Level 2 Diploma in Electrical Power Engineering - Underground Cables (2339-22)

www.cityandguilds.com
August 2009
Version 2.0 (August 2011)

Accreditation number: 600/1672/3

Unit Handbook

Contents

1 About this document

This document contains the unit titles, accreditation numbers and content for the Level 2 Diploma in Electrical Power Engineering – Underground Cables.

The qualification, attesting to work-place competence, has been developed by City & Guilds in conjunction with power sector employers and the sector skills council Energy & Utility Skills (EU Skills), and is accredited on the qualifications and credit framework (QCF).

The unit accreditation numbers appear in brackets after the title, followed by the QCF credits attached to the unit.

The structure of the qualification is made up of the following City & Guilds unit numbers:

- Group A - Mandatory units (001-003, 019-020)
- Group B - Optional units (021-026)
- Group C - Optional skill units (004-006, 027-035)

To achieve the full qualification learners must achieve **15** credits from Group A, **12** credits from Group B and a minimum of **10** credits from Group C.

All of the performance criteria must be evidenced. In the case of each Group A mandatory unit the requisite evidence is attained through completion of the relevant skill based units on a minimum of **three** separate occasions.

To support standardisation each unit has ten suggested knowledge questions and a range of acceptable answers (see the relevant questions and answers document for further details). These questions must be evidenced through either natural performance or professional discussion. In the context of the skill-based units these questions may provide evidence against the knowledge and understanding criteria, which have been lifted directly from the relevant national occupational standard. Where there are gaps, further oral questioning or observation will be required to confirm the criteria has been met. Centres may devise their own questions in place of those provided, but they must be agreed with their External Verifier.

For standardisation, and where appropriate, the performance and knowledge criteria are:

- prescribed with range, scope and evidence requirements
- qualified by company policies and procedures; legislation and regulations.

This qualification is delivered in line with the requirements of EU Skills' assessment strategy (captured in the main qualification handbook) and in the same fashion as a national vocational qualification (NVQ).

Unit 001 Working Safely in the Power sector (L/600/3898) 4 credits

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.

By completing this unit, you show you are competent to:

- Recognise hazards and risks
- Demonstrate understanding of a range of information sources supporting safe working practices
- Recognise the range of Personal Protective Equipment relevant to the task being completed
- Take appropriate action in the event of emergencies
- Work safely and maintain a safe working environment
- Demonstrate an understanding of lifting techniques

Performance Criteria

To perform effectively in this unit, you need to evidence competent performance of all the criteria through completion of the mandatory and optional skill-based units over a minimum of **three** separate occasions.

Outcome 1: Recognise hazards and risks

1.1 Identify hazards and risks and take appropriate action, **all** of the following **must** be included: Environment, Use of tools and equipment, Materials and substances, Electrical working practices

Outcome 2: Demonstrate understanding of a range of information sources supporting safe working practices

2.1 Work in accordance with approved procedures, **all** of the following **must** be included: Operating procedures, Method statements, COSHH statements, Health & Safety at Work Act

2.2 Identify and comply with safety signs and labels

2.3 Work in accordance with requirements of risk assessments

Outcome 3: Recognise the range of Personal Protective Equipment relevant to the task being completed

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

Outcome 4: Take appropriate action in the event of emergencies

4.1 Identify qualified first aiders or appointed person

4.2 Locate first aid facilities

4.3 Respond in line with company procedure to emergency situations eg Injury to self or others, Fire

4.4 Report accidents, injuries, hazardous or dangerous occurrences to appropriate personnel

Outcome 5: Work safely and maintain a safe working environment

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: Tools, Equipment, Materials
5.3 Use resources safely and for the purpose intended, **all** of the following **must** be included: Tools, Equipment, Materials
5.4 Dispose of hazardous substances/waste materials in accordance with approved company procedures

Outcome 6: Demonstrate an understanding of lifting techniques

6.1 Demonstrate acceptable lifting technique when carrying out lifting of loads on their own
6.2 Demonstrate acceptable lifting technique when carrying out lifting of load with **one** of the following: Assistance of others, Mechanical assistance

Unit 002 Working Efficiently and Effectively in the Power sector (R/600/3899) 2 credits

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.

By completing this unit, you show you are competent to:

- Apply appropriate planning processes whilst preparing to complete allocated tasks
- Maintain effective and efficient working practices whilst completing allocated tasks
- Recognise problems or areas for improvement and respond appropriately
- Create and maintain effective working relationships
- Contribute to own development programme

Performance Criteria

To perform effectively in this unit, you need to evidence competent performance of all the criteria through completion of the mandatory and optional skill-based units over a minimum of **three** separate occasions.

Outcome 1: Apply appropriate planning processes whilst preparing to complete allocated tasks

1.1 Select appropriate resources and ensure suitability, **all** of the following **must** be included: Tools, Equipment, Materials, PPE

1.2 Prepare working area

1.3 Obtain authorisation to carry out the work

Outcome 2: Maintain effective and efficient working practices whilst completing allocated tasks

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

Outcome 3: Recognises problem or areas for improvement and respond appropriately

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 should be evidenced: Materials, Tools and Equipment, Information sources, People, Safety procedures, Workmanship, Time, Weather

Outcome 4: Create and maintain effective working relationships

4.1 Dress appropriately for the working activity

4.2 Communicate effectively with all of the following: Colleagues, Line managers, Members of the public

4.3 Resolve issues/problems amicably and through appropriate channels

Outcome 5: Contribute to their own development programme

5.1 Identify personal training/development needs in relation to your work activity and discuss with appropriate personnel

5.2 Review and revise personal development records

Unit 003 Using and Communicating Technical Information in the Power sector (R/600/3904) 3 credits

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 pictoral sources, and (ii) produce and communicate this information to other parties.

By completing this unit, you show you are competent to:

- Recognise information sources
- Obtain information contained in information sources
- Record and communicate technical information

Performance Criteria

To perform effectively in this unit, you need to evidence competent performance of all the criteria through completion of the mandatory and optional skill-based units over a minimum of **three** separate occasions.

Outcome 1: Recognise information sources

1.1 Identify written information sources, evidence to include **three** of the following: Job instructions, Test schedules, company information, Material specifications, Reference table/chart, Planning documentation, Operating sheets, Process specification, Risk assessments, Method statements

1.2 Identify diagrammatic/pictorial information sources, evidence to include **two** of the following: Detailed component drawings, General assembly drawings, Repair drawings, Wiring/circuit diagrams, Installation drawings, Approved sketches, Illustrations, Visual display screens, Modification drawings, Sub-assembly drawings, Schematic drawings, Fabrication drawings, Operational diagrams, Physical layouts, Manufacturers manuals/drawings, Photographic representations

Outcome 2: Obtain information contained in information sources

2.1 Identify required resources to complete allocated tasks from interpretation of information sources, **all** of the following **must** be included: Tools, Equipment, Materials, PPE

2.2 Determine from information sources **four** of the following: Dimensions, Installation process, Connections to be made, Assembly sequence, Operations required, Test points to be used, Job duration

2.3 Report to the appropriate person where inconsistencies or inaccuracies in information sources are identified

Outcome 3: Record and communicate technical information

3.1 Complete/produce documentation to communicate information and/or to record activities completed; evidence to include **three** of the following: Fully detailed sketch of work/circuits required or completed, Planning documentation, Resource requisitions, Data from completed testing activities, Risk assessment, Training records, Reporting problems/areas for improvement

Unit 004 Customer Relations for working in the Power sector (D/600/3906) 2 credits

This unit is designed to ensure that operatives in the electrical power engineering environment are able to (i) communicate with customers effectively (ii) provide accurate answers and information to questions asked (iii) deal effectively with any customer concerns.

By completing this unit, you show you are competent to:

- Prepare to visit a customer's premises
- Maintain effective relations with customers

Performance Criteria

To perform effectively in this unit, you need to evidence competent performance of all the criteria through completion of the mandatory and optional skill-based units over a minimum of **three** separate occasions.

Outcome 1: Prepare to visit a customer's premises

1.1 Determine the purpose for visiting the customer from information given

1.2 Identify the correct location using relevant information

1.3 Identify the main objectives to be achieved from the visit

1.4 Prepare relevant information/documentation prior to visiting the customer. Evidence to include **three** of the following: Personal company identification, Plans, Work instruction, Wayleave information, company information, Customer/client Information

1.5 Select appropriate work wear to visit customer's premises. Evidence to include **two** of the following: Domestic premises, Industrial/Commercial premises, Agricultural premises, Building site, Distribution/Transmission Site

Outcome 2: Maintain effective relations with customers

2.1 Introduce and identify self to customer in a polite and courteous manner

2.2 Accurately and effectively describe the purpose of the visit to the customer

2.3 Listen attentively to the customer, responding to questions asked with accurate information

2.4 Agree the objectives with the customer giving all relevant information

2.5 Record/report information of visit in an appropriate manner (where applicable)

2.6 Respond to customer concerns/complaints in a sympathetic and effective manner. Evidence to include **two** of the following:

- Resolve the customers' issues on site within own level of responsibility,
- Resolve the customers issues when outside of own responsibility by referring the matter to the appropriate person on site,
- Report issues which cannot be resolved on site to the appropriate person/section,
- Provide the customer with appropriate contact details of other personnel/sections if requested

Unit 005 Movement of Cable, Plant and Apparatus (T/600/3913) 6 credits

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

By completing this unit, you show you are competent to:

- Plan the movement of cable, plant and apparatus
- Prepare for the movement of cable, plant and apparatus
- Move, secure and position cable, plant and apparatus
- Use and communicate data and information
- Resolve problems effectively and efficiently

Performance Criteria

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

Outcome 1: Plan for work activities to move cable, plant and apparatus

1.1 Identify the correct work location using available information

1.2 Conduct a site specific risk assessment, completing required documentation, in line with health and safety regulations

1.3 Plan the moving operation in line 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 their intended work plan, in accordance with company procedures

Outcome 2: Prepare resources to move cable, plant and apparatus

2.1 Identify the load to be moved, in line with work plan. To include at least **three** different types of loads (e.g. Large Cable drums, Link boxes, Transformer, Switchgear, Panels, Street furniture, Over 25 kV joints)

2.2 Select, inspect and wear Personal Protective Equipment (PPE) in line 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 line 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 line 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 the 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 line with company procedures

Outcome 3: Carry out the movement of cable, plant and apparatus

3.1 Position and secure the lifting and moving equipment to the load, ensuring the weight is evenly distributed in line 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 line 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: Positioning/securing of loads, Environmental/site conditions, Equipment/resources. Effects of other people

3.6 Work throughout the duration of the work 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 line with company procedures

3.8 Ensure all tools and equipment are stored safely and appropriately in line 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 you **must** also incorporate the following additional requirements in the process of moving the **three** different loads identified in the unit:

- Use safely at least **three** 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:
  - Move a load across **all** of the following:
  - Across a difficult route
  - Where space and positioning is confined
  - Where the load is unbalanced and/or complex

Knowledge and understanding

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

Outcome 4: General

4.1 The main principles of health and safety and environmental legislation and regulations

4.2 The company reporting lines and authorisation roles and responsibilities

4.3 The company policies and procedures that directly impact on the work to be undertaken

Outcome 5: Work area

5.1 The company procedures and processes for reporting problems with tools and equipment

5.2 Processes and procedures to be followed for inspecting and preparing tools and equipment prior to use

5.3 What Personal Protective Equipment needs to worn when undertaken work activities

5.4 How to minimise risks to self and others when undertaking work activities

5.5 Read and interpret work instruction, information and reporting systems and documentation

5.6 How to respond to the different types and categories of emergency situations that might occur

5.7 Methods and procedures for securing loads in their final location

5.8 Methods that can be adopted to establish the weight of a load

5.9 The criteria to use to make sure that the method and lifting equipment chosen to move a load is fit for purpose

5.10 How to recognise and report inaccurate and incorrect work instructions and documentation

Unit 006 Access, Egress and Movement in Substations (L/600/3917) 4 credits

This unit is about safe entry, egress and movement in substations in a 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.

By completing this unit, you show you are competent to:

- Plan for access and egress of a substation
- Prepare resources for accessing and egressing of a substation
- Access and egress a substation
- Use and communicate data and information
- Resolve problems effectively and efficiently

Performance Criteria

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

Outcome 1: Plan for access and egress of substation

1.1 Identify the correct substation to be accessed using available information

1.2 Conduct a site specific risk assessment, completing required documentation, in line with health and safety regulations

1.3 Plan the work to be undertaken to comply with company procedures in line with risk assessment, taking into account factors such as location, content, sequence of tasks and personnel

1.4 Inform all affected parties of their intended work plan, in accordance with company procedures

Outcome 2: Prepare resources to access and egress substation

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 the 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 line with company procedures

Outcome 3: Carry out the access and egress of substation

3.1 Conduct a pre-entry inspection of the identified substation in line with the work plan, risk assessment and company procedures. To include **three** different substation locations

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 line 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 sub station 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 to include **one** of the following problems: Proximity to live equipment, Unauthorised access, Defective equipment, Environmental/site conditions

3.7 Work throughout the duration of the work 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 line with company procedures

3.9 Ensure all tools and equipment are stored safely and appropriately in line 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

Knowledge and understanding

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

Outcome 4: General

4.1 The main principles of health and safety and environmental legislation and regulations

4.2 The organisations reporting lines and authorisation roles and responsibilities

4.3 The organisations policies and procedures that directly impact on access of the location and work area

Outcome 5: Work area

5.1 The company procedures and processes for reporting problems with tools and equipment

5.2 How to read and interpret procedures and information sources used to make sure that tools or equipment are fit for purpose and safe to use

5.3 What processes and procedures need to be followed and complied with when inspecting and preparing tools or equipment prior to use

5.4 Read and interpret instructions on how to use tools and equipment safely and the processes and requirements for undertaking routine checks

5.5 What Personal Protective Equipment needs to worn when undertaken work activities

5.6 What materials and substances are dangerous and hazardous to health

5.7 How to maintain safe working and environmental practices throughout the duration of the work

5.8 How to minimise risks to self and others when undertaking work activities

5.9 Organisations work instruction, information and reporting systems and documentation

5.10 How to respond to the different types and categories of emergency situations that might occur

5.11 Work authorisation and permits to work procedures and documentation

5.12 How to recognise and minimise the impact of dangers and hazards that might cause harm or injury to self and others

5.13 How to recognise and report inaccurate and incorrect work instructions and documentation

5.14 What different access arrangements need to be complied within different areas

Unit 019 Location and Identification of Underground Utility Services (K/600/4041) 4 credits

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 yourself and others from harm and to safeguard the supply of public utility services.

By completing this unit, you show you are competent to:

- Plan to locate and identify underground utility services
- Prepare resources to locate and identify underground utility services
- Locate and identify underground utility services
- Use and communicate data and information
- Resolve problems effectively and efficiently

Performance Criteria

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

Outcome 1: Plan for work activities to locate and identify underground utility services

1.1 Identify the correct work location using available information

1.2 Conduct a site specific risk assessment, completing required documentation in line with established company procedures and health and safety regulations. To include at least two of the following environments; Roadway, Building site, Pavement, Pedestrian area, Grass verge

1.3 Plan the work to be undertaken to comply with company procedures in line 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

Outcome 2: Prepare resources to locate and identify underground utility services

2.1 Select, inspect and wear Personal Protective Equipment (PPE) compatible with the 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 commence in line 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 the work plan, risk assessment 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 Report faults with tools, equipment and PPE, including that which is unavailable, in line with company procedures

Outcome 3: Carry out location and identification of underground utility services

3.1 Use cable avoidance equipment to correctly confirm the location of buried cables on at least **two** separate occasions. To include **all** of the following modes performed at least **once**: Power, Radio, Induction, 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 line with 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: No response from locator, Location of apparatus, Difficulty in tracing cable, Site/environmental conditions
3.4 Work throughout the duration of the work 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 line with company procedures
3.6 Ensure all tools and equipment are stored safely and appropriately in line 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

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

Outcome 4: General
4.1 The main principles of health and safety and environmental legislation and regulations
4.2 The company reporting lines and authorisation roles and responsibilities
4.3 The company policies and procedures that directly impact on the work to be undertaken

Outcome 5: Work area
5.1 What are the processes and procedures used to report problems with tools and equipment
5.2 How to use and follow processes and procedures to confirm that tools and equipment are fit for purpose and safe to use
5.3 How to interpret Instructions and guidance on safe use of tools and equipment processes and requirements for routine checks
5.4 What Personal Protective Equipment to be used for the given work activity
5.5 What materials and substances are dangerous and hazardous to health
5.6 How to maintain safe working practices and comply with environmental regulations throughout the duration of the work
5.7 How to minimise risks to self and others responsible for undertaking and (those) associated with the work activity
5.8 Know the process and procedures for reporting and problems
5.9 Know the company work instruction and reporting systems documentation and processes
5.10 Know the different types and categories of emergency situations that can occur
5.11 Tools, methods and techniques to locate underground services and utilities

Unit 020 Access, Egress and Movement within the Working Area (M/600/4042) 2 credits

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.

By completing this unit, you show you are competent to:

- Plan for cable jointing work activities
- Prepare for cable jointing work activities
- Maintain safe access and egress whilst completing cable jointing activities
- Use and communicate data and information
- Resolve problems effectively and efficiently

Performance Criteria

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

Outcome 1: Plan for cable jointing work activities

1.1 Identify the correct work location using available information

1.2 Conduct a site specific risk assessment, completing required documentation, in line with company procedures and health and safety regulations

1.3 Plan the work to be undertaken to comply with company procedures in line 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 their intended work plan, in line with company procedures

Outcome 2: Prepare for cable jointing work activities

2.1 Select, inspect and wear Personal Protective Equipment (PPE) compatible with the work plan, risk assessment 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 line with risk assessment requirements and company procedures (e.g. signs/barriers, traffic control)

2.3 Select and prepare tools and equipment, compatible with the work plan, risk assessment 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 Report faults with tools, equipment and PPE, including that which is unavailable, in line with company procedures

Outcome 3: Maintain safe access and egress whilst completing cable jointing work activities

3.1 Conduct a pre-entry inspection of the identified work areas in line with the work plan, risk assessment 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 line with risk assessment

3.4 Access, egress and move around the identified work area in a safe manner, in line with risk assessment requirements and company procedures at **two** different working locations

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: Resources/materials, Adjacent to live apparatus, Traffic control, Site/environmental conditions, Effects of others

3.6 Work throughout the duration of the work 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 line with company procedures

3.8 Ensure all tools and equipment are stored safely and appropriately in line 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

Knowledge and Understanding

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

Outcome 4: General

4.1 The main principles of health and safety and environmental legislation and regulations

4.2 The organisations reporting lines and authorisation roles and responsibilities

4.3 The organisations policies and procedures that directly impact on access of the location and work area

Outcome 5: Work area

5.1 The company procedures and processes for reporting problems with tools and equipment

5.2 How to read and interpret procedures and information sources used to make sure that tools or equipment are fit for purpose and safe to use

5.3 What processes and procedures need to be followed and complied with when inspecting and preparing tools or equipment prior to use

5.4 Read and interpret instructions on how to use tools and equipment safely and the processes and requirements for undertaking routine checks

5.5 What Personal Protective Equipment needs to worn when undertaken work activities

5.6 What materials and substances are dangerous and hazardous to health

5.7 How to maintain safe working and environmental practices throughout the duration of the work

5.8 How to minimise risks to self and others when undertaking work activities

5.9 Organisations work instruction, information and reporting systems and documentation

5.10 Work authorisation and permits to work procedures and documentation

5.11 How to recognise and minimise the impact of dangers and hazards that might cause harm or injury to self and others

5.12 How to recognise and report inaccurate and incorrect work instructions and documentation

5.13 Know what are different access arrangement that need to be complied with in different areas

Unit 021 Service Jointing on Low Voltage Underground Cables (T/600/4043) 12 credits

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.

By completing this unit, you show you are competent to:

- Plan for service jointing on low voltage underground cables
- Prepare for service jointing on low voltage underground cables
- Perform service jointing on low voltage underground cables
- Use and communicate data and information
- Resolve problems effectively and efficiently

Performance Criteria

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

Outcome 1: Plan for work activities on service jointing on low voltage underground cables

1.1 Identify the correct work location using available information

1.2 Conduct a site specific risk assessment, completing required documentation, in line with company procedures and health and safety regulations

1.3 Plan the work to be undertaken to comply with company procedures in line with the risk assessment, taking into account factors such as location, content, sequence of tasks and personnel

1.4 Inform all affected parties of their intended work plan, in line with company procedures

Outcome 2: Prepare for work activities on service jointing on low voltage underground cables

2.1 Select, inspect and wear Personal Protective Equipment (PPE) compatible with the 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 commence in line 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 the work plan, risk assessment 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 and inspect the cables to be jointed, in line with company procedures and work plan

2.6 Report faults with tools, equipment and PPE, including that which is unavailable, in line with company procedures

Outcome 3: Carry out service jointing activities on low voltage underground cables

3.1 Complete service jointing and termination of low voltage cables using selected tools and equipment, in line with work plan, risk assessment and company procedures. Service joint types to include at least **three** of the following: Service to polymeric main, Service to paper main, Service transition straight, Service transition branch

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: Insufficient work space, Cable condition, Test results, Equipment/materials, Environmental/site conditions
3.5 Work throughout the duration of the work 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 line with company policy (e.g. safety reports, joint positions)
3.7 Ensure all tools and equipment are stored safely and appropriately in line 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

Knowledge and Understanding

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

Outcome 4: General

4.1 The main principles of health and safety and environmental legislation and regulations
4.2 The company reporting lines and authorisation roles and responsibilities
4.3 The company policies and procedures that directly impact on the work to be undertaken

Outcome 5: Work area

5.1 The company procedures and processes for reporting problems with tools and equipment
5.2 How to read and interpret the procedures and information sources used to make sure that tools and equipment are fit for purpose and safe to use
5.3 What processes and procedures need to be followed and complied with when performing switching operations
5.4 Read and interpret instructions on how to use tools and equipment safely and the processes and requirements for undertaking routine checks
5.5 What Personal Protective Equipment needs to worn when undertaken work activities
5.6 How to maintain safe working and environmental practices throughout the duration of the work
5.7 How to minimise risks to self and others when undertaking work activities
5.8 Company work instruction, information and reporting systems and documentation
5.9 How to respond to the different types and categories of emergency situations that might occur
5.10 What are the sequence of processes and techniques that need to be followed and applied when performing jointing activities
5.11 Recognise and report inaccurate and incorrect work instructions and documentation

Unit 022 Jointing and Termination of Low Voltage Mains Underground Cables (A/600/4044) 15 credits

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.

By completing this unit, you show you are competent to:

- Plan for jointing and termination of low voltage mains underground cables
- Prepare for jointing and termination of low voltage mains underground cables
- Perform jointing and termination of low voltage mains underground cables
- Use and communicate data and information
- Resolve problems effectively and efficiently

Performance Criteria

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

Outcome 1: Plan for work activities on jointing and termination of low voltage mains underground cables

1.1 Identify the correct work location using available information

1.2 Conduct a site specific risk assessment, completing required documentation, in line with company procedures and health and safety regulations

1.3 Plan the work to be undertaken to comply with company procedures in line with the risk assessment, taking into account factors such as location, content, sequence of tasks and personnel

1.4 Inform all affected parties of their intended work plan, in line with company procedures

Outcome 2: Prepare for work activities jointing and termination of low voltage mains underground cables

2.1 Select, inspect and wear Personal Protective Equipment (PPE) compatible with the 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 commence in line 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 the work plan, risk assessment 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 and inspect the cables to be jointed, in line with company procedures and work plan

2.6 Report faults with tools, equipment and PPE, including that which is unavailable, in line with company procedures

Outcome 3: Carry out jointing and termination of low voltage mains underground cables

3.1 Complete mains jointing and termination of low voltage cables using selected tools and equipment, in line with work plan, risk assessment and company procedures. Mains joint

types to include at least **three** of the following: Polymeric branch, Transition straight, Transition branch, Link box, 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 to include **one** of the following problems: Cable position, Cable identification, Access/egress conditions, Insufficient working space, Environmental/site conditions

3.5 Work throughout the duration of the work 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 line with company policy (e.g. safety reports, joint positions)

3.7 Ensure all tools and equipment are stored safely and appropriately in line 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

Knowledge and Understanding

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

Outcome 4: General

4.1 The main principles of health and safety and environmental legislation and regulations

4.2 The company reporting lines and authorisation roles and responsibilities

4.3 The company policies and procedures that directly impact on the work to be undertaken

Outcome 5: Work area

5.1 The company procedures and processes for reporting problems with tools and equipment

5.2 How to read and interpret the procedures and information sources used to make sure that tools and equipment are fit for purpose and safe to use

5.3 What processes and procedures need to be followed and complied with when performing switching operations

5.4 Read and interpret instructions on how to use tools and equipment safely and the processes and requirements for undertaking routine checks

5.5 What Personal Protective Equipment needs to worn when undertaken work activities

5.6 How to maintain safe working and environmental practices throughout the duration of the work

5.7 How to minimise risks to self and others when undertaking work activities

5.8 Company work instruction, information and reporting systems and documentation

5.9 How to respond to the different types and categories of emergency situations that might occur

5.10 What are the sequence of processes and techniques that need to be followed and applied when performing jointing activities

5.11 Recognise and report inaccurate and incorrect work instructions and documentation

Unit 023 Jointing and Termination of High Voltage (up to 25 kV) Underground Cables (F/600/4045) 15 credits

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.

By completing this unit, you show you are competent to:

- Plan for jointing and termination of high voltage underground cables
- Prepare for jointing and termination of high voltage underground cables
- Perform jointing and termination of high voltage underground cables
- Use and communicate data and information
- Resolve problems effectively and efficiently

Performance Criteria

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

Outcome 1: Plan for work activities on jointing and termination of high voltage underground cables

1.1 Identify the correct work location using available information

1.2 Conduct a site specific risk assessment, completing required documentation, in line with company procedures and health and safety regulations

1.3 Plan the work to be undertaken to comply with company procedures in line with the risk assessment, taking into account factors such as location, content, sequence of tasks and personnel

1.4 Inform all affected parties of their intended work plan, in line with company procedures

Outcome 2: Prepare for work activities jointing and termination of high voltage underground cables

2.1 Select, inspect and wear Personal Protective Equipment (PPE) compatible with the 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 commence in line 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 the work plan, risk assessment 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 cables to be jointed, in line 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 line with company procedures

Outcome 3: Carry out jointing and termination of high voltage underground cables

3.1 Complete jointing operations of high voltage cables using selected tools and equipment, in line with work plan, risk assessment and company procedures. To include jointing operations on **both** of the following: Polymeric insulated cables, 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 to include **one** of the following problems: Cable position, Cable identification, Access/egress conditions, Insufficient working space, Environmental/site conditions

3.5 Work throughout the duration of the work 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 line with company policy (e.g. safety reports, joint positions)

3.7 Ensure all tools and equipment are stored safely and appropriately in line 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

Knowledge and Understanding

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

Outcome 4: General

4.1 The main principles of health and safety and environmental legislation and regulations

4.2 The company reporting lines and authorisation roles and responsibilities

4.3 The company policies and procedures that directly impact on the work to be undertaken

Outcome 5: Work area

5.1 The company procedures and processes for reporting problems with tools and equipment

5.2 How to read and interpret the procedures and information sources used to make sure that tools and equipment are fit for purpose and safe to use

5.3 What processes and procedures need to be followed and complied with when performing switching operations

5.4 Read and interpret instructions on how to use tools and equipment safely and the processes and requirements for undertaking routine checks

5.5 What Personal Protective Equipment needs to worn when undertaken work activities

5.6 How to maintain safe working and environmental practices throughout the duration of the work

5.7 How to minimise risks to self and others when undertaking work activities

5.8 Company work instruction, information and reporting systems and documentation

5.9 How to respond to the different types and categories of emergency situations that might occur

5.10 What are the sequence of processes and techniques that need to be followed and applied when performing jointing activities

5.11 Recognise and report inaccurate and incorrect work instructions and documentation

Unit 024 Over 25 kV XLPE Jointing and Terminations (J/600/4046) 15 credits

This unit is about jointing termination of over 25 kV XLPE 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.

By completing this unit, you show you are competent to:

- Plan for jointing and termination of XLPE cables up to 33 kV
- Prepare for jointing and termination of XLPE cables up to 33 kV
- Perform jointing and termination of XLPE cables up to 33 kV
- Use and communicate data and information
- Resolve problems effectively and efficiently

Performance Criteria

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

Outcome 1: Plan to joint/terminate up to 33 kV XLPE cables

1.1 Identify the correct work location using available information

1.2 Conduct a site specific risk assessment, completing required documentation, in line with company procedures and health and safety regulations

1.3 Plan the work to be undertaken to comply with company procedures in line with the risk assessment, taking into account factors such as location, content, sequence of tasks and personnel

1.4 Inform all affected parties of their intended work plan, in line with company procedures

Outcome 2: Prepare resources to joint/terminate up to 33 kV XLPE cables

2.1 Select, inspect and wear Personal Protective Equipment (PPE) compatible with the 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 commence in line 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 the work plan, risk assessment 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 cables to be jointed, in line 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 line with company procedures

Outcome 3: Joint/terminate up to 33 kV XLPE cables

3.1 Complete jointing operations of identified cables using selected tools and equipment, in line with work plan, risk assessment and company procedures. Jointing types to include at least

two of the following: a) Bifurcating b) Single core straight c) Three core straight d) 3c end termination e) 3x single core 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: Access/egress, Tools/equipment/materials, Environmental/site conditions, Effect of others

3.5 Work throughout the duration of the work 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 line with company policy (e.g. safety reports, joint positions)

3.7 Ensure all tools and equipment are stored safely and appropriately in line 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

Knowledge and Understanding

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

Outcome 4: General

4.1 The main principles of health and safety and environmental legislation and regulations

4.2 The company reporting lines and authorisation roles and responsibilities

4.3 The company policies and procedures that directly impact on the work to be undertaken

Outcome 5: Work area

5.1 The company procedures and processes for reporting problems with tools and equipment

5.2 How to read and interpret the procedures and information sources used to make sure that tools and equipment are fit for purpose and safe to use

5.3 What processes and procedures need to be followed and complied with when performing switching operations

5.4 Read and interpret instructions on how to use tools and equipment safely and the processes and requirements for undertaking routine checks

5.5 What Personal Protective Equipment needs to worn when undertaken work activities

5.6 How to maintain safe working and environmental practices throughout the duration of the work

5.7 How to minimise risks to self and others when undertaking work activities

5.8 Company work instruction, information and reporting systems and documentation

5.9 How to respond to the different types and categories of emergency situations that might occur

5.10 What are the sequence of processes and techniques that need to be followed and applied when performing jointing activities

5.11 Recognise and report inaccurate and incorrect work instructions and documentation

Unit 025 Over 25 kV Paper Insulated Jointing and Terminations (Non Pressurised) (L/600/4047) 15 credits

This unit is about over 25 kV paper insulated jointing and terminations (non-pressurized) 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.

By completing this unit, you show you are competent to:

- Plan for jointing and termination up to 33kV PILC cables
- Prepare for jointing and termination up to 33kV PILC cables
- Perform jointing and termination up to 33kV PILC cables
- Use and communicate data and information
- Resolve problems effectively and efficiently

Performance Criteria

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

Outcome 1: Plan to joint/terminate up to 33 kV PILC cables

1.1 Identify the correct work location using available information

1.2 Conduct a site specific risk assessment, completing required documentation, in line with health and safety regulations

1.3 Plan the work to be undertaken to comply with company procedures in line with the risk assessment, taking into account factors such as location, content, sequence of tasks and personnel

1.4 Inform all affected parties of their intended work plan, in line with company procedures

Outcome 2: Prepare resources to joint/terminate up to 33 kV PILC cables

2.1 Select, inspect and wear Personal Protective Equipment (PPE) compatible with the 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 commence in line 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 the work plan, risk assessment 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 cables to be jointed, in line 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 line with company procedures

Outcome 3: Joint/terminate up to 33 kV PILC cables

3.1 Complete jointing operations of non-pressurised cables using selected tools and equipment, in line with work plan, risk assessment and company procedures. Jointing types to include at least **two** of the following: a) Trifurcating joint (transition) b) Single core straight joint c) Three core straight joint d) Indoor termination e) Single core outdoor 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: Cable condition, Jointing materials, Damaged screens, Environmental/site conditions, Insufficient working space

3.5 Work throughout the duration of the work 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 line with company policy (e.g. safety reports, joint positions)

3.7 Ensure all tools and equipment are stored safely and appropriately in line 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

Knowledge and Understanding

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

Outcome 4: General

4.1 The main principles of health and safety and environmental legislation and regulations

4.2 The company reporting lines and authorisation roles and responsibilities

4.3 The company policies and procedures that directly impact on the work to be undertaken

Outcome 5: Work area

5.1 The company procedures and processes for reporting problems with tools and equipment

5.2 How to read and interpret the procedures and information sources used to make sure that tools and equipment are fit for purpose and safe to use

5.3 What processes and procedures need to be followed and complied with when performing switching operations

5.4 Read and interpret instructions on how to use tools and equipment safely and the processes and requirements for undertaking routine checks

5.5 What Personal Protective Equipment needs to worn when undertaken work activities

5.6 How to maintain safe working and environmental practices throughout the duration of the work

5.7 How to minimise risks to self and others when undertaking work activities

5.8 Company work instruction, information and reporting systems and documentation

5.9 How to respond to the different types and categories of emergency situations that might occur

5.10 What are the sequence of processes and techniques that need to be followed and applied when performing jointing activities

5.11 Recognise and report inaccurate and incorrect work instructions and documentation

Unit 026 Over 25 kV Paper Insulated Jointing and Terminations (Pressurised) (R/600/4048) 15 credits

This unit is about over 25 kV paper insulated jointing and terminations (non-pressurized) 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.

By completing this unit, you show you are competent to:

- Plan for jointing and termination up to 33kV PILC cables
- Prepare for jointing and termination up to 33kV PILC cables
- Perform jointing and termination up to 33kV PILC cables
- Use and communicate data and information
- Resolve problems effectively and efficiently

Performance Criteria

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

Outcome 1: Plan to joint/terminate up to 33 kV PILC cables

1.1 Identify the correct work location using available information

1.2 Conduct a site specific risk assessment, completing required documentation, in line with health and safety regulations

1.3 Plan the work to be undertaken to comply with company procedures in line with the risk assessment, taking into account factors such as location, content, sequence of tasks and personnel

1.4 Inform all affected parties of their intended work plan, in line with company procedures

Outcome 2: Prepare resources to joint/terminate up to 33 kV PILC cables

2.1 Select, inspect and wear Personal Protective Equipment (PPE) compatible with the 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 commence in line 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 the work plan, risk assessment 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 cables to be jointed, in line with company procedures and work plan, including points of isolation and earthing arrangements

2.6 Report faults with tools, equipment and PPE, including that which is unavailable, in line with company procedures

Outcome 3: Joint/terminate up to 33 kV PILC cables

3.1 Complete jointing operations of identified cables using selected tools and equipment, in line with work plan, risk assessment and company procedures. Cable types to include at least

one of the following: a) Paper insulated, pressurised b) Oil filled c) Gas pressurised. Joint types to include at least **two** of the following: a) Stop joint b) Single core straight joint c) Three core straight joint d) Termination e) Repair joint

3.2 Maintain a positive feed pressure throughout the duration of the work and ensure that the completed joint is purged of air, in line with company procedures and manufacturers specifications

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: Cable condition, Jointing materials, Damaged screens, Environmental conditions, Environmental/site conditions

3.6 Work throughout the duration of the work 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 line with company policy (e.g. safety reports, joint positions)

3.8 Ensure all tools and equipment are stored safely and appropriately in line 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

Knowledge and Understanding

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

Outcome 4: General

4.1 The main principles of health and safety and environmental legislation and regulations

4.2 The company reporting lines and authorisation roles and responsibilities

4.3 The company policies and procedures that directly impact on the work to be undertaken

Outcome 5: Work area

5.1 The company procedures and processes for reporting problems with tools and equipment

5.2 How to read and interpret the procedures and information sources used to make sure that tools and equipment are fit for purpose and safe to use

5.3 What processes and procedures need to be followed and complied with when performing switching operations

5.4 Read and interpret instructions on how to use tools and equipment safely and the processes and requirements for undertaking routine checks

5.5 What Personal Protective Equipment needs to worn when undertaken work activities

5.6 How to maintain safe working and environmental practices throughout the duration of the work

5.7 How to minimise risks to self and others when undertaking work activities

5.8 Company work instruction, information and reporting systems and documentation

5.9 How to respond to the different types and categories of emergency situations that might occur

5.10 What are the sequence of processes and techniques that need to be followed and applied when performing jointing activities

5.11 Recognise and report inaccurate and incorrect work instructions and documentation

Unit 027 Electrical Testing of Underground Cables and Apparatus (Y/600/4049) 6 credits

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.

By completing this unit, you show you are competent to:

- Plan to test cable and associated apparatus
- Prepare to test cable and associated apparatus
- Test cable and associated apparatus
- Use and communicate data and information
- Resolve problems effectively and efficiently

Performance Criteria

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

Outcome 1: Plan for work activities to test cable and associated apparatus

1.1 Identify the correct work location using available information

1.2 Conduct a site specific risk assessment, completing required documentation, in line with health and safety regulations

1.3 Plan the work to be undertaken to comply with company procedures in line with the risk assessment, taking into account factors such as location, content, sequence of tasks and personnel

1.4 Inform all affected parties of their intended work plan, in line with company procedures

Outcome 2: Prepare resources to test cable and associated apparatus

2.1 Select, inspect and wear Personal Protective Equipment (PPE) compatible with the 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 testing to commence in line with risk assessment requirements and company procedures

2.3 Select and prepare tools and testing equipment compatible with the work plan, risk assessment 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 and inspect the correct cable and/or apparatus to be tested in line with company procedures and work plan

2.6 Report faults with tools, equipment and PPE, including that which is unavailable, in line with company procedures

Outcome 3: Carry out the electrical testing of cable and associated apparatus

3.1 Use testing equipment to carry out electrical tests in line with work plan, risk assessment and company procedures. To include **all** of the following tests: Polarity, Insulation resistance, Earth loop impedance, Three-phase testing, Phase rotation, Continuity, Voltage. Each test to be performed at least **once** over a minimum of **two** separate occasions (e.g. three tests on one occasion and four on another)

3.2 Confirm and interpret the results of the testing, in line with company procedures

3.3 Record the results of the testing in line 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: Earth reading, Voltage fluctuation, Phase rotation, Polarity readings, Insulation resistance, Environmental/site conditions

3.5 Work throughout the duration of the work 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 line with company policy

3.7 Ensure all tools and equipment are stored safely and appropriately in line 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

Knowledge and Understanding

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

Outcome 4: General

4.1 The main principles of health and safety and environmental legislation and regulations

4.2 The company reporting lines and authorisation roles and responsibilities

4.3 The company policies and procedures that directly impact on the work to be undertaken

Outcome 5: Work area

5.1 The company procedures and processes for reporting problems with tools and equipment

5.2 How to read and interpret procedures and information sources used to make sure that tools and equipment are fit for purpose and safe to use

5.3 What Personal Protective Equipment needs to worn when undertaken work activities

5.4 How to maintain safe working and environmental practices throughout the duration of the work

5.5 How to minimise risks to self and others when undertaking work activities

5.6 Company work instruction, information and reporting systems and documentation

5.7 How to respond to the different types and categories of emergency situations that might occur

5.8 How to apply test principles, methods, processes and procedures on plant and apparatus

5.9 How to interpret test results and report findings

5.10 How to recognise and report inaccurate and incorrect work instructions and documentation

Unit 028 Repairs to Faulted or Damaged LV Service and Mains Cables (non-diagnosis) (L/600/4050) 20 credits

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 involve 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.

By completing this unit, you show you are competent to:

- Plan to repair faulty or damaged LV service and mains cables
- Prepare to repair faulty or damaged LV service and mains cable
- Repair faulty or damaged LV service and mains cable
- Use and communicate data and information
- Resolve problems effectively and efficiently

Performance Criteria

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

Outcome 1: Plan for work activities on faulty/damaged LV service and mains cables

1.1 Identify the correct work location using available information

1.2 Conduct a site specific risk assessment, completing required documentation, in line with health and safety regulations

1.3 Plan the work to be undertaken to comply with company procedures in line 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 their intended work plan

Outcome 2: Prepare for work activities repairing faulted/damaged LV service and mains cables

2.1 Select, inspect and wear Personal Protective Equipment (PPE) compatible with the 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 testing to commence in line with risk assessment requirements and company procedures

2.3 Select and prepare tools and equipment compatible with the work plan, risk assessment 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 and inspect the correct cable to be repaired in line 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 line with company procedures

Outcome 3: Carry out repair to faulted/damaged LV service/mains cables

3.1 Carry out repairs to faulted low voltage cables using selected tools and equipment, in line with work plan, risk assessment and company procedures on **both** of the following: Service cable fault, 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 line with company 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: Location of fault position, Cable condition, 3rd party apparatus in close proximity to fault position, Environmental/site conditions

3.6 Work throughout the duration of the work 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 line with company policy

3.8 Ensure all tools and equipment are stored safely and appropriately in line 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

Knowledge and Understanding

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

Outcome 4: General

4.1 The main principles of health and safety and environmental legislation and regulations

4.2 The company reporting lines and authorisation roles and responsibilities

4.3 The company policies and procedures that directly impact on the work to be undertaken

Outcome 5: Work area

5.1 The company procedures and processes for reporting problems with tools and equipment

5.2 How to read and interpret procedures and information sources used to make sure that tools and equipment are fit for purpose and safe to use

5.3 Processes and procedures to be followed for inspecting and preparing tools and equipment prior to use

5.4 Read and interpret instructions on how to use tools and equipment safely and the processes and requirements for undertaking routine checks

5.5 What Personal Protective Equipment needs to worn when undertaken work activities

5.6 What materials and substances are dangerous and hazardous to health

5.7 How to maintain safe working and environmental practices throughout the duration of the work

5.8 How to minimise risks to self and others when undertaking work activities

5.9 Company work instruction, information and reporting systems and documentation

5.10 How to respond to the different types and categories of emergency situations that might occur

5.11 How to read, interpret and follow fault repair work instructions, processes and procedures

5.12 How to recognise and report inaccurate and incorrect work instructions and documentation

Unit 029 Carry out Excavation Activities on Underground Cables (R/600/4051) 4 credits

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.

By completing this unit, you show you are competent to:

- 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

Performance Criteria

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

Outcome 1: Plan for work activities excavating on underground cables

1.1 Identify the correct work location using available information

1.2 Conduct a site specific risk assessment, completing required documentation, in line with health and safety regulations

1.3 Plan the work to be undertaken to comply with company procedures in line with the risk assessment, taking into account factors such as location, content, sequence of tasks and personnel

1.4 Inform all affected parties of their intended work plan, in accordance with company procedures

Outcome 2: Prepare for work activities excavating on underground cables

2.1 Select, inspect and wear Personal Protective Equipment (PPE) compatible with the work plan, risk assessment 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 line 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 the work plan, risk assessment 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 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 line with company procedures

Outcome 3: Carry out excavating activities on underground cables

3.1 Carry out excavation activities using safe excavation techniques in line with work plan, risk assessment and company procedures. Evidence to include at least **three** separate excavation activities in the following environments: Roadway, Grass verge, Pavement, Building site, Pedestrian area, Domestic/Commercial premises

3.2 Confirm that the completed excavation is suitable for its intended use in line 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: Insufficient barriers, Unable to locate cable, Traffic control, Defective equipment, Environmental/site conditions
3.4 Work throughout the duration of the work 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 line with company policy
3.6 Ensure all tools and equipment are stored safely and appropriately in line 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

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

Outcome 4: General
4.1 The main principles of health and safety and environmental legislation and regulations
4.2 The company reporting lines and authorisation roles and responsibilities
4.3 The company policies and procedures that directly impact on the work to be undertaken

Outcome 5 Work area
5.1 The company procedures and processes for reporting problems with tools and equipment
5.2 How to read and interpret procedures and information sources used to make sure that tools and equipment are fit for purpose and safe to use
5.3 Processes and procedures to be followed for inspecting and preparing tools and equipment prior to use
5.4 What Personal Protective Equipment needs to worn when undertaken work activities
5.5 What materials and substances are dangerous and hazardous to health
5.6 How to maintain safe working and environmental practices throughout the duration of the work
5.7 How to minimise risks to self and others when undertaking work activities
5.8 Company work instruction, information and reporting systems and documentation
5.9 How to respond to the different types and categories of emergency situations that might occur
5.10 Recognise and report inaccurate and incorrect work instructions and documentation
5.11 What are the different control measure that can be used to protect the safety of self and others
5.12 What type of control measures should be chosen and applied for a given purpose

Unit 030 Inspect the Installation of Underground Cables (Y/600/4052) 4 credits

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.

By completing this unit, you show you are competent to:

- Plan to inspect the installation of underground cables
- Prepare to inspect the installation of underground cables
- Inspect the installation of underground cables
- Use and communicate data and information
- Resolve problems effectively and efficiently

Performance Criteria

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

Outcome 1: Plan for work activities inspecting the installation of underground cables

1.1 Identify the correct work location using available information

1.2 Conduct a site specific risk assessment, completing required documentation, in line with health and safety regulations

1.3 Plan the work to be undertaken to comply with company procedures in line with risk the assessment, taking into account factors such as location, content, sequence of tasks and personnel

1.4 Inform all affected parties of their intended work plan, in accordance with company procedures

Outcome 2: Prepare for work activities inspecting the installation of underground cables

2.1 Select, inspect and wear Personal Protective Equipment (PPE) compatible with the work plan, risk assessment 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 line 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 the work plan, risk assessment 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 installation to be inspected, in line with company procedures and work plan

2.6 Report faults with tools, equipment and PPE, including that which is unavailable, in line with company procedures

Outcome 3: Carry out inspection of the installation of underground cables activities

3.1 Inspect the installation of underground cables using selected tools and equipment, in line with work plan, risk assessment and company procedures. To include the inspection of **three** different cable installations

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: Incorrect trench depth, Incorrect duct type, Cable damage, Incorrect bend radii, Environmental/site conditions, Non compliance with specification
3.5 Work throughout the duration of the work 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 line with company procedures (e.g. Safety reports, Cable positions)
3.7 Ensure all tools and equipment are stored safely and appropriately in line 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

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

Outcome 4: General
4.1 The main principles of health and safety and environmental legislation and regulations
4.2 The company reporting lines and authorisation roles and responsibilities
4.3 The company policies and procedures that directly impact on the work to be undertaken

Outcome 5: Work area
5.1 The company procedures and processes for reporting problems with tools and equipment
5.2 Read and interpret the procedures and information sources used to make sure that tools and equipment are fit for purpose and safe to use
5.3 What processes and procedures need to be followed and complied with when inspecting and preparing tools and equipment prior to use
5.4 Read and interpret instructions on how to use tools and equipment safely and the processes and requirements for undertaking routine checks
5.5 What Personal Protective Equipment needs to worn when undertaken work activities
5.6 What materials and substances are dangerous and hazardous to health
5.7 How to maintain safe working and environmental practices throughout the duration of the work
5.8 How to minimise risks to self and others when undertaking work activities
5.9 Company work instruction, information and reporting systems and documentation
5.10 How to respond to the different types and categories of emergency situations that might occur
5.11 What inspection processes and equipment to use for a specific and given purpose
5.12 How to read and analyse inspection data, interpret and record findings
5.13 How to recognise and report inaccurate and incorrect work instructions and documentation

Unit 031 Install Underground Cables (D/600/4053) 4 credits

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.

By completing this unit, you show you are competent to:

- Plan to install underground cables
- Prepare to install underground cables
- Install underground cables
- Use and communicate data and information
- Resolve problems effectively and efficiently

Performance Criteria

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

Outcome 1: Plan for work activities to install underground cables

1.1 Identify the correct work location using available information

1.2 Conduct a site specific risk assessment, completing required documentation, in line with health and safety regulations

1.3 Plan the work to be undertaken to comply with company procedures in line with the risk assessment, taking into account factors such as location, content, sequence of tasks and personnel

1.4 Inform all affected parties of their intended work plan, in accordance with company procedures

Outcome 2: Prepare for work activities to install underground cables

2.1 Select, inspect and wear Personal Protective Equipment (PPE) compatible with the work plan, risk assessment 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 line 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 the work plan, risk assessment 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 line 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 line with company procedures

Outcome 3: Carry out the installation of underground cables activities

3.1 Install underground cables using selected tools and equipment, in line with work plan, risk assessment and company procedures. Cable installation to include at least **two** of the following: LV cable in duct, LV cable direct, HV cable in duct, 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: Cable duct, Trench condition, Materials/resources, Backfill material, Environmental/site conditions
3.5 Work throughout the duration of the work 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 line with company procedures, (e.g. Safety reports, Joint positions)
3.7 Ensure all tools and equipment are stored safely and appropriately in line 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

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

Outcome 4: General
4.1 The main principles of health and safety and environmental legislation and regulations
4.2 The company reporting lines and authorisation roles and responsibilities
4.3 The company policies and procedures that directly impact on the work to be undertaken

Outcome 5: Work area
5.1 The company procedures and processes for reporting problems with tools and equipment
5.2 How to read and interpret procedures and information sources used to make sure that tools and equipment are fit for purpose and safe to use
5.3 Processes and procedures to be followed for inspecting and preparing tools and equipment prior to use
5.4 Read and interpret instructions on how to use tools and equipment safely and the processes and requirements for undertaking routine checks
5.5 What Personal Protective Equipment needs to worn when undertaken work activities
5.6 What materials and substances are dangerous and hazardous to health
5.7 How to maintain safe working and environmental practices throughout the duration of the work
5.8 How to minimise risks to self and others when undertaking work activities
5.9 Company work instruction, information and reporting systems and documentation
5.10 How to respond to the different types and categories of emergency situations that might occur
5.11 How to install plant and apparatus using specified principles, methods, processes and procedures
5.12 How to recognise and report inaccurate and incorrect work instructions and documentation

Unit 032 Carry out Jointing on Pilot/Telephone Cables (H/600/4054) 8 credits

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.

By completing this unit, you show you are competent to:

- Plan for jointing on pilot/telephone cables
- Prepare for jointing on pilot/telephone cables
- Perform jointing on pilot/telephone cables
- Use and communicate data and information
- Resolve problems effectively and efficiently

Performance Criteria

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

Outcome 1: Plan for work activities on jointing on pilot/telephone cables

1.1 Identify the correct work location using available information

1.2 Conduct a site specific risk assessment, completing required documentation, in line with health and safety regulations

1.3 Plan the work to be undertaken to comply with company procedures in line with the risk assessment, taking into account factors such as location, content, sequence of tasks and personnel

1.4 Inform all affected parties of their intended work plan, in accordance with company procedures

Outcome 2: Prepare for work activities on jointing on pilot/telephone cables

2.1 Select, inspect and wear Personal Protective Equipment (PPE) compatible with the 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 commence in line 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 the work plan, risk assessment 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 and inspect the cables to be jointed, in line with company procedures and work plan

2.6 Report faults with tools, equipment and PPE, including that which is unavailable, in line with company procedures

Outcome 3: Carry out jointing activities on pilot/telephone cables

3.1 Open the cable and identify pilot cores and telephone pairs in line with company procedures

3.2 Complete jointing operations of the cables using selected tools and equipment, in line with work plan, risk assessment and company procedures. Evidence to include **two** different joint types

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: Cable identification, Materials, Resources, Environmental/site conditions
3.6 Work throughout the duration of the work 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 line with company procedures (e.g. safety reports, joint positions)
3.8 Ensure all tools and equipment are stored safely and appropriately in line 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

Knowledge and Understanding

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

Outcome 4: General

4.1 The main principles of health and safety and environmental legislation and regulations
4.2 The company reporting lines and authorisation roles and responsibilities
4.3 The company policies and procedures that directly impact on the work to be undertaken

Outcome 5: Work area

5.1 The company procedures and processes for reporting problems with tools and equipment
5.2 How to read and interpret the procedures and information sources used to make sure that tools and equipment are fit for purpose and safe to use
5.3 What processes and procedures need to be followed and complied with when performing switching operations
5.4 Read and interpret instructions on how to use tools and equipment safely and the processes and requirements for undertaking routine checks
5.5 What Personal Protective Equipment needs to worn when undertaken work activities
5.6 How to maintain safe working and environmental practices throughout the duration of the work
5.7 How to minimise risks to self and others when undertaking work activities
5.8 Company work instruction, information and reporting systems and documentation
5.9 How to respond to the different types and categories of emergency situations that might occur
5.10 What are the sequence of processes and techniques that need to be followed and applied when performing jointing activities
5.11 Recognise and report inaccurate and incorrect work instructions and documentation

Unit 033 Carry out Jointing on Low Voltage Concentric Cables (K/600/4055) 8 credits

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.

By completing this unit, you show you are competent to:

- Plan for jointing operations on low voltage concentric cables
- Prepare for jointing operations on low voltage concentric cables
- Perform jointing operations on low voltage concentric cables
- Use and communicate data and information
- Resolve problems effectively and efficiently

Performance Criteria

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

Outcome 1: Plan for work activities on jointing on low voltage concentric cables

1.1 Identify the correct work location using available information

1.2 Conduct a site specific risk assessment, completing required documentation, in line with health and safety regulations

1.3 Plan the work to be undertaken to comply with company procedures in line with the risk assessment, taking into account factors such as location, content, sequence of tasks and personnel

1.4 Inform all affected parties of their intended work plan, in accordance with company procedures

Outcome 2: Prepare for work activities on jointing low voltage concentric cables

2.1 Select, inspect and wear Personal Protective Equipment (PPE) compatible with the 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 commence in line 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 the work plan, risk assessment 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 and inspect the cables to be jointed, in line with company procedures and work plan

2.6 Report faults with tools, equipment and PPE, including that which is unavailable, in line with company procedures

Outcome 3: Carry out jointing activities on low voltage concentric cables

3.1 Open the cable and identify the conductors, in line with company procedures

3.2 Complete jointing operations of the cables using selected tools and equipment, in line with work plan, risk assessment and company procedures. Jointing types to include at least **two** of the following: Single concentric, Twin (split) concentric, 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: Unable to identify neutral/phase conductors, Incorrect materials/resources, Environmental/site conditions
3.6 Work throughout the duration of the work 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 line with company procedures (e.g. safety reports, joint positions)
3.8 Ensure all tools and equipment are stored safely and appropriately in line 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

Knowledge and Understanding

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

Outcome 4: General

4.1 The main principles of health and safety and environmental legislation and regulations
4.2 The company reporting lines and authorisation roles and responsibilities
4.3 The company policies and procedures that directly impact on the work to be undertaken

Outcome 5: Work area

5.1 The company procedures and processes for reporting problems with tools and equipment
5.2 How to read and interpret the procedures and information sources used to make sure that tools and equipment are fit for purpose and safe to use
5.3 What processes and procedures need to be followed and complied with when performing switching operations
5.4 Read and interpret instructions on how to use tools and equipment safely and the processes and requirements for undertaking routine checks
5.5 What Personal Protective Equipment needs to worn when undertaken work activities
5.6 How to maintain safe working and environmental practices throughout the duration of the work
5.7 How to minimise risks to self and others when undertaking work activities
5.8 Company work instruction, information and reporting systems and documentation
5.9 How to respond to the different types and categories of emergency situations that might occur
5.10 What are the sequence of processes and techniques that need to be followed and applied when performing jointing activities
5.11 Recognise and report inaccurate and incorrect work instructions and documentation

Unit 034 Carry out Jointing on Low Voltage Consac Cables (M/600/4056) 8 credits

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.

By completing this unit, you show you are competent to:

- Plan for jointing operations on low voltage consac cables
- Prepare for jointing operations on low voltage consac cables
- Perform jointing operations on low voltage consac cables
- Use and communicate data and information
- Resolve problems effectively and efficiently

Performance Criteria

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

Outcome 1: Plan for work activities on jointing on low voltage consac cable

1.1 Identify the correct work location using available information

1.2 Conduct a site specific risk assessment, completing required documentation, in line with health and safety regulations

1.3 Plan the work to be undertaken to comply with company procedures in line with the risk assessment, taking into account factors such as location, content, sequence of tasks and personnel

1.4 Inform all affected parties of their intended work plan, in accordance with company procedures

Outcome 2: Prepare for work activities on jointing low voltage consac cable

2.1 Select, inspect and wear Personal Protective Equipment (PPE) compatible with the 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 commence in line 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 the work plan, risk assessment 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 and inspect the cables to be jointed, in line with company procedures and work plan

2.6 Report faults with tools, equipment and PPE, including that which is unavailable, in line with company procedures

Outcome 3: Carry out jointing activities on low voltage consac cable

3.1 Joint the identified Consac cables using selected tools and equipment, in line with work plan, risk assessment and company procedures. Joint types to include at least **two** of the following: Services, Mains transition straight, Mains transition branch, 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: Aluminium sheath shows signs of oxidisation, Aluminium sheath tears as it is being lifted, Incorrect cutting wheel in sheath cutting tool, Environmental/site conditions
3.5 Work throughout the duration of the work 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 line with company procedures (e.g. safety reports, joint positions)
3.7 Ensure all tools and equipment are stored safely and appropriately in line 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

Knowledge and Understanding

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

Outcome 4: General

4.1 The main principles of health and safety and environmental legislation and regulations
4.2 The company reporting lines and authorisation roles and responsibilities
4.3 The company policies and procedures that directly impact on the work to be undertaken

Outcome 5: Work area

5.1 The company procedures and processes for reporting problems with tools and equipment
5.2 How to read and interpret the procedures and information sources used to make sure that tools and equipment are fit for purpose and safe to use
5.3 What processes and procedures need to be followed and complied with when performing switching operations
5.4 Read and interpret instructions on how to use tools and equipment safely and the processes and requirements for undertaking routine checks
5.5 What Personal Protective Equipment needs to worn when undertaken work activities
5.6 How to maintain safe working and environmental practices throughout the duration of the work
5.7 How to minimise risks to self and others when undertaking work activities
5.8 Company work instruction, information and reporting systems and documentation
5.9 How to respond to the different types and categories of emergency situations that might occur
5.10 What are the sequence of processes and techniques that need to be followed and applied when performing jointing activities
5.11 Recognise and report inaccurate and incorrect work instructions and documentation

Unit 035 Repairs to Faulted or Damaged HV Cables (non-diagnosis) (T/600/4057) 20 credits

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 involve 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.

By completing this unit, you show you are competent to:

- Plan to repair faulty or damaged HV cables
- Prepare to repair faulty or damaged HV cables
- Repair faulty or damaged HV cables
- Use and communicate data and information
- Resolve problems effectively and efficiently

Performance Criteria

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

Outcome 1: Plan for work activities on faulty/damaged HV cables

1.1 Identify the correct work location using available information

1.2 Conduct a site specific risk assessment, completing required documentation, in line with health and safety regulations

1.3 Plan the work to be undertaken to comply with company procedures in line with the risk assessment, taking into account factors such as location, content, sequence of tasks and personnel

1.4 Inform all affected parties of their intended work plan, in line with company procedures

Outcome 2: Prepare for work activities repairing faulted/damaged HV cables

2.1 Select, inspect and wear Personal Protective Equipment (PPE) compatible with the 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 commence in line 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 the work plan, risk assessment 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 damaged cable to be repaired, in line 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 line with company procedures

Outcome 3: Carry out repair to faulted/damaged HV cables

3.1 Carry out the fault repair to identified high voltage cable using selected tools and equipment, in line with work plan, risk assessment and company procedures. Repairs to take place on **both** of the following: Polymeric insulated cables, 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 line with company 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: Unable to locate fault position, Damage to cable greater than anticipated, 3rd party apparatus in close proximity to fault position, Environmental/site conditions

3.6 Work throughout the duration of the work 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 line with company procedures (eg safety reports, joint positions)

3.8 Ensure all tools and equipment are stored safely and appropriately in line 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

Knowledge and Understanding

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

Outcome 4: General

4.1 The main principles of health and safety and environmental legislation and regulations

4.2 The company reporting lines and authorisation roles and responsibilities

4.3 The company policies and procedures that directly impact on the work to be undertaken

Outcome 5: Work area

5.1 The company procedures and processes for reporting problems with tools and equipment

5.2 How to read and interpret procedures and information sources used to make sure that tools and equipment are fit for purpose and safe to use

5.3 Processes and procedures to be followed for inspecting and preparing tools and equipment prior to use

5.4 Read and interpret instructions on how to use tools and equipment safely and the processes and requirements for undertaking routine checks

5.5 What Personal Protective Equipment needs to worn when undertaken work activities

5.6 What materials and substances are dangerous and hazardous to health

5.7 How to maintain safe working and environmental practices throughout the duration of the work

5.8 How to minimise risks to self and others when undertaking work activities

5.9 Company work instruction, information and reporting systems and documentation

5.10 How to respond to the different types and categories of emergency situations that might occur

5.11 How to read, interpret and follow fault repair work instructions, processes and procedures

5.12 How to recognise and report inaccurate and incorrect work instructions and documentation

City & Guilds
Believe you can

www.cityandguilds.com

Useful contacts

UK learners General qualification information	T: +44 (0)844 543 0033 E: **learnersupport@cityandguilds.com**
International learners General qualification information	T: +44 (0)844 543 0033 F: +44 (0)20 7294 2413 E: **intcg@cityandguilds.com**
Centres Exam entries, Certificates, Registrations/enrolment, Invoices, Missing or late exam materials, Nominal roll reports, Results	T: +44 (0)844 543 0000 F: +44 (0)20 7294 2413 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	T: +44 (0)844 543 0000 F: +44 (0)20 7294 2413 F: +44 (0)20 7294 2404 (BB forms) E: **singlesubjects@cityandguilds.com**
International awards Results, Entries, Enrolments, Invoices, Missing or late exam materials, Nominal roll reports	T: +44 (0)844 543 0000 F: +44 (0)20 7294 2413 E: **intops@cityandguilds.com**
Walled Garden Re-issue of password or username, Technical problems, Entries, Results, e-assessment, Navigation, User/menu option, Problems	T: +44 (0)844 543 0000 F: +44 (0)20 7294 2413 E: **walledgarden@cityandguilds.com**
Employer Employer solutions, Mapping, Accreditation, Development Skills, Consultancy	T: +44 (0)121 503 8993 E: **business@cityandguilds.com**
Publications Logbooks, Centre documents, Forms, Free literature	T: +44 (0)844 543 0000 F: +44 (0)20 7294 2413

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

City & Guilds
1 Giltspur Street
London EC1A 9DD
T +44 (0)844 543 0000
F +44 (0)20 7294 2413
www.cityandguilds.com

City & Guilds is a registered charity established to promote education and training