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Specification

Edexcel NVQ/competence-based qualifications

Edexcel Level 2 Diploma in Network Construction Operations (Water) – Repair and Maintenance (QCF)

First registration June 2011

A PEARSON COMPANY

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Contents

Qualification title covered by this specification

This specification gives you the information you need to offer the Edexcel Level 2 Diploma in Network Construction Operations (Water) – Repair and Maintenance (QCF):

Qualification title	Qualification Number (QN)	Accreditation start date
Edexcel Level 2 Diploma in Network Construction Operations (Water) – Repair and Maintenance (QCF)	600/1814/8	01/06/2011

This qualification has been accredited within the Qualifications and Credit Framework (QCF) and is eligible for public funding as determined by the Department for Education (DfE) under Sections 96 of the Learning and Skills Act 2000.

The qualification title listed above features in the funding lists published annually by the DfE and the regularly updated website. It will also appear on the Learning Aims Database (LAD), where relevant.

You should use the QCF Qualification Number (QN), when you wish to seek public funding for your learners. Each unit within a qualification will also have a unique QCF reference number, which is listed in this specification.

The QCF qualification title and unit reference numbers will appear on the learners' final certification document. Learners need to be made aware of this when they are recruited by the centre and registered with Edexcel.

Key features of the Edexcel Level 2 Diploma in Network Construction Operations (Water) – Repair and Maintenance (QCF)

This qualification:

- is nationally recognised
- is based on the Energy and Utility Skills National Occupational Standards (NOS). The NOS, assessment strategy and qualification structure are owned by Energy and Utility Skills.

The Edexcel Level 2 Diploma in Network Construction Operations (Water) – Repair and Maintenance (QCF) has been approved as a component for the Energy and Utility Skills Apprenticeship framework.

What is the purpose of this qualification?

This qualification is appropriate for employees in the engineering sector working across a broad range of areas. It is designed to assess occupational competence in the workplace where learners are required to demonstrate skills and knowledge to a level required in the engineering sector.

Who is this qualification for?

This qualification is for all learners aged 16 and above who are capable of reaching the required standards.

Edexcel's policy is that the qualification should:

- be free from any barriers that restrict access and progression
- ensure equality of opportunity for all wishing to access the qualification.

What are the benefits of this qualification to the learner and employer?

This qualification allows learners to demonstrate competence against NOS which are based on the needs of the engineering sector as defined by Energy and Utility Skills, the Sector Skills Council. As such, it contributes to the development of skilled labour in the sector. The qualification may contribute towards the competence element of an Apprenticeship.

What are the potential job roles for those working towards this qualification?

- Service pipe layer
- Water network operative
- Engineering operative.

What progression opportunities are available to learners who achieve this qualification?

This qualification allows learners to demonstrate competence in network construction operations (water) at a level required by the engineering industry. Learners can progress across the level and size of the engineering competence and knowledge qualifications and into other occupational areas such as team leading and management.

Further information is available in *Annexe A*.

What is the qualification structure for the Edexcel Level 2 Diploma in Network Construction Operations (Water) – Repair and Maintenance (QCF)?

Individual units can be found in the *Units* section. The QCF level and credit value are given on the first page of each unit.

To achieve the **Edexcel Level 2 Diploma in Network Construction Operations (Water) – Repair and Maintenance (QCF)** learners must complete all the mandatory units in group A for a minimum total of 43 credits.

Credit from the Additional units group (AD) does not count towards completion of the qualification.

A (Mandatory units)

Learners must complete all the units in Group A.

Minimum credit value: 43

R/503/0316 – Create an efficient and effective environment in utilities network construction

D/503/1159 – Maintain a safe and secure working environment in water network construction

A/503/0665 – Establish and maintain effective working relationships in utilities network construction

A/503/0682 – Install equipment for safe working on the highway for utilities network construction

F/503/0683 – Install equipment for safe working on sites for utilities network construction

J/503/0684 – Locate and avoid supply apparatus for utilities network construction

L/503/0685 – Excavate and maintain holes and trenches for utilities network construction

Y/503/0687 – Operate powered tools and equipment for routine and predictable requirements on utilities network construction

D/503/1162 – Joint materials by mechanical means on water network construction

H/503/1163 – Install water services up to 50 mm nominal bore or 63 mm polyethylene

F/503/0666 – Joint materials by electrofusion processes on utilities network construction

F/503/1168 – Restore water network components to operational condition by repair

AD (Additional units)

Credit from the Additional units group (AD) does not count towards completion of the qualification.

M/503/1165 – Install water mains from 150 mm - 300 mm nominal bore or 180 mm – 315 mm polyethylene

T/503/1166 – Install water mains above 300 mm nominal bore or 315 mm polyethylene

A/503/1167 – Conduct pressure and soundness testing of water network engineering products or assets

R/503/0686 – Reinstate excavation and pavement surfaces after utility network construction operations

J/503/0667 – Joint materials by butt fusion processes on utilities network construction, up to 180 mm diameter

Y/503/1161 – Joint materials by butt fusion processes between 180 mm and 315 mm for utilities network construction

R/503/1160 – Joint materials by butt fusion processes above 315 mm for utilities network construction

How is the qualification graded and assessed?

The overall grade for the qualification is a 'pass'. The learner must achieve all the required units within the specified qualification structure.

To pass a unit the learner must:

- achieve **all** the specified learning outcomes
- satisfy **all** the assessment criteria by providing sufficient and valid evidence for each criterion
- show that the evidence is their own.

The qualification is designed to be assessed:

- in the workplace or
- in conditions resembling the workplace, as specified in the assessment requirements/strategy for the sector, or
- as part of a training programme.

Assessment strategy

The assessment strategy for this qualification has been included in *Annexe D*. It has been developed by Energy and Utility Skills in partnership with employers, training providers, awarding organisations and the regulatory authorities. The assessment strategy includes details on:

- criteria for defining realistic working environments
- roles and occupational competence of assessors, expert witnesses, internal verifiers and standards verifiers
- quality control of assessment
- evidence requirements.

Evidence of competence may come from:

- **current practice** where evidence is generated from a current job role
- a **programme of development** where evidence comes from assessment opportunities built into a learning/training programme whether at or away from the workplace
- the **Recognition of Prior Learning (RPL)** where a learner can demonstrate that they can meet the assessment criteria within a unit through knowledge, understanding or skills they already possess without undertaking a course of learning. They must submit sufficient, reliable and valid evidence for internal and standards verification purposes. RPL is acceptable for accrediting a unit, several units or a whole qualification
- a **combination** of these.

It is important that the evidence is:

Valid	relevant to the standards for which competence is claimed
Authentic	produced by the learner
Current	sufficiently recent to create confidence that the same skill, understanding or knowledge persist at the time of the claim
Reliable	indicates that the learner can consistently perform at this level
Sufficient	fully meets the requirements of the standards.

Types of evidence (to be read in conjunction with the assessment strategy in *Annexe D*)

To successfully achieve a unit the learner must gather evidence which shows that they have met the required standard in the assessment criteria. Evidence can take a variety of different forms including the examples below. Centres should refer to the assessment strategy for information about which of the following are permissible.

- direct observation of the learner's performance by their assessor (O)
- outcomes from oral or written questioning (Q&A)
- products of the learner's work (P)
- personal statements and/or reflective accounts (RA)
- outcomes from simulation, where permitted by the assessment strategy (S)
- professional discussion (PD)
- assignment, project/case studies (A)
- authentic statements/witness testimony (WT)
- expert witness testimony (EPW)
- evidence of Recognition of Prior Learning (RPL).

The abbreviations may be used for cross-referencing purposes.

Learners can use one piece of evidence to prove their knowledge, skills and understanding across different assessment criteria and/or across different units. It is, therefore, not necessary for learners to have each assessment criterion assessed separately. Learners should be encouraged to reference the assessment criteria to which the evidence relates.

Evidence must be made available to the assessor, internal verifier and Edexcel standards verifier. A range of recording documents is available on the Edexcel website: www.edexcel.com. Alternatively, centres may develop their own.

Additional requirements

The Joint Awarding Body and the SSC Working Practices Group have identified additional requirements that are needed to assess and quality assure qualifications placed on the QCF that use NVQ within their title. These requirements are shown in *Annexe E: Additional requirement for qualifications that use the term 'NVQ' in a QCF qualification title.*

Centre recognition and approval

Centre recognition

Centres that have not previously offered Edexcel qualifications need to apply for and be granted centre recognition as part of the process for approval to offer individual qualifications. New centres must complete both a centre recognition approval application and a qualification approval application.

Existing centres will be given 'automatic approval' for a new qualification if they are already approved for a qualification that is being replaced by the new qualification and the conditions for automatic approval are met. Centres already holding Edexcel approval are able to gain qualification approval for a different level or different sector via Edexcel online.

Approvals agreement

All centres are required to enter into an approvals agreement which is a formal commitment by the head or principal of a centre to meet all the requirements of the specification and any linked codes or regulations. Edexcel will act to protect the integrity of the awarding of qualifications, if centres do not comply with the agreement. This could result in the suspension of certification or withdrawal of approval.

Quality assurance

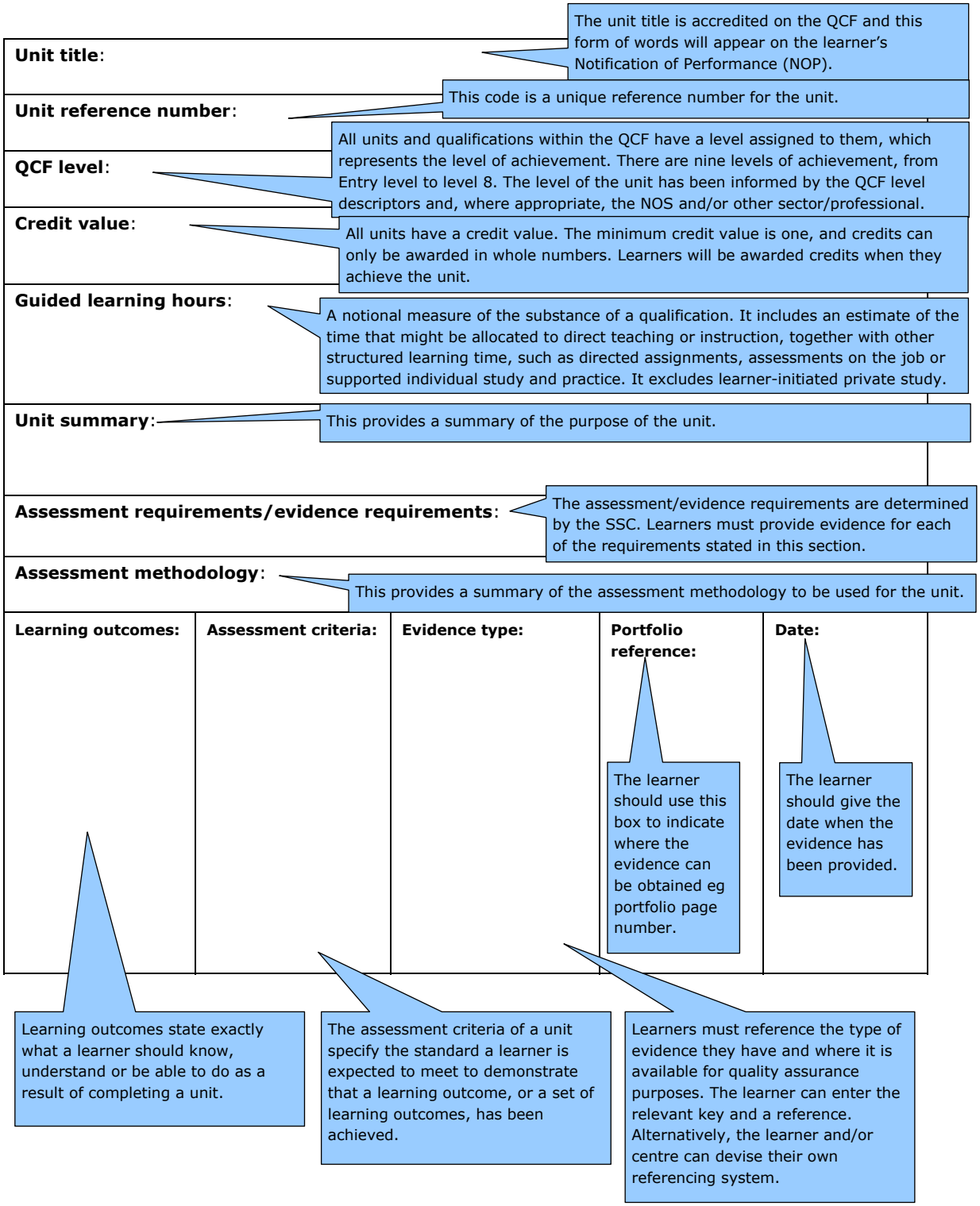
Detailed information on Edexcel's quality assurance processes is given in *Annexe B*.

What resources are required?

Each qualification is designed to support learners working in the engineering sector. Physical resources need to support the delivery of the qualifications and the assessment of the learning outcomes and must be of industry standard. Centres must meet any specific resource requirements outlined in *Annexe D: Assessment strategy*. Staff assessing the learner must meet the requirements within the overarching assessment strategy for the sector.

Unit format

Each unit in this specification contains the following sections.



Units

Unit 1: Create an efficient and effective environment in utilities network construction

Unit reference number: R/503/0316

QCF level: 2

Credit value: 3

Guided learning hours: 10

Unit summary

This unit develops learners' knowledge of health and safety guidance and legislation. Learners will gain skills to create efficient, effective working environments, maintaining standards and minimising hazards in utilities network construction.

Assessment requirements/evidence requirements

Some terms in the assessment criteria cover a range of situations. Refer to the full assessment requirements and guidance for this unit for a detailed list of terms and definitions, agreed with Energy and Utility Skills.

This unit must be assessed in line with the Energy and Utility Skills assessment strategy for vocational qualifications based on its NOS.

Assessment methodology

This unit is assessed in the workplace or in conditions resembling the workplace. Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcome		Assessment criterion		Evidence type	Portfolio reference	Date
1	Be able to work efficiently and effectively	1.1	carry out a site-specific risk assessment and review in accordance with company procedures			
		1.2	select and wear the designated PPE			
		1.3	store, maintain and use tools, work materials and equipment in accordance with the work requirements, approved procedures and practices			
2	Be able to organise their work and maintain standards to minimise hazards	2.1	organise work to comply with instructions and the agreed schedules			
		2.2	coordinate own work with other personnel and related activities			
		2.3	carry out activities to approved procedures and practices			
		2.4	carry out and confirm all work is in accordance with standards and approved codes of practice			
		2.5	check own work and that of other personnel to ensure compliance with specified standards			
		2.6	confirm with a designated person on the steps to be taken throughout the work process			
3	Be able to use and communicate data and information	3.1	comply with operational and organisational procedures for communicating information to other people			
		3.2	confirm records are maintained and exchanged in accordance with operational and organisational requirements			
		3.3	confirm with designated personnel any circumstances where information appears incorrect			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
	3.4 use organisational information systems to record and store, data and information			
4 Be able to resolve problems that arise from work activities	4.1 report to a designated person any situations which require additional intervention 4.2 communicate problems and conditions outside the responsibility of the job role using approved procedures			
5 Know Health and Safety guidance and legislation in utilities network construction operations	5.1 state the main responsibilities of the employer and employee under the Health and Safety at Work Act 5.2 explain the health and safety guidance governing work in excavations 5.3 describe the safe procedures for handling hazardous materials 5.4 explain the organisational accident recording and reporting procedures 5.5 state the legislative requirements relative to the work activity and the workplace environment, including: – any licensing, certification or inspection – organisational and operational standards			
6 Understand how to create an efficient and effective environment in utilities network construction	6.1 describe the industry practices and company requirements for the work activity within the remit of the occupation 6.2 apply approved procedures and practices in the context of the operations, the work activity and the workplace environment			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
	6.3 describe the main physical properties of the range of materials used in work operations 6.4 describe how the range of materials may be affected by weather conditions 6.5 describe the categories and uses of materials used in the work activity 6.6 describe the characteristics of work materials relevant to the work activity, both hazardous and non-hazardous 6.7 identify materials used for the work which could pose a health hazard 6.8 explain how to identify hazardous materials 6.9 describe precautions to be taken when dealing with toxic fumes and dust 6.10 explain safe methods of handling and storing the range of materials being used for the work 6.11 identify types of packaging used for the range of materials 6.12 identify types of tools and equipment used with the operation and work activity 6.13 identify the range and use of personal protective equipment for the work activity 6.14 describe the methods of checking PPE for good condition 6.15 state the operational and organisational requirements for storage			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
	6.16 describe the arrangements, designated places and working procedures for storing tools and equipment 6.17 explain the safe lifting and handling techniques for tools, equipment and materials 6.18 explain the emergency procedures and actions to take in the event of emergency 6.19 describe means of communication used in utilities network construction 6.20 explain the procedures for reporting problems in accordance with company policy 6.21 outline the range of the work activity and sequence of events to achieve the intended job outcomes			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 2: Maintain a safe and secure working environment in water network construction

Unit reference number: D/503/1159

QCF level: 2

Credit value: 3

Guided learning hours: 23

Unit summary

This unit provides learners with skills to maintain a safe and secure working environment. Learners will gain an understanding of health and safety legislation, regulations and company policies. This unit also covers the principles and applications of risk assessment.

Assessment requirements/evidence requirements

Some terms in the assessment criteria cover a range of situations. Refer to the full assessment requirements and guidance for this unit for a detailed list of terms and definitions, agreed with Energy and Utility Skills.

This unit must be assessed in line with the Energy and Utility Skills assessment strategy for vocational qualifications based on its NOS for Multi-Utility Network Construction.

Assessment methodology

This unit is assessed in the workplace or in conditions resembling the workplace. Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
1 Maintain the health and safety of themselves and others	1.1 work in a way which ensures they do not endanger or risk themselves or other people 1.2 carry out site-specific risk assessments for their area of work and review them in accordance with company procedures 1.3 wear the personal protective equipment (PPE) that is identified in the site-specific risk assessment and in company procedures 1.4 change working practices and other aspects of the workplace that could harm themselves and other people. 1.5 deal with hazards and make them safe in accordance with workplace policies and health and safety requirements 1.6 deal promptly with accidental breakages and spillages 1.7 monitor conditions and make sure they remain safe and deal with situations that fall short of requirements 1.8 make sure that work activity is carried out to safe working practices and health, safety and hygiene requirements 1.9 monitor work activities and their potential to harm: – people – the environment			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
	1.10 follow emergency procedures immediately in the event of an emergency			
2 Maintain the safety and security of plant, equipment and the working environment	2.1 maintain plant, equipment and hazardous locations in line with health and safety specifications and safe working and hygiene practices 2.2 maintain entrances to, and exits from, hazardous locations according to site specifications 2.3 maintain health and safety equipment – assembled for use in a safe area – free from defects and deficiencies 2.4 deal with unauthorised personnel seen in the workplace in accordance with organisational procedures 2.5 store and use safety clothing and personal protective equipment (PPE) in accordance with safe working practices and organisational requirements 2.6 maintain site safety by routine health and safety checks			
3 Respond to emergencies	3.1 in the event of an emergency, implement the designated response procedures promptly and in accordance with recognised safe practice and organisational policy 3.2 respond to all accidents and emergencies that are within their capability and responsibility and report promptly to a designated person 3.3 use emergency appliances in accordance with approved procedures and practices			

Learning outcome		Assessment criterion		Evidence type	Portfolio reference	Date
4	Use and communicate data and information	4.1	follow all lone working procedures where they are working alone			
		4.2	report promptly, to the designated people, unsafe plant, equipment and hazardous locations outside their area of responsibility			
		4.3	report high risk hazards outside their responsibility to the designated people			
		4.4	report emergencies immediately to the designated people			
		4.5	report situations that emerge from visual inspections or monitoring data which have the potential to escalate and pose risks to people			
		4.6	report breaches of security immediately to a designated person			
		4.7	keep accurate and up-to-date records on routine matters and emergencies to confirm to health and safety specifications and safe working and hygiene practices			
		4.8	maintain audit trails of records for quality assurance purposes			
5	Resolve problems which could affect health and safety	5.1	make safe and restore plant, equipment and hazardous locations to health and safety specifications and safe working and hygiene practices			
		5.2	deal with unsafe behaviour in accordance with the responsibilities of the job role and workplace procedures			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
	5.3 resolve day-to-day problems within their responsibility 5.4 refer matters outside their responsibility to the designated people			
6 Demonstrate general knowledge and understanding for utilities network construction operations	6.1 state the main responsibilities of the employer and employee under the Health and Safety at Work Act 6.2 state the health and safety guidance governing work in excavations 6.3 describe the safe procedures for handling hazardous materials 6.4 explain their organisational accident recording and reporting procedures 6.5 list the range and use of personal protective equipment (PPE) for the work			

Learning outcome		Assessment criterion		Evidence type	Portfolio reference	Date
7	Demonstrate knowledge of legislation, regulations, procedures and company policies relating to health and safety	7.1	outline their duties for health and safety as defined by: – any specific legislation covering the job role – specific responsibilities and scope in their job description			
		7.2	outline the workplace policies and health and safety requirements for dealing with potential risks			
		7.3	outline the procedures to be followed in the event of an emergency			
		7.4	outline the information that is provided to other people relating to health, safety and hygiene			
		7.5	outline the organisation's confidentiality policies			
		7.6	outline the workplace policies and health and safety requirements for dealing with potential risks			
8	Demonstrate knowledge and understanding of the principles and application of risk assessment	8.1	explain when to carry out health and safety checks			
		8.2	describe how to carry out and review site-specific risk assessments			
		8.3	explain the importance of remaining alert to the presence of hazards in the whole workplace			
		8.4	describe the hazards that may exist in their own workplace and how to assess them			
		8.5	describe how work activities can turn a relatively safe excavation into a confined space, and the implications of this			
		8.6	describe those aspects of the workplace that could harm themselves or others			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
9 Demonstrate knowledge and understanding of maintaining the safety and security of plant, equipment and the working environment	9.1 outline the requirements of health and safety specifications and safe working and hygiene practices for plant, equipment and the working environment 9.2 explain how to restore plant, equipment and hazardous locations to confirm to health and safety specifications and safe working and hygiene practices 9.3 outline the site specifications for entrances to, and exits from, hazardous locations 9.4 describe typical and unusual defects and deficiencies with health and safety equipment. 9.5 explain the procedures to follow when dealing with confined spaces 9.6 describe the dangers associated with working in a confined space 9.7 outline the monitoring procedures for work that is carried out in a hazardous area 9.8 outline the work requirements and guidance on precautions to be taken 9.9 describe safe working practices 9.10 explain how to identify and deal with unsafe behaviour 9.11 describe the requirements of the organisation for the safe storage and use of safety clothing and equipment (PPE)			

Learning outcome		Assessment criterion		Evidence type	Portfolio reference	Date
10	Demonstrate knowledge and understanding of roles and responsibilities in maintaining safety	10.1	describe the roles and responsibilities of those involved in maintaining safety			
		10.2	describe their responsibility for correcting risks within the scope of their job role			
		10.3	describe the procedures for dealing with risks that they cannot correct			
		10.4	explain the importance of dealing with, or promptly reporting, risks			
		10.5	describe how to resolve misunderstandings			
11	Demonstrate knowledge and understanding of the use and storage of information	11.1	explain the importance of checking information received for accuracy, validity and meaning			
		11.2	explain why it is important to interpret instructions accurately			
		11.3	explain how to recognise information that is inaccurate			
		11.4	describe how and when to record verbal, written and computerised information			
		11.5	describe how and when to produce data in text, tabular and graphical formats			
		11.6	describe how to interpret data from text, tabular and graphical formats			
		11.7	explain how to use the required data storage systems			
		11.8	explain why it is important to store information and documentation in the correct location			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
	11.9 outline the organisational requirements for storing information and documentation 11.10 explain the use of information during water network construction, including: – what types of information are used – the sources that they use in their role – how information is used – the implications of its use 11.11 explain the importance of providing accurate information in a fit-for-purpose format, within identified timescales 11.12 explain the purpose of data audit trails, and how to use and maintain them			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 3: Establish and maintain effective working relationships in utilities network construction

Unit reference number: A/503/0665

QCF level: 2

Credit value: 2

Guided learning hours: 5

Unit summary

This unit provides learners with understanding and skills to establish and maintain effective working relationships. Learners will also gain knowledge of health and safety guidance and legislation for utilities network construction operations.

Assessment requirements/evidence requirements

Some terms in the assessment criteria cover a range of situations. Refer to the full assessment requirements and guidance for this unit for a detailed list of terms and definitions, agreed with Energy and Utility Skills.

This unit must be assessed in line with the Energy and Utility Skills assessment strategy for vocational qualifications based on its NOS.

Assessment methodology

This unit is assessed in the workplace or in conditions resembling the workplace. Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
1 Be able to establish and maintain productive working relationships	1.1 demonstrate how to deal with working relationships appropriately 1.1 demonstrate how to deal with requests positively and in a timely manner 1.3 support colleagues and associates that may be in work-related difficulties 1.4 communicate to the designated person all unresolved matters likely to result in a breakdown of working relationships 1.5 work with others to find effective ways to deal with work problems			
2 Be able to use and communicate data and information	2.1 comply with operational and organisational procedures for communicating information to other people 2.2 comply with operational and organisational procedures when maintaining records 2.3 confirm with designated personnel any circumstances where information appears to be incorrect 2.4 use organisational information systems to record and store, data and information			
3 Be able to resolve problems that could damage effective working relationships	3.1 handle problems within the responsibility of the job role 3.2 communicate problems and conditions outside the responsibility of the job role to the designated person using approved procedures			

Learning outcome		Assessment criterion		Evidence type	Portfolio reference	Date
4	Know Health and Safety guidance and legislation in utilities network construction operations	4.1	state the main responsibilities of the employer and employee under the Health and Safety at Work Act			
		4.2	explain the health and safety guidance governing work in excavations			
		4.3	describe the safe procedures for handling hazardous materials			
		4.4	explain the organisational accident recording and reporting procedures			
		4.5	identify the range and use of personal protective equipment for the work			
5	Understand how to establish and maintain effective working relationships in utilities network construction	5.1	describe how to create and maintain working relationships with different types of personnel			
		5.2	identify the range and roles of other persons involved in the work activities			
		5.3	explain how to deal with groups and individuals with diverse roles, responsibilities and business environments			
		5.4	describe how to recognise and deal with problems effecting working relationships			
		5.5	state the lines of communications to be followed when communicating information to customers, clients and work colleagues			
		5.6	explain the methods of communication used to communicate with others			
		5.7	identify documentation to use when communicating information to individuals and groups			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
	5.8 describe ways to resolve problems that are affecting productivity and the achievement of work goals 5.9 state the legislative requirements including any licensing or certification for the work activities 5.10 state actions to be taken in the event of an emergency 5.11 state how to comply with the requirements of the Health and Safety at Work Act in respect of work activities			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____
(*if sampled*)

Unit 4: Install equipment for safe working on the highway for utilities network construction

Unit reference number: A/503/0682

QCF level: 2

Credit value: 4

Guided learning hours: 25

Unit summary

This unit develops learners' knowledge and understanding of installing equipment for safe working on the highway. Learners will gain skills to prepare resources and set out temporary traffic control equipment in line with industry codes of practice and current legislation. Learners will also develop skills in resolving problems which could arise from work on the highway.

Assessment requirements/evidence requirements

Some terms in the assessment criteria cover a range of situations. Refer to the full assessment requirements and guidance for this unit for a detailed list of terms and definitions, agreed with Energy and Utility Skills.

This unit must be assessed in line with the Energy and Utility Skills assessment strategy for vocational qualifications based on its NOS for Multi-Utility Network Construction.

Assessment methodology

This unit is assessed in the workplace or in conditions resembling the workplace. Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
1 Set out temporary signing, lighting and guarding traffic control equipment in line with industry Codes of Practice and current legislation	1.1 locate the area for highway works and determine the characteristics and conditions of the carriageway 1.2 plan the works for minimum disruption and inconvenience to others in accordance with approved procedures and practices 1.3 carry out a site-specific risk assessment to identify hazards and to determine the range of control signs and protection equipment necessary for the works 1.4 select and wear the specified personal protective equipment (PPE), including high visibility vest or coat 1.5 set out control signs and protection equipment in a safe manner, according to the risk assessment, industry codes of practice and current legislation 1.6 remove all control equipment on completion of the works 1.7 store and maintain control equipment in accordance with operational and organisational requirements 1.8 work to approved procedures and practices and in compliance with statutory requirements 1.9 maintain the security of the site where work is not completed			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
2 Prepare resources for highway works	2.1 select the materials and equipment for the planned works in accordance with the work instructions and specifications 2.2 confirm the materials and equipment supplies are correct for the work requirement and are of the quality and quantity required 2.3 maintain in accordance with operational and organisational requirements: – the materials and equipment in storage – the security of materials and equipment			
3 Use and communicate data and information	3.1 use the work instructions and specifications: – to determine the safety and security requirements for the area of the highways works – to ensure compliance with current legislation 3.2 use approved procedures and practices throughout the work activity to ensure the work complies with statutory requirements 3.3 check with designated personnel any circumstances where information appears incorrect 3.4 use organisational information systems to record and store data and information			

Learning outcome		Assessment criterion		Evidence type	Portfolio reference	Date
4	Resolve problems which could arise from work on the highway	4.1	resolve problems which arise from work on the highway			
		4.2	record defects, replacements or additional equipment required and report them to the designated person			
		4.3	refer problems and conditions outside their responsibility to the designated person using approved procedures			
5	Demonstrate general knowledge and understanding for utilities network construction operations	5.1	state the main responsibilities of the employer and employee under the Health and Safety at Work Act			
		5.2	state the health and safety guidance governing work in excavations			
		5.3	describe the safe procedures for handling hazardous materials			
		5.4	explain their organisational accident recording and reporting procedures			
6	Demonstrate knowledge and understanding of installing equipment for safe working on the highway	6.1	state the main sources of information on statutory requirements for the control of highways works			
		6.2	give examples of the different types of signs, lights and guarding equipment			
		6.3	give examples of the different types of traffic control equipment			
		6.4	explain the importance of: – checking and reporting defects in signs, guards, lighting and traffic control systems – ensuring that defective equipment is taken out of use			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
	6.5 state the implications of incorrect signing, lighting, guarding and traffic control 6.6 describe the design and purpose of each of the signs used for protecting highways works 6.7 explain the statutory positioning requirements for protection equipment relative to different highways environments and conditions, to cover: – signs – lights – guards – traffic controls 6.8 describe guarding arrangements for highways works, including: – the different types of guards used to protect highways works – their positioning requirements relative to the work 6.9 give examples of the different types and positioning of lighting required for highways works 6.10 list the main road classifications, including single and dual carriageways 6.11 outline the design, operation, and maintenance requirements for traffic controls including: – warning signs – priority signs – stop/go boards – portable traffic signals			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
	6.12 give examples of the different types of traffic control requirements for highways works in different road conditions 6.13 explain the correct procedures and sequences for implementing traffic control equipment in different work locations 6.14 explain the correct procedures for moving traffic controls as work progresses 6.15 explain the importance of ensuring that signing, lighting, guarding and traffic control arrangements are checked and updated regularly as work progresses 6.16 explain the importance of regular maintenance and cleaning of signs and lights throughout highways works 6.17 describe the statutory requirements and recommendations for signing, lighting and guarding highways works on single and dual carriageways 6.18 give examples of the range and purpose of personal protective equipment used during highways works 6.19 explain the importance of checking and reporting defects in personal protective equipment 6.20 state the main approved procedures and practices for determining site and resource requirements, within their job role 6.21 list the steps that must be taken in the event of an accident or emergency on the highway			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
	6.22 state the procedures for summoning the emergency services 6.23 list the persons and organisations with whom it is necessary to liaise on highways operations			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____
(*if sampled*)

Unit 5: Install equipment for safe working on sites for utilities network construction

Unit reference number: F/503/0683

QCF level: 2

Credit value: 3

Guided learning hours: 20

Unit summary

This unit develops learners' knowledge and understanding of installing equipment safely on site and skills in preparing resources, segregating and protecting the worksite. Learners will also gain skills to resolve problems which could arise from preparing the site and resource requirements.

Assessment requirements/evidence requirements

Some terms in the assessment criteria cover a range of situations. Refer to the full assessment requirements and guidance for this unit for a detailed list of terms and definitions, agreed with Energy and Utility Skills.

This unit must be assessed in line with the Energy and Utility Skills assessment strategy for vocational qualifications based on its NOS for Multi-Utility Network Construction.

Assessment methodology

This unit is assessed in the workplace or in conditions resembling the workplace. Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcome	Assessment criteron	Evidence type	Portfolio reference	Date
1 Prepare, segregate and protect the worksite	1.1 locate and confirm the area for works according to instructions and specified requirements 1.2 plan the work to minimise disruption and inconvenience to others in accordance with approved procedures and practices 1.3 carry out a site-specific risk assessment to identify hazards and to determine the range of control signs and protection equipment necessary for the works 1.4 review the risk assessment in accordance with company procedures 1.5 select and wear the specified personal protective equipment (PPE), including high visibility vest or coat 1.6 set out the area for the works in line with the specified requirements 1.7 take steps to provide for the safety of the work area and the natural environment where hazards and risk are identified 1.8 maintain the security of the site where work is not completed			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
2 Prepare resources for site works	2.1 select the materials and equipment for the planned works in accordance with the work instructions and specifications 2.2 confirm the materials and equipment supplies are correct for the work requirement and are of the quality and quantity required 2.3 maintain in accordance with operational and organisational requirements: – the materials and equipment in storage – the security of materials and equipment			
3 Use and communicate data and information	3.1 use information in the work instructions and specified requirements to locate the worksite 3.2 use approved procedures and practices throughout the work activity to ensure the work complies with statutory requirements 3.3 check with authorised personnel any circumstances where information appears incorrect 3.4 use organisational information systems to record and store data and information			
4 Resolve problems which could arise from preparing the site and resource requirements	4.1 record and report to the designated person any shortages and defects of materials and equipment 4.2 refer problems and conditions outside their responsibility to the designated person using approved procedures			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
5 Demonstrate knowledge and understanding for utilities network construction operations	5.1 state the main responsibilities of the employer and employee under the Health and Safety at Work Act 5.2 state the health and safety guidance governing work in excavations 5.3 describe the safe procedures for handling hazardous materials 5.4 explain their organisational accident recording and reporting procedures			
6 Demonstrate knowledge and understanding of installing equipment for safe working on site	6.1 describe the roles and responsibilities of people within the site operations team 6.2 describe the site management structures for operations on site 6.3 explain the importance of referring to designated persons problems that are outside their area of responsibility 6.4 describe the recording and reporting procedures for: – job progress – problems – deviations to work programmes 6.5 explain the importance of confirming that the work location has been identified correctly 6.6 describe the types of information contained in written instructions, specifications and drawings 6.7 outline the key requirements of an effective site layout			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
	6.8 describe common hazards in site works, and fit-for-purpose safety precautions and hazard prevention methods that can be used 6.9 describe how to deal with emergencies 6.10 describe the range of safety equipment that is appropriate for site operations 6.11 outline the main requirements of safety legislation governing site works 6.12 describe the materials that may pose a health hazard on site, and how to handle them safely 6.13 describe the personal protective equipment (PPE) that is used in site operations 6.14 describe the lifting and handling techniques that are appropriate to the materials, tools and equipment used in site works			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 6: Locate and avoid supply apparatus for utilities network construction

Unit reference number: J/503/0684

QCF level: 2

Credit value: 4

Guided learning hours: 25

Unit summary

This unit develops learners' knowledge and understanding of the different types of utility apparatus, how to locate and maintain supply apparatus and the skills to resolve problems from work on the highway.

Assessment requirements/evidence requirements

Some terms in the assessment criteria cover a range of situations. Refer to the full assessment requirements and guidance for this unit for a detailed list of terms and definitions, agreed with Energy and Utility Skills.

This unit must be assessed in line with the Energy and Utility Skills assessment strategy for vocational qualifications based on its NOS for Multi-Utility Network Construction.

Assessment methodology

This unit is assessed in the workplace or in conditions resembling the workplace. Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
1 Locate supply apparatus	1.1 use work instructions and interpret utility plans to determine the extent of the worksite and to enable the supply apparatus to be marked 1.2 carry out site specific risk assessment, and review it in accordance with company procedures 1.3 use appropriate search techniques to enable the identification and marking of supply apparatus 1.4 mark the position and type of supply apparatus and sub-structures on the worksite in accordance with work instructions and statutory and regulatory Codes of Practice 1.5 mark risks of damage to supply apparatus and sub-structures in accordance with statutory and regulatory Codes of Practice 1.6 record positions and types of supply apparatus and sub-structures in accordance with instructions and organisational requirements 1.7 communicate details of the position and type of supply apparatus and sub-structures to personnel in accordance with instruction and organisational requirements 1.8 report deviations in the position of equipment and identification of other structures in accordance with instruction and organisational requirements 1.9 carry out all work to approved procedures and practices and comply with statutory requirements			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
2 Maintain the safety and integrity of supply apparatus	2.1 maintain the position and condition of supply apparatus within the worksite according to their specification and Codes of Practice 2.2 ensure working practices on the site avoid damage to supply apparatus 2.3 ensure that exposed supply apparatus are supported correctly in line with their specification and approved procedures and practices 2.4 take precautions to protect personnel and equipment from the effects of damage to supply apparatus according to approved procedures and practices 2.5 ensure that all work complies with: – the latest specifications – statutory regulations – company Codes of Practice			
3 Use and communicate data and information	3.1 check any circumstances where information appears incorrect with the designated personnel 3.2 use organisational information systems to record and store data and information 3.3 follow all required lone working procedures when working alone			

Learning outcome		Assessment criterion		Evidence type	Portfolio reference	Date
4	Resolve problems which could arise from work on the highway	4.1	report any damage to supply apparatus promptly to the designated person and make the area safe			
		4.2	resolve day-to-day problems within their area of responsibility			
		4.3	advise colleagues or managers where situations need them to intervene			
		4.4	refer matters outside their responsibility to the designated people using approved procedures			
5	Demonstrate general knowledge and understanding for utilities network construction operations	5.1	state the main responsibilities of the employer and employee under the Health and Safety at Work Act			
		5.2	state the health and safety guidance governing work in excavations			
		5.3	describe the safe procedures for handling hazardous materials			
		5.4	explain their organisational accident recording and reporting procedures			
		5.5	list the range and use of personal protective equipment for the work			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
6 Demonstrate knowledge and understanding of the different types of utility apparatus	6.1 describe typical locations and depths of the usual range of underground supply apparatus 6.2 state the key physical properties of the supply pipeline or components of supply apparatus, including: – size (diameter) – colour – material and its resistance to impact from excavation activities – methods of identification 6.3 describe the physical properties of the supply being carried by different types of supply apparatus, including where relevant: – ignition characteristics – density relative to air – electrocution risk – risk of water damage 6.4 describe the risks that arise when the safety and integrity of supply apparatus is not maintained 6.5 describe the methods of marking and warning of the presence of underground supply apparatus eg identification tape 6.6 describe the possible effects of damage to the supply apparatus			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
	6.7 explain the implications of damage to the different types of supply apparatus, including where relevant: – personal danger to the health or life of the operatives, or to others on site – damage to the environment – additional job costs in repair – delay to job progress 6.8 give examples of the types of hazards associated with different supplies and actions to take in the case of damage 6.9 explain why it is important to provide adequate support and protection for supply apparatus 6.10 describe the industry procedures and practices for confirming the location and marking of supply apparatus 6.11 give examples of different methods used to provide temporary and permanent support to protect supply apparatus exposed during site excavations			
7 Demonstrate knowledge and understanding of equipment and techniques used for locating supply apparatus	7.1 describe the principles of operation and method of use of electronic detection equipment 7.2 describe the safe procedures for handling the range of equipment necessary to carry out the task in hand 7.3 explain how to interpret the results of readings from electronic detection equipment			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
	7.4 explain the possible effects of external influences on electronic detection equipment readings 7.5 explain how to visually locate and identify underground supply apparatus, using: – markers – signs and features – existing records 7.6 describe the situations where trial holes can be used to locate underground supplies 7.7 describe how to mark the position of supply services on the surface to ensure accurate location of the excavation 7.8 explain the consequences of marking out excavations incorrectly, including: – costs – loss of time – material wastage 7.9 explain the importance of protecting supply apparatus exposed during excavation work 7.10 state the precautions to be taken when locating supply apparatus, including statutory and regulatory requirements			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
8 Demonstrate knowledge and understanding of roles, responsibilities and communication requirements for locating utilities apparatus	8.1 state the main sources of legislation relating to highways operations in the proximity of other supply apparatus 8.2 name the persons or organisations who must be notified where there is damage to supply apparatus or other underground structures 8.3 list the regulations that govern the location of supply apparatus where this exposes other services 8.4 outline the requirements of the legislation that applies to new roads and street works 8.5 explain why it is important to refer problems outside their area of job role responsibility to designated people 8.6 describe the procedures for reporting and recording: – job progress – problems – deviations to work programme 8.7 outline the roles and responsibilities of the various organisations involved location work and how to liaise with them effectively			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____
(*if sampled*)

Unit 7: Excavate and maintain holes and trenches for utilities network construction

Unit reference number: L/503/0685

QCF level: 2

Credit value: 5

Guided learning hours: 35

Unit summary

This unit develops learners' knowledge and understanding in using different techniques, tools and equipment for excavation activities. Learners will gain skills to excavate in a variety of situations, understanding responsibility to others and complying with legal and industry requirements.

Assessment requirements/evidence requirements

Some terms in the assessment criteria cover a range of situations. Refer to the full assessment requirements and guidance for this unit for a detailed list of terms and definitions, agreed with Energy and Utility Skills.

This unit must be assessed in line with the Energy and Utility Skills assessment strategy for vocational qualifications based on its NOS for Multi-Utility Network Construction.

Assessment methodology

This unit is assessed in the workplace or in conditions resembling the workplace. Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
1 Excavate on site to requirements	1.1 determine the suitable excavation method for the surface and sub-surface materials being removed, and which meets with statutory and regulatory Codes of Practice 1.2 carry out a site-specific risk assessment and review it according to company procedures 1.3 select and wear the designated personal protective equipment (PPE) 1.4 select and use the most suitable tools and equipment for the excavation method to be used 1.5 confirm the position and size of the excavation in accordance with instructions and the work specification 1.6 excavate, identify, select, segregate and store materials in accordance with work instructions and Codes of Practice 1.7 carry out the excavation in a manner that avoids damage to supply apparatus 1.8 minimise damage to the natural environment according to technical guidance 1.9 keep gullies and water courses clear at all times 1.10 support and protect exposed supply apparatus in line with work instructions and relevant Codes of Practice 1.11 remove surplus materials according to work instructions and requirements			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
	1.12 confirm the dimensions and condition of the excavation against the instructions and the work specification 1.13 ensure work is carried out to approved procedures and practices and complies with statutory requirements			
2 Maintain the integrity of the excavation	2.1 confirm that the method used to support the excavation is fit for purpose to: – the size of the excavation – the nature of the ground conditions and adjacent structures 2.2 install and remove support mechanisms according to instructions and relevant Codes of Practice 2.3 maintain the condition of the excavation by adjusting support mechanisms and removing ground water as required 2.4 monitor and maintain the condition of support mechanisms safely in accordance with operational and organisational safe working procedures 2.5 resolve situations that require measures to deal with dangerous atmospheres, according to relevant Codes of Practice and safe working procedures 2.6 establish arrangements for access to and egress from the excavation in line with statutory requirements and approved procedures and practices 2.7 ensure that all relevant safety checks are undertaken before any entry into the excavation			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
	2.8 ensure that the site-specific risk assessment provides adequate safeguards in work practices to deal with the excavation becoming a confined space 2.9 confirm that the condition of the ground area adjacent to the excavation is safe, in line with relevant Codes of Practice 2.10 work to approved procedures and practices and comply with statutory requirements throughout excavation operations			
3 Use and communicate data and information	3.1 use the information in the work instructions and specification to determine the worksite and the area to be excavated 3.2 report detrimental conditions and defects in the excavation and support mechanisms that are outside their responsibility, according to relevant Codes of Practice 3.3 use approved procedures and practices and statutory requirements to determine any requirements for excavation support 3.4 check any circumstances where information appears to be incorrect with the designated personnel 3.5 use organisational information systems to record and store data and information relating to excavation work 3.6 follow all required lone working procedures when working alone			

Learning outcome		Assessment criterion		Evidence type	Portfolio reference	Date
4	Resolve problems which could arise from excavation work	4.1	report any damage to supply apparatus promptly to the designated person			
		4.2	resolve day-to-day problems within the responsibility of their own job role			
		4.3	advise colleagues or managers where situations need them to intervene			
		4.4	refer matters that are outside their responsibility to the designated people using approved procedures			
5	Demonstrate general knowledge and understanding for utilities network construction operations	5.1	state the main responsibilities of the employer and employee under the Health and Safety at Work Act			
		5.2	state the health and safety guidance governing work in excavations			
		5.3	describe the safe procedures for handling hazardous materials			
		5.4	explain their organisational accident recording and reporting procedures			
6	Demonstrate knowledge and understanding of how excavation work must be carried out to comply with legal and industry requirements	6.1	outline how activities in involved in excavation work can be carried out in compliance with legislative requirements and good industry practice			
		6.2	outline the responsibilities of the employer and employee in relation to activities in involved in excavation			
7	Demonstrate knowledge and understanding of excavating in a variety of situations using different techniques and equipment	7.1	describe the safe procedures for handling the range of excavation support equipment			
		7.2	describe the different methods of excavation, and how to decide which is appropriate			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
	7.3 describe the different types of surfaces and sub-surfaces that may require to be excavated 7.4 explain why a competent banksman is needed when excavating by machine 7.5 describe the consequences and implications of using incorrect excavation and reinstatement practices 7.6 describe the requirements for selecting, storing and using backfill and reinstatement materials 7.7 describe the requirements for disposing of surplus materials 7.8 explain how to recognise when an excavation is or could become a confined space, and how to deal effectively with this 7.9 describe the methods and principles of excavation support systems, and where their use is most appropriate			
8 Demonstrate knowledge and understanding of the tools and equipment used in the course of excavation activities	8.1 list the tools, equipment and machinery that are used for hand and machine excavation 8.2 describe the criteria used to select the most appropriate tools, equipment and machinery for excavation activities 8.3 explain the importance of economy in using powered or motorised equipment for excavations			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
9 Demonstrate knowledge and understanding of responsibilities to others during excavation work	9.1 list the different utility organisations that may own apparatus that could be affected by excavation activities 9.2 describe how the different buried apparatus could be identified 9.3 describe the potential environmental impact of excavation activities and the agencies responsible for environmental protection 9.4 describe the potential consequences of not providing the necessary protection to underground apparatus and features 9.5 describe the roles and responsibilities of people within the site or highways operations team 9.6 explain the importance of referring problems outside their responsibility to the designated persons 9.7 describe the procedures used to report and record the detail of excavation activities			

Learner name: _____ Date: _____

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Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 8: Operate powered tools and equipment for routine and predictable requirements on utilities network construction

Unit reference number: Y/503/0687

QCF level: 2

Credit value: 4

Guided learning hours: 25

Unit summary

This unit provides learners with knowledge, understanding and skills to prepare, run and operate, shut down and check powered tools and equipment. Learners will also gain skills to resolve problems which arise from operating powered tools and equipment.

Assessment requirements/evidence requirements

Some terms in the assessment criteria cover a range of situations. Refer to the full assessment requirements and guidance for this unit for a detailed list of terms and definitions, agreed with Energy and Utility Skills.

This unit must be assessed in line with the Energy and Utility Skills assessment strategy for vocational qualifications based on its NOS for Multi-Utility Network Construction.

Assessment methodology

This unit is assessed in the workplace or in conditions resembling the workplace. Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcome		Assessment criterion		Evidence type	Portfolio reference	Date
1	Prepare powered tools and equipment for routine and predictable use	1.1	use work instructions and specifications to confirm the operations requiring the use of powered tools and equipment			
		1.2	carry out a site specific risk assessment, and review in accordance with company procedures			
		1.3	select and wear the designated personal protective equipment (PPE)			
		1.4	carry out pre-start inspections on the powered tools and equipment			
		1.5	record and report any defects of the powered tools and equipment and take out of service until rectified			
		1.6	confirm powered tools and equipment are safe, correct and read for use in accordance with the work requirements			
2	Run and operate powered tools and equipment	2.1	carry out start and stop procedures to confirm functions are in accordance with safe control and the manufacturers' operating instructions			
		2.2	operate tools and equipment safely in accordance with specifications			
3	Shut down and carry out post-stop checks on powered tools and equipment	3.1	stop powered tools and equipment safely			
		3.2	carry out post-stop checks in accordance with organisational and operational procedures			
		3.3	leave powered tools and equipment safe and secure			

Learning outcome		Assessment criterion		Evidence type	Portfolio reference	Date
4	Use and communicate data and information	4.1	carry out all work to approved procedures and practice and in compliance with statutory and regulatory requirements			
		4.2	carry out site-specific risk assessment, and review in accordance with company procedures			
		4.3	record and report defects in tool and equipment performance to the designated person			
		4.4	record and report the need for replacement tools and equipment to the designated person			
		4.5	check any circumstances where information appears incorrect with the designated personnel			
		4.6	use organisational information systems to record and store data and information			
5	Resolve problems which arise from operating powered tools and equipment	5.1	report any damage to tools and equipment to the designated person			
		5.2	refer problems that are outside their responsibility to the designated person using approved procedures			
6	Demonstrate general knowledge and understanding for utilities network construction operations	6.1	state the main responsibilities of the employer and employee under the Health and Safety at Work Act			
		6.2	state the health and safety guidance governing work in excavations			
		6.3	describe the safe procedures for handling hazardous materials			
		6.4	explain their organisational accident recording and reporting procedures			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
7 Demonstrate knowledge and understanding of working with powered tools and equipment	7.1 describe the hazards posed by powered tools and equipment and explain how the associated risks must be illuminated or controlled 7.2 describe the full range of personal protective equipment (PPE) that must be worn when operating powered tools and equipment 7.3 describe the key features and characteristics of powered tools and equipment, including the type of work for which they are suitable 7.4 outline how powered tools and equipment should be operated, including: – starting and stopping routines – operation to comply with all approved procedures and practices 7.5 describe the training certificates and license requirements for operating powered tools and equipment 7.6 outline the industry recognised practices for their specific trade occupation and general construction work activities, including current statutory requirements 7.7 describe the manufacturer's recommendations for starting the powered tools and equipment 7.8 describe the operational safety procedures that must be observed when starting and stopping powered tools and equipment			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
	7.9 describe the operational problems that can occur with the powered tools and equipment being used and how these might be resolved 7.10 describe how to report problems with and damage to powered tools and equipment 7.11 explain the importance of maintaining tools in good working order, including the sharpening of cutting tools 7.12 describe the routine and emergency operational procedures for the powered tools and equipment being used, including manufacturer's recommendations 7.13 describe the pre- and post-use maintenance checks that should be carried out on powered tools and equipment, including those recommended by manufacturers and in operational and organisational procedures 7.14 explain why it is important to report and to prevent the spread of spilled fuels and lubricants, in line with company policies			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 9: Joint materials by mechanical means on water network construction

Unit reference number: D/503/1162

QCF level: 2

Credit value: 4

Guided learning hours: 25

Unit summary

This unit provides learners with knowledge, understanding and skills to joint materials by mechanical means. Learners will also gain skills to resolve problems which arise when performing jointing activities.

Assessment requirements/evidence requirements

Some terms in the assessment criteria cover a range of situations. Refer to the full assessment requirements and guidance for this unit for a detailed list of terms and definitions, agreed with Energy and Utility Skills.

This unit must be assessed in line with the Energy and Utility Skills assessment strategy for vocational qualifications based on its NOS for Multi-Utility Network Construction.

Evidence for this unit may be generated working on pipes of up to 300 mm diameter.

Assessment methodology

This unit is assessed in the workplace or in conditions resembling the workplace. Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
1 Joint materials by assembling	1.1 work safely at all times in accordance with health, safety and environment requirements and legislation 1.2 carry out a site specific risk assessment, and review in accordance with company procedures 1.3 select and wear the appropriate personal protective equipment (PPE) 1.4 assemble and position the joint components using and following assembly drawing and work instructions 1.5 ensure that the joint components to be assembled meet the manufacturer's specifications and operating and performance standards 1.6 secure the joint components using connectors and securing devices in accordance with component specifications and work instructions 1.7 check to make sure that the finished joint assembly is complete and meets its operating requirements 1.8 carry out work in accordance with company procedures			

Learning outcome		Assessment criterion		Evidence type	Portfolio reference	Date
2	Use and communicate data and information	2.1	follow all approved procedures and practices involved in the work activity			
		2.2	check with designated personnel any circumstances where information appears correct			
		2.3	use organisational information systems to record and store data and information			
		2.4	follow all lone working procedures when working alone			
3	Resolve problems which arise when performing jointing activities	3.1	deal with problems within the limits of their responsibility			
		3.2	report problems that are outside the responsibility of their job role to the designated person			
4	Demonstrate general knowledge and understanding for utilities network construction operations	4.1	state the main responsibilities of the employer and employee under the Health and Safety at Work Act			
		4.2	state the health and safety guidance governing work in excavations			
		4.3	describe the safe procedures for handling hazardous materials			
		4.4	explain their organisational accident recording and reporting procedures			
		4.5	list the range and use of personal protective equipment for the work			

5	Demonstrate knowledge and understanding of jointing materials by mechanical means	5.1	outline the requirements of legislation, environmental procedures, Codes of Practice and company procedures relevant to the specific work activities			
		5.2	explain how to read and interpret basic drawings and specifications as specified in industry standards			
		5.3	describe the basic methods and techniques for assembling and jointing components			
		5.4	explain the purpose of quality control procedures.			
		5.5	describe how to read and interpret quality control procedures			
		5.6	describe the handling equipment and procedures which should be used and followed for designated work activities			
		5.7	explain how to select preparation techniques for simple designated jointing activities			
		5.8	describe the tools and equipment that are required to carry out pipe jointing			
		5.9	explain why it is important to look after tools and equipment			
		5.10	describe typical problems that can occur during pipe jointing activities and explain possible remedial activities			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 10: Install water services up to 50 mm nominal bore or 63 mm polyethylene

Unit reference number: H/503/1163

QCF level: 2

Credit value: 4

Guided learning hours: 30

Unit summary

This unit provides learners with knowledge, understanding and skills to interpret technical information, select components and resources and install components for water services. Learners will also gain skills in resolving problems that arise from technical information and installation work.

Assessment requirements/evidence requirements

Some terms in the assessment criteria cover a range of situations. Refer to the full assessment requirements and guidance for this unit for a detailed list of terms and definitions, agreed with Energy and Utility Skills.

This unit must be assessed in line with the Energy and Utility Skills assessment strategy for vocational qualifications based on its NOS for Multi-Utility Network Construction.

Assessment methodology

This unit is assessed in the workplace or in conditions resembling the workplace. Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
1 Interpret technical information for installing water services	1.1 use drawings, records, work documents, manuals and technical specifications to provide work details for component installation 1.2 use the technical information to confirm dimensions, lengths, widths and quantities required 1.3 use the technical information to determine the positions of utilities plant, services, buildings, kerbs and boundaries 1.4 where discrepancies occur, ensure that necessary corrections are made or communicated to those who need to know			
2 Select water service components and resources for installation of the system	2.1 select the components in accordance with work and quality specifications 2.2 ensure components are in good condition and are fit for purpose 2.3 follow procedures to ensure that defective, non-matching or sub-standard components are replaced 2.4 ensure that sufficient quantities of suitable tools, plant and equipment are available, checked and fit for purpose 2.5 ensure there is sufficient competent labour to carry out the work effectively and safely 2.6 deal promptly and effectively with actual and predicted changes to the planned use of the resources			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
3 Install components of the system	3.1 determine the method to be used for installing water services 3.2 carry out a site-specific risk assessment and review in accordance with company policy 3.3 select and wear the designated personal protective equipment (PPE) 3.4 check and confirm the condition of the excavation conforms with instructions and specifications 3.5 select, prepare and operate installation equipment in accordance with the specification and manufacturer's instructions 3.6 position components in accordance with the specification 3.7 assemble components to industry standards using appropriate jointing techniques 3.8 take adequate precautions to prevent damage to components, tools and equipment during installation 3.9 protect installed assets and other utilities using appropriate protective techniques 3.10 make connection to the water main using appropriate drilling and tapping techniques and equipment 3.11 check the quality of the installation and confirm compliance with the specified standard 3.12 maintain the security and safety of the site, job and third parties at all times			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
	3.13 ensure safe working procedures are followed throughout the work activities			
4 Use and communicate data and information	4.1 provide technical information using appropriate verbal and written communication techniques 4.2 ensure recipients have received and understood the information 4.3 report any inaccuracies in the technical information sources used to the designated person 4.4 complete work documentation accurately and record it in the specified place or pass to a designated person 4.5 follow the correct procedures if working on a 'Permit to Work' activity			
5 Resolve problems that arise from technical information and installation work	5.1 report any damage or defects to tools, equipment or materials to the designated person 5.2 report work which is incomplete and not to schedule to the designated person 5.3 refer problems and conditions outside their responsibility to the designated person			
6 Demonstrate general knowledge and understanding for utilities network construction operations	6.1 state the main responsibilities of the employer and employee under the Health and Safety at Work Act 6.2 state the health and safety guidance governing work in excavations 6.3 describe the safe procedures for handling hazardous materials 6.4 explain their organisational accident recording and reporting procedures			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
	6.5 list the range and use of personal protective equipment for the work			
7 Demonstrate knowledge and understanding of installing water services	7.1 explain the importance of carrying out on-site risk assessments and implementing safe systems of work and the need for constant review 7.2 explain the importance of understanding and implementing a safe system of work (SSOW) document when working in excavations 7.3 outline the organisation's policy and procedures for meeting relevant statutory requirements, regulations and Codes of Practice 7.4 describe the factors that affect the suitability of excavations, and how to confirm that an excavation is suitable 7.5 describe situations where particular authorisations are required before undertaking work 7.6 explain the implications of not obtaining the required authorisations before undertaking work 7.7 explain the potential dangers of working in trenches and holes 7.8 outline the main responsibilities of employers and employees under the current working at height regulations 7.9 explain the dangers of taking actions that can create confined spaces risks in excavations 7.10 describe the implications of using incorrect plant, tools, materials and system components			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
	7.11 state the actions to be taken where plant, tools, materials and system components fail to meet required specification 7.12 describe situations where service pipe installation can go wrong and suitable actions available to rectify them 7.13 describe how to access information from reference documents, Regulations and Codes of Practice 7.14 describe the range of actions to be taken if work cannot proceed to schedule 7.15 explain how to determine appropriate safe remedial action if work cannot proceed 7.16 describe the types and causes of disruption that can occur when installing water service pipes, and how to avoid them 7.17 describe the dangers of using inadequate handling and lifting procedures 7.18 describe the types and signs of defect likely to be encountered when installing water services 7.19 explain how to determine the correct, and safe, action to take to resolve defects encountered during installation of water services 7.20 explain the importance of compliance with current industry standards			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____
(*if sampled*)

Unit 11: Joint materials by electrofusion processes on utilities network construction

Unit reference number: F/503/0666

QCF level: 2

Credit value: 2

Guided learning hours: 10

Unit summary

This unit provides learners with an understanding of jointing materials by electrofusion processes and knowledge of health and safety guidance and legislation in utilities network construction operations. Learners will gain skills to make joints using electrofusion jointing techniques and resolve problems that arise during jointing work.

Assessment requirements/evidence requirements

Some terms in the assessment criteria cover a range of situations. Refer to the full assessment requirements and guidance for this unit for a detailed list of terms and definitions, agreed with Energy and Utility Skills.

This unit must be assessed in line with the Energy and Utility Skills assessment strategy for vocational qualifications based on its NOS.

Assessment methodology

This unit is assessed in the workplace or in conditions resembling the workplace. Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
1 Be able to make joints using electrofusion jointing techniques	1.1 carry out site specific risk assessment, and review in accordance to company procedures 1.2 select and wear the designated PPE 1.3 check that jointing related equipment and consumables are as specified and fit for purpose 1.4 use the correct electrofusion jointing technique to produce joints of the required quality and confirm compliance with the: – specified standard – specified dimensional accuracy 1.5 confirm that on completion of jointing activities the equipment is shut down to a safe condition 1.6 confirm temporary attachments, excess and waste materials are dealt with promptly in line with approved and agreed procedures			
2 Be able to use and communicate data and information	2.1 comply with approved procedures, practices, statutory and regulatory requirements involved in the work activity 2.2 check with designated personnel any circumstances where information appears incorrect 2.3 use organisational information systems to record and store data and information			

Learning outcome		Assessment criterion		Evidence type	Portfolio reference	Date
3	Be able to resolve problems that arise during jointing work	3.1	report to the designated person damage to supply apparatus			
		3.2	report to the designated person damage to jointing equipment			
		3.3	report to the designated person matters outside the responsibility of the job role			
		3.4	demonstrate how to resolve day-to-day problems within the responsibility of the job role			
		3.5	handle emergency situations when they arise			
4	Know Health and Safety guidance and legislation in utilities network construction operations	4.1	state the main responsibilities of the employer and employee under the Health and Safety at Work Act			
		4.2	explain the health and safety guidance governing work in excavations			
		4.3	describe the safe procedures for handling hazardous materials			
		4.4	explain the organisational accident recording and reporting procedures			
		4.5	identify the range and use of personal protective equipment for the work			
5	Understand jointing materials by electrofusion processes on Utilities Network Construction	5.1	state the health, safety and environment legislation and environmental procedures relevant to the work activities			
		5.2	apply the correct manual handling procedures			
		5.3	explain the industry codes of practice and company procedures			
		5.4	interpret engineering specifications relevant to the engineering activity			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
	5.5 describe the different stages that take place during the jointing process and the importance of allowing each phase to complete 5.6 explain the need for pipe restraint, pipe support and pipe alignment 5.7 explain the cause and effect of defects 5.8 interpret pipe specifications 5.9 explain pipe compatibility 5.10 identify different types of pipe materials 5.11 describe equipment maintenance procedures 5.12 describe equipment calibration 5.13 state the consequences of poor equipment maintenance 5.14 identify quality assurance procedures that can be applied in recognising defects 5.15 explain the correct reporting procedures			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____
(*if sampled*)

Unit 12: Restore water network components to operational condition by repair

Unit reference number: F/503/1168

QCF level: 2

Credit value: 5

Guided learning hours: 35

Unit summary

This unit provides learners with knowledge, understanding and skills to restore water network components to operational condition and resolve problems which arise when restoring components.

Assessment requirements/evidence requirements

Some terms in the assessment criteria cover a range of situations. Refer to the full assessment requirements and guidance for this unit for a detailed list of terms and definitions, agreed with Energy and Utility Skills.

This unit must be assessed in line with the Energy and Utility Skills assessment strategy for vocational qualifications based on its NOS for Multi-Utility Network Construction.

Evidence for this unit may be generated working on pipes of up to 300 mm diameter.

Assessment methodology

This unit is assessed in the workplace or in conditions resembling the workplace. Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcome		Assessment criterion		Evidence type	Portfolio reference	Date
1	Restore components to operational condition	1.1	work in accordance with health, safety, environment and hygiene regulations and legislation and procedures			
		1.2	carry out a site specific risk assessment, and review it in accordance with company procedures			
		1.3	select and wear the designated personal protective equipment (PPE)			
		1.4	prepare components for repair			
		1.5	repair components in line with relevant specifications and work instructions			
		1.6	carry out the repairs to agreed timescales using approved materials and components			
		1.7	ensure that repaired components meet the specified operating conditions and parameters			
		1.8	carry out all work in accordance with company procedures			
2	Use and communicate data and information	2.1	produce accurate and complete records of all repair work carried out			
		2.2	communicate information in a way that meets the requirements of the recipient			

Learning outcome		Assessment criterion		Evidence type	Portfolio reference	Date
3	Resolve problems which arise when restoring components to operational condition	3.1	deal promptly and effectively with problems within their control and report those that cannot be solved			
		3.2	refer problems and conditions outside the responsibility of the job to the designated person using approved procedures			
		3.3	deal with any emergencies that may arise when restoring components to operational condition			
4	Demonstrate general knowledge and understanding for utilities network construction operations	4.1	state the main responsibilities of the employer and employee under the Health and Safety at Work Act			
		4.2	state the health and safety guidance governing work in excavations			
		4.3	describe the safe procedures for handling hazardous materials			
		4.4	explain their organisational accident recording and reporting procedures			
		4.5	list the range and use of personal protective equipment for the work			
5	Demonstrate knowledge and understanding of restoring components to operational condition	5.1	outline the health, safety and environmental legislation and environmental procedures that apply to restoring components to operational condition, including Codes of Practice and relevant company procedures			
		5.2	explain the importance of following all hygiene procedures			
		5.3	describe how to select the repair technique to use for the specification of the component to be repaired			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
	5.4 describe the various components that are in use on the water network 5.5 describe the types of tools and equipment to be used when restoring components to operational condition by repair 5.6 describe the care and control procedures to be used to ensure compliance with hygiene regulations 5.7 state the different types of records and documentation that are used to record maintenance activities 5.8 describe the reporting procedures that are used for repair activities			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____
(*if sampled*)

Unit 13: Install water mains from 150 mm - 300 mm nominal bore or 180 mm – 315 mm polyethylene

Unit reference number: M/503/1165

QCF level: 2

Credit value: 5

Guided learning hours: 35

Unit summary

This unit provides learners with knowledge, understanding and skills to interpret technical information, select components and resources and install components for water mains. Learners will also gain skills in resolving problems that arise from technical information and installation work.

Assessment requirements/evidence requirements

Some terms in the assessment criteria cover a range of situations. Refer to the full assessment requirements and guidance for this unit for a detailed list of terms and definitions, agreed with Energy and Utility Skills.

This unit must be assessed in line with the Energy and Utility Skills assessment strategy for vocational qualifications based on its NOS for Multi-Utility Network Construction.

Assessment methodology

This unit is assessed in the workplace or in conditions resembling the workplace. Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
1 Interpret technical information for installing water mains	1.1 use drawings, records, work documents, manuals and technical specifications to provide work details for component installation 1.2 use the technical information to confirm dimensions, lengths, widths and quantities required 1.3 use the technical information to determine the positions of utilities plant, services, buildings, kerbs and boundaries 1.4 where discrepancies occur, ensure that necessary corrections are made or communicated to those who need to know			
2 Select water main components and resources for installation of the system	2.1 select the components in accordance with work and quality specifications 2.2 ensure components are in good condition and are fit for purpose 2.3 follow procedures to ensure that defective, non-matching or sub-standard components are replaced 2.4 ensure that sufficient quantities of suitable tools, plant and equipment are available, checked and fit for purpose 2.5 ensure there is sufficient competent labour to carry out the work effectively and safely 2.6 deal promptly and effectively with actual and predicted changes to the planned use of the resources			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
3 Install components of the water main	3.1 determine the mains installation method to be used 3.2 carry out a site-specific risk assessment and review in accordance with company policy 3.3 select and wear the designated personal protective equipment (PPE) 3.4 check and confirm the condition of the excavation conforms with instructions and specifications 3.5 where lifting machinery is involved, ensure a safe system of work is in place and communicated 3.6 select, prepare and operate installation equipment in accordance with the specification and manufacturer's instructions 3.7 position components in accordance with the specification 3.8 assemble components to industry standards using appropriate jointing techniques 3.9 take adequate precautions to prevent damage to components, tools and equipment during installation 3.10 protect installed assets and other utilities using appropriate protective techniques 3.11 make connection to the existing water main using appropriate connection techniques 3.12 complete the connection within the specified time frame 3.13 check the quality of the installation and confirm compliance with the specified standard			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
	3.14 install all chambers covers and associated ancillary items in accordance with specifications 3.15 maintain the security and safety of the site, job and third parties at all times 3.16 ensure safe working procedures are followed throughout the work activities			
4 Use and communicate data and information	4.1 provide technical information using appropriate verbal and written communication techniques 4.2 ensure recipients have received and understood the information 4.3 report any inaccuracies in the technical information sources used to the designated person 4.4 complete work documentation accurately and record it in the specified place or pass to a designated person 4.5 follow the correct procedures if working on a 'Permit to Work' activity			
5 Resolve problems that arise from technical information and installation work	5.1 report any damage or defects to tools, equipment or materials to the designated person 5.2 report work which is incomplete and not to schedule to the designated person 5.3 refer problems and conditions outside their responsibility to the designated person			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
6 Demonstrate general knowledge and understanding for utilities network construction operations	6.1 state the main responsibilities of the employer and employee under the Health and Safety at Work Act 6.2 state the health and safety guidance governing work in excavations 6.3 describe the safe procedures for handling hazardous materials 6.4 explain their organisational accident recording and reporting procedures 6.5 list the range and use of personal protective equipment for the work			
7 Demonstrate knowledge and understanding of installing water mains	7.1 explain the importance of carrying out on-site risk assessments and implementing safe systems of work and the need for constant review 7.2 explain the importance of understanding and implementing a safe system of work (SSOW) document when working in excavations 7.3 outline the organisation's policy and procedures for meeting relevant statutory requirements, regulations and Codes of Practice 7.4 describe the factors that affect the suitability of excavations, and how to confirm that an excavation is suitable 7.5 describe situations where particular authorisations are required before undertaking work 7.6 explain the implications of not obtaining the required authorisation before undertaking work 7.7 explain the potential dangers of working in trenches and holes			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
	7.8 outline the main responsibilities of employers and employees under the current working at height regulations 7.9 explain the dangers of taking actions that can create confined spaces risks in excavations 7.10 describe the implications of using incorrect plant, tools, materials and system components 7.11 state the actions to be taken where plant, tools, materials and system components fail to meet required specification 7.12 describe situations where mains installation can go wrong and suitable actions available to rectify them 7.13 describe how to access information from reference documents, Regulations and Codes of Practice 7.14 describe the range of actions to be taken if work cannot proceed to schedule 7.15 explain how to determine appropriate safe remedial action if work cannot proceed 7.16 describe the types and causes of disruption that can occur when installing water mains, and how to avoid them 7.17 describe the dangers of using inadequate handling and lifting procedures 7.18 describe the types and signs of defect likely to be encountered when installing water mains			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
	7.19 explain how to determine the correct, and safe, action to take to resolve defects encountered during installation of water mains 7.20 explain the importance of compliance with current industry standards			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____
(*if sampled*)

Unit 14: Install water mains above 300 mm nominal bore or 315 mm polyethylene

Unit reference number: T/503/1166

QCF level: 2

Credit value: 5

Guided learning hours: 35

Unit summary

This unit provides learners with knowledge, understanding and skills to interpret technical information, select components and resources and install components for water mains. Learners will also gain skills in resolving problems that arise from technical information and installation work.

Assessment requirements/evidence requirements

Some terms in the assessment criteria cover a range of situations. Refer to the full assessment requirements and guidance for this unit for a detailed list of terms and definitions, agreed with Energy and Utility Skills.

This unit must be assessed in line with the Energy and Utility Skills assessment strategy for vocational qualifications based on its NOS for Multi-Utility Network Construction.

Assessment methodology

This unit is assessed in the workplace or in conditions resembling the workplace. Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
1 Interpret technical information for installing water mains	1.1 use drawings, records, work documents, manuals and technical specifications to provide work details for component installation 1.2 use the technical information to confirm dimensions, lengths, widths and quantities required 1.3 use the technical information to determine the positions of utilities plant, services, buildings, kerbs and boundaries 1.4 where discrepancies occur, ensure that necessary corrections are made or communicated to those who need to know			
2 Select water main components and resources for installation of the system	2.1 select the components in accordance with work and quality specifications 2.2 ensure components are in good condition and are fit for purpose 2.3 follow procedures to ensure that defective, non-matching or sub-standard components are replaced 2.4 ensure that sufficient quantities of suitable tools, plant and equipment are available, checked and fit for purpose 2.5 ensure there is sufficient competent labour to carry out the work effectively and safely 2.6 deal promptly and effectively with actual and predicted changes to the planned use of the resources			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
3 Install components of the water main	3.1 determine the mains installation method to be used 3.2 carry out a site-specific risk assessment and review in accordance with company policy 3.3 select and wear the designated personal protective equipment (PPE) 3.4 check and confirm the condition of the excavation conforms with instructions and specifications 3.5 where lifting machinery is involved, ensure a safe system of work is in place and communicated 3.6 select, prepare and operate installation equipment in accordance with the specification and manufacturer's instructions 3.7 position components in accordance with the specification 3.8 assemble components to industry standards using appropriate jointing techniques 3.9 take adequate precautions to prevent damage to components, tools and equipment during installation 3.10 protect installed assets and other utilities using appropriate protective techniques 3.11 make connection to the existing water main using appropriate connection techniques 3.12 complete the connection in the specified time frame 3.13 check the quality of the installation and confirm compliance with the specified standard			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
	3.14 install all chambers covers and associated ancillary items in accordance with specifications 3.15 maintain the security and safety of the site, job and third parties at all times 3.16 ensure safe working procedures are followed throughout the work activities			
4 Use and communicate data and information	4.1 provide technical information using communication techniques that are appropriate to the type of information provided and the way it will be used 4.2 use appropriate communication techniques on site where noise and visibility may be compromised 4.3 ensure recipients have received and understood the technical information 4.4 report any inaccuracies in the technical information sources used to the designated person 4.5 complete work documentation accurately and record it in the specified place or pass to a designated person 4.6 follow the correct procedures if working on a 'Permit to Work' activity			
5 Resolve problems that arise from technical information and installation work	5.1 report any damage or defects to tools, equipment or materials to the designated person 5.2 report work which is incomplete and not to schedule to the designated person 5.3 refer problems and conditions outside their responsibility to the designated person			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
6 Demonstrate general knowledge and understanding for utilities network construction operations	6.1 state the main responsibilities of the employer and employee under the Health and Safety at Work Act 6.2 state the health and safety guidance governing work in excavations 6.3 describe the safe procedures for handling hazardous materials 6.4 explain their organisational accident recording and reporting procedures 6.5 list the range and use of personal protective equipment for the work			
7 Demonstrate knowledge and understanding of installing water mains	7.1 explain the importance of carrying out on-site risk assessments and implementing safe systems of work and the need for constant review 7.2 explain the importance of understanding and implementing a safe system of work (SSOW) document when working in excavations 7.3 outline the organisation's policy and procedures for meeting relevant statutory requirements, regulations and Codes of Practice 7.4 describe the factors that affect the suitability of excavations, and how to confirm that an excavation is suitable 7.5 describe situations where particular authorisations are required before undertaking work 7.6 explain the implications of not obtaining the required authorisations before undertaking work 7.7 explain the potential dangers of working in trenches and holes			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
	7.8 outline the main responsibilities of employers and employees under the current working at height regulations 7.9 explain the dangers of taking actions that can create confined spaces risks in excavations 7.10 describe the implications of using incorrect plant, tools, materials and system components 7.11 state the actions to be taken where plant, tools, materials and system components fail to meet required specification 7.12 describe situations where mains installation can go wrong and suitable actions available to rectify them 7.13 describe how to access information from reference documents, Regulations and Codes of Practice 7.14 describe the range of actions to be taken if work cannot proceed to schedule 7.15 explain how to determine appropriate safe remedial action if work cannot proceed 7.16 describe the types and causes of disruption that can occur when installing water mains, and how to avoid them 7.17 describe the dangers of using inadequate handling and lifting procedures 7.18 describe the types and signs of defect likely to be encountered when installing water mains			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
	7.19 explain how to determine the correct, and safe, action to take to resolve defects encountered during installation of water mains 7.20 explain the importance of compliance with current industry standards			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____
(*if sampled*)

Unit 15: Conduct pressure and soundness testing of water network engineering products or assets

Unit reference number: A/503/1167

QCF level: 2

Credit value: 4

Guided learning hours: 25

Unit summary

This unit develops learners' knowledge and understanding for conducting specified testing of water engineering products or assets. Learners will also gain skills to perform pressure testing activities and resolve problems which arise from performing test activities.

Assessment requirements/evidence requirements

Some terms in the assessment criteria cover a range of situations. Refer to the full assessment requirements and guidance for this unit for a detailed list of terms and definitions, agreed with Energy and Utility Skills.

This unit must be assessed in line with the Energy and Utility Skills assessment strategy for vocational qualifications based on its NOS for Multi-Utility Network Construction.

Assessment methodology

This unit is assessed in the workplace or in conditions resembling the workplace. Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
1 Perform pressure testing activities	1.1 work safely in accordance with health and safety and environment regulations and legislation 1.2 carry out a site-specific risk assessment, and review it in accordance with company procedures 1.3 select and wear the designated personal protective equipment (PPE) 1.4 use all tools and equipment for pressure testing in accordance with work instructions and manufacturers specifications 1.5 remove excess air from the system, and ensure that the system to be tested is isolated 1.6 set up the equipment and carry out pressure testing appropriate to the type of pipe material concerned 1.7 flush in line with work instructions 1.8 record and review test results to establish that the soundness of the system against the performance parameters 1.9 confirm that the equipment is functioning in line with system operating requirements and parameters 1.10 dispose of waste products in accordance with environmental standards 1.11 carry out all work to agreed timescales, and in line with company procedures and safe working and hygiene practices			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
2 Use and communicate data and information	2.1 follow drawings, plans and specifications for the testing, pressure testing and flushing of engineering products and assets 2.2 follow all approved procedures and practices and statutory and regulatory requirements involved in test work activity 2.3 record the results of test activity using required reporting systems and documentation to meet company procedures and requirements			
3 Resolve problems which arise from performing test activities	3.1 report damage or defects to test equipment to the designated person 3.2 deal promptly and effectively with problems within their control and report those that cannot be solved 3.3 refer problems and conditions outside their responsibility to the designated person using approved procedures 3.4 deal with any emergencies that may arise			
4 Demonstrate general knowledge and understanding for utilities network construction operations	4.1 state the main responsibilities of the employer and employee under the Health and Safety at Work Act 4.2 state the health and safety guidance governing work in excavations 4.3 describe the safe procedures for handling hazardous materials 4.4 explain their organisational accident recording and reporting procedures 4.5 list the range and use of personal protective equipment for the work			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
5 Demonstrate knowledge and understanding of conducting specified testing of water engineering products or assets	5.1 describe how to carry out testing activities safely and in accordance with all legal and procedural requirements 5.2 explain how to interpret drawings, plans and specifications for different test activities and procedures 5.3 describe the lines and procedures for reporting problems associated with testing activities, including: – standard industry documentation – relevant company procedures 5.4 describe the different types of pressure tests and how they are carried out depending on the pipe materials concerned 5.5 describe how to carry out pre-use checks and set up pressure testing equipment 5.6 explain the actions required when faults or problems occur with pressure testing equipment or the test its self 5.7 explain how the results of the test are recorded and interpreted 5.8 explain how air can enter pipe systems and the methods of removing it 5.9 explain the calibration requirements for pressure testing equipment 5.10 explain the criteria for passing or failing a pressure test and the follow-up actions required in either case			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
	5.11 explain the consequences of test failure and the likely remedial activities 5.12 explain the consequences of mechanical failures during testing due to the pressure ranges 5.13 describe the procedures to follow and documentation to be used to record test results			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____
(*if sampled*)

Unit 16: Reinstate excavation and pavement surfaces after utility network construction operations

Unit reference number: R/503/0686

QCF level: 2

Credit value: 5

Guided learning hours: 35

Unit summary

This unit develops learners' knowledge and understanding of plant and equipment, legislation and best practice for reinstatement activities. Learners will gain knowledge and understanding of other agencies, utilities, apparatus and communication equipment. Learners will also gain skills to prepare, carry out and resolve problems with the reinstatement of excavation and pavement surface.

Assessment requirements/evidence requirements

Some terms in the assessment criteria cover a range of situations. Refer to the full assessment requirements and guidance for this unit for a detailed list of terms and definitions, agreed with Energy and Utility Skills.

This unit must be assessed in line with the Energy and Utility Skills assessment strategy for vocational qualifications based on its NOS for Multi-Utility Network Construction.

Assessment methodology

This unit is assessed in the workplace or in conditions resembling the workplace. Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
1 Prepare for reinstatement of excavation and pavement surface	1.1 confirm the location of the excavation and the holes and trenches, according to instructions and work specifications 1.2 carry out a site-specific risk assessment, and review it according to company procedures 1.3 select and wear the designated personal protective equipment (PPE) 1.4 follow safe working practices for working in the vicinity of hazardous materials 1.5 confirm that the area for reinstatement is in accordance with statutory and regulatory Codes of Practice 1.6 carry out preparation procedures for reinstatement of the excavation in accordance with statutory and regulatory Codes of Practice 1.7 protect supply apparatus and sub-structures in accordance with the relevant Codes of Practice 1.8 select stored materials for reinstatement, according to the relevant Codes of Practice 1.9 select hand tools, powered tools and equipment for reinstatement			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
	1.10 confirm that tools and equipment are: – appropriate for the materials to be used in reinstatement – in a suitable condition for use, according to manufacturer's specifications and operational requirements. 1.11 report remedial work and defects in the excavation that are outside their responsibility, according to organisational and operational procedures 1.12 work according to approved procedures and practices and comply with statutory requirements			
2 Carry out reinstatement of excavation and pavement surface	2.1 confirm that materials to be used for reinstatement are fit for purpose and meet statutory and regulatory Codes of Practice, including: – new and reusable materials for backfill, sub-base, road-base and pavement surface – cold-lay materials 2.2 confirm that the area and type of structure being reinstated meet statutory and regulatory Codes of Practice 2.3 follow laying and compaction procedures for the material that meet statutory and regulatory Codes of Practice 2.4 report defects and deficiencies in the laying and compaction of materials, that are outside their responsibility, in accordance with organisational and operational procedures			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
	2.5 maintain suitable conditions and the security of the excavation throughout reinstatement operations 2.6 replace ironwork, kerbs and edge restraints in line with relevant Codes of Practice 2.7 store and dispose of surplus materials in line with work instructions and statutory and regulatory Codes of Practice 2.8 complete the work by checking and confirming that the quality and condition of the finished reinstatement and the worksite conform to statutory and regulatory Codes of Practice			
3 Use and communicate data and information	3.1 use records to determine potential deep excavations, confined spaces and hazardous materials 3.2 use information in the work instructions and specification to determine the worksite and the area to be reinstated 3.3 use approved procedures and practice and statutory requirements to determine the requirement for excavation support 3.4 check any circumstances where information appears to be incorrect with the designated personnel 3.5 use organisational information systems to record and store data and information relating to reinstatement work 3.6 follow all required lone working procedures when working alone			

Learning outcome		Assessment criterion		Evidence type	Portfolio reference	Date
4	Resolve problems which could arise from reinstatement work	4.1	report any damage to supply apparatus and sub-structures promptly to the designated person			
		4.2	resolve day-to-day problems within the responsibility of their own job role			
		4.3	advise colleagues or managers where situations need them to intervene			
		4.4	refer matters that are outside their responsibility to the designated people using approved procedures			
5	Demonstrate general knowledge and understanding for utilities network construction operations	5.1	state the main responsibilities of the employer and employee under the Health and Safety at Work Act in relation to reinstatement activities			
		5.2	state the health and safety guidance governing work in excavations			
		5.3	describe the safe procedures for handling hazardous materials			
		5.4	explain their organisational accident recording and reporting procedures			
		5.5	list the range and use of personal protective equipment for the work			
6	Demonstrate knowledge and understanding of plant and equipment used for reinstatement activities	6.1	list the hand tools, powered tools and motorised equipment that are used in reinstatement work			
		6.2	describe safe procedures for handling reinstatement equipment			
		6.3	describe the maintenance requirements for hand tools, powered tools and equipment used for reinstatement work			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
	6.4 describe the types of equipment used to compact materials, including hand and power tools and motorised equipment 6.5 describe the methods used to compact reinstatement materials 6.6 describe the maintenance requirements for compaction equipment used in reinstatement			
7 Demonstrate knowledge and understanding of legislation and best practice for reinstatement operations	7.1 outline the legal and operational responsibilities of the employer and employee in relation to reinstatement activities 7.2 outline the legislation controlling the use of hand tools, powered tools and equipment 7.3 outline the main industry approved procedures and practices for reinstatement work 7.4 describe the roles and responsibilities of people within the site or highways operations team 7.5 explain the importance of referring problems outside their responsibility to the designated persons 7.6 describe the procedures used to report and record details of reinstatement work 7.7 outline site management structures for site or highways operations			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
8 Demonstrate knowledge and understanding of reinstatement activities	8.1 describe the different types of reinstatement surfaces 8.2 describe the sub-surface requirements for each type of pavement surface 8.3 describe the preparation procedures for reinstatement 8.4 describe the types of materials that can be excavated, and defects that can arise with them 8.5 state the remedial actions to be taken when defects are encountered 8.6 explain how to segregate the different types of materials used in reinstatement 8.7 describe how to check the condition of the reinstatement material that is to be used 8.8 outline the specifications for surface, sub-surface and general reinstatement materials 8.9 describe the methods used to store and protect excavated material to prevent deterioration 8.10 describe the types of surface finishes used in reinstatement 8.11 describe the common defects in reinstatement, including settlement and surface damage, and the appropriate remedial action to take 8.12 state the specifications for materials in reinstatement surface structures 8.13 explain why it is important to ensure that reinstatement materials are stored in the correct conditions			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
9 Demonstrate knowledge and understanding of other agencies, utilities, their apparatus and communication requirements	9.1 describe the different types of supply apparatus and sub-structures for utilities and other agencies that may be encountered during reinstatement 9.2 explain the methods used to protect each type of supply apparatus and sub-structure 9.3 explain why it is necessary to report any spillage from fuel and lubricants, and to safely prevent their spread, in line with company procedures			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____
(*if sampled*)

Unit 17: Joint materials by butt fusion processes on utilities network construction, up to 180 mm diameter

Unit reference number: J/503/0667

QCF level: 2

Credit value: 2

Guided learning hours: 10

Unit summary

This unit provides learners with an understanding of jointing materials by butt fusion processes, up to 180 mm diameter, and knowledge of health and safety guidance and legislation in utilities network construction operations. Learners will gain skills to make joints using butt fusion jointing techniques and resolve problems that arise during jointing work.

Assessment requirements/evidence requirements

Some terms in the assessment criteria cover a range of situations. Refer to the full assessment requirements and guidance for this unit for a detailed list of terms and definitions, agreed with Energy and Utility Skills.

This unit must be assessed in line with the Energy and Utility Skills assessment strategy for vocational qualifications based on its NOS.

Assessment methodology

This unit is assessed in the workplace or in conditions resembling the workplace. Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
1 Be able to make joints using butt fusion techniques	1.1 carry out site specific risk assessment, and review in accordance with company procedures 1.2 select and wear the designated PPE 1.3 check that jointing and related equipment and consumables are as specified and fit for purpose 1.4 confirm there is adequate weather protection during the entire jointing cycle 1.5 carry out and monitor the machine operations to produce butt fusion joints of the required quality 1.6 confirm compliance with: – job instructions – correct preparation – specification – specified dimensional accuracy 1.7 demonstrate how to de-bead and carry out approved quality assurance test on bead 1.8 confirm joint and bead are identifiable by marking in accordance with company procedures 1.9 confirm the equipment is in a safe condition on completion of jointing activities 1.10 handle excess and waste materials and temporary attachments, in line with approved and agreed procedures			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
2 Be able to use and communicate data and information	2.1 comply with approved procedures and practices involved in the work activity 2.2 confirm with designated personnel any circumstances where information appears incorrect 2.3 use organisational information systems to record and store jointing data and information			
3 Be able to resolve problems which arise from jointing materials	3.1 report promptly to the designated person damage or defects to tools, equipment, materials 3.2 report promptly to the designated person matters outside the responsibility of the job role 3.3 resolve day to day problems within the responsibility of the job role 3.4 handle emergency situations as specified in approved procedures			
4 Know Health and Safety guidance and legislation in utilities network construction operations	4.1 state the main responsibilities of the employer and employee under the Health and Safety at Work Act 4.2 explain the health and safety guidance governing work in excavations 4.3 describe the safe procedures for handling hazardous materials 4.4 explain the organisational accident recording and reporting procedures 4.5 identify the range and use of personal protective equipment for the work 4.6 state the health, safety and environment legislation and environmental procedures relevant to the work activities			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
5 Understand jointing materials by butt fusion processes on utilities network construction, up to 180 mm diameter	5.1 apply the correct manual handling procedures 5.2 explain the industry codes of practice and company procedures 5.3 explain why only pipes of similar specifications can be joined together 5.4 interpret engineering specifications relevant to the engineering activity 5.5 describe the different stages that take place during the jointing process and the importance of allowing each phase to complete 5.6 explain the need for pipe support, alignment and the consequences of poor support and mis-alignment 5.7 explain the cause and effect of defects and contaminations 5.8 describe maintenance procedures 5.9 describe equipment calibration 5.10 outline the consequences of poor maintenance 5.11 identify different quality assurance procedures that can be applied in recognising defects 5.12 explain the correct reporting procedures			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____
(*if sampled*)

Unit 18: Joint materials by butt fusion processes between 180 mm and 315 mm for utilities network construction

Unit reference number: Y/503/1161

QCF level: 2

Credit value: 3

Guided learning hours: 24

Unit summary

This unit provides learners with an understanding of jointing materials by butt fusion processes between 180 mm and 315 mm, and knowledge of health and safety guidance and legislation in utilities network construction operations. Learners will gain skills to make joints using butt fusion techniques and resolve problems that arise during jointing work.

Assessment requirements/evidence requirements

Some terms in the assessment criteria cover a range of situations. Refer to the full assessment requirements and guidance for this unit for a detailed list of terms and definitions, agreed with Energy and Utility Skills.

This unit must be assessed in line with the Energy and Utility Skills assessment strategy for vocational qualifications based on its NOS for Multi-Utility Network Construction.

Assessment methodology

This unit is assessed in the workplace or in conditions resembling the workplace. Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
1 Make butt fusion joints on pipe with diameter between 180 mm and 315 mm	1.1 work safely and ensure compliance with health, safety, environment and other regulations and guidelines 1.2 carry out a site-specific risk assessment, and review it in accordance with company procedures 1.3 select and wear the designated personal protective equipment (PPE) 1.4 follow the job instructions and procedures accurately to prepare and make joints 1.5 check and confirm that joint preparation: – complies with the specification – meets quality requirements 1.6 check that the jointing and related equipment and consumables are as specified and fit for purpose 1.7 provide adequate weather protection during the entire jointing cycle 1.8 carry out and monitor the machine operations in line with specifications and job instructions 1.9 make butt joints of the required quality and specified dimensional accuracy 1.10 de-bead and carry out the approved quality assurance test on the bead 1.11 mark the joint and bead in line with company procedures to ensure that they are identifiable			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
	1.12 shut down the equipment to a safe condition on completion of jointing activities 1.13 deal promptly with excess and waste materials and temporary attachments, in line with approved and agreed procedures			
2 Use and communicate data and information	2.1 follow all approved procedures and practices and statutory and regulatory requirements involved in the work activity 2.2 check with designated personnel any circumstances where information appears incorrect 2.3 use organisational information systems to record and store data and information 2.4 follow all lone working procedures when working alone			
3 Resolve problems which could arise from jointing materials	3.1 report damage to tools, equipment or materials promptly to the designated person 3.2 resolve day-to-day problems within their responsibility 3.3 refer matters that are outside their responsibility to the designated people using approved procedures 3.4 deal with emergency situations where they arise			
4 Demonstrate general knowledge and understanding for utilities network construction operations	4.1 state the main responsibilities of the employer and employee under the Health and Safety at Work Act 4.2 state the health and safety guidance governing work in excavations 4.3 describe the safe procedures for handling hazardous materials			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
	4.4 explain their organisational accident recording and reporting procedures 4.5 state the range and use of personal protective equipment required for the work			
5 Demonstrate knowledge and understanding of butt fusion jointing	5.1 state the health, safety and environment legislation and environmental procedures that relate to the work activities 5.2 describe the correct manual handling procedures to be used during butt fusion jointing 5.3 outline the industry codes of practice and company procedures relating to butt fusion jointing 5.4 explain why only pipes of similar specifications can be joined together 5.5 explain how to interpret engineering specifications that are relevant to the jointing activity 5.6 describe the different stages that take place during the butt fusion jointing process 5.7 explain the importance of allowing each stage of the butt fusion process to complete 5.8 explain why pipe support and alignment are needed 5.9 describe the consequences of poor pipe support and misalignment			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
	5.10 explain the causes and effects of defects and contamination, including: – misalignment split defects – inadequate bead – excessive bead – pipe specifications – compatibility – different types of materials and consumables. 5.11 describe the maintenance procedures that must be followed for butt fusion activities 5.12 describe how equipment must be calibrated for butt fusion activities 5.13 describe the consequences of poor maintenance 5.14 describe the different quality assurance procedures that can be applied to recognise jointing defects, including: – destructive testing – non-destructive testing 5.15 outline the correct reporting procedures used for butt fusion activities			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____
(*if sampled*)

Unit 19: Joint materials by butt fusion processes above 315 mm for utilities network construction

Unit reference number: R/503/1160

QCF level: 2

Credit value: 3

Guided learning hours: 24

Unit summary

This unit provides learners with an understanding of jointing materials by butt fusion processes above 315 mm, and knowledge of health and safety guidance and legislation in utilities network construction operations. Learners will gain skills to make joints using butt fusion techniques and resolve problems that arise during jointing work.

Assessment requirements/evidence requirements

Some terms in the assessment criteria cover a range of situations. Refer to the full assessment requirements and guidance for this unit for a detailed list of terms and definitions, agreed with Energy and Utility Skills.

This unit must be assessed in line with the Energy and Utility Skills assessment strategy for vocational qualifications based on its NOS for Multi-Utility Network Construction.

Assessment methodology

This unit is assessed in the workplace or in conditions resembling the workplace. Learners can enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centre documentation should be used to record this information.

Learning outcomes and assessment criteria

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
1 Make joints using butt fusion techniques on pipe with diameter over 315 mm	1.1 work safely and ensure compliance with health, safety, environment and other regulations and guidelines 1.2 carry out a site-specific risk assessment, and review it in accordance with company procedures 1.3 select and wear the designated personal protective equipment (PPE) 1.4 follow the job instructions and procedures accurately to prepare and make joints 1.5 check and confirm that joint preparation: – complies with the specification – meets quality requirements 1.6 check that the jointing and related equipment and consumables are as specified and fit for purpose. 1.7 provide adequate weather protection during the entire jointing cycle 1.8 carry out and monitor the machine operations in line with specifications and job instructions 1.9 make butt joints of the required quality and specified dimensional accuracy 1.10 de-bead and carry out the approved quality assurance test on the bead 1.11 mark the joint and bead in line with company procedures to ensure that they are identifiable 1.12 shut down the equipment to a safe condition on completion of jointing activities			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
	1.13 deal promptly with excess and waste materials and temporary attachments, in line with approved and agreed procedures			
2 Use and communicate data and information	2.1 follow all approved procedures and practices and statutory and regulatory requirements involved in the work activity 2.2 check with designated personnel any circumstances where information appears incorrect 2.3 use organisational information systems to record and store data and information 2.4 follow all lone working procedures when working alone			
3 Resolve problems which could arise from jointing materials	3.1 report damage to tools, equipment or materials promptly to the designated person 3.2 resolve day-to-day problems within their responsibility 3.3 refer matters that are outside their responsibility to the designated people using approved procedures 3.4 deal with emergency situations where they arise			
4 Demonstrate general knowledge and understanding for utilities network construction operations	4.1 state the main responsibilities of the employer and employee under the Health and Safety at Work Act 4.2 state the health and safety guidance governing work in excavations 4.3 describe the safe procedures for handling hazardous materials 4.4 explain their organisational accident recording and reporting procedures			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
	4.5 state the range and use of personal protective equipment required for the work			
5 Demonstrate knowledge and understanding of butt fusion jointing	5.1 state the health, safety and environment legislation and environmental procedures that relate to the work activities 5.2 describe the correct manual handling procedures to be used during butt fusion jointing 5.3 outline the industry codes of practice and company procedures relating to butt fusion jointing 5.4 explain why only pipes of similar specifications can be joined together 5.5 explain how to interpret engineering specifications that are relevant to the jointing activity 5.6 describe the different stages that take place during the butt fusion jointing process 5.7 explain the importance of allowing each stage of the butt fusion process to complete 5.8 explain why pipe support and alignment are needed 5.9 describe the consequences of poor pipe support and misalignment			

Learning outcome	Assessment criterion	Evidence type	Portfolio reference	Date
	5.10 explain the causes and effects of defects and contamination, including: – misalignment split defects – inadequate bead – excessive bead – pipe specifications – compatibility – different types of materials and consumables 5.11 describe the maintenance procedures that must be followed for butt fusion activities 5.12 describe how equipment must be calibrated for butt fusion activities 5.13 describe the consequences of poor maintenance 5.14 describe the different quality assurance procedures that can be applied to recognise jointing defects, including: – destructive testing – non-destructive testing. 5.15 outline the correct reporting procedures used for butt fusion activities			

Learner name: _____ Date:_____

Learner signature: _____ Date:_____

Assessor signature: _____ Date:_____

Internal verifier signature: _____ Date:_____
(*if sampled*)

Further information

Our customer service numbers are:

BTEC and NVQ	0844 576 0026
GCSE	0844 576 0027
GCE	0844 576 0025
The Diploma	0844 576 0028
DiDA and other qualifications	0844 576 0031

Calls may be recorded for training purposes.

Useful publications

Related information and publications include:

- *Centre Handbook for Edexcel QCF NVQs and Competence-based Qualifications* published annually
- functional skills publications – specifications, tutor support materials and question papers
- *Regulatory Arrangements for the Qualification and Credit Framework* (published by Ofqual, August 2008)
- the current Edexcel publications catalogue and update catalogue.

Edexcel publications concerning the Quality Assurance System and the internal and standards verification of vocationally related programmes can be found on the Edexcel website.

NB: Some of our publications are priced. There is also a charge for postage and packing. Please check the cost when you order.

How to obtain National Occupational Standards

To obtain the National Occupational Standards please go to www.ukstandards.org.uk.

Professional development and training

Edexcel supports UK and international customers with training related to NVQ and BTEC qualifications. This support is available through a choice of training options offered in our published training directory or through customised training at your centre.

The support we offer focuses on a range of issues including:

- planning for the delivery of a new programme
- planning for assessment and grading
- developing effective assignments
- building your team and teamwork skills
- developing student-centred learning and teaching approaches
- building functional skills into your programme
- building effective and efficient quality assurance systems.

The national programme of training we offer can be viewed on our website (www.edexcel.com/training). You can request customised training through the website or by contacting one of our advisers in the Training from Edexcel team via Customer Services to discuss your training needs.

The training we provide:

- is active
- is designed to be supportive and thought-provoking
- builds on best practice
- may be suitable for those seeking evidence for their continuing professional development.

Annexe A: Progression pathways

The Edexcel qualification framework for the engineering sector

Level	General qualifications	Diplomas	BTEC vocationally related qualifications	BTEC specialist qualification/ professional	NVQ/competence
6					We have too many qualifications to list in this space. Please go to www.edexcel.com for further information.

Level	General qualifications	Diplomas	BTEC vocationally related qualifications	BTEC specialist qualification/ professional	NVQ/competence
5			Edexcel BTEC Level 5 HND Diploma in Manufacturing Engineering Edexcel BTEC Level 5 HND Diploma in Mechanical Engineering Edexcel BTEC Level 5 HND Diploma in Operations Engineering Edexcel BTEC Level 5 HND Diploma in Electrical/Electronic Engineering Edexcel BTEC Level 5 HND Diploma in General Engineering Edexcel BTEC Level 5 HND Diploma in Automotive Engineering Edexcel BTEC Level 5 HND Diploma in Aeronautical Engineering		We have too many qualifications to list in this space. Please go to www.edexcel.com for further information.

Level	General qualifications	Diplomas	BTEC vocationally related qualifications	BTEC specialist qualification/ professional	NVQ/competence
4			Edexcel BTEC Level 4 HNC Diploma in Manufacturing Engineering Edexcel BTEC Level 4 HNC Diploma in Mechanical Engineering Edexcel BTEC Level 4 HNC Diploma in Operations Engineering Edexcel BTEC Level 4 HNC Diploma in Electrical/Electronic Engineering Edexcel BTEC Level 4 HNC Diploma in General Engineering Edexcel BTEC Level 4 HNC Diploma in Automotive Engineering Edexcel BTEC Level 4 HNC Diploma in Aeronautical Engineering		We have too many qualifications to list in this space. Please go to www.edexcel.com for further information.

Level	General qualifications	Diplomas	BTEC vocationally related qualifications	BTEC specialist qualification/ professional	NVQ/competence
3		Edexcel Level 3 Diploma in Engineering	Edexcel BTEC Level 3 Certificate, Subsidiary Diploma, Diploma and Extended Diploma in Engineering Edexcel BTEC Level 3 Diploma and Extended Diploma in Mechanical Engineering Edexcel BTEC Level 3 Diploma and Extended Diploma in Manufacturing Engineering Edexcel BTEC Level 3 Diploma and Extended Diploma in Operations and Maintenance Engineering Edexcel BTEC Level 3 Diploma and Extended Diploma in Electrical/Electronic Engineering Edexcel BTEC Level 3 Diploma and Extended Diploma in Aeronautical Engineering		We have too many qualifications to list in this space. Please go to www.edexcel.com for further information.

Level	General qualifications	Diplomas	BTEC vocationally related qualifications	BTEC specialist qualification/ professional	NVQ/competence
2	GCSE Engineering GCSE Manufacturing	Edexcel Level 2 Diploma in Engineering	Edexcel BTEC Level 2 Certificate, Extended Certificate and Diploma in Engineering		We have too many qualifications to list in this space. Please go to www.edexcel.com for further information.
1		Edexcel Level 1 Diploma in Engineering	Edexcel BTEC Level 1 Award, Certificate and Diploma in Engineering		We have too many qualifications to list in this space. Please go to www.edexcel.com for further information.

Annexe B: Quality assurance

Key principles of quality assurance

- A centre delivering Edexcel qualifications must be an Edexcel-recognised centre and must have approval for qualifications that it is offering.
- The centre agrees, as part of gaining recognition, to abide by specific terms and conditions relating to the effective delivery and quality assurance of assessment. The centre must abide by these conditions throughout the period of delivery.
- Edexcel makes available to approved centres a range of materials and opportunities to exemplify the processes required for effective assessment and provide examples of effective standards. Approved centres must use the guidance on assessment to ensure that staff who are delivering Edexcel qualifications are applying consistent standards.
- An approved centre must follow agreed protocols for: standardisation of assessors; planning, monitoring and recording of assessment processes; internal verification and recording of internal verification processes and dealing with special circumstances, appeals and malpractice.

Quality assurance processes

The approach to quality assured assessment is made through a partnership between a recognised centre and Edexcel. Edexcel is committed to ensuring that it follows best practice and employs appropriate technology to support quality assurance processes where practicable. The specific arrangements for working with centres will vary. Edexcel seeks to ensure that the quality assurance processes it uses do not inflict undue bureaucratic processes on centres, and works to support them in providing robust quality assurance processes.

The learning outcomes and assessment criteria in each unit within this specification set out the standard to be achieved by each learner in order to gain each qualification. Edexcel operates a quality assurance process, designed to ensure that these standards are maintained by all assessors and verifiers.

For the purposes of quality assurance, all individual qualifications and units are considered as a whole. Centres offering these qualifications must be committed to ensuring the quality of the units and qualifications they offer, through effective standardisation of assessors and internal verification of assessor decisions. Centre quality assurance and assessment processes are monitored by Edexcel.

The Edexcel quality assurance processes will involve:

- gaining centre recognition and qualification approval if a centre is not currently approved to offer Edexcel qualifications
- annual visits to centres by Edexcel for quality review and development of overarching processes and quality standards. Quality review and development visits will be conducted by an Edexcel quality development reviewer
- annual visits by occupationally competent and qualified Edexcel Standards Verifiers for sampling of internal verification and assessor decisions for the occupational sector
- the provision of support, advice and guidance towards the achievement of National Occupational Standards.

Centres are required to declare their commitment to ensuring quality and appropriate opportunities for learners that lead to valid and accurate assessment outcomes. In addition, centres will commit to undertaking defined training and online standardisation activities.

Annexe C: Centre certification and registration

Edexcel Standards Verifiers will provide support, advice and guidance to centres to achieve Direct Claims Status (DCS). Edexcel will maintain the integrity of Edexcel QCF NVQs through ensuring that the awarding of these qualifications is secure. Where there are quality issues identified in the delivery of programmes, Edexcel will exercise the right to:

- direct centres to take action
- limit or suspend certification
- suspend registration.

The approach of Edexcel in such circumstances is to work with the centre to overcome the problems identified. If additional training is required, Edexcel will aim to secure the appropriate expertise to provide this.

What are the access arrangements and special considerations for the qualification in this specification?

Centres are required to recruit learners to Edexcel qualifications with integrity.

Appropriate steps should be taken to assess each applicant's potential and a professional judgement should be made about their ability to successfully complete the programme of study and achieve the qualification. This assessment will need to take account of the support available to the learner within the centre during their programme of study and any specific support that might be necessary to allow the learner to access the assessment for the qualification. Centres should consult Edexcel's policy on learners with particular requirements.

Edexcel's policy on access arrangements and special considerations for Edexcel qualifications aims to enhance access to the qualifications for learners with disabilities and other difficulties (as defined by the 1995 Disability Discrimination Act and the amendments to the Act) without compromising the assessment of skills, knowledge, understanding or competence. Please refer to *Access Arrangements and Special Considerations for BTEC and Edexcel NVQ Qualifications* for further details (*www.edexcel.com*).

Annexe D: Assessment strategy

The Energy and Utility Skills Assessment Strategy will be available on the Edexcel website, along side the full specification on the Engineering NVQ/Competence page.

Annexe E: Additional requirement for qualifications that use the term 'NVQ' in a QCF qualification title

Please go to www.ofqual.gov.uk to access the document *'Operating rules for using the term 'NVQ' in a QCF qualification title'*.

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For more information on Edexcel and BTEC qualifications please
visit our website: www.edexcel.com