools and equipment are fit for purpose to carry out the identified work in accordance with company procedures
 - 2.6 identify and inspect the plant and/or apparatus to be worked on in accordance with company procedures and work plan
 - 2.7 report faults with tools, equipment and PPE, including that which is unavailable, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

3. be able to carry out the installation distribution substations plant and apparatus

Assessment criteria

The learner can:

- 3.1 install the identified plant or apparatus using selected tools and equipment, in accordance with work plans, risk assessments and company procedures. Installation evidence **must** include a minimum of **two** of the following:
 - a. transformer
-

- b. switchgear
 - c. package sub station
 - d. LV frames
 - e. panel wiring
 - f. battery and charger
 - g. cable installations
 - h. LV apparatus
 - i. automation equipment
 - j. switchgear housing
 - k. busbar installations
 - l. compressed air equipment
- 3.2 check the finished product is compliant with required specifications
- 3.3 perform testing procedures to ensure the installation meets company operational requirements. Evidence **must** include both:
- a. operation of equipment
 - b. electrical testing
- 3.4 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person; evidence must include one of the following problems:
- a. proximity to live equipment
 - b. tools/equipment/materials
 - c. environmental/site conditions
 - d. effects of other people
- 3.5 work throughout the duration of operations in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
- 3.6 complete all required post activity documentation in accordance with company policy
- 3.7 ensure all tools and equipment are stored safely and appropriately in accordance with company procedures
- 3.8 ensure waste materials are dealt with and disposed of in accordance with company and statutory procedures
- 3.9 ensure the work area is left in a safe and tidy condition compatible with company procedures

Unit 214

Dismantle distribution substation plant and apparatus

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is about dismantling distribution substation plant and apparatus in an electrical power engineering environment. It involves the rigorous and methodical following of processes and procedures to make sure that the completed work meets the quality assurance and operating specifications set by the organisation. It also involves using a range of tools and equipment and the wearing of Personal Protective Equipment whilst carrying out the work.</p> <p>By completing this unit, learners will demonstrate competence in:</p> <ul style="list-style-type: none">• planning to dismantle distribution substation plant and apparatus• preparing to dismantle distribution substation plant and apparatus• dismantling distribution substation plant and apparatus• using and communicating data and information• resolving problems effectively and efficiently
Assessment criteria:	To achieve this unit, learners are required to evidence competence in the following performance-based assessment criteria.

Learning outcomes:

The learner will be able to:

1. plan for work activities to dismantle distribution substation plant and apparatus
2. prepare resources to dismantle distribution substation plant and apparatus
3. carry out the dismantling distribution substation plant and apparatus

Learning outcome:

The learner will be able to:

1. plan for work activities to dismantle distribution substation plant and apparatus

Assessment criteria

The learner can:

- 1.1 identify the correct work location using available information
 - 1.2 conduct a site-specific risk assessment, completing required documentation, in accordance with health and safety regulations
 - 1.3 plan work to be undertaken to comply with company procedures in accordance with risk assessment, taking into account factors such as location, content, sequence of tasks and personnel
 - 1.4 inform all affected parties of intended work plans, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

2. prepare resources to dismantle distribution substation plant and apparatus

Assessment criteria

The learner can:

- 2.1 select, inspect and wear personal protective equipment (PPE) compatible with work plans, risk assessments and health and safety regulations
 - 2.2 apply appropriate control measures to ensure the work area is in a safe and suitable condition for work to commence in accordance with risk assessment requirements and company procedures (e.g. signs/barriers, demarcation of work area, control/removal of hazards, contamination protection)
 - 2.3 confirm the system is safe to work on, including points of isolation and earthing arrangements, in accordance with company procedures
 - 2.4 select and prepare tools and equipment compatible with work plans, risk assessments and company procedures
 - 2.5 check tools and equipment are fit for purpose to carry out the identified work in accordance with company procedures
 - 2.6 identify and inspect the plant and/or apparatus to be worked on in accordance with company procedures and work plan
 - 2.7 report faults with tools, equipment and PPE, including that which is unavailable, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

3. carry out the dismantling distribution substation plant and apparatus

Assessment criteria

The learner can:

- 3.1 dismantle the identified equipment, ensuring any stored energy is safely released using selected tools and equipment, in accordance with company procedures. Dismantling **must** include evidence of a minimum of **two** of the following:
 - a. transformer
-

- b. switchgear
 - c. package sub station
 - d. LV frames
 - e. panel wiring
 - f. battery and charger
 - g. cable installations
 - h. LV apparatus
 - i. automation equipment
 - j. switchgear housing
 - k. busbar installations
 - l. compressed air equipment
- 3.2 remove dismantled equipment in accordance with work instructions and company procedures ensuring suitable precautions are taken to prevent damage
- 3.3 check the completed dismantlement is compliant with the required specifications, in accordance with company procedures
- 3.4 identify and store safely re-usable plant, apparatus and components in a designated area
- 3.5 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person; Evidence **must** include a minimum of **one** of the following problems:
- a. proximity to live equipment
 - b. tools/equipment/materials
 - c. environmental/site conditions
 - d. effects of other people
- 3.6 work throughout the duration of operations in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
- 3.7 complete all required post activity documentation in accordance with company policy
- 3.8 ensure all tools and equipment are stored safely and appropriately in accordance with company procedures
- 3.9 ensure hazardous/non-hazardous waste materials are dealt with and disposed of in accordance with company and statutory procedures
- 3.10 ensure the work area is left in a safe and tidy condition compatible with company procedures

Unit 215

Maintain distribution substation plant and apparatus

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is about maintaining distribution substation plant and apparatus in an electrical power engineering environment. It includes the processes and procedures to be followed to make sure that the completed maintenance work meets the quality assurance and operating specifications set by the organisation. It includes aspects of communication and the safe working practices that need to be followed in the workplace.</p> <p>By completing this unit, learners will demonstrate competence in:</p> <ul style="list-style-type: none">• planning to maintain distribution substation plant and apparatus• preparing to maintain distribution substation plant and apparatus• maintaining distribution substation plant and apparatus• using and communicating data and information• resolving problems effectively and efficiently
Assessment criteria:	To achieve this unit, learners are required to evidence competence in the following performance-based assessment criteria.

Learning outcomes:

The learner will be able to:

1. plan for work activities to maintain distribution substation plant and apparatus
2. prepare resources to maintain distribution substation plant and apparatus
3. carry out the maintenance distribution substation plant and apparatus

Learning outcome:

The learner will be able to:

1. be able to plan for work activities to maintain distribution substation plant and apparatus

Assessment criteria

The learner can:

- 1.1 identify the correct work location using available information
 - 1.2 conduct a site-specific risk assessment, completing required documentation, in accordance with health and safety regulations
 - 1.3 plan work to be undertaken to comply with company procedures in accordance with risk assessment, taking into account factors such as location, content, sequence of tasks and personnel
 - 1.4 inform all affected parties of intended work plans, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

2. be able to prepare resources to maintain distribution substation plant and apparatus

Assessment criteria

The learner can:

- 2.1 select, inspect and wear personal protective equipment (PPE) compatible with work plans, risk assessments and health and safety regulations
 - 2.2 apply appropriate control measures to ensure the work area is in a safe and suitable condition for work to commence in accordance with risk assessment requirements and company procedures (e.g. signs/barriers, demarcation of work area, control/removal of hazards, contamination protection)
 - 2.3 confirm the system is safe to work on, including points of isolation and earthing arrangements, in accordance with company procedures
 - 2.4 select and prepare tools and equipment compatible with work plans, risk assessments and company procedures
 - 2.5 check tools and equipment are fit for purpose to carry out the identified work in accordance with company procedures
 - 2.6 identify and inspect the plant and/or apparatus to be worked on in accordance with company procedures and work plan
 - 2.7 report faults with tools, equipment and PPE, including that which is unavailable, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

3. be able to carry out the maintenance distribution substation plant and apparatus

Assessment criteria

The learner can:

- 3.1 maintain the identified plant or apparatus using selected tools and equipment, in accordance with work plans, risk assessments and company procedures. Evidence **must** include a minimum of **two** of the following:
 - a. oil filled circuit breakers
-

- b. oil filled switchgear
 - c. SF6 switchgear
 - d. transformers
 - e. vacuum equipment
 - f. air blast circuit breakers
 - g. LV equipment
- 3.2 check the finished product is compliant with maintenance specifications and work instruction requirements
- 3.3 perform testing procedures in accordance with company procedures to ensure the completed maintenance meets company operational requirements
- 3.4 record and report the maintenance work in accordance with company procedures
- 3.5 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person; Evidence **must** include a minimum of **one** of the following problems:
- a. proximity to live equipment
 - b. defective equipment/materials
 - c. environmental/site conditions
 - d. effects of other people
- 3.6 work throughout the duration of operations in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
- 3.7 complete all required post activity documentation in accordance with company policy
- 3.8 ensure all tools and equipment are stored safely and appropriately in accordance with company procedures
- 3.9 ensure hazardous/non hazardous waste materials are dealt with and disposed of in accordance with company and statutory procedures
- 3.10 ensure the work area is left in a safe and tidy condition compatible with company procedures

Unit 216

Install primary and extra high voltage substation plant and apparatus

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is about installing primary/extra high voltage substation plant and apparatus in an electrical power engineering environment. It involves completing installation activities in a rigorous and methodical manner and the following of processes and procedures to make sure that the finishes work meets the quality assurance and operating specifications set by the organisation.</p> <p>By completing this unit, learners will demonstrate competence in:</p> <ul style="list-style-type: none">• planning to install primary/EHV substation plant and apparatus• preparing to install primary/EHV substation plant and apparatus• installing primary/EHV substation• using and communicating data and information• resolving problems effectively and efficiently
Assessment criteria:	To achieve this unit, learners are required to evidence competence in the following performance-based assessment criteria. .

Learning outcomes:

The learner will be able to:

1. plan for work activities to install primary/EHV substation plant and apparatus
2. prepare resources to install primary/EHV substation plant and apparatus
3. carry out the installation primary/EHV substation plant and apparatus

Learning outcome:

The learner will be able to:

1. plan for work activities to install primary/EHV substation plant and apparatus

Assessment criteria

The learner can:

- 1.1 identify the correct work location using available information
 - 1.2 conduct a site-specific risk assessment, completing required documentation, in accordance with health and safety regulations
 - 1.3 plan work to be undertaken to comply with company procedures in accordance with risk assessment, taking into account factors such as location, content, sequence of tasks and personnel
 - 1.4 inform all affected parties of intended work plans, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

2. prepare resources to install primary/EHV substation plant and apparatus

Assessment criteria

The learner can:

- 2.1 select, inspect and wear personal protective equipment (PPE) compatible with work plan, risk assessment and health and safety regulations
 - 2.2 apply appropriate control measures to ensure the work area is in a safe and suitable condition for work to be undertaken in accordance with risk assessment requirements and company procedures (e.g. Prevention of unauthorised access, Signs/barriers, Demarcation of routes/work areas, Control/removal of hazards)
 - 2.3 identify the equipment to be worked on, in accordance with company procedures and work plan
 - 2.4 confirm the system is safe to work on, including points of isolation and earthing arrangements, in accordance with company procedures
 - 2.5 select and prepare tools and equipment compatible with the work plan and risk assessment
 - 2.6 check tools and equipment are fit for purpose to carry out the identified work in accordance with company procedures
 - 2.7 report faults with tools, equipment and PPE, including that which is unavailable, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

3. carry out the installation primary/EHV substation plant and apparatus

Assessment criteria

The learner can:

- 3.1 install plant and apparatus using selected tools and equipment, in accordance with work plan, risk assessment and company procedures. Installation **must** include evidence of a minimum of **two** of the following:
 - a. transformer
 - b. switchgear
 - c. cable installations
-

- d. bus bars
 - e. circuit breakers
 - f. neutral Earthing Resistor
 - g. isolators
 - h. interrupter heads
 - i. panel wiring
 - j. TX dehydration
- 3.2 check the finished product is compliant with specifications and work instruction requirements
- 3.3 perform testing procedures in accordance with company procedures to ensure the completed work meets company operational requirements, where applicable
- 3.4 Deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person; Evidence **must** include a minimum of **one** of the following problems:
- a. proximity to live equipment
 - b. defective tools/equipment/materials
 - c. environmental/site conditions
 - d. effects of other people
- 3.5 work throughout the duration of operations in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
- 3.6 complete all required post activity documentation in accordance with company policy
- 3.7 ensure all tools and equipment are stored safely and appropriately in accordance with company procedures
- 3.8 ensure hazardous/non hazardous waste materials are dealt with and disposed of in accordance with company and statutory procedures
- 3.9 ensure the work area is left in a safe and tidy condition compatible with company procedures

Unit 217

Dismantle primary and extra high voltage substation plant and apparatus

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is about dismantling primary/extra high voltage substation plant and apparatus in an electrical power engineering environment. It involves the rigorous and methodical following of processes and procedures to make sure that the completed work meets the quality assurance and operating specifications set by the organisation. It also involves using a range of tools and equipment and the wearing of Personal Protective Equipment whilst carrying out the work.</p> <p>By completing this unit, learners will demonstrate competence in:</p> <ul style="list-style-type: none">• planning to dismantle primary/EHV substation plant and apparatus• preparing to dismantle primary/EHV substation plant and apparatus• dismantling primary/EHV substation plant and apparatus• using and communicating data and information• resolving problems effectively and efficiently
Assessment criteria:	To achieve this unit, learners are required to evidence competence in the following performance-based assessment criteria.

Learning outcomes:

The learner will be able to:

1. plan for work activities to dismantle primary/EHV substation plant and apparatus
2. prepare resources to dismantle primary/EHV substation plant and apparatus
3. carry out the dismantling of primary/EHV substation plant and apparatus

Learning outcome:

The learner will be able to:

1. plan for work activities to dismantle primary/EHV substation plant and apparatus

Assessment criteria

The learner can:

- 1.1 identify the correct work location using available information
 - 1.2 conduct a site-specific risk assessment, completing required documentation, in accordance with health and safety regulations
 - 1.3 plan work to be undertaken to comply with company procedures in accordance with risk assessment, taking into account factors such as location, content, sequence of tasks and personnel
 - 1.4 inform all affected parties of intended work plans, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

2. prepare resources to dismantle primary/EHV substation plant and apparatus

Assessment criteria

The learner can:

- 2.1 select, inspect and wear personal protective equipment (PPE) compatible with work plan, risk assessment and health and safety regulations
 - 2.2 apply appropriate control measures to ensure the work area is in a safe and suitable condition for work to be undertaken in accordance with risk assessment requirements and company procedures (e.g. prevention of unauthorised access, signs/barriers, demarcation of routes/work areas, control/removal of hazards)
 - 2.3 identify the correct equipment to be worked on, in accordance with company procedures and work plan
 - 2.4 confirm the system is safe to work on, including points of isolation and earthing arrangements, in accordance with company procedures
 - 2.5 select and prepare tools and equipment compatible with the work plan and risk assessment
 - 2.6 check tools and equipment are fit for purpose to carry out the identified work in accordance with company procedures
 - 2.7 report faults with tools, equipment and PPE, including that which is unavailable, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

3. carry out the dismantling of primary/EHV substation plant and apparatus

Assessment criteria

The learner can:

- 3.1 dismantle the identified equipment, ensuring any stored energy is safely released using selected tools and equipment, in accordance with company procedures. Dismantling **must** include evidence of a minimum of **two** of the following:
 - a. transformer
 - b. switchgear
-

- c. cable installations
 - d. bus bars
 - e. circuit breakers
 - f. neutral Earthing Resistor
 - g. isolators
 - h. busbar installations
- 3.2 remove dismantled equipment in accordance with work instructions and company procedures ensuring suitable precautions are taken to prevent damage
- 3.3 check the completed dismantlement is compliant with the required specifications, in accordance with company procedures
- 3.4 identify and store safely re-usable plant, apparatus and components in a designated area
- 3.5 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person; evidence **must** include **one** of the following problems:
- a. proximity to live equipment
 - b. defective tools/equipment/materials
 - c. environmental/site conditions
 - d. effects of other people
- 3.6 work throughout the duration of operations in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
- 3.7 complete all required post activity documentation in accordance with company policy
- 3.8 ensure all tools and equipment are stored safely and appropriately in accordance with company procedures
- 3.9 ensure hazardous/non hazardous waste materials are dealt with and disposed of in accordance with company and statutory procedures
- 3.10 ensure the work area is left in a safe and tidy condition compatible with company procedures

Unit 218

Maintain primary and extra high voltage substation plant and apparatus

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is about maintaining primary/extra high voltage substation plant and apparatus in an electrical power engineering environment. It includes the processes and procedures to be followed to make sure that the completed maintenance work meets the quality assurance and operating specifications set by the organisation. It includes aspects of communication and the safe working practices that need to be followed in the workplace.</p> <p>By completing this unit, learners will demonstrate competence in:</p> <ul style="list-style-type: none">• planning to maintain primary/EHV substation plant and apparatus• preparing to maintain primary/EHV substation plant and apparatus• maintaining primary/EHV substation plant and apparatus• using and communicating data and information• resolving problems effectively and efficiently
Assessment criteria:	To achieve this unit, learners are required to evidence competence in the following performance-based assessment criteria.

Learning outcomes:

The learner will be able to:

1. plan for work activities to maintain primary/EHV substation plant and apparatus
2. prepare resources to maintain primary/EHV substation plant and apparatus
3. carry out the maintenance of primary/EHV substation plant and apparatus

Learning outcome:

The learner will be able to:

1. plan for work activities to maintain primary/EHV substation plant and apparatus

Assessment criteria

The learner can:

- 1.1 identify the correct work location using available information
 - 1.2 conduct a site-specific risk assessment, completing required documentation, in accordance with health and safety regulations
 - 1.3 plan work to be undertaken to comply with company procedures in accordance with risk assessment, taking into account factors such as location, content, sequence of tasks and personnel
 - 1.4 inform all affected parties of intended work plans, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

2. prepare resources to maintain primary/EHV substation plant and apparatus

Assessment criteria

The learner can:

- 2.1 select, inspect and wear personal protective equipment (PPE) compatible with work plan, risk assessment and health and safety regulations
 - 2.2 apply appropriate control measures to ensure the work area is in a safe and suitable condition for work to be undertaken in accordance with risk assessment requirements and company procedures (e.g. prevention of unauthorised access, signs/barriers, demarcation of routes/work areas, control/removal of hazards)
 - 2.3 identify the correct equipment to be worked on, in accordance with company procedures and work plan
 - 2.4 confirm the system is safe to work on, including points of isolation and earthing arrangements, in accordance with company procedures
 - 2.5 select and prepare tools and equipment compatible with the work plan and risk assessment
 - 2.6 check tools and equipment are fit for purpose to carry out the identified work in accordance with company procedures
 - 2.7 report faults with tools, equipment and PPE, including that which is unavailable, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

3. carry out the maintenance of primary/EHV substation plant and apparatus

Assessment criteria

The learner can:

- 3.1 maintain plant or apparatus using selected tools and equipment, in accordance with work plan, risk assessment and company procedures. Evidence **must** include a minimum of **two** of the following:
 - a. transformer
 - b. circuit breaker
-

- c. switchgear
 - d. tap changer
 - e. busbar
 - f. neutral Earthing Resistor
 - g. isolators
 - h. interrupter heads
 - i. TX dehydration
- 3.2 check the finished product is compliant with maintenance specifications and work instruction requirements
 - 3.3 perform testing procedures in accordance with company procedures to ensure the completed maintenance meets company operational requirements
 - 3.4 record and report the maintenance work in accordance with company procedures
 - 3.5 conduct a dielectric oil test on one occasion, in accordance with company procedures
 - 3.6 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person; evidence **must** include **one** of the following problems:
 - a. proximity to live equipment
 - b. defective equipment/materials
 - c. environmental/site conditions
 - d. effects of other people
 - 3.7 work throughout the duration of operations in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
 - 3.8 complete all required post activity documentation in accordance with company policy
 - 3.9 ensure all tools and equipment are stored safely and appropriately in accordance with company procedures
 - 3.10 ensure hazardous/non hazardous waste materials are dealt with and disposed of in accordance with company and statutory procedures
 - 3.11 ensure the work area is left in a safe and tidy condition compatible with company procedures

Unit 219

Fault repair of distribution and high voltage substation plant and apparatus

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is about fault repair of distribution and HV substation plant and apparatus in an electrical power engineering environment. It involves following routine fault rectification and repair procedures. It also involves inspecting the finished repair and rectification work to make sure it operates in a manner that meets operating specifications and quality standards and criteria set by the organisation</p> <p>By completing this unit, learners will demonstrate competence in:</p> <ul style="list-style-type: none">• planning to repair faults on substation plant and apparatus• preparing to repair faults on substation plant and apparatus• repairing faults on substation plant and apparatus• using and communicating data and information• resolving problems effectively and efficiently
Assessment criteria:	To achieve this unit, learners are required to evidence competence in the following performance-based assessment criteria.

Learning outcomes:

The learner will be able to:

1. plan for work activities to repair faults on substation plant/apparatus
2. prepare resources to repair faults on substation plant/apparatus
3. carry out the repair faults on substation plant/apparatus

Learning outcome:

The learner will be able to:

1. plan for work activities to repair faults on substation plant/apparatus

Assessment criteria

The learner can:

- 1.1 identify the correct work location using available information
 - 1.2 conduct a site-specific risk assessment, completing required documentation, in accordance with health and safety regulations
 - 1.3 plan work to be undertaken to comply with company procedures in accordance with risk assessment, taking into account factors such as location, content, sequence of tasks and personnel
 - 1.4 inform all affected parties of intended work plans, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

2. prepare resources to repair faults on substation plant/apparatus

Assessment criteria

The learner can:

- 2.1 select, inspect and wear personal protective equipment (PPE) compatible with work plans, risk assessments and health and safety regulations
 - 2.2 apply appropriate control measures to ensure the work area is in a safe and suitable condition for work to commence in accordance with risk assessment requirements and company procedures (e.g. signs/barriers, demarcation of work area, control/removal of hazards)
 - 2.3 select and prepare tools and testing equipment compatible with work plans, risk assessments and company procedures
 - 2.4 check tools and equipment are fit for purpose to carry out the identified work in accordance with company procedures outline
 - 2.5 identify and inspect the equipment to be worked on in accordance with company procedures and work plan
 - 2.6 report faults with tools, equipment and PPE, including that which is unavailable, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

3. carry out the repair faults on substation plant/apparatus

Assessment criteria

The learner can:

- 3.1 perform fault repairs using selected tools and equipment, in accordance with work plans, risk assessments and company procedures on **two** occasions. Evidence **must** include a minimum of **two** of the following:
 - a. HV apparatus
 - b. LV apparatus
 - c. transformer
 - d. switchgear
-

- e. circuit breakers
 - f. neutral earthing resistor
 - g. isolators
 - h. interrupter heads
 - i. panel wiring
 - j. TX dehydration
 - k. tap changer
 - l. compressors
 - m. ancillary equipment
- 3.2 check the repair work is compliant with required specifications, in accordance with company procedures
- 3.3 perform testing operations in accordance with the work plan, specifications and company procedures
- 3.4 record and report the repair work in accordance with company procedures
- 3.5 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person. Evidence **must** include a minimum of **one** of the following problems:
- a. plant/apparatus
 - b. environmental conditions
 - c. substation Conditions
 - d. safety or earthing/bonding arrangements
 - e. effects of other people
- 3.6 work throughout the duration of operations in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
- 3.7 complete all required post activity documentation in accordance with company policy
- 3.8 ensure all tools and equipment are stored safely and appropriately in accordance with company procedures
- 3.9 ensure hazardous/non hazardous waste materials are dealt with and disposed of in accordance with company and statutory procedures
- 3.10 ensure the work area is left in a safe and tidy condition compatible with company procedures

Unit 220

Service jointing on low voltage underground cables

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is about performing service jointing on low voltage underground cables in an electrical power engineering environment. It includes the processes and procedures to be followed to make sure that the completed work meets the quality assurance and operating specifications set by the organisation. It also involves following and complying with health and safety measures to minimise the risk of harm and injury to self and others when undertaking and completing jointing work activities.</p> <p>By completing this unit, learners will demonstrate competence in:</p> <ul style="list-style-type: none">• planning for service jointing on low voltage underground cables• preparing for service jointing on low voltage underground cables• performing service jointing on low voltage underground cables• using and communicating data and information• resolving problems effectively and efficiently
Assessment criteria:	To achieve this unit, learners are required to evidence competence in the following performance-based assessment criteria.

Learning outcomes:

The learner will be able to:

1. demonstrate plan for work activities on service jointing on low voltage underground cables
2. prepare for work activities on service jointing on low voltage underground cables
3. carry out service jointing activities on low voltage underground cables

Learning outcome:

The learner will be able to:

1. plan for work activities on service jointing on low voltage underground cables

Assessment criteria

The learner can:

- 1.1 identify the correct work location using available information
 - 1.2 conduct a site-specific risk assessment, completing required documentation, in accordance with company procedures and health and safety regulations
 - 1.3 plan work to be undertaken to comply with company procedures in accordance with the risk assessment, taking into account factors such as location, content, sequence of tasks and personnel
 - 1.4 inform all affected parties of intended work plans, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

2. prepare for work activities on service jointing on low voltage underground cables

Assessment criteria

The learner can:

- 2.1 select, inspect and wear personal protective equipment (PPE) compatible with work plans, risk assessments and health and safety regulations
 - 2.2 apply appropriate control measures to ensure the work area is in a safe and suitable condition for work to commence in accordance with risk assessment requirements and company procedures (e.g. signs/barriers, control/removal of hazards)
 - 2.3 select and prepare tools and equipment compatible with work plans, risk assessments and company procedures
 - 2.4 check tools and equipment are fit for purpose to carry out the identified work in accordance with company procedures
 - 2.5 identify and inspect the cables to be jointed, in accordance with company procedures and work plan
 - 2.6 report faults with tools, equipment and PPE, including that which is unavailable, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

3. carry out service jointing activities on low voltage underground cables

Assessment criteria

The learner can:

- 3.1 complete service jointing and termination of low voltage cables using selected tools and equipment, in accordance with work plan, risk assessment and company procedures. Evidence of service joint types **must** include a minimum of **two** of the following:
 - a. service to polymeric main
 - b. service to paper main
 - c. service transition straight
 - d. service transition branch
-

- e. service polymeric straight joint
- 3.2 check the finished product is compliant with company specifications and work requirements
- 3.3 perform relevant testing operations in accordance with company procedures, where necessary
- 3.4 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person. Evidence **must** include a minimum of **one** of the following problems:
 - a. insufficient workspace
 - b. cable condition
 - c. test results
 - d. equipment/materials
 - e. environmental/site conditions
- 3.5 work throughout the duration of operations in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
- 3.6 Complete all required post activity documentation in accordance with company policy (e.g. safety reports, joint positions)
- 3.7 ensure all tools and equipment are stored safely and appropriately in accordance with company procedures
- 3.8 ensure hazardous/non hazardous waste materials are dealt with and disposed of in accordance with company and statutory procedures
- 3.9 ensure the work area is left in a safe and tidy condition compatible with company procedures

Unit 221

Jointing and termination of low voltage mains underground cables

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is about jointing and termination of low voltage mains underground cables in an electrical power engineering environment. It includes the processes and procedures to be followed to make sure that the completed work meets the quality assurance and operating specifications set by the organisation. It also involves following and complying with health and safety measures to minimise the risk of harm and injury to self and others when undertaking and completing jointing work activities.</p> <p>By completing this unit, learners will demonstrate competence in:</p> <ul style="list-style-type: none">• planning for jointing and termination of low voltage mains underground cables• preparing for jointing and termination of low voltage mains underground cables• performing jointing and termination of low voltage mains underground cables• using and communicating data and information• resolving problems effectively and efficiently
Assessment criteria:	To achieve this unit, learners are required to evidence competence in the following performance-based assessment criteria.

Learning outcomes:

The learner will be able to:

1. plan for work activities on jointing and termination of low voltage mains underground cables
2. prepare for work activities jointing and termination of low voltage mains underground cables
3. carry out jointing and termination of low voltage mains underground cables

Learning outcome:

The learner will be able to:

1. plan for work activities on jointing and termination of low voltage mains underground cables

Assessment criteria

The learner can:

- 1.1 identify the correct work location using available information
 - 1.2 conduct a site-specific risk assessment, completing required documentation, in accordance with company procedures and health and safety regulations
 - 1.3 plan work to be undertaken to comply with company procedures in accordance with the risk assessment, taking into account factors such as location, content, sequence of tasks and personnel
 - 1.4 inform all affected parties of intended work plans, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

2. prepare for work activities jointing and termination of low voltage mains underground cables

Assessment criteria

The learner can:

- 2.1 select, inspect and wear personal protective equipment (PPE) compatible with work plans, risk assessments and health and safety regulations
 - 2.2 apply appropriate control measures to ensure the work area is in a safe and suitable condition for work to commence in accordance with risk assessment requirements and company procedures (e.g. signs/barriers, control/removal of hazards, traffic control, identification of circuit isolation points)
 - 2.3 select and prepare tools and equipment compatible with work plans, risk assessments and company procedures
 - 2.4 check tools and equipment are fit for purpose to carry out the identified work in accordance with company procedures
 - 2.5 identify and inspect the cables to be jointed, in accordance with company procedures and work plan
 - 2.6 report faults with tools, equipment and PPE, including that which is unavailable, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

3. carry out jointing and termination of low voltage mains underground cables

Assessment criteria

The learner can:

- 3.1 complete mains jointing and termination of low voltage cables using selected tools and equipment, in accordance with work plan, risk assessment and company procedures. Evidence of mains joint types **must** include a minimum of **two** of the following:
 - a. polymeric branch
 - b. transition straight
 - c. transition branch
-

- d. link box
 - e. LV termination
- 3.2 check the finished product is compliant with company specifications and work requirements
- 3.3 perform relevant testing operations in accordance with company procedures, where necessary
- 3.4 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person. Evidence **must** include a minimum of **one** of the following problems:
- a. cable position
 - b. cable identification
 - c. access/egress conditions
 - d. insufficient working space
 - e. environmental/site conditions
- 3.5 work throughout the duration of operations in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
- 3.6 complete all required post activity documentation in accordance with company policy (e.g. safety reports, joint positions)
- 3.7 ensure all tools and equipment are stored safely and appropriately in accordance with company procedures
- 3.8 ensure hazardous/non-hazardous waste materials are dealt with and disposed of in accordance with company and statutory procedures
- 3.9 ensure the work area is left in a safe and tidy condition compatible with company procedures

Unit 222

Jointing and termination of high voltage (up to 25 kV) underground cables

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is about jointing and termination of high voltage (up to 25 kV) underground cables in an electrical power engineering environment. It includes the processes and procedures to be followed to make sure that the completed work meets the quality assurance and operating specifications set by the organisation. It also involves following and complying with health and safety measures to minimise the risk of harm and injury to self and others when undertaking and completing jointing work activities.</p> <p>By completing this unit, learners will demonstrate competence in:</p> <ul style="list-style-type: none">• planning for jointing and termination of high voltage underground cables• preparing for jointing and termination of high voltage underground cables• performing jointing and termination of high voltage underground cables• using and communicating data and information• resolving problems effectively and efficiently
Assessment criteria:	To achieve this unit, learners are required to evidence competence in the following performance-based assessment criteria.

Learning outcomes:

The learner will be able to:

1. plan for work activities on jointing and termination of high voltage underground cables
2. prepare for work activities jointing and termination of high voltage underground cables
3. carry out jointing and termination of high voltage underground cables

Learning outcome:

The learner will be able to:

1. plan for work activities on jointing and termination of high voltage underground cables

Assessment criteria

The learner can:

- 1.1 identify the correct work location using available information
 - 1.2 conduct a site-specific risk assessment, completing required documentation, in accordance with company procedures and health and safety regulations
 - 1.3 plan work to be undertaken to comply with company procedures in accordance with the risk assessment, taking into account factors such as location, content, sequence of tasks and personnel
 - 1.4 inform all affected parties of intended work plans, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

2. prepare for work activities jointing and termination of high voltage underground cables

Assessment criteria

The learner can:

- 2.1 select, inspect and wear personal protective equipment (PPE) compatible with work plans, risk assessments and health and safety regulations
 - 2.2 apply appropriate control measures to ensure the work area is in a safe and suitable condition for work to commence in accordance with risk assessment requirements and company procedures (e.g. signs/barriers, control/removal of hazards, traffic control)
 - 2.3 select and prepare tools and equipment compatible with work plans, risk assessments and company procedures
 - 2.4 check tools and equipment are fit for purpose to carry out the identified work in accordance with company procedures
 - 2.5 identify the cables to be jointed, in accordance with company procedures and work plan, including points of isolation and earthing arrangements
 - 2.6 prepare for cable spiking activities, including fitting and removal of spiking gun in accordance with company procedures
 - 2.7 report faults with tools, equipment and PPE, including that which is unavailable, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

3. carry out jointing and termination of high voltage underground cables

Assessment criteria

The learner can:

- 3.1 complete jointing operations of high voltage cables using selected tools and equipment, in accordance with work plan, risk assessment and company procedures. Evidence of jointing operations **must** include a minimum of **one** of the following:
 - a. polymeric insulated cables
 - b. paper insulated cables
-

- 3.2 check the finished product is compliant with company specifications and work requirements
- 3.3 perform relevant testing operations in accordance with company procedures, where necessary
- 3.4 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person. Evidence **must** include a minimum of **one** of the following problems:
 - a. cable position
 - b. cable identification
 - c. access/egress conditions
 - d. insufficient working space
 - e. environmental/site conditions
- 3.5 work throughout the duration of operations in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
- 3.6 complete all required post activity documentation in accordance with company policy (e.g. safety reports, joint positions)
- 3.7 ensure all tools and equipment are stored safely and appropriately in accordance with company procedures
- 3.8 ensure hazardous/non-hazardous waste materials are dealt with and disposed of in accordance with company and statutory procedures
- 3.9 ensure the work area is left in a safe and tidy condition compatible with company procedures

Unit 223

Repairs to faulted or damaged low voltage service and mains cables (non-diagnosis)

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is about repairing faulted or damaged low voltage service and mains cables (non-diagnosis) in an electrical power engineering environment. It involves following routine fault rectification and repair procedures. It also involves inspecting the finished repair and rectification work to make sure it's operates in a manner that meets operating specifications and quality standards and criteria set by the organization.</p> <p>By completing this unit, learners will demonstrate competence in:</p> <ul style="list-style-type: none">• planning to repair faulty or damaged LV service and mains cables• preparing to repair faulty or damaged LV service and mains cable• repairing faulty or damaged LV service and mains cable• using and communicating data and information• resolving problems effectively and efficiently
Assessment criteria:	To achieve this unit, learners are required to evidence competence in the following performance-based assessment criteria.

Learning outcomes:

The learner will be able to:

1. plan for work activities on faulty/damaged LV service and mains cables
2. prepare for work activities repairing faulted/damaged LV service and mains cables
3. carry out repair to faulted/damaged LV service/mains cables

Learning outcome:

The learner will be able to:

1. plan for work activities on faulty/damaged LV service and mains cables

Assessment criteria

The learner can:

- 1.1 identify the correct work location using available information
 - 1.2 conduct a site-specific risk assessment, completing required documentation, in accordance with health and safety regulations
 - 1.3 plan work to be undertaken to comply with company procedures in accordance with the risk assessment, taking into account factors such as location, content, sequence of tasks and personnel
 - 1.4 identify the fault damage position using selected equipment and available information
 - 1.5 inform all affected parties of intended work plans
-

Learning outcome:

The learner will be able to:

2. prepare for work activities repairing faulted/damaged LV service and mains cables

Assessment criteria

The learner can:

- 2.1 select, inspect and wear personal protective equipment (PPE) compatible with work plans, risk assessments and health and safety regulations
 - 2.2 apply appropriate control measures to ensure the work area is in a safe and suitable condition for testing to commence in accordance with risk assessment requirements and company procedures
 - 2.3 select and prepare tools and equipment compatible with work plans, risk assessments and company procedures
 - 2.4 check tools and equipment are fit for purpose to carry out the identified work in accordance with company procedures
 - 2.5 identify and inspect the correct cable to be repaired in accordance with company procedures and work plan
 - 2.6 establish the extent of repair needed in accordance with company safe working procedures
 - 2.7 report faults with tools, equipment and PPE, including that which is unavailable, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

3. carry out repair to faulted/damaged LV service/mains cables

Assessment criteria

The learner can:

- 3.1 carry out repairs to faulted low voltage cables using selected tools and equipment, in accordance with work plan, risk assessment and company procedures for a minimum of **one** of the following:
 - a. service cable fault
 - b. mains cable fault
-

- 3.2 check the finished repair work is compliant with company specifications and work requirements
- 3.3 perform relevant testing operations in accordance with company procedures, where necessary
- 3.4 record and report the repair work in accordance with company procedures
- 3.5 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person; including a minimum of **one** of the following problems:
 - a. location of fault position
 - b. cable condition
 - c. third party apparatus in close proximity to fault position
 - d. environmental/site conditions
- 3.6 work throughout the duration of operations in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
- 3.7 complete all required post activity documentation in accordance with company policy
- 3.8 ensure all tools and equipment are stored safely and appropriately in accordance with company procedures
- 3.9 ensure hazardous/non-hazardous materials are dealt with and disposed of in accordance with company and statutory procedures
- 3.10 ensure the work area is left in a safe and tidy condition compatible with company procedures

Unit 224

Repairs to faulted or damaged high voltage cables (non-diagnosis)

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is about repairing faulted or damaged high voltage cables (non-diagnosis) in an electrical power engineering environment. It involves following routine fault rectification and repair procedures. It also involves inspecting the finished repair and rectification work to make sure it's operates in a manner that meets operating specifications and quality standards and criteria set by the organization.</p> <p>By completing this unit, learners will demonstrate competence in</p> <ul style="list-style-type: none">• Planning to repair faulty or damaged HV cables• Preparing to repair faulty or damaged HV cables• Repairing faulty or damaged HV cables• Using and communicating data and information• Resolving problems effectively and efficiently
Assessment criteria:	To achieve this unit, learners are required to evidence competence in the following performance-based assessment criteria.

Learning outcomes:

The learner will be able to:

1. plan for work activities on faulty/damaged HV cables
2. prepare for work activities repairing faulted/damaged HV cables
3. carry out repair to faulted/damaged HV cables

Learning outcome:

The learner will be able to:

1. plan for work activities on faulty/damaged HV cables

Assessment criteria

The learner can:

- 1.1 identify the correct work location using available information
 - 1.2 conduct a site-specific risk assessment, completing required documentation, in accordance with health and safety regulations
 - 1.3 plan work to be undertaken to comply with company procedures in accordance with the risk assessment, taking into account factors such as location, content, sequence of tasks and personnel
 - 1.4 outline Inform all affected parties of intended work plans, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

2. prepare for work activities repairing faulted/damaged HV cables

Assessment criteria

The learner can:

- 2.1 select, inspect and wear personal protective equipment (PPE) compatible with work plans, risk assessments and health and safety regulations
 - 2.2 apply appropriate control measures to ensure the work area is in a safe and suitable condition for work to commence in accordance with risk assessment requirements and company procedures (e.g. signs/barriers, control/removal of hazards, traffic control)
 - 2.3 select and prepare tools and equipment compatible with work plans, risk assessments and company procedures
 - 2.4 check tools and equipment are fit for purpose to carry out the identified work in accordance with company procedures
 - 2.5 identify the damaged cable to be repaired, in accordance with company procedures and risk assessment, including points of isolation and earthing arrangements
 - 2.6 identify the fault position and establish the extent of repair needed in accordance with company safe working procedures
 - 2.7 prepare for cable spiking activities, including fitting and removal of spiking gun in accordance with company procedures
 - 2.8 report faults with tools, equipment and PPE, including that which is unavailable, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

3. carry out repair to faulted/damaged HV cables

Assessment criteria

The learner can:

- 3.1 carry out the fault repair to identified high voltage cable using selected tools and equipment, in accordance with work plan, risk assessment and company procedures. Repairs to take place on a minimum of **one** of the following:
 - a. polymeric insulated cables
 - b. paper insulated cables
- 3.2 check the finished repair work is compliant with company specifications and work requirements
- 3.3 perform relevant testing operations in accordance with company procedures, where necessary
- 3.4 record and report the repair work in accordance with company procedures
- 3.5 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person; including a minimum of **one** of the following problems:
 - a. unable to locate fault position
 - b. damage to cable greater than anticipated
 - c. third party apparatus in close proximity to fault position
 - d. environmental/site conditions
- 3.6 work throughout the duration of operations in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
- 3.7 complete all post activity documentation, in accordance with company procedures (e.g. safety reports, joint positions)
- 3.8 ensure all tools and equipment are stored safely and appropriately in accordance with company procedures
- 3.9 ensure hazardous/non hazardous waste materials are dealt with and disposed of in accordance with company and statutory procedures
- 3.10 ensure the work area is left in a safe and tidy condition compatible with company procedures

Unit 225

Movement of cable, plant and apparatus

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is about moving cable, plant and apparatus in an electrical power engineering environment. It involves the processes and procedures to be followed to make sure that loads are secured and moved safely using lifting methods and equipment that are fit for purpose and meet health and safety regulations.</p> <p>By completing this unit, learners will demonstrate competence in:</p> <ul style="list-style-type: none">• planning the movement of cable, plant and apparatus• preparing for the movement of cable, plant and apparatus• moving, secure and position cable, plant and apparatus• using and communicate data and information• resolving problems effectively and efficiently
Assessment criteria:	To achieve this unit, learners are required to evidence competence in the following performance-based assessment criteria.

Learning outcomes:

The learner will be able to:

1. plan for work activities to move cable, plant and apparatus
2. prepare resources to move cable, plant and apparatus
3. carry out the movement of cable, plant and apparatus

Learning outcome:

The learner will be able to:

1. plan for work activities to move cable, plant and apparatus

Assessment criteria

The learner can:

- 1.1 identify the correct work location using available information
- 1.2 conduct a site-specific risk assessment, completing required documentation, in accordance with health and safety regulations

- 1.3 plan the moving operation in accordance with the risk assessment, taking into account factors such as location, sequence of tasks, personnel and size, weight and stability of the load to be moved
 - 1.4 identify a route compatible with the risk assessment and health and safety procedures
 - 1.5 inform all affected parties of intended work plans, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

2. prepare resources to move cable, plant and apparatus

Assessment criteria

The learner can:

- 2.1 identify the load to be moved, in accordance with the work/lift plan. Evidence **must** include a minimum of **two** different types of loads (e.g. large cable drums, link boxes, transformer, switchgear, panels, street furniture, over 25 kV joints)
 - 2.2 elect, inspect and wear personal protective equipment (PPE) in accordance with work/lift plan, risk assessment and relevant health and safety regulations
 - 2.3 apply appropriate control measures to ensure the work area is in a safe and suitable condition for work to commence in accordance with risk assessment requirements and company procedures (e.g. signs/barriers, control/removal of hazards, traffic control)
 - 2.4 establish the weight and stability of the load to be moved, in accordance with the work/lift plan
 - 2.5 identify a lifting and moving technique, in accordance with company procedures, compatible with the weight and stability of the load
 - 2.6 select, inspect and prepare moving equipment capable of handling the weight and stability of the load
 - 2.7 select additional tools and equipment necessary to perform the operation
 - 2.8 check tools and equipment are fit for purpose to carry out the identified work in accordance with company procedures
 - 2.9 report faults with tools, equipment and PPE, including that which is unavailable, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

3. carry out the movement of cable, plant and apparatus

Assessment criteria

The learner can:

- 3.1 position and secure the lifting and moving equipment to the load, ensuring the weight is evenly distributed in accordance with safe working procedures
 - 3.2 lift and move the identified load safely and efficiently along the planned route
 - 3.3 secure the load safely in its final identified position in accordance with the work/lift plan
 - 3.4 check the finished location meets the work specification and company requirements
-

- 3.5 deal with all problems encountered safely and efficiently, referring matters that cannot be rectified to the appropriate person; evidence must include **one** of the following problems:
 - a. positioning/securing of loads
 - b. environmental/site conditions
 - c. equipment/resources
 - d. effects of other people
 - 3.6 demonstrate throughout the duration of the work operations compliance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
 - 3.7 confirm the completion of work activities with relevant parties in accordance with company procedures
 - 3.8 ensure all tools and equipment are inspected and stored appropriately in accordance with company procedures
 - 3.9 ensure hazardous/non-hazardous waste materials are dealt with and disposed of in accordance with company and statutory procedures
 - 3.10 ensure the work area is left in a safe and tidy condition compatible with company procedures
-

Additional requirements:

To complete this unit learners **must** incorporate the following additional requirements in the process of moving the loads identified in the unit:

- Use lifting accessories safely. Evidence **must** include a minimum of **two** of the following accessories:
 - slings
 - shackles
 - chain lifts
 - winches/hoists
 - rollers
 - ratchet straps
 - pull lifts
 - tirlors
 - ropes
 - other mechanical aids
- Incorporate the use of powered lifting equipment. Evidence **must** include a minimum of **one** of the following situations:
 - a difficult route
 - where space and positioning is confined
 - where the load is unbalanced and/or complex

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is about safe entry, egress and movement in substations in an electrical power engineering environment. It involves procedures to be followed and measures to be taken to make sure that the working environment is free from obstacles and hazards that may cause harm to self, your work colleagues and the general public.</p> <p>By completing this unit, learners will demonstrate competence in:</p> <ul style="list-style-type: none"> • planning for access and egress of a substation • preparing resources for accessing and egressing of a substation • accessing and egressing a substation • using and communicating data and information • resolving problems effectively and efficiently
Assessment criteria:	To achieve this unit, learners are required to evidence competence in the following performance-based assessment criteria.

Learning outcomes:

The learner will be able to:

1. plan for access and egress of substation
 2. prepare resources to access and egress substation
 3. carry out the access and egress of substation
-

Learning outcome:

The learner will be able to:

1. plan for access and egress of substation

Assessment criteria

The learner can:

- 1.1 identify the correct substation to be accessed using available information
 - 1.2 conduct a site-specific risk assessment, completing required documentation, in accordance with health and safety regulations
-

- 1.3 plan work to be undertaken to comply with company procedures in accordance with risk assessment, taking into account factors such as location, content, sequence of tasks and personnel
 - 1.4 inform all affected parties of intended work plans, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

2. prepare resources to access and egress substation

Assessment criteria

The learner can:

- 2.1 select, inspect and wear personal protective equipment (PPE) compatible with work plan, risk assessment and health and safety regulations
 - 2.2 select and prepare tools and equipment compatible with work plan and risk assessment
 - 2.3 check tools and equipment are fit for purpose to carry out the identified work in accordance with company procedures
 - 2.4 report faults with tools, equipment and PPE, including that which is unavailable, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

3. carry out the access and egress of substation

Assessment criteria

The learner can:

- 3.1 conduct a pre-entry inspection of the identified substation in accordance with work plans, risk assessments and company procedures
 - 3.2 inform all relevant parties of their presence and intended work plan
 - 3.3 conduct a visual inspection of the site and apply appropriate control measures to ensure the work area is in a safe and suitable condition for work to commence in accordance with risk assessment requirements and company procedures (e.g. prevention of unauthorised access, signs/barriers, demarcation of routes/work areas, control/removal of hazards)
 - 3.4 access, egress and move around the identified substation in accordance with company procedures and safe working practices
 - 3.5 identify, record and report substation faults to the appropriate person in accordance with company procedures, where applicable
 - 3.6 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person; evidence must include at least **one** of the following problems:
 - a. proximity to live equipment
 - b. unauthorised access
 - c. defective equipment
 - d. environmental/site conditions
-

- 3.7 work throughout the duration of operations in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
- 3.8 confirm the completion of the work activity with relevant parties in accordance with company procedures
- 3.9 ensure all tools and equipment are stored safely and appropriately in accordance with company procedures
- 3.10 ensure hazardous/non-hazardous waste materials are dealt with and disposed of in accordance with company and statutory procedures
- 3.11 ensure the work area is left in a safe and tidy condition compatible with company procedures
- 3.12 leave the substation in a safe and secure condition in accordance with company procedures and statutory regulations

Unit 227

Electrical and functional testing of fitting plant and apparatus

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is about electrical and functional testing of fitting plant and apparatus in an electrical power engineering environment. It includes the processes and procedures to be followed to make sure that tests are conducted and recorded in a manner that meets the quality assurance requirements and standards set by the organisation.</p> <p>By completing this unit, learners will demonstrate competence in:</p> <ul style="list-style-type: none">• planning to test fitting plant and apparatus• preparing to test fitting plant and apparatus• testing fitting plant and apparatus• using and communicating data and information• resolving problems effectively and efficiently
Assessment criteria:	To achieve this unit, learners are required to evidence competence in the following performance-based assessment criteria.

Learning outcomes:

The learner will be able to:

1. plan for work activities to test fitting plant and apparatus
2. prepare resources to test fitting plant and apparatus
3. carry out the electrical testing of fitting plant and apparatus

Learning outcome:

The learner will be able to:

1. plan for work activities to test fitting plant and apparatus

Assessment criteria

The learner can:

- 1.1 identify the correct work location using available information

- 1.2 conduct a site-specific risk assessment, completing required documentation, in accordance with health and safety regulations
 - 1.3 plan work to be undertaken to comply with company procedures in accordance with risk assessment, taking into account factors such as location, content, sequence of tasks and personnel
 - 1.4 inform all affected parties of intended work plans, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

2. prepare resources to test fitting plant and apparatus

Assessment criteria

The learner can:

- 2.1 select, inspect and wear personal protective equipment (PPE) compatible with work plans, risk assessments and health and safety regulations
 - 2.2 apply appropriate control measures to ensure the work area is in a safe and suitable condition for work to commence in accordance with risk assessment requirements and company procedures (e.g. signs/barriers, demarcation of work area, control/removal of hazards)
 - 2.3 select and prepare tools and testing equipment compatible with work plans, risk assessments and company procedures
 - 2.4 check tools and equipment are fit for purpose to carry out the identified work in accordance with company procedures
 - 2.5 identify and inspect the plant and/or apparatus to be worked on in accordance with company procedures and work plan
 - 2.6 report faults with tools, equipment and PPE, including that which is unavailable, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

3. carry out the electrical testing of fitting plant and apparatus

Assessment criteria

The learner can:

- 3.1 use the selected testing equipment to carry out the work in accordance with work plan, risk assessment and company procedures. On a minimum of **one** occasion Evidence **must** include a minimum of **two** of the following tests:
 - a. polarity
 - b. insulation resistance
 - c. earth impedance
 - d. three phase testing
 - e. phase rotation
 - f. continuity
 - g. ductor test
-

- h. contact wipe
 - i. contact alignment
 - j. SF6 pressure testing
 - k. dielectric oil testing
 - l. Buchholz test
- 3.2 confirm and correctly interpret the results of the testing operations
- 3.3 record the results of the testing in accordance with company procedures, where applicable
- 3.4 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person. Evidence must include a minimum of **one** of the following problems:
- a. earth reading
 - b. voltage fluctuation
 - c. phase rotation
 - d. polarity
 - e. inappropriate test results
- 3.5 work throughout the duration of operations in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
- 3.6 complete all required post activity documentation in accordance with company policy
- 3.7 ensure all tools and equipment are stored safely and appropriately in accordance with company procedures
- 3.8 ensure hazardous/non-hazardous waste materials are dealt with and disposed of in accordance with company and statutory procedures
- 3.9 ensure the work area is left in a safe and tidy condition compatible with company procedures

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is about inspecting and maintaining battery systems in an electrical power engineering environment. It includes the processes and procedures that need to be rigorously and methodically followed to make sure that the finished work meets the quality assurance and operating specifications set by the organisation. It also involves using a range of tools and equipment that are fit for purpose and the wearing of Personal Protective Equipment when performing work activities.</p> <p>By completing this unit, learners will demonstrate competence in:</p> <ul style="list-style-type: none">• planning to inspect and maintain battery systems• preparing to inspect and maintain battery systems• inspecting and maintain battery systems• using and communicate data and information• resolving problems effectively and efficiently
Assessment criteria:	To achieve this unit, learners are required to evidence competence in the following performance-based assessment criteria.

Learning outcomes:

The learner will be able to:

1. plan for work activities to inspect and maintain battery systems
2. prepare resources to inspect and maintain battery systems
3. carry out the inspection and maintenance of battery systems

Learning outcome:

The learner will be able to:

1. plan for work activities to inspect and maintain battery systems

Assessment criteria

The learner can:

- 1.1 identify the correct work location using available information
 - 1.2 conduct a site-specific risk assessment, completing required documentation, in accordance with health and safety regulations
 - 1.3 plan work to be undertaken to comply with company procedures in accordance with risk assessment, taking into account factors such as location, content, sequence of tasks and personnel
 - 1.4 inform all affected parties of intended work plans, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

2. prepare resources to inspect and maintain battery systems

Assessment criteria

The learner can:

- 2.1 select, inspect and wear personal protective equipment (PPE) compatible with work plans, risk assessments and health and safety regulations
 - 2.2 apply appropriate control measures to ensure the work area is in a safe and suitable condition for work to commence in accordance with risk assessment requirements and company procedures (e.g. signs/barriers, demarcation of work area, control/removal of hazards)
 - 2.3 select and prepare tools and testing equipment compatible with work plans, risk assessments and company procedures
 - 2.4 check tools and equipment are fit for purpose to carry out the identified work in accordance with company procedures
 - 2.5 identify the correct battery system to be worked on in accordance with company procedures and work plan
 - 2.6 report faults with tools, equipment and PPE, including that which is unavailable, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

3. carry out the inspection and maintenance of battery systems

Assessment criteria

The learner can:

- 3.1 inspect and maintain battery systems, using selected tools and equipment, in accordance with work plans, risk assessments and company procedures
 - 3.2 check the finished product is compliant with maintenance specifications and work instruction requirements
 - 3.3 perform testing procedures in accordance with company procedures to ensure the completed maintenance meets company operational requirements. Evidence **must** include a minimum of **two** of the following:
-

- a. battery voltage/current
 - b. cell specific gravity
 - c. discharge
 - d. battery charger
 - e. other relevant testing procedure
- 3.4 confirm and interpret the results of the testing operations
- 3.5 record and report the test results, in accordance with company procedures
- 3.6 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person; Evidence **must** include a minimum of **one** of the following problems:
- a. poor test results
 - b. damage/corrosion/leakage
 - c. congested/hazardous areas
 - d. environmental/site conditions
- 3.7 work throughout the duration of operations in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
- 3.8 complete all required post activity documentation in accordance with company policy
- 3.9 ensure all tools and equipment are stored safely and appropriately in accordance with company procedures
- 3.10 ensure hazardous/non-hazardous waste materials are dealt with and disposed of in accordance with company and statutory procedures
- 3.11 ensure the work area is left in a safe and tidy condition compatible with company procedures
-

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This is about substation earthing installation and testing in an electrical power engineering environment. It involves using tools and equipment in a safe, methodical and vigilant manner to make sure the earthing of plant and apparatus is conducted safely and in accordance with health and safety rules and regulations.</p> <p>By completing this unit, learners will demonstrate competence in:</p> <ul style="list-style-type: none"> • planning to install and test earthing materials • preparing to install and test earthing materials • installing and test earthing materials • using and communicate data and information • resolving problems effectively and efficiently
Assessment criteria:	To achieve this unit, learners are required to evidence competence in the following performance-based assessment criteria.

Learning outcomes:

The learner will be able to:

1. plan for work activities to install and test earthing materials
 2. prepare resources to install and test earthing materials
 3. carry out the installation and testing of earthing materials
-

Learning outcome:

The learner will be able to:

1. plan for work activities to install and test earthing materials

Assessment criteria

The learner can:

- 1.1 identify the correct work location using available information
 - 1.2 conduct a site-specific risk assessment, completing required documentation, in accordance with health and safety regulations
-

- 1.3 plan work to be undertaken to comply with company procedures in accordance with risk assessment, taking into account factors such as location, content, sequence of tasks and personnel
 - 1.4 inform all affected parties of intended work plans, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

2. prepare resources to install and test earthing materials

Assessment criteria

The learner can:

- 2.1 select, inspect and wear personal protective equipment (PPE) compatible with work plans, risk assessments and health and safety regulations
 - 2.2 apply appropriate control measures to ensure the work area is in a safe and suitable condition for work to commence in accordance with risk assessment requirements and company procedures (e.g. signs/barriers, demarcation of work area, control/removal of hazards)
 - 2.3 select and prepare tools and testing equipment compatible with work plans, risk assessments and company procedures
 - 2.4 check tools and equipment are fit for purpose to carry out the identified work in accordance with company procedures
 - 2.5 identify and inspect the plant/apparatus to be worked on in accordance with company procedures and work plan
 - 2.6 report faults with tools, equipment and PPE, including that which is unavailable, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

3. carry out the installation and testing of earthing materials

Assessment criteria

The learner can:

- 3.1 describe Install earthing materials using the selected tools, equipment and materials in accordance with work plans, risk assessments and company procedures
 - 3.2 check the finished product is compliant with maintenance specifications and work instruction requirements
 - 3.3 perform testing procedures in accordance with company procedures to ensure the completed work meets company operational requirements
 - 3.4 record and report the test results, in accordance with company procedures
 - 3.5 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person. Evidence **must** include a minimum of **one** of the following problems:
 - a. poor test results
 - b. difficult ground conditions
-

c. congested/hazardous areas

- 3.6 work throughout the duration of operations in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
 - 3.7 complete all required post activity documentation in accordance with company policy
 - 3.8 ensure all tools and equipment are stored safely and appropriately in accordance with company procedures
 - 3.9 ensure hazardous/non-hazardous waste materials are dealt with and disposed of in accordance with company and statutory procedures
 - 3.10 ensure the work area is left in a safe and tidy condition compatible with company procedures
-

Unit 230

Inspection of substation plant and apparatus

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is about inspecting substation plant and apparatus in an electrical power engineering environment. It includes the processes and procedures that need to be rigorously and methodically followed to make sure that the finished work meets the quality assurance and operating specifications set by the organisation. It also involves using a range of tools and equipment that are fit for purpose and the wearing of personal protective equipment when performing work activities.</p> <p>By completing this unit, learners will demonstrate competence in:</p> <ul style="list-style-type: none">• planning to inspect substation plant and apparatus• preparing to inspect substation plant and apparatus• inspecting substation plant and apparatus• using and communicating data and information• resolving problems effectively and efficiently
Assessment criteria:	To achieve this unit, learners are required to evidence competence in the following performance-based assessment criteria.

Learning outcomes:

The learner will be able to:

1. plan for work activities to inspect substation plant and apparatus
2. prepare resources to inspect substation plant and apparatus
3. carry out the inspection of substation plant and apparatus

Learning outcome:

The learner will be able to:

1. plan for work activities to inspect substation plant and apparatus

Assessment criteria

The learner can:

- 1.1 identify the correct substation to be inspected using available information
 - 1.2 conduct a site-specific risk assessment, completing required documentation, in accordance with health and safety regulations
 - 1.3 plan work to be undertaken to comply with company procedures in accordance with risk assessment, taking into account factors such as location, content, sequence of tasks and personnel
 - 1.4 inform all affected parties of intended work plans, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

2. prepare resources to inspect substation plant and apparatus

Assessment criteria

The learner can:

- 2.1 select, inspect and wear personal protective equipment (PPE) in accordance with work plan, risk assessment and health and safety regulations
 - 2.2 select and prepare tools and equipment compatible with work plan and risk assessment
 - 2.3 check tools, equipment are fit for purpose to carry out the identified work in accordance with company procedures
 - 2.4 report faults with tools, equipment and PPE, including that which is unavailable, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

3. carry out the inspection of substation plant and apparatus

Assessment criteria

The learner can:

- 3.1 conduct a pre-entry inspection of the identified substation in accordance with work plans, risk assessments and company procedures
 - 3.2 conduct a visual inspection of the site and apply appropriate control measures to ensure the work area is in a safe and suitable condition for work to commence in accordance with risk assessment (e.g. prevention of unauthorised access, signs/barriers, demarcation of routes/work areas, control/removal of hazards)
 - 3.3 identify the correct plant or apparatus to be inspected, in accordance with company procedures and work plan
 - 3.4 conduct an inspection of the identified substation plant and apparatus, using selected tools and equipment, in accordance with company procedures. Evidence **must** include a minimum of **two** of the following:
 - a. transformers
 - b. HV Switchgear
-

- c. LV apparatus
 - d. bus-bar installations
 - e. earthing
 - f. neutral earthing resistor
 - g. cables
 - h. battery installations
 - i. site conditions
- 3.5 record and report substation inspection outcomes in accordance with company policy
- 3.6 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person. Evidence **must** include **one** of the following problems:
- a. proximity to live equipment
 - b. unauthorised access
 - c. defective equipment
 - d. environmental/site conditions
- 3.7 work throughout the duration of operations in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
- 3.8 complete all required post activity documentation in accordance with company policy
- 3.9 ensure all tools and equipment are stored safely and appropriately in accordance with company procedures
- 3.10 ensure hazardous/non-hazardous waste materials are dealt with and disposed of in accordance with company and statutory procedures
- 3.11 ensure the work area is left in a safe and tidy condition compatible with company procedures

Unit 231

Maintain compressed air systems

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is about maintaining compressed air systems in an electrical power engineering environment. It includes the processes and procedures to be followed to make sure that the completed maintenance work meets the quality assurance and operating specifications set by the organisation. It includes aspects of communication and the safe working practices that need to be followed in the workplace.</p> <p>By completing this unit, learners will demonstrate competence in:</p> <ul style="list-style-type: none">• planning to maintain compressed air systems• preparing to maintain compressed air systems• maintaining compressed air systems• using and communicating data and information• resolving problems effectively and efficiently
Assessment criteria:	To achieve this unit, learners are required to evidence competence in the following performance-based assessment criteria.

Learning outcomes:

The learner will be able to:

1. plan for work to maintain compressed air systems
2. prepare resources to maintain compressed air systems
3. carry out maintenance of compressed air systems

Learning outcome:

The learner will be able to:

1. plan for work to maintain compressed air systems

Assessment criteria

The learner can:

- 1.1 identify the correct work location using available information

- 1.2 conduct a site-specific risk assessment, completing required documentation, in accordance with health and safety regulations
 - 1.3 plan work to be undertaken to comply with company procedures in accordance with risk assessment, taking into account factors such as location, content, sequence of tasks and personnel
 - 1.4 inform all affected parties of intended work plans, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

2. prepare resources to maintain compressed air systems

Assessment criteria

The learner can:

- 2.1 select, inspect and wear personal protective equipment (PPE) compatible with work plans, risk assessments and health and safety regulations
 - 2.2 apply appropriate control measures to ensure the work area is in a safe and suitable condition for work to commence in accordance with risk assessment requirements and company procedures (e.g. signs/barriers, demarcation of work area, control/removal of hazards)
 - 2.3 select and prepare tools and testing equipment compatible with work plans, risk assessments and company procedures
 - 2.4 check tools and equipment are fit for purpose to carry out the identified work in accordance with company procedures
 - 2.5 identify and inspect the equipment and system to be maintained in accordance with company procedures and work plan
 - 2.6 report faults with tools, equipment and PPE, including that which is unavailable, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

3. carry maintenance of compressed air systems

Assessment criteria

The learner can:

- 3.1 maintain compressed air systems using selected tools and equipment, in accordance with work plans, risk assessments and company procedures
 - 3.2 ensure any stored energy is released safely, where applicable, in accordance with company procedures
 - 3.3 check the finished product is compliant with maintenance specifications and work instruction requirements
 - 3.4 perform testing procedures in accordance with company procedures to ensure the completed maintenance meets company requirements.
 - 3.5 record and report the maintenance work in accordance with company procedures
-

- 3.6 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person. Evidence **must** include a minimum of **one** of the following problems:
- a. equipment
 - b. material
 - c. test failure
 - d. system conditions
 - e. environmental/site conditions
 - f. effects of other people
- 3.7 work throughout the duration of operations in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
- 3.8 complete all required post activity documentation in accordance with company policy
- 3.9 ensure all tools and equipment are stored safely and appropriately in accordance with company procedures
- 3.10 ensure hazardous/non-hazardous waste materials are dealt with and disposed of in accordance with company and statutory procedures
- 3.11 ensure the work area is left in a safe and tidy condition compatible with company procedures

Unit 232

Location and identification of underground utility services

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is about locating and identifying underground utility services in an electrical power engineering environment. It involves the use of cable and other avoidance tools to equipment to reduce the risk of damage to existing underground cables and utilities. It also involves following procedures designed to protect operatives and others from harm and to safeguard the supply of public utility services.</p> <p>By completing this unit, learners will demonstrate competence in:</p> <ul style="list-style-type: none">• planning to locate and identify underground utility services• preparing resources to locate and identify underground utility services• locating and identifying underground utility services• using and communicating data and information• resolving problems effectively and efficiently
Assessment criteria:	To achieve this unit, learners are required to evidence competence in the following performance-based assessment criteria.

Learning outcomes:

The learner will be able to:

1. plan for work activities to locate and identify underground utility services
2. prepare resources to locate and identify underground utility services
3. carry out location and identification of underground utility services

Learning outcome:

The learner will be able to:

1. plan for work activities to locate and identify underground utility services

Assessment criteria

The learner can:

- 1.1 identify the correct work location using available information

- 1.2 conduct a site-specific risk assessment, completing required documentation in accordance with established company procedures and health and safety regulations. Evidence **must** include a minimum of **two** of the following environments:
 - a. roadway
 - b. building site
 - c. pavement
 - d. pedestrian area
 - e. grass verge
 - 1.3 plan work to be undertaken to comply with company procedures in accordance with the risk assessment, taking into account factors such as location, content, sequence of tasks and personnel
 - 1.4 inform all affected parties with their intended work plan, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

2. prepare resources to locate and identify underground utility services

Assessment criteria

The learner can:

- 2.1 select, inspect and wear personal protective equipment (PPE) compatible with work plans, risk assessments and health and safety regulations
 - 2.2 apply appropriate control measures to ensure the work area is in a safe and suitable condition for work to commence in accordance with risk assessment requirements and company procedures (e.g. signs/barriers, traffic control)
 - 2.3 select and prepare tools and equipment, including cable avoidance equipment, compatible with work plans, risk assessments and company procedures
 - 2.4 check tools and equipment are fit for purpose to carry out the identified work in accordance with company procedures
 - 2.5 report faults with tools, equipment and PPE, including that which is unavailable, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

3. carry out location and identification of underground utility services

Assessment criteria

The learner can:

- 3.1 use cable avoidance equipment to correctly confirm the location of buried cables. Evidence **must** include a minimum of **two** of the following modes:
 - a. power
 - b. radio
-

- c. induction
 - d. connection. (e.g. two modes on one occasion and two on another)
- 3.2 record on utility plans the position of all located apparatus in accordance with company procedures
- 3.3 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person. Evidence **must** include a minimum of **one** of the following problems:
 - a. no response from locator
 - b. location of apparatus
 - c. difficulty in tracing cable
 - d. site/environmental conditions
- 3.4 work throughout the duration of operations in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
- 3.5 complete all required post activity documentation in accordance with company procedures
- 3.6 ensure all tools and equipment are stored safely and appropriately in accordance with company procedures
- 3.7 ensure hazardous/non-hazardous waste materials are dealt with and disposed of in accordance with company and statutory procedures
- 3.8 ensure the work area is left in a safe and tidy condition compatible with company procedures

Unit 233

Access egress and movement within the working area

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is about safe entry, egress and movement within the working area in an electrical power engineering environment. It involves procedures to be followed and measures to be taken to make sure that the working environment is free from obstacles and hazards that may cause harm to self, your work colleagues and the general public.</p> <p>By completing this unit, learners will demonstrate competence in:</p> <ul style="list-style-type: none">• planning for cable jointing work activities• preparing for cable jointing work activities• maintaining safe access and egress whilst completing cable jointing activities• using and communicating data and information• resolving problems effectively and efficiently
Assessment criteria:	To achieve this unit, learners are required to evidence competence in the following performance-based assessment criteria.

Learning outcomes:

The learner will be able to:

1. plan for cable jointing work activities
2. prepare for cable jointing work activities
3. maintain safe access and egress whilst completing cable jointing work activities

Learning outcome:

The learner will be able to:

1. plan for cable jointing work activities

Assessment criteria

The learner can:

- 1.1 identify the correct work location using available information

- 1.2 conduct a site-specific risk assessment, completing required documentation, in accordance with company procedures and health and safety regulations
 - 1.3 plan work to be undertaken to comply with company procedures in accordance with the risk assessment, taking into account factors such as location, site conditions, content, sequence of tasks and personnel
 - 1.4 inform all affected parties of intended work plans, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

2. prepare for cable jointing work activities

Assessment criteria

The learner can:

- 2.1 select, inspect and wear personal protective equipment (PPE) compatible with work plans, risk assessments and health and safety regulations
 - 2.2 apply control measures to ensure the work area is in a safe and suitable condition for work to commence in accordance with risk assessment requirements and company procedures (e.g. signs/barriers, traffic control)
 - 2.3 select and prepare tools and equipment, compatible with work plans, risk assessments and company procedures
 - 2.4 check tools and equipment are fit for purpose to carry out the identified work in accordance with company procedures
 - 2.5 report faults with tools, equipment and PPE, including that which is unavailable, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

3. maintain safe access and egress whilst completing cable jointing work activities

Assessment criteria

The learner can:

- 3.1 conduct a pre-entry inspection of the identified work areas in accordance with work plans, risk assessments and company procedures
 - 3.2 ensure excavated spoil, obstacles and other waste materials do not constitute a hazard to safe movement
 - 3.3 position tools, equipment and materials in a safe location, in accordance with risk assessment
 - 3.4 access, egress and move around the identified work area in a safe manner, in accordance with risk assessment requirements and company procedures
 - 3.5 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person. Evidence **must** include a minimum of **one** of the following problems:
 - a. resources/materials
 - b. adjacent to live apparatus
-

- c. traffic control
 - d. site/environmental conditions
 - e. effects of others
- 3.6 work throughout the duration of operations in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
 - 3.7 confirm the completion of the work activity in accordance with company procedures
 - 3.8 ensure all tools and equipment are stored safely and appropriately in accordance with company procedures
 - 3.9 ensure hazardous/non-hazardous waste materials are dealt with and disposed of in accordance with company and statutory procedures
 - 3.10 ensure the work area is left in a safe and tidy condition compatible with company procedures

Unit 234

Electrical testing of underground cables and apparatus

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is about electrical testing of underground cables and apparatus in an electrical power engineering environment. It includes the processes and procedures to be followed to make sure that tests are conducted and recorded in a manner that meets the quality assurance requirements and standards set by the organisation.</p> <p>By completing this unit, learners will demonstrate competence in:</p> <ul style="list-style-type: none">• planning to test cable and associated apparatus• preparing to test cable and associated apparatus• testing cable and associated apparatus• using and communicating data and information• resolving problems effectively and efficiently
Assessment criteria:	To achieve this unit, learners are required to evidence competence in the following performance-based assessment criteria.

Learning outcomes:

The learner will be able to:

1. plan for work activities to test cable and associated apparatus
2. prepare resources to test cable and associated apparatus
3. carry out the electrical testing of cable and associated apparatus

Learning outcome:

The learner will be able to:

1. plan for work activities to test cable and associated apparatus

Assessment criteria

The learner can:

- 1.1 identify the correct work location using available information
- 1.2 conduct a site-specific risk assessment, completing required documentation, in accordance with health and safety regulations

- 1.3 plan work to be undertaken to comply with company procedures in accordance with the risk assessment, taking into account factors such as location, content, sequence of tasks and personnel
- 1.4 inform all affected parties of intended work plans, in accordance with company procedures

Learning outcome:

The learner will be able to:

2. prepare resources to test cable and associated apparatus

Assessment criteria

The learner can:

- 2.1 select, inspect and wear personal protective equipment (PPE) compatible with work plans, risk assessments and health and safety regulations
- 2.2 apply appropriate control measures to ensure the work area is in a safe and suitable condition for testing to commence in accordance with risk assessment requirements and company procedures
- 2.3 select and prepare tools and testing equipment compatible with work plans, risk assessments and company procedures
- 2.4 check tools and equipment are fit for purpose to carry out the identified work in accordance with company procedures
- 2.5 identify and inspect the correct cable and/or apparatus to be tested in accordance with company procedures and work plan
- 2.6 report faults with tools, equipment and PPE, including that which is unavailable, in accordance with company procedures

Learning outcome:

The learner will be able to:

3. carry out the electrical testing of cable and associated apparatus

Assessment criteria

The learner can:

- 3.1 use testing equipment to carry out electrical tests in accordance with work plan, risk assessment and company procedures. To include minimum of **two** of the following tests:
 - a. polarity
 - b. insulation resistance
 - c. earth loop impedance
 - d. three-phase testing
 - e. phase rotation
 - f. continuity
 - g. voltage

Each selected test to be performed at least **once**

- 3.2 confirm and interpret the results of the testing, in accordance with company procedures

- 3.3 record the results of the testing in accordance with company procedures, where applicable
- 3.4 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person; evidence to include **one** of the following problems:
 - a. earth reading
 - b. voltage fluctuation
 - c. phase rotation
 - d. polarity readings
 - e. insulation resistance
 - f. environmental/site conditions
- 3.5 work throughout the duration of operations in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
- 3.6 complete all required post activity documentation in accordance with company policy
- 3.7 ensure all tools and equipment are stored safely and appropriately in accordance with company procedures
- 3.8 ensure hazardous/non-hazardous waste materials are dealt with and disposed of in accordance with company and statutory procedures
- 3.9 ensure the work area is left in a safe and tidy condition compatible with company procedures

Unit 235

Carry out excavation activities on underground cables

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is about carrying out excavation activities on underground cables in an electrical power engineering environment. It includes the procedures to be followed and the measures to be taken to make sure that self, work colleagues and the general public are protected from harm when in the vicinity of the excavation. It also involves using a range of tools and equipment and the wearing of Personal Protective Equipment whilst carrying out the work.</p> <p>By completing this unit, you show you are competent to:</p> <ul style="list-style-type: none">• plan for excavation activities on underground cables• prepare for excavation activities on underground cables• carryout excavations activities on underground cables• use and communicate data and information• resolve problems effectively and efficiently
Assessment criteria:	<p>To achieve this unit, learners are required to evidence competence in the following performance-based assessment criteria.</p> <p>.</p>

Learning outcomes:

The learner will be able to:

1. plan for work activities excavating on underground cables
2. prepare for work activities excavating on underground cables
3. carry out excavating activities on underground cables

Learning outcome:

The learner will be able to:

1. plan for work activities excavating on underground cables

Assessment criteria

The learner can:

- 1.1 identify the correct work location using available information

- 1.2 conduct a site-specific risk assessment, completing required documentation, in accordance with health and safety regulations
 - 1.3 plan work to be undertaken to comply with company procedures in accordance with the risk assessment, taking into account factors such as location, content, sequence of tasks and personnel
 - 1.4 inform all affected parties of intended work plans, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

2. prepare for work activities excavating on underground cables

Assessment criteria

The learner can:

- 2.1 select, inspect and wear Personal Protective Equipment (PPE) compatible with work plans, risk assessments and health and safety regulations
 - 2.2 apply control measures to ensure the work area is in a safe and suitable condition for work to commence in accordance with risk assessment requirements and company procedures (e.g. signs/barriers, control/removal of hazards, traffic control)
 - 2.3 select and prepare tools and equipment, compatible with work plans, risk assessments and company procedures
 - 2.4 check tools and equipment are fit for purpose to carry out the identified work in accordance with company procedures
 - 2.5 use cable avoidance and safe excavation techniques in accordance with company procedures prior to excavation to identify potential hazards
 - 2.6 report faults with tools, equipment and PPE, including that which is unavailable, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

3. carry out excavating activities on underground cables

Assessment criteria

The learner can:

- 3.1 carry out excavation activities using safe excavation techniques in accordance with work plan, risk assessment and company procedures. Evidence to include at least **two** separate excavation activities in the following environments:
 - a. roadway
 - b. grass verge
 - c. pavement
 - d. building site
 - e. pedestrian area
 - f. domestic/commercial premises
-

- 3.2 confirm that the completed excavation is suitable for its intended use in accordance with work specifications and company procedures
- 3.3 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person; evidence to include **one** of the following problems:
 - a. insufficient barriers
 - b. unable to locate cable
 - c. traffic control
 - d. defective equipment
 - e. environmental/site conditions
- 3.4 work throughout the duration of operations in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
- 3.5 complete all required post activity documentation in accordance with company policy
- 3.6 ensure all tools and equipment are stored safely and appropriately in accordance with company procedures
- 3.7 ensure hazardous/non-hazardous waste materials are dealt with and disposed of in accordance with company and statutory procedures
- 3.8 ensure the work area is left in a safe and tidy condition compatible with company procedures

Unit 236

Inspect the installation of underground cables

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is about inspecting the installation of underground cables in an electrical power environment. It includes the processes and procedures that need to be rigorously and methodically followed to make sure that the finished work meets the quality assurance and operating specifications set by the organisation. It also involves using a range of tools and equipment that are fit for purpose and the wearing of Personal Protective Equipment when performing work activities.</p> <p>By completing this unit, learners will demonstrate competence in:</p> <ul style="list-style-type: none">• planning to inspect the installation of underground cables• preparing to inspect the installation of underground cables• inspecting the installation of underground cables• using and communicating data and information• resolving problems effectively and efficiently
Assessment criteria:	To achieve this unit, learners are required to evidence competence in the following performance-based assessment criteria. .

Learning outcomes:

The learner will be able to:

1. plan for work activities inspecting the installation of underground cables
2. prepare for work activities inspecting the installation of underground cables
3. carry out inspection of the installation of underground cables activities

Learning outcome:

The learner will be able to:

1. plan for work activities inspecting the installation of underground cables

Assessment criteria

The learner can:

- 1.1 identify the correct work location using available information

- 1.2 conduct a site-specific risk assessment, completing required documentation, in accordance with health and safety regulations
 - 1.3 plan work to be undertaken to comply with company procedures in accordance with risk the assessment, taking into account factors such as location, content, sequence of tasks and personnel
 - 1.4 inform all affected parties of intended work plans, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

2. prepare for work activities inspecting the installation of underground cables

Assessment criteria

The learner can:

- 2.1 select, inspect and wear personal protective equipment (PPE) compatible with work plans, risk assessments and health and safety regulations
 - 2.2 apply control measures to ensure the work area is in a safe and suitable condition for the inspection to take place in accordance with risk assessment requirements and company procedures (e.g. signs/barriers, control/removal of hazards)
 - 2.3 select and prepare tools and equipment, compatible with work plans, risk assessments and company procedures
 - 2.4 check tools and equipment are fit for purpose to carry out the identified work in accordance with company procedures
 - 2.5 identify the correct cable installation to be inspected, in accordance with company procedures and work plan
 - 2.6 report faults with tools, equipment and PPE, including that which is unavailable, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

3. carry out inspection of the installation of underground cables activities

Assessment criteria

The learner can:

- 3.1 inspect the installation of underground cables using selected tools and equipment, in accordance with work plan, risk assessment and company procedures
 - 3.2 check the cable installation complies with company specifications (e.g. correct depth, bending radii, protection)
 - 3.3 confirm no damage has occurred to the cable or other utility apparatus during installation
 - 3.4 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person; evidence to include **one** of the following problems:
 - a. incorrect trench depth
 - b. incorrect duct type
-

- c. cable damage
 - d. incorrect bend radii
 - e. environmental/site conditions
 - f. non-compliance with specification
- 3.5 work throughout the duration of operations in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
 - 3.6 complete all post activity documentation, in accordance with company procedures (e.g. safety reports, cable positions)
 - 3.7 ensure all tools and equipment are stored safely and appropriately in accordance with company procedures
 - 3.8 ensure hazardous/non-hazardous waste materials are dealt with and disposed of in accordance with company and statutory procedures
 - 3.9 ensure the work area is left in a safe and tidy condition compatible with company procedures

Unit 237

Install underground cables

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is about installing underground cables in an electricity power utility environment. It involves completing installation activities in a rigorous and methodical manner and the following of processes and procedures to make sure that the finishes work meets the quality assurance and operating specifications set by the organisation.</p> <p>By completing this unit, learners will demonstrate competence in:</p> <ul style="list-style-type: none">• planning to install underground cables• preparing to install underground cables• installing underground cables• using and communicating data and information• resolving problems effectively and efficiently
Assessment criteria:	To achieve this unit, learners are required to evidence competence in the following performance-based assessment criteria.

Learning outcomes:

The learner will be able to:

1. plan for work activities to install underground cables
2. prepare for work activities to install underground cables
3. carry out the installation of underground cables activities

Learning outcome:

The learner will be able to:

1. plan for work activities to install underground cables

Assessment criteria

The learner can:

- 1.1 identify the correct work location using available information

- 1.2 conduct a site-specific risk assessment, completing required documentation, in accordance with health and safety regulations
 - 1.3 plan work to be undertaken to comply with company procedures in accordance with the risk assessment, taking into account factors such as location, content, sequence of tasks and personnel
 - 1.4 inform all affected parties of intended work plans, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

2. prepare for work activities to install underground cables

Assessment criteria

The learner can:

- 2.1 select, inspect and wear personal protective equipment (PPE) compatible with work plans, risk assessments and health and safety regulations
 - 2.2 apply control measures to ensure the work area is in a safe and suitable condition for the installation to take place in accordance with risk assessment requirements and company procedures (e.g. signs/barriers, control/removal of hazards, traffic control)
 - 2.3 select and prepare tools and equipment, compatible with work plans, risk assessments and company procedures
 - 2.4 check the tools and equipment are fit for purpose to carry out the identified work in line with company procedures
 - 2.5 identify the correct cable/s to be installed and the cable route in accordance with company procedures and work plan
 - 2.6 check the cable route conforms to company specifications and is suitable for the cable installation (e.g. width, depth, ducts)
 - 2.7 report faults with tools, equipment and PPE, including that which is unavailable, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

3. carry out the installation of underground cables activities

Assessment criteria

The learner can:

- 3.1 install underground cables using selected tools and equipment, in accordance with work plan, risk assessment and company procedures. Cable installation to include at least **two of the following**:
 - a. LV cable in duct
 - b. LV cable direct
 - c. HV cable in duct
 - d. HV cable direct
-

- 3.2 check the cable installation complies with company specifications (e.g. correct depth, bending radii, protection)
- 3.3 confirm no damage has occurred to the cable or other utility apparatus during installation
- 3.4 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person; evidence to include **one** of the following problems:
 - a. cable duct
 - b. trench condition
 - c. materials/resources
 - d. backfill material
 - e. environmental/site conditions
- 3.5 work throughout the duration of operations in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
- 3.6 complete all post activity documentation, in accordance with company procedures, (e.g. safety reports, joint positions)
- 3.7 ensure all tools and equipment are stored safely and appropriately in accordance with company procedures
- 3.8 ensure hazardous/non-hazardous waste materials are dealt with and disposed of in accordance with company and statutory procedures
- 3.9 ensure the work area is left in a safe and tidy condition compatible with company procedures

Unit 238

Carry out jointing on pilot/telephone cables

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is about performing jointing work on pilot/telephone cables in an electrical power engineering environment. It includes the processes and procedures to be followed to make sure that the completed work meets the quality assurance and operating specifications set by the organisation. It also involves following and complying with health and safety measures to minimise the risk of harm and injury to self and others when undertaking and completing jointing work activities.</p> <p>By completing this unit, learners will demonstrate competence in:</p> <ul style="list-style-type: none">• planning for jointing on pilot/telephone cables• preparing for jointing on pilot/telephone cables• performing jointing on pilot/telephone cables• using and communicating data and information• resolving problems effectively and efficiently
Assessment criteria:	To achieve this unit, learners are required to evidence competence in the following performance-based assessment criteria.

Learning outcomes:

The learner will be able to:

1. plan for work activities on jointing on pilot/telephone cables
2. prepare for work activities on jointing on pilot/telephone cables
3. carry out jointing activities on pilot/telephone cables

Learning outcome:

The learner will be able to:

1. plan for work activities on jointing on pilot/telephone cables

Assessment criteria

The learner can:

- 1.1 identify the correct work location using available information

- 1.2 conduct a site-specific risk assessment, completing required documentation, in accordance with health and safety regulations
 - 1.3 plan work to be undertaken to comply with company procedures in accordance with the risk assessment, taking into account factors such as location, content, sequence of tasks and personnel
 - 1.4 inform all affected parties of intended work plans, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

2. prepare for work activities on jointing on pilot/telephone cables

Assessment criteria

The learner can:

- 2.1 select, inspect and wear personal protective equipment (PPE) compatible with work plans, risk assessments and health and safety regulations
 - 2.2 apply appropriate control measures to ensure the work area is in a safe and suitable condition for work to commence in accordance with risk assessment requirements and company procedures (e.g. signs/barriers, control/removal of hazards)
 - 2.3 select and prepare tools and equipment compatible with work plans, risk assessments and company procedures
 - 2.4 check tools and equipment are fit for purpose to carry out the identified work in accordance with company procedures
 - 2.5 identify and inspect the cables to be jointed, in accordance with company procedures and work plan
 - 2.6 report faults with tools, equipment and PPE, including that which is unavailable, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

3. carry out jointing activities on pilot/telephone cables

Assessment criteria

The learner can:

- 3.1 open the cable and identify pilot cores and telephone pairs in accordance with company procedures
 - 3.2 complete jointing operations of the cables using selected tools and equipment, in accordance with work plan, risk assessment and company procedures. Evidence to include at least **one** joint type
 - 3.3 check the finished product is compliant with company specifications and work requirements
 - 3.4 perform relevant testing operations in accordance with company procedures, where necessary
 - 3.5 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person; evidence to include **one** of the following problems:
 - a. cable identification
-

- b. materials
 - c. resources
 - d. environmental/site conditions
- 3.6 work throughout the duration of operations in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
 - 3.7 complete all post activity documentation, in accordance with company procedures (e.g. safety reports, joint positions)
 - 3.8 ensure all tools and equipment are stored safely and appropriately in accordance with company procedures
 - 3.9 ensure hazardous/non-hazardous waste materials are dealt with and disposed of in accordance with company and statutory procedures
 - 3.10 ensure the work area is left in a safe and tidy condition compatible with company procedures

Unit 239

Carry out jointing on low voltage concentric cables

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is about performing jointing work on low voltage concentric cables in an electrical power engineering environment. It includes the processes and procedures to be followed to make sure that the completed work meets the quality assurance and operating specifications set by the organisation. It also involves following and complying with health and safety measures to minimise the risk of harm and injury to self and others when undertaking and completing jointing work activities.</p> <p>By completing this unit, learners will demonstrate competence in:</p> <ul style="list-style-type: none">• planning for jointing operations on low voltage concentric cables• preparing for jointing operations on low voltage concentric cables• performing jointing operations on low voltage concentric cables• using and communicating data and information• resolving problems effectively and efficiently
Assessment criteria:	To achieve this unit, learners are required to evidence competence in the following performance-based assessment criteria.

Learning outcomes:

The learner will be able to:

1. plan for work activities on jointing on low voltage concentric cables
2. prepare for work activities on jointing low voltage concentric cables
3. carry out jointing activities on low voltage concentric cables

Learning outcome:

The learner will be able to:

1. plan for work activities on jointing on low voltage concentric cables

Assessment criteria

The learner can:

- 1.1 identify the correct work location using available information
 - 1.2 conduct a site-specific risk assessment, completing required documentation, in accordance with health and safety regulations
 - 1.3 plan work to be undertaken to comply with company procedures in accordance with the risk assessment, taking into account factors such as location, content, sequence of tasks and personnel
 - 1.4 inform all affected parties of intended work plans, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

2. prepare for work activities on jointing low voltage concentric cables

Assessment criteria

The learner can:

- 2.1 select, inspect and wear personal protective equipment (PPE) compatible with work plans, risk assessments and health and safety regulations
 - 2.2 apply appropriate control measures to ensure the work area is in a safe and suitable condition for work to commence in accordance with risk assessment requirements and company procedures (e.g. signs/barriers, control/removal of hazards, traffic control)
 - 2.3 select and prepare tools and equipment compatible with work plans, risk assessments and company procedures
 - 2.4 check tools and equipment are fit for purpose to carry out the identified work in accordance with company procedures
 - 2.5 identify and inspect the cables to be jointed, in accordance with company procedures and work plan
 - 2.6 report faults with tools, equipment and PPE, including that which is unavailable, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

3. carry out jointing activities on low voltage concentric cables

Assessment criteria

The learner can:

- 3.1 open the cable and identify the conductors, in accordance with company procedures
 - 3.2 complete jointing operations of the cables using selected tools and equipment, in accordance with work plan, risk assessment and company procedures. Jointing types to include at least **two** of the following:
 - a. single concentric
 - b. twin (split) concentric
-

- c. triple concentric
- 3.3 check the finished product is compliant with company specifications and work requirements
- 3.4 perform relevant testing operations in accordance with company procedures, where necessary
- 3.5 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person. Evidence to include **one** of the following problems:
 - a. unable to identify neutral/phase conductors
 - b. incorrect materials/resources
 - c. environmental/site conditions
- 3.6 work throughout the duration of operations in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
- 3.7 complete all post activity documentation, in accordance with company procedures (e.g. safety reports, joint positions)
- 3.8 ensure all tools and equipment are stored safely and appropriately in accordance with company procedures
- 3.9 ensure hazardous/non-hazardous waste materials are dealt with and disposed of in accordance with company and statutory procedures
- 3.10 ensure the work area is left in a safe and tidy condition compatible with company procedures

Unit 240

Carry out jointing on low voltage consac cables

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is about performing jointing work on low voltage consac cables in an electrical power engineering environment. It includes the processes and procedures to be followed to make sure that the completed work meets the quality assurance and operating specifications set by the organisation. It also involves following and complying with health and safety measures to minimise the risk of harm and injury to self and others when undertaking and completing jointing work activities.</p> <p>By completing this unit, learners will demonstrate competence in:</p> <ul style="list-style-type: none">• planning for jointing operations on low voltage consac cables• preparing for jointing operations on low voltage consac cables• performing jointing operations on low voltage consac cables• using and communicating data and information• resolving problems effectively and efficiently
Assessment criteria:	To achieve this unit, learners are required to evidence competence in the following performance-based assessment criteria.

Learning outcomes:

The learner will be able to:

1. plan for work activities on jointing on low voltage consac cable
2. prepare for work activities on jointing low voltage consac cable
3. carry out jointing activities on low voltage consac cable

Learning outcome:

The learner will be able to:

1. plan for work activities on jointing on low voltage consac cable

Assessment criteria

The learner can:

- 1.1 identify the correct work location using available information
 - 1.2 conduct a site-specific risk assessment, completing required documentation, in accordance with health and safety regulations
 - 1.3 plan work to be undertaken to comply with company procedures in accordance with the risk assessment, taking into account factors such as location, content, sequence of tasks and personnel
 - 1.4 inform all affected parties of intended work plans, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

2. prepare for work activities on jointing low voltage consac cable

Assessment criteria

The learner can:

- 2.1 select, inspect and wear personal protective equipment (PPE) compatible with work plans, risk assessments and health and safety regulations
 - 2.2 apply appropriate control measures to ensure the work area is in a safe and suitable condition for work to commence in accordance with risk assessment requirements and company procedures (e.g. signs/barriers, control/removal of hazards, traffic control)
 - 2.3 select and prepare tools and equipment compatible with work plans, risk assessments and company procedures
 - 2.4 check tools and equipment are fit for purpose to carry out the identified work in accordance with company procedures
 - 2.5 identify and inspect the cables to be jointed, in accordance with company procedures and work plan
 - 2.6 report faults with tools, equipment and PPE, including that which is unavailable, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

3. carry out jointing activities on low voltage consac cable

Assessment criteria

The learner can:

- 3.1 joint the identified consac cables using selected tools and equipment, in accordance with work plan, risk assessment and company procedures. Joint types to include at least **two** of the following:
 - a. services
 - b. mains transition straight
 - c. mains transition branch
-

- d. end termination
- 3.2 check the finished product is compliant with company specifications and work requirements
- 3.3 perform relevant testing operations in accordance with company procedures, where necessary
- 3.4 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person; evidence to include **one** of the following problems:
 - a. aluminium sheath shows signs of oxidisation
 - b. aluminium sheath tears as it is being lifted
 - c. incorrect cutting wheel in sheath cutting tool
 - d. environmental/site conditions
- 3.5 work throughout the duration of operations in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
- 3.6 complete all post activity documentation, in accordance with company procedures (e.g. safety reports, joint positions)
- 3.7 ensure all tools and equipment are stored safely and appropriately in accordance with company procedures
- 3.8 ensure hazardous/non-hazardous waste materials are dealt with and disposed of in accordance with company and statutory procedures
- 3.9 ensure the work area is left in a safe and tidy condition compatible with company procedures

Unit 241

Movement of overhead line plant and apparatus

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is about moving overhead plant and apparatus. It involves the processes and procedures to be followed to make sure that loads are secured and moved safely using lifting methods and equipment that are fit for purpose and meet health and safety regulations.</p> <p>By completing this unit, learners will demonstrate competence in:</p> <ul style="list-style-type: none">• planning the movement of overhead line plant and apparatus• preparing the movement of overhead line plant and apparatus• moving, securing and positioning the load• using and communicating data and information• resolving problems effectively and efficiently
Assessment criteria:	To achieve this unit, learners are required to evidence competence in the following performance-based assessment criteria.

Learning outcomes:

The learner will be able to:

1. plan for work activities to move overhead line plant and apparatus
2. prepare resources to move overhead line plant and apparatus
3. carry out the movement of overhead line plant and apparatus

Learning outcome:

The learner will be able to:

1. plan for work activities to move overhead line plant and apparatus

Assessment criteria

The learner can:

- 1.1 identify the correct work location using available information

- 1.2 conduct a site-specific risk assessment, completing required documentation, in accordance with health and safety regulations
 - 1.3 plan the moving operation in accordance with the risk assessment, taking into account factors such as location, sequence of tasks, personnel and size, weight and stability of the load to be moved
 - 1.4 identify a route compatible with the risk assessment and health and safety procedures
 - 1.5 inform all affected parties of intended work plans, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

2. prepare resources to move overhead line plant and apparatus

Assessment criteria

The learner can:

- 2.1 identify the load to be moved, in accordance with work plan (e.g. large cable drum, transformer, switchgear, distribution pole, heavy steelwork)
 - 2.2 select, inspect and wear personal protective equipment (PPE) in accordance with work plan, risk assessment and health and safety regulations
 - 2.3 apply appropriate control measures to ensure the work area is in a safe and suitable condition for work to commence in accordance with risk assessment requirements and company procedures (e.g. signs/barriers, control/removal of hazards, traffic control)
 - 2.4 establish the weight and stability of the load to be moved, in accordance with the work plan
 - 2.5 identify a lifting and moving technique, in accordance with company procedures, compatible with the weight and stability of the load
 - 2.6 select, inspect and prepare moving equipment capable of handling the weight and stability of the load
 - 2.7 select additional tools and equipment necessary to perform the operation
 - 2.8 check tools and equipment are fit for purpose to carry out the identified work in accordance with company procedures
 - 2.9 report faults with tools, equipment and PPE, including that which is unavailable, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

3. carry out the movement of overhead line plant and apparatus

Assessment criteria

The learner can:

- 3.1 position and secure the lifting and moving equipment to the load, ensuring the weight is evenly distributed in accordance with safe working procedures
 - 3.2 lift and move the identified load safely and efficiently along the planned route
 - 3.3 secure the load safely in its final identified position in accordance with the work plan
-

- 3.4 check the finished product meets the work specification and company requirements
 - 3.5 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person; evidence to include **one** of the following problems:
 - a. positioning/securing of loads
 - b. environmental/site conditions
 - c. equipment/resources
 - d. effects of other people
 - 3.6 work throughout the duration of operations in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
 - 3.7 confirm the completion of the work activity with relevant parties in accordance with company procedures
 - 3.8 ensure all tools and equipment are stored safely and appropriately in accordance with company procedures
 - 3.9 ensure hazardous/non-hazardous waste materials are dealt with and disposed of in accordance with company and statutory procedures
 - 3.10 ensure the work area is left in a safe and tidy condition compatible with company procedures
-

Additional requirements:

To complete this unit, the learner **must** also incorporate the following additional requirements in the process of moving the loads identified in the unit.

Use safely at least **four** of the following pieces of equipment:

- Slings
- Shackles
- Chain Lifts
- Winches/Hoists
- Rollers
- Ratchet Straps
- Pull Lifts
- Tirfors
- Ropes
- Other Mechanical Aids

Incorporate the use of powered lifting equipment on at least **one** occasion.

Lift plant and apparatus at height on **two** different occasions.

Move a load across **one** of the following:

- Across a difficult route
- Where space and positioning is confined
- Where the load is unbalanced and/or complex

Unit 242

Access and egress and work on wood pole structures

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is about safe entry, egress and working on wood pole structures in an electrical power engineering environment. It involves procedures to be followed and measures to be taken to make sure that the working environment is free from obstacles and hazards that may cause harm to self, your work colleagues and the general public.</p> <p>By completing this unit, learners will demonstrate competence in:</p> <ul style="list-style-type: none">• planning to access/egress and work in positions at height on wood pole structures• preparing to access/egress and work in positions at height on wood pole structures• accessing/egressing and working in positions at height on wood pole structures• using and communicating data and information• resolving problems effectively and efficiently
Assessment criteria:	To achieve this unit, learners are required to evidence competence in the following performance-based assessment criteria.

Learning outcomes:

The learner will be able to:

1. plan for work activities to access/egress and work in positions at height on wood pole structures
2. prepare resources to access/egress and work in positions at height on wood pole structures
3. carry out access and egress operations and work in positions at height on wood pole structures

Learning outcome:

The learner will be able to:

1. plan for work activities to access/egress and work in positions at height on wood pole structures

Assessment criteria

The learner can:

- 1.1 identify the correct work location using available information
 - 1.2 conduct a site-specific risk assessment, completing required documentation, in accordance with health and safety regulations
 - 1.3 plan work to be undertaken to comply with company procedures in accordance with the risk assessment, taking into account factors such as location, content, sequence of tasks, personnel and method of access and egress
 - 1.4 inform all affected parties of intended work plans, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

2. prepare resources to access/egress and work in positions at height on wood pole structures

Assessment criteria

The learner can:

- 2.1 select, inspect and wear personal protective equipment (PPE) compatible with work plan, risk assessment and health and safety regulations
 - 2.2 select and prepare tools and equipment compatible with the work plan and risk assessment
 - 2.3 check tools and equipment are fit for purpose to carry out the identified work in accordance with company procedures
 - 2.4 select, inspect and prepare suitable access and egress equipment to carry out the identified work in accordance with company procedures
 - 2.5 identify the structure to be worked on and carry out a pre work inspection, reporting identified defects in accordance with company procedures
 - 2.6 apply appropriate control measures in accordance with risk assessment requirements and company procedures (e.g. person in attendance when working at height, control/removal of hazards, rescue equipment available, identification of isolation/earthing points)
 - 2.7 report faults with tools, equipment and PPE, including that which is unavailable, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

3. carry out access and egress operations and work in positions at height on wood pole structures

Assessment criteria

The learner can:

- 3.1 use the identified access and egress equipment in a safe and efficient manner in accordance with company procedures and statutory regulations. Evidence to include the use of **two** different attached climbing techniques used on separate occasions (e.g. pole choker, fall arrest lanyard, rope and slide chuck)
-

- 3.2 conduct all work and movement on the structure in an approved manner complying with all relevant health and safety procedures
 - 3.3 raise, lower and use all tools and equipment safely and efficiently in accordance with company procedures
 - 3.4 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person; evidence to include **one** of the following problems:
 - a. equipment use
 - b. environmental/site conditions
 - c. structure condition
 - d. effects of other people
 - 3.5 work throughout the duration of operations in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
 - 3.6 confirm the completion of the work activity with relevant parties in accordance with company procedures
 - 3.7 ensure all tools and equipment are stored safely and appropriately in accordance with company procedures
 - 3.8 ensure hazardous/non-hazardous waste materials are dealt with and disposed of in accordance with company and statutory procedures
 - 3.9 ensure the work area is left in a safe and tidy condition compatible with company procedures
-

Additional requirements:

To complete this unit, the learner **must** also:

- establish and use safely a mobile elevated work platform to access and egress equipment on **one** occasion
- install a set of overhead line earthing electrodes in the ground and apply earthing connectors to overhead line conductors in accordance with company procedures on **one** occasion
- safely establish and use a ladder to access/egress a work position on **one** occasion

Unit 243

Access and egress and work on steel tower structures

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is about safe entry, egress and working on steel tower structures in an electrical power engineering environment. It involves procedures to be followed and measures to be taken to make sure that the working environment is free from obstacles and hazards that may cause harm to self, your work colleagues and the general public.</p> <p>By completing this unit, learners will demonstrate competence in:</p> <ul style="list-style-type: none">• plan to access / egress and work in positions at height on steel tower structures• prepare to access / egress and work in positions at height on steel tower structures• access / egress and work in positions at height on steel tower structures• use and communicate data and information• resolve problems effectively and efficiently
Assessment criteria:	To achieve this unit, learners are required to evidence competence in the following performance-based assessment criteria.

Learning outcomes:

The learner will be able to:

1. plan for work activities to access/egress and work in positions of height on steel tower structures
2. prepare resources to access/egress and work in positions of height on steel tower structures
3. carry out work and the access/egress in positions at height on steel tower structures

Learning outcome:

The learner will be able to:

1. plan for work activities to access/egress and work in positions of height on steel tower structures

Assessment criteria

The learner can:

- 1.1 identify the correct work location using available information
 - 1.2 conduct a site-specific risk assessment, completing required documentation, in accordance with health and safety regulations
 - 1.3 plan work to be undertaken to comply with company procedures in accordance with the risk assessment, taking into account factors such as location, content, sequence of tasks, personnel and method of access and egress
 - 1.4 inform all affected parties of intended work plans, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

2. prepare resources to access/egress and work in positions of height on steel tower structures

Assessment criteria

The learner can:

- 2.1 select, inspect and wear personal protective equipment (PPE) compatible with work plan, risk assessment and health and safety regulations
 - 2.2 identify the correct structure to be worked on, in accordance with company procedures and work plan
 - 2.3 confirm the system is safe to work on in accordance with company procedures
 - 2.4 select and prepare tools and equipment compatible with the work plan and risk assessment
 - 2.5 check tools and equipment are fit for purpose to carry out the identified work in accordance with company procedures
 - 2.6 select, inspect and prepare suitable access and egress equipment to carry out the identified work in accordance with company procedures
 - 2.7 perform a pre work inspection of the structure, reporting identified defects in accordance with company procedures
 - 2.8 apply appropriate control measures in accordance with risk assessment requirements and company procedures (e.g. person in attendance when working at height, control/removal of hazards, pennants/flags, rescue equipment available)
 - 2.9 report faults with tools, equipment and PPE, including that which is unavailable, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

3. carry out work and the access/egress in positions at height on steel tower structures

Assessment criteria

The learner can:

- 3.1 use the identified access and egress equipment in a safe and efficient manner in accordance with company procedures and statutory regulations. Evidence to include the use of **two**
-

different attached climbing techniques to access and egress steel tower structures on separate occasions

- 3.2 conduct all work and movement on the structure in an approved manner complying with all relevant health and safety procedures
- 3.3 raise, lower and use all tools and equipment safely and efficiently in accordance with company procedures
- 3.4 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person; evidence to include **one** of the following problems:
 - a. equipment use
 - b. environmental conditions
 - c. structure condition
 - d. effects of other people
- 3.5 work throughout the duration of operations in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
- 3.6 confirm the completion of the work activity with relevant parties in accordance with company procedures
- 3.7 ensure all tools and equipment are stored safely and appropriately in accordance with company procedures
- 3.8 ensure hazardous/non-hazardous waste materials are dealt with and disposed of in accordance with company and statutory procedures
- 3.9 ensure the work area is left in a safe and tidy condition compatible with company procedures

Additional requirements:

To complete this unit, the learner **must** also safely establish and use in accordance with company procedures **two** of the following pieces of equipment on at least **one** occasion:

- Tower ladder
- Conductor trolley
- Tower platform
- Jumper basket
- Mobile elevated work platform

Unit 244

Excavate and install distribution wood poles and stays

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is about excavating and installing distribution wood poles and stays in an electrical power engineering environment. It includes the procedures to be followed and the measures to be taken to make sure that self, work colleagues and the general public are protected from harm when in the vicinity of the excavation. It also involves using a range of tools and equipment and the wearing of Personal Protective Equipment whilst carrying out the work.</p> <p>By completing this unit, learners will demonstrate competence in:</p> <ul style="list-style-type: none">• planning to excavate and install distribution wood poles and stays• preparing to excavate and install distribution wood poles and stays• excavating and installing distribution wood poles and stays• using and communicating data and information• resolving problems effectively and efficiently
Assessment criteria:	To achieve this unit, learners are required to evidence competence in the following performance-based assessment criteria. .

Learning outcomes:

The learner will be able to:

1. plan for work activities to excavate and install distribution wood poles and stays
2. prepare resources to excavate and install distribution wood poles and stays
3. carry out the excavation and installation of distribution wood poles and stays

Learning outcome:

The learner will be able to:

1. plan for work activities to excavate and install distribution wood poles and stays

Assessment criteria

The learner can:

- 1.1 identify the correct work location using available information
 - 1.2 conduct a site-specific risk assessment, completing required documentation, in accordance with health and safety regulations
 - 1.3 plan work to be undertaken to comply with company procedures in accordance with risk the assessment, taking into account factors such as location, content, sequence of tasks and personnel
 - 1.4 inform all affected parties of intended work plans, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

2. prepare resources to excavate and install distribution wood poles and stays

Assessment criteria

The learner can:

- 2.1 select, inspect and wear personal protective equipment (PPE) compatible with work plan, risk assessment and health and safety regulations
 - 2.2 select and prepare tools and equipment compatible with the work plan and risk assessment
 - 2.3 check tools and equipment are fit for purpose to carry out the identified work in accordance with company procedures
 - 2.4 report faults with tools, equipment and PPE, including that which is unavailable, in accordance with company procedures
 - 2.5 use cable avoidance and safe excavation techniques in accordance with company procedures prior to excavation to identify potential hazards
-

Learning outcome:

The learner will be able to:

3. carry out the excavation and installation of distribution wood poles and stays

Assessment criteria

The learner can:

- 3.1 carry out excavation activities using safe excavation techniques in accordance with work plan, risk assessment and company procedures
 - 3.2 ensure the finished excavation is suitable and sufficient for its intended use in accordance with company specifications
 - 3.3 carry out the installation of **two** differing distribution poles configurations and **two** complete stay arrangements in compliance with company specifications and statutory requirements
 - 3.4 ensure the apparatus is installed in a safe, efficient manner in compliance with company specifications and procedures
-

- 3.5 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person; evidence to include **one** of the following problems:
 - a. pole/stay positioning
 - b. environmental conditions
 - c. site conditions
 - d. effects of other people
 - 3.6 work throughout the duration of operations in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
 - 3.7 confirm the completion of the work activity with relevant parties in accordance with company procedures
 - 3.8 ensure all tools and equipment are stored safely and appropriately in accordance with company procedures
 - 3.9 ensure hazardous/non-hazardous waste materials are dealt with and disposed of in accordance with company and statutory procedures
 - 3.10 ensure the work area is left in a safe and tidy condition compatible with company procedures
-

Additional requirements:

To complete this unit, the learner **must** also give instruction and monitor the use of mechanised equipment to complete a pole or stay excavation on at least **one** occasion.

Unit 245

Electrical testing of overhead line distribution equipment

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is about electrical testing of overhead line distribution equipment in an electrical power engineering environment. It includes the processes and procedures to be followed to make sure that tests are conducted and recorded in a manner that meets the quality assurance requirements and standards set by the organisation.</p> <p>By completing this unit, learners will demonstrate competence in:</p> <ul style="list-style-type: none">• planning to test overhead line equipment electrically• preparing to test overhead line equipment electrically• testing overhead line equipment electrically• using and communicating data and information• resolving problems effectively and efficiently
Assessment criteria:	To achieve this unit, learners are required to evidence competence in the following performance-based assessment criteria.

Learning outcomes:

The learner will be able to:

1. plan for work activities to test overhead line equipment electrically
2. prepare resources to test overhead line equipment electrically
3. carry out the electrical testing of overhead line equipment

Learning outcome:

The learner will be able to:

1. plan for work activities to test overhead line equipment electrically

Assessment criteria

The learner can:

- 1.1 identify the correct work location using available information

- 1.2 conduct a site-specific risk assessment, completing required documentation, in accordance with health and safety regulations
 - 1.3 plan work to be undertaken to comply with company procedures in accordance with the risk assessment, taking into account factors such as location, content, sequence of tasks and personnel
 - 1.4 inform all affected parties of intended work plans, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

2. prepare resources to test overhead line equipment electrically

Assessment criteria

The learner can:

- 2.1 select, inspect and wear personal protective equipment (PPE) compatible with work plan, risk assessment and health and safety regulations
 - 2.2 select and prepare tools and equipment compatible with the work plan and risk assessment
 - 2.3 check tools and equipment are fit for purpose to carry out the identified work in accordance with company procedures
 - 2.4 select, inspect and prepare suitable access and egress equipment to carry out the identified work in accordance with company procedures
 - 2.5 identify the work position and carry out a pre work inspection, reporting identified defects in accordance with company procedures
 - 2.6 apply appropriate control measures in accordance with risk assessment requirements and company procedures (e.g. person in attendance when working at height, control/removal of hazards, shrouding, rescue equipment available, identification of circuit isolation points)
 - 2.7 report faults with tools, equipment and PPE, including that which is unavailable, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

3. carry out the electrical testing of overhead line equipment

Assessment criteria

The learner can:

- 3.1 select, inspect and use the appropriate PPE and testing equipment in accordance with, work plan, risk assessment and company procedures in **both** of the following situations:
 - a. electrical testing of low voltage overhead lines (wood pole at height)
 - b. electrical testing of low voltage service/mains positions (ground position)
 - 3.2 perform at least **two** of the following low voltage tests:
 - a. polarity
 - b. insulation resistance
 - c. earth loop impedance
-

- d. three phase testing
 - e. phase rotation
 - f. voltage testing
 - g. continuity testing
- 3.3 confirm and correctly interpret the results of the testing operations
 - 3.4 record the results of the testing in accordance with company procedures, where applicable
 - 3.5 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person; evidence to include **one** of the following problems:
 - a. earth electrode readings
 - b. earth loop impedance reading
 - c. voltage fluctuation
 - d. phase rotation or polarity
 - e. effects of other people
 - 3.6 work throughout the duration of operations in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
 - 3.7 confirm the completion of the work activity with relevant parties in accordance with company procedures
 - 3.8 ensure all tools and equipment are stored safely and appropriately in accordance with company procedures
 - 3.9 ensure hazardous/non-hazardous waste materials are dealt with and disposed of in accordance with company and statutory procedures
 - 3.10 ensure the work area is left in a safe and tidy condition compatible with company procedures
-

Additional requirements:

To complete this unit, the learner **must** also perform earth electrode testing on **one** of the following earthing systems:

- transformer
- cable
- auto recloser

Unit 246

Inspection of overhead line wood pole networks

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is about performing inspection work of overhead line wood pole networks in an electrical power engineering environment. It includes the processes and procedures that need to be rigorously and methodically followed to make sure that the finished work meets the quality assurance and operating specifications set by the organisation. It also involves using a range of tools and equipment that are fit for purpose and the wearing of Personal Protective Equipment when performing work activities.</p> <p>By completing this unit, learners will demonstrate competence in:</p> <ul style="list-style-type: none">• planning to inspect an overhead line network• preparing to an overhead line network• inspecting an overhead line network• using and communicating data and information• resolving problems effectively and efficiently
Assessment criteria:	To achieve this unit, learners are required to evidence competence in the following performance-based assessment criteria.

Learning outcomes:

The learner will be able to:

1. plan for work activities to inspect an overhead line network
2. prepare resources to inspect an overhead line network
3. carry out the inspection of an overhead line network

Learning outcome:

The learner will be able to:

1. plan for work activities to inspect an overhead line network

Assessment criteria

The learner can:

- 1.1 identify the correct work location using available information
 - 1.2 conduct a site-specific risk assessment, completing required documentation, in accordance with health and safety regulations
 - 1.3 plan work to be undertaken to comply with company procedures in accordance with the risk assessment, taking into account factors such as inspection route, lone working arrangements, locations, content and sequence of tasks
 - 1.4 inform all affected parties of intended work plans, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

2. prepare resources to inspect an overhead line network

Assessment criteria

The learner can:

- 2.1 select, inspect and wear personal protective equipment (PPE) compatible with work plan, risk assessment and health and safety regulations
 - 2.2 identify the correct network to be inspected, in accordance with company procedures and work plan
 - 2.3 select and prepare tools and equipment compatible with the work plan and risk assessment
 - 2.4 check tools and equipment are fit for purpose to carry out the identified work in accordance with company procedures
 - 2.5 report faults with tools, equipment and PPE, including that which is unavailable, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

3. carry out the inspection of an overhead line network

Assessment criteria

The learner can:

- 3.1 perform inspection of an overhead line network in accordance with work plan, risk assessment and company procedures
 - 3.2 perform relevant pole testing procedures on **two** different wood pole structures. Evidence to include **two** of the following:
 - a. hammer test
 - b. prod test
 - c. auger sample
 - d. visual inspection
-

- 3.3 identify an example of network conditions which do not meet the company specifications. For example – leaning or damaged pole, damaged conductor, faulty insulators, incorrect stay arrangement, incorrect conductor clearance, missing safety equipment, etc.
- 3.4 record and report the inspection in accordance with company procedures
- 3.5 record and report necessary test results in accordance with company procedures
- 3.6 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person; evidence to include **one** of the following problems:
 - a. hazardous conditions
 - b. faulty equipment
 - c. faulty network issues
 - d. access to site
 - e. wayleave issues
- 3.7 work throughout the duration of operations in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
- 3.8 confirm the completion of the work activity with relevant parties in accordance with company procedures
- 3.9 ensure all tools and equipment are stored safely and appropriately in accordance with company procedures
- 3.10 ensure hazardous/non-hazardous waste materials are dealt with and disposed of in accordance with company and statutory procedures
- 3.11 ensure the work area is left in a safe and tidy condition compatible with company procedures

Unit 247

Earthing of overhead line conductors on steel tower structures

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is about earthing overhead line conductors on steel tower networks in an electrical power engineering environment. It involves using tools and equipment in a safe, methodical and vigilant manner to make sure the earthing of plant and apparatus is conducted safely and in accordance with health and safety rules and regulations.</p> <p>By completing this unit, learners will demonstrate competence in:</p> <ul style="list-style-type: none">• plan to earth overhead line transmission conductors• prepare to earth overhead line transmission conductors• earth overhead line transmission conductors• use and communicate data and information• resolve problems effectively and efficiently
Assessment criteria:	To achieve this unit, learners are required to evidence competence in the following performance-based assessment criteria.

Learning outcomes:

The learner will be able to:

1. plan for work activities to earth overhead line transmission conductors
2. prepare resources to earth overhead line transmission conductors
3. carry out the earthing of overhead line transmission conductors

Learning outcome:

The learner will be able to:

1. plan for work activities to earth overhead line transmission conductors

Assessment criteria

The learner can:

- 1.1 identify the correct work location using available information
- 1.2 conduct a site-specific risk assessment, completing required documentation, in accordance with health and safety regulations

- 1.3 plan work to be undertaken to comply with company procedures in accordance with the risk assessment, taking into account factors such as location, content, sequence of tasks and personnel
 - 1.4 inform all affected parties of intended work plans, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

2. prepare resources to earth overhead line transmission conductors

Assessment criteria

The learner can:

- 2.1 select, inspect and wear personal protective equipment (PPE) compatible with work plan, risk assessment and health and safety regulations
 - 2.2 identify the correct structure and circuit to be earthed, in accordance with company procedures and work plan
 - 2.3 confirm the system is safe to work on in accordance with company procedures
 - 2.4 select and prepare tools and equipment compatible with the work plan and risk assessment
 - 2.5 check tools and equipment are fit for purpose to carry out the identified work in accordance with company procedures
 - 2.6 select, inspect and prepare suitable access and egress equipment to carry out the identified work in accordance with company procedures
 - 2.7 perform a pre work inspection of the structure, reporting identified defects in accordance with company procedures
 - 2.8 apply appropriate control measures in accordance with risk assessment requirements and company procedures (e.g. person in attendance when working at height, control/removal of hazards, pennants/flags, rescue equipment available)
 - 2.9 report faults with tools, equipment and PPE, including that which is unavailable, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

3. carry out the earthing of overhead line transmission conductors

Assessment criteria

The learner can:

- 3.1 ensure resources are raised, lowered and used safely in accordance with company procedures
 - 3.2 apply earthing connectors in the correct sequence in accordance with company procedures
 - 3.3 check the finished earthing installation meets with the work requirements
 - 3.4 record and report the relevant earthing information in accordance with company requirements
 - 3.5 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person; evidence to include **one** of the following problems:
 - a. safety or earthing/bonding arrangements
-

- b. environmental conditions
 - c. structure condition
 - d. earthing/bonding equipment
 - e. effects of other people
- 3.6 work throughout the duration of operations in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
 - 3.7 confirm the completion of the work activity with relevant parties in accordance with company procedures
 - 3.8 ensure all tools and equipment are stored safely and appropriately in accordance with company procedures
 - 3.9 ensure hazardous/non-hazardous waste materials are dealt with and disposed of in accordance with company and statutory procedures
 - 3.10 ensure the work area is left in a safe and tidy condition compatible with company procedures

Unit 248

Jointing of overhead line extra high voltage conductors

Level:	Level 2
Endorsement by a sector or regulatory body:	This unit is endorsed by Energy & Utility Skills.
Aim:	<p>This unit is about performing jointing of overhead line EHV conductors in an electrical power engineering environment. It includes the processes and procedures to be followed to make sure that the completed work meets the quality assurance and operating specifications set by the organisation. It also involves following and complying with health and safety measures to minimise the risk of harm and injury to self and others when undertaking and completing jointing work activities.</p> <p>By completing this unit, learners will demonstrate competence in:</p> <ul style="list-style-type: none">• planning for jointing of overhead line transmission conductors• preparing for jointing of overhead line transmission conductors• performing jointing of overhead line transmission conductors• using and communicating data and information• resolving problems effectively and efficiently
Assessment criteria:	To achieve this unit, learners are required to evidence competence in the following performance-based assessment criteria.

Learning outcomes:

The learner will be able to:

1. plan for work activities to joint overhead line transmission conductors
2. prepare resources to joint overhead line transmission conductors
3. carry out the jointing of overhead line transmission conductors

Learning outcome:

The learner will be able to:

1. plan for work activities to joint overhead line transmission conductors

Assessment criteria

The learner can:

- 1.1 identify the correct work location using available information
 - 1.2 conduct a site-specific risk assessment, completing required documentation, in accordance with health and safety regulations
 - 1.3 plan work to be undertaken to comply with company procedures in accordance with the risk assessment, taking into account factors such as location, content, sequence of tasks and personnel
 - 1.4 inform all affected parties of intended work plans, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

2. prepare resources to joint overhead line transmission conductors

Assessment criteria

The learner can:

- 2.1 select, inspect and wear personal protective equipment (PPE) compatible with work plan, risk assessment and health and safety regulations
 - 2.2 identify the correct conductors to be jointed, in accordance with company procedures and work plan
 - 2.3 confirm the system is safe to work on in accordance with company procedures
 - 2.4 select and prepare tools and equipment compatible with the work plan and risk assessment
 - 2.5 check tools and equipment are fit for purpose to carry out the identified work in accordance with company procedures
 - 2.6 apply appropriate control measures in accordance with risk assessment requirements and company procedures (e.g. person in attendance when working at height, control/removal of hazards, pennants/flags, rescue equipment available)
 - 2.7 report faults with tools, equipment and PPE, including that which is unavailable, in accordance with company procedures
-

Learning outcome:

The learner will be able to:

3. carry out the jointing of overhead line transmission conductors

Assessment criteria

The learner can:

- 3.1 prepare and joint **one** tension joints (e.g. midspan/tension-anchor joint (gun end), in accordance with company procedures and manufacturers specifications
 - 3.2 prepare and joint **one** non-tension joints, in accordance with company procedures and manufacturers specifications
 - 3.3 check the finished product for compliance with the relevant specification in accordance with company procedures
-

- 3.4 perform testing procedures in accordance with company procedures to ensure the completed joint meets company specifications, where applicable
 - 3.5 record the results of the testing in accordance with company procedures where applicable
 - 3.6 deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person; evidence to include **one** of the following problems:
 - a. jointing equipment or conductor
 - b. environmental conditions
 - c. safety issues
 - d. earthing arrangements
 - e. effects of others
 - 3.7 work throughout the duration of operations in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
 - 3.8 confirm the completion of the work activity with relevant parties in accordance with company procedures
 - 3.9 ensure all tools and equipment are stored safely and appropriately in accordance with company procedures
 - 3.10 ensure waste materials are dealt with and disposed of in accordance with company and statutory procedures
 - 3.11 ensure the work area is left in a safe and tidy condition compatible with company procedures
-

Additional requirements:

To complete this unit, the learner **must** also prepare and joint **two** differing conductor types.

Appendix 1 Sources of general information

The following documents contain essential information for centres delivering City & Guilds qualifications. They should be referred to in conjunction with this handbook. To download the documents and to find other useful documents, go to the **Centres and Training Providers homepage** on **www.cityandguilds.com**.

City & Guilds Centre Manual contains detailed information about the processes which must be followed and requirements which must be met for a centre to achieve 'approved centre' status, or to offer a particular qualification, as well as updates and good practice exemplars for City & Guilds assessment and policy issues. Specifically, the document includes sections on:

- The centre and qualification approval process
- Assessment, internal quality assurance and examination roles at the centre
- Registration and certification of candidates
- Non-compliance
- Complaints and appeals
- Equal opportunities
- Data protection
- Management systems
- Maintaining records
- Assessment
- Internal quality assurance
- External quality assurance.

Access to Assessment & Qualifications provides full details of the arrangements that may be made to facilitate access to assessments and qualifications for candidates who are eligible for adjustments in assessment.

The **centre homepage** section of the City & Guilds website also contains useful information on such things as:

- **Walled Garden:** how to register and certificate candidates on line
- **Events:** dates and information on the latest Centre events
- **Online assessment:** how to register for e-assessments.

Centre Guide – Delivering International Qualifications contains detailed information about the processes which must be followed and requirements which must be met for a centre to achieve ‘approved centre’ status, or to offer a particular qualification. Specifically, the document includes sections on:

- The centre and qualification approval process and forms
- Assessment, verification and examination roles at the centre
- Registration and certification of candidates
- Non-compliance
- Complaints and appeals
- Equal opportunities
- Data protection
- Frequently asked questions.

Linking to this document from web pages

We regularly update the name of documents on our website, therefore in order to prevent broken links we recommend that you link to our web page that the document resides upon, rather than linking to the document itself.

www.cityandguilds.com

Guidance note

To ensure that the back cover and the inside back cover print in the correct position, the document must have an EVEN number of pages.

If this page currently occupies an EVEN numbered page, leave it here and delete this note.

If your document has an ODD number of pages, please remove this page, to allow the back cover to fall on the left-hand page (even number).

Useful contacts

UK learners

General qualification information

E: learnersupport@cityandguilds.com

International learners

General qualification information

E: intcg@cityandguilds.com

Centres

Exam entries, Certificates, Registrations/enrolment, Invoices, Missing or late exam materials, Nominal roll reports, Results

E: centresupport@cityandguilds.com

Single subject qualifications

Exam entries, Results, Certification, Missing or late exam materials, Incorrect exam papers, Forms request (BB, results entry), Exam date and time change

E: singlesubjects@cityandguilds.com

International awards

Results, Entries, Enrolments, Invoices, Missing or late exam materials, Nominal roll reports

E: intops@cityandguilds.com

Walled Garden

Re-issue of password or username, Technical problems, Entries, Results, e-assessment, Navigation, User/menu option, Problems

E: walledgarden@cityandguilds.com

Employer

Employer solutions including, Employer Recognition: Endorsement, Accreditation and Quality Mark, Consultancy, Mapping and Specialist Training Delivery

E: business@cityandguilds.com

Every effort has been made to ensure that the information contained in this publication is true and correct at the time of going to press. However, City & Guilds' products and services are subject to continuous development and improvement and the right is reserved to change products and services from time to time. City & Guilds cannot accept liability for loss or damage arising from the use of information in this publication.

If you have a complaint, or any suggestions for improvement about any of the services that we provide, email: **feedbackandcomplaints@cityandguilds.com**

About City & Guilds

As the UK's leading vocational education organisation, City & Guilds is leading the talent revolution by inspiring people to unlock their potential and develop their skills. We offer over 500 qualifications across 28 industries through 8500 centres worldwide and award around two million certificates every year. City & Guilds is recognised and respected by employers across the world as a sign of quality and exceptional training.

City & Guilds Group

The City & Guilds Group is a leader in global skills development. Our purpose is to help people and organisations to develop their skills for personal and economic growth. Made up of City & Guilds, City & Guilds Kineo, The Oxford Group and ILM, we work with education providers, businesses and governments in over 100 countries.

Copyright

The content of this document is, unless otherwise indicated, © The City and Guilds of London Institute and may not be copied, reproduced or distributed without prior written consent. However, approved City & Guilds centres and candidates studying for City & Guilds qualifications may photocopy this document free of charge and/or include a PDF version of it on centre intranets on the following conditions:

- centre staff may copy the material only for the purpose of teaching candidates working towards a City & Guilds qualification, or for internal administration purposes
- candidates may copy the material only for their own use when working towards a City & Guilds qualification

The Standard Copying Conditions (see the City & Guilds website) also apply.

Please note: National Occupational Standards are not © The City and Guilds of London Institute. Please check the conditions upon which they may be copied with the relevant Sector Skills Council. Published by City & Guilds, a registered charity established to promote education and training

City & Guilds

5-6 Giltspur Street

London EC1A 9DE

www.cityandguilds.com