Level 1 Certificate and Level 2 Diploma in Gas Network Construction Operations (6028)

Qualification handbook for centres

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Level 1 Certificate and Level 2 Diploma in Gas Network Construction Operations (6028)

Qualification handbook for centres

Qualification title	Number	QAN
Level 1 Certificate in Network Construction Operations (Gas)	6028-10	600/1311/4
Level 2 Diploma in Network Construction Operations (Gas) - Main layer	6028-21	600/1534/2
Level 2 Diploma in Network Construction Operations (Gas) - Service layer	6028-22	600/1535/4

Version and date	Change detail	Section
V1.2 March 2012	Support materials Additional workplace observation guidance	3.3 4.3
V2.0 June 2014	Added elective units 306, 307, 308, 309, 310 and 311; withdrawn elective unit 303.	5 – Units
V2.1 February 2016	Unit 203, LO4 amended	5 – Units
V2.2 March 2016	Phone numbers deleted, City & Guilds Group information updated Minor amendments made to units 205, 207, 308, 309, 310 and 311	p. 2 and final pages 5 – Units
V2.3 Jan 2021	Unit content updated due to changes made by EU Skills	Unit 213 Unit 219
V2.4 March 2021	TQT and GLH values included in handbook. Grading information clarified in handbook.	1.3 1.4

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Contents

1 Introduction to the qualifications

This document contains the information that centres need to offer the following qualifications:

Qualification title and level	City & Guilds qualification number	Qualification accreditation number	Registration and certification
Level 1 Certificate in Network Construction Operations (Gas)	6028-10	600/1311/4	Consult the Walled Garden/Online Catalogue for last dates
Level 2 Diploma in Network Construction Operations (Gas) - Main layer	6028-21	600/1534/2	
Level 2 Diploma in Network Construction Operations (Gas) - Service layer	6028-22	600/1535/4	

These qualifications cover all aspects of gas network construction and will help to develop the learner's technical skills in areas such as excavating, welding, operating tools and machinery and installation, while maintaining safety standards. They are ideal for network operatives and engineers already employed on the gas distribution networks, either directly with an asset owner or through an outsourced operations company.

Learners can choose the relevant qualification that demonstrates specialist knowledge and skills including

- excavating holes and trenches in ground and pavement structures
- operating powered tools
- electrofusion welding
- assembling components to meet specifications for gas network construction operations.

1.1 Qualification structure

To achieve the **Level 1 Certificate in Network Construction Operations (Gas)**, learners must achieve **17** credits from the mandatory units and a minimum of **2** credits from the optional units available.

Unit accreditation number	City & Guilds	Unit title	Mandatory / optional for full qualification	Credit value
F/502/9663	101	Assist in locating and avoiding supply apparatus and sub structures	Mandatory	2
L/502/9665	102	Working under supervision, excavate holes and trenches in ground and pavement structures	Mandatory	2
R/502/9666	103	Assist in preparing for reinstatement of excavation and pavement surface	Mandatory	2
A/503/0214	104	Working under supervision, contribute to an efficient and effective work environment in gas network construction	Mandatory	2

Unit accreditation number	City & Guilds	Unit title	Mandatory / optional for full qualification	Credit value
T/503/0213	105	Working under supervision, contribute to health, safety and environment in the workplace during gas network construction	Mandatory	2
Y/502/9670	106	Working under supervision, operate powered tools and equipment for network construction operations	Mandatory	2
H/502/9672	107	Working under supervision, join polyethylene pipe by electrofusion welding	Mandatory	2
M/503/0212	108	Working under supervision, assemble components to meet specifications for gas network construction operations	Mandatory	1
K/502/9673	109	Assist in preparing resources and signing, lighting and guarding the area for highway works	Optional	2
M/502/9674	110	Assist in preparing resources and signing and guarding the area for site works	Optional	2
T/502/9675	111	Working under supervision, join polyethylene pipe by butt fusion welding	Mandatory	2

To achieve the **Level 2 Diploma in Network Construction Operations (Gas) - Main layer**, learners must achieve the following combination of units, depending on pathway chosen.

- Level 2 Diploma in Network Construction Operations (Gas) – Main layer (Self lay)
    - 44 credits from units 201 - 203, 205 - 207, 209 - 211, 214, 302
- Level 2 Diploma in Network Construction Operations (Gas) – Main layer (Distribution)
    - 51 credits from 201 - 207, 209 - 211, 214, 216, 302
- Level 2 Diploma in Network Construction Operations (Gas) – Main layer (Repair and Maintenance)
    - 62 credits from 201 - 207, 209 - 211, 214, 216 - 218, 302, 304, 305

Units 208, 212, 306 - 311 are elective and may be taken by learners; however credits gained will not contribute to the overall achievement of the qualification.

To achieve the **Level 2 Diploma in Network Construction Operations (Gas) – Service layer**, learners must achieve the following combination of units, depending on pathway chosen.

- Level 2 Diploma in Network Construction Operations (Gas) – Service layer (Self lay)
    - 37 credits from 201 - 203, 205 - 207, 209, 210, 215, 301
- Level 2 Diploma in Network Construction Operations (Gas) – Service layer (Distribution)
    - 41 credits from 201 - 207, 209, 210, 215, 301
- Level 2 Diploma in Network Construction Operations (Gas) – Service layer (Repair and Maintenance)
    - 52 credits from 201 - 207, 209, 210, 215, 217 - 218, 301, 304, 305

Units 208, 213, 219, 307, 310 and 311 are elective and may be taken by learners; however credits gained will not contribute to the overall achievement of the qualification.

Unit accreditation number	City & Guilds unit	Unit title	Mandatory / elective for full qualification	Credit value
R/503/0316	201	Create an efficient and effective environment in Utilities Network Construction	Mandatory	3
R/503/0669	202	Maintain a safe and secure working environment in utilities network construction	Mandatory	3
A/503/0665	203	Establish and maintain effective working relationships in utilities network construction	Mandatory	2
A/503/0682	204	Install equipment for safe working on the highway for utilities network construction	Mandatory	4
F/503/0683	205	Install equipment for safe working on sites for utilities network construction	Mandatory	3
J/503/0684	206	Locate and avoid supply apparatus for utilities network construction	Mandatory	4
L/503/0685	207	Excavate and maintain holes and trenches for utilities network construction	Mandatory	5
R/503/0686	208	Reinstate excavation and pavement surfaces after utility network construction operations	Elective	5
Y/503/0687	209	Operate powered tools and equipment for routine and predictable requirements on utilities network construction	Mandatory	4
F/503/0666	210	Join materials by electrofusion processes on utilities network construction	Mandatory	2
J/503/0667	211	Joint materials by butt fusion processes on Utilities Network Construction, up to 180mm diameter	Mandatory	2
L/503/0668	212	Join materials by butt fusion processes on Utilities Network Construction, above 180mm diameter	Elective	2
A/503/0696	213	Install or replace external gas service risers	Elective	8
F/503/0697	214	Conduct specified testing of Gas network engineering products or assets - mains	Mandatory	3
J/503/0698	215	Conduct specified testing of Gas services	Mandatory	2
L/503/0699	216	Conduct specified connections to gas network mains and commissioning	Mandatory	3
L/503/0671	217	Restore gas network components to operational condition by repair	Mandatory	2
Y/503/0673	218	Conduct specified testing of gas networks associated with leakage location	Mandatory	3

Unit accreditation number	City & Guilds unit	Unit title	Mandatory / elective for full qualification	Credit value
T/503/0700	219	Disconnection of Gas Meters	Elective	2
T/503/0695	301	Install Gas services up to 63mm	Mandatory	9
M/503/0694	302	Install gas engineering products or assets up to 180mm	Mandatory	13
R/503/0672	304	Minimise risks to life, property and the environment during Gas escapes	Mandatory	3
D/503/0674	305	Analyse and interpret the results of surveys to determine the location of gas escapes	Mandatory	3
J/506/4754	306	Joint materials by fusion processes on utilities network construction, above 180mm diameter	Elective	9
H/506/0789	307	Decommissioning and abandonment of mains and services 63mm and above	Elective	7
L/506/4755	308	Install gas engineering products or assets above 355mm	Elective	9
R/506/4756	309	Install gas engineering products or assets above 180mm, up to and including 355mm	Elective	7
Y/506/4757	310	Operate within the gas intermediate pressure range	Elective	3
D/506/4758	311	Operate safely in emergency situations within the gas intermediate pressure range	Elective	2

1.2 Opportunities for progression

On completion of the Level 1 Certificate in Network Construction Operations (Gas), learners may progress onto the Level 2 Diplomas in Network Construction Operations, specialising in main laying or servicing laying.

On completion of the Level 2 Diplomas in Network Construction Operations, learners may progress as a gas network construction operative involved in main laying and service laying. Learners may also like to progress onto the City & Guilds Level 3 Diplomas in Domestic Natural Gas (6014).

1.3 Total Qualification Time

Total Qualification Time (TQT) is the number of notional hours which represents an estimate of the total amount of time that could reasonably be expected for a learner to achieve and demonstrate the achievement of the level of attainment necessary for the award of a qualification.

TQT is comprised of the following two elements:

- The number of hours which an awarding organisation has assigned to a qualification for Guided Learning, and
- An estimate of the number of hours a Learner will reasonably be likely to spend in preparation, study or any other form of participation in education or training, including assessment, which takes place as directed by - but, unlike Guided Learning, not under the Immediate Guidance or Supervision of - a lecturer, supervisor, tutor or other, appropriate provider of education or training

Level and Title	GLH	TQT
Level 1 Certificate in Network Construction Operations (Gas) 6028-10	77	190
Level 2 Diploma in Network Construction Operations (Gas) - Main layer 6028-21	210	440
Level 2 Diploma in Network Construction Operations (Gas) - Service layer 6028-22	190	370

1.4 Grading

The qualifications in this handbook are graded as follows:

Level and Title	Grading
Level 1 Certificate in Network Construction Operations (Gas) 6028-10	Pass/Fail
Level 2 Diploma in Network Construction Operations (Gas) - Main layer 6028-21	Pass/Fail
Level 2 Diploma in Network Construction Operations (Gas) - Service layer 6028-22	Pass/Fail

2 Centre requirements

2.1 Centre approval

Centres approved to offer the following City & Guilds NVQ in Gas Network Operations qualifications have **automatic approval** to offer these qualifications.

- 6029-01 Level 1 NVQ in Gas Network Operations
- 6029-02 Level 2 NVQ in Gas Network Operations (Main laying)
- 6029-03 Level 2 NVQ in Gas Network Operations (Service laying)

To offer these qualifications, **new centres** will need to gain both centre and qualification approval. Please refer to the *Centre Manual - Supporting Customer Excellence* for further information.

Centre staff should familiarise themselves with the structure, content and assessment requirements of the qualifications before designing a course programme.

2.2 Candidate entry requirements

For the Level 1 Certificate in Network Construction Operations (Gas) are no formal entry requirements for learners. However, centres must ensure that learners have the potential and opportunity to gain the qualifications successfully.

All learners entering on the Level 2 Diplomas in Network Construction Operations (Gas) must be network operatives employed on the gas distribution networks, either directly with an asset owner or through an outsourced operations company.

Age restrictions

These qualifications are not approved for use by learners under the age of 16, and City & Guilds cannot accept any registrations for learners in this age group.

3 Course design and delivery

3.1 Initial assessment and induction

Centres will need to make an initial assessment of each candidate prior to the start of their programme to ensure they are entered for an appropriate type and level of qualification.

The initial assessment should identify

- any specific training needs the candidate has, and the support and guidance they may require when working towards their qualifications. This is sometimes referred to as diagnostic testing.
- any units the candidate has already completed, or credit they have accumulated which is relevant to the qualifications they are about to begin.

City & Guilds recommends that centres provide an induction programme to ensure the candidate fully understands the requirements of the qualifications they will work towards, their responsibilities as a candidate, and the responsibilities of the centre. It may be helpful to record the information on a learning contract.

3.2 Recommended delivery strategies

Centre staff should familiarise themselves with the structure, content and assessment requirements of the qualifications before designing a course programme.

Centres may design course programmes of study in any way which:

- best meets the needs and capabilities of their learners
- satisfies the requirements of the qualifications.

When designing and delivering the course programme, centres might wish to incorporate other teaching and learning that is not assessed as part of the qualifications. This might include the following:

- literacy, language and/or numeracy
- personal learning and thinking
- personal and social development
- employability.

Where applicable, this could involve enabling the candidate to access relevant qualifications covering these skills.

3.3 Support materials

The following resources are available for these qualifications:

Description	How to access
Leaner Logbook	Go to the **www.cityandguilds.com** and navigate to the 6028 web page. Passwords available on the Walled Garden.
Assessment packs	Go to the **www.cityandguilds.com** and navigate to the 6028 web page. Passwords available on the Walled Garden.

4 Assessment

The knowledge and understanding of learners is assessed using a range of assessment strategies including:

- inferred knowledge assessed as part of a performance assessment
- project work
- oral questioning by the assessor

The performance skills of learners will be assessed primarily in the work place, with performance tasks undertaken in simulated work environments where a lack of opportunity exists or safety conditions cannot be met.

4.1 Assessor/Verifier Requirements

The necessary requirements for Assessors (A); Internal Verifiers (IV); External Verifiers (EV) and Internal Assessors (IA) as specified in the *Energy & Utility Skills Overarching Assessment Strategy* are listed in the table below.

	A	**IV**	**EV**	**IA**
Demonstrate a high level of interpersonal and communication skills	X	X	X	
Have up-to-date knowledge of current practice and emerging issues within their industry and be aware there may be differences between the 4 UK countries	X	X	X	
Have a thorough understanding of the national occupational standards for the qualifications they are assessing or verifying and be able to interpret them and offer advice on assessment-related matters	X	X	X	
Show experience and working knowledge of the assessment and verification processes relating to the context in which they are working	X	X	X	
Demonstrate relevant, current and credible experience and knowledge with a requirement for evidence of CPD and occupational skills	X	X	X	X
Show they are able to act as an emissary of City & Guilds and will be able to facilitate consistency across centres			X	
Have, or be working towards • Being qualified –Assessor or Verifier units plus CPD and operate to A and V standards (A or V units/D units) • Qualifications/Training that has been mapped to A and V units	X	X	X	
Demonstrate a commitment to continuing professional development and to keeping abreast of the changing environment and practices in their industry	X	X	X	X

4.2 Specific Assessor requirements

In addition, assessors who are assessing the units listed below, common to both water and gas network construction qualifications, must have experience in network construction in either the gas or water sector.

Level 1

Unit 101 Assist in locating and avoiding supply apparatus and sub structures
Unit 102 Working under supervision, excavate holes and trenches in ground and pavement structures
Unit 103 Assist in preparing for reinstatement of excavation and pavement surface
Unit 106 Working under supervision, operate powered tools and equipment for routing and predictable requirements during gas network operations
Unit 107 Working under supervision, join polyethylene pipe by electrofusion welding
Unit 109 Assist in preparing resources and segregating the area for highways works
Unit 110 Assist in preparing resources and segregating the area for site works
Unit 111 Working under supervision, join polyethylene pipe by butt fusion welding

Level 2

Unit 201 Create an efficient and effective work environment in utilities network construction
Unit 203 Establish and maintain effective working relationships in utilities network construction
Unit 204 Install equipment for safe working on the highway for utilities network construction
Unit 205 Install equipment for safe working on sites for utilities network construction
Unit 206 Locate and avoid supply apparatus for utilities network construction
Unit 207 Excavate and maintain holes and trenches for utilities network construction
Unit 208 Reinstate excavation and pavement surfaces after utility network construction operations
Unit 209 Operate powered tools and equipment for routine and predictable requirements on utilities network construction
Unit 210 Join materials by electrofusion processes on utilities network construction
Unit 211 Joint materials by butt fusion processes on utilities network construction, up to 180mm diameter
Unit 212 Join materials by butt fusion processes on utilities network construction, above 180mm diameter

Assessors who are assessing the units listed below, specific to gas network construction qualifications, must have experience in network construction in the gas sector.

Level 1

Unit 104 Working under supervision, contribute to an efficient and effective work environment in gas network construction
Unit 105 Working under supervision, contribute to heath, safety and environment in the workplace during gas network construction
Unit 108 Working under supervision, assemble components to meet specifications for gas network construction operations

Level 2

Unit 202 Maintain a safe and secure working environment on gas network construction
Unit 301 Install gas services up to 63mm
Unit 302 Install gas engineering products or assets up to 180mm
Unit 213 Install or replace external gas service risers
Unit 214 Conduct specified testing of gas engineering products or assets – mains
Unit 215 Conduct specified testing of gas services
Unit 216 Conduct specified connection to gas network mains and commissioning
Unit 217 Restore gas components to operational condition by repair
Unit 304 Assess and minimise risks to life, property and the environment during gas escapes

Unit 218 Conduct specified testing of gas networks associated with leakage location
Unit 305 Analyse and interpret the results of surveys to determine the location of gas escapes
Unit 219 Disconnection of meters

Assessors are **not** eligible to assess learners for whom they have line management responsibility or any unit for which they have been involved in training that learner.

4.3 Workplace observation

These qualifications contain a number of units and both workplace experience and naturally occurring evidence are required for each. A combination of direct observation by an assessor, witness testimony from operationally competent persons and evidence gathered in realistic work environment (RWE) is acceptable to establish that the learner meets all the criteria within the units. However, the following essential activities must be directly assessed at least once through workplace observation by an assessor.

Level 2 Diploma in Network Construction Operations (Gas) – Main layer

- Installation of at least one section of gas main (for each pipe size category forming part of the qualification) to a valve or capped point, with a standard connection to the network
- The testing and purging of a section of gas main

Level 2 Diploma in Network Construction Operations (Gas) – Service layer

- Installation of at least one gas service to a capped point, with a standard connection made to a main
- The testing and purging of a service installation

Further assessment guidance for these activities has been provided against the following corresponding units.

- Unit 214 - Conduct specified testing of gas network engineering products or assets – mains
- Unit 215 - Conduct specified testing of gas services
- Unit 216 - Conduct specified connections to gas network mains and commissioning
- Unit 301 - Install gas services up to 63 mm
- Unit 302 - Install gas engineering products or assets up to 180 mm

6028-217 - Restore gas network components to operational condition by repair

Unit assessment requirements

- Assessments must be carried out as documented in this table
- Learners must demonstrate sufficient evidence of competence through experience of satisfactorily undertaking the work activities documented across the full range. This shall be evidenced via the Learners Portfolio and be assessed as meeting the minimum documented requirements.

RANGE	RWE ASSESSMENT	ASSESSMENT OF EXPERIENCE	WORKPLACE ASSESSMENT
Primary Range • Gas Distribution Pipework • Components • Valves and Fittings • Controlled Escape • Uncontrolled Escape **Secondary Range** • Metallic • Non-Metallic • ≤ 75 mbar pressure • > 75 mbar pressure • Temporary Repair • Permanent Repair	One Successful Assessment	Evidence of experience undertaking the satisfactory response and action is required across both primary and secondary ranges. Sourced from a minimum of 5 [1] separate repairs, the Learner must satisfy some (but not necessarily all) of the Assessment Criteria on each occasion. The sum total of collected evidence must cover all the Primary and Secondary Ranges At least 3 [1] of the occasions generating evidence must be from the workplace.	One Successful Assessment

Table Notes:

[1] The documented numbers required to be evidenced do include the assessment occasions.

6028-218 - Conduct specified testing of gas networks associated with leakage location

Unit assessment requirements

- Assessments must be carried out as documented in this table
- Learners must demonstrate sufficient evidence of competence through experience of satisfactorily undertaking the work activities documented across the full range. This shall be evidenced via the Learners Portfolio and be assessed as meeting the minimum documented requirements.

RANGE	RWE ASSESSMENT	ASSESSMENT OF EXPERIENCE	WORKPLACE ASSESSMENT
Primary Range • Gas Mains • Gas Services • Valves and Fittings • Components **Secondary Range** • Metallic • Non-Metallic • ≤ 75 mbar pressure • > 75 mbar pressure • Barholing • Surveying • Decay Testing	One Successful Assessment	Evidence of experience undertaking the satisfactory response and action is required across both primary and secondary ranges. Sourced from a minimum of 5 [1] separate testing occasions, the Learner must satisfy some (but not necessarily all) of the Assessment Criteria on each occasion. The sum total of collected evidence must cover all the Primary and Secondary Ranges At least 3 [1] of the occasions generating evidence must be from the workplace.	One Successful Assessment

Table Notes:

[1] The documented numbers required to be evidenced do include the assessment occasions.

6028-304 - Minimise Risks to Life, Property and the Environment during Gas Escapes

Unit assessment requirements

- Assessments must be carried out as documented in this table
- Learners must demonstrate sufficient evidence of competence through experience of satisfactorily undertaking the work activities documented across the full range. This shall be evidenced via the Learners Portfolio and be assessed as meeting the minimum documented requirements.

RANGE	RWE ASSESSMENT	ASSESSMENT OF EXPERIENCE	WORKPLACE ASSESSMENT
Primary Range: • Gas in Property • Persons at Risk • Environmental Risk • Controlled Escape • Uncontrolled Escape **Secondary Range:** • Evacuation • Ventilation • Forced Entry • Liaison with Third Parties	One Successful Assessment	Evidence of experience undertaking the satisfactory response and action is required across both primary and secondary ranges. Sourced from a minimum of 5 [1] separate occasions, the Learner must satisfy some (but not necessarily all) of the Assessment Criteria on each occasion. The sum total of collected evidence must cover all the Primary and Secondary Ranges At least 3 [1] of the occasions generating evidence must be from the workplace.	One Successful Assessment

Table Notes:

[1] The documented numbers required to be evidenced do include the assessment occasions.

6028-305 - Analyse and Interpret the results of surveys to determine the location of gas escapes

Unit assessment requirements

- Assessments must be carried out as documented in this table
- Learners must demonstrate sufficient evidence of competence through experience of satisfactorily undertaking the work activities documented across the full range. This shall be evidenced via the Learners Portfolio and be assessed as meeting the minimum documented requirements.

RANGE	RWE ASSESSMENT	ASSESSMENT OF EXPERIENCE	WORKPLACE ASSESSMENT
Primary Range: • Barhole Readings • Surveys • Decay Testing • Pressure Test Results **Secondary Range:** • Controlled Escape • Uncontrolled Escape • ≤ 75 mbar pressure • > 75 mbar pressure	One Successful Assessment	Evidence of experience undertaking the satisfactory response and action is required across both primary and secondary ranges. Sourced from a minimum of 5 [1] separate occasions, the Learner must satisfy some (but not necessarily all) of the Assessment Criteria on each occasion. The sum total of collected evidence must cover all the Primary and Secondary Ranges At least 3 [1] of the occasions generating evidence must be from the workplace.	One Successful Assessment

Table Notes:

[1] The documented numbers required to be evidenced do include the assessment occasions.

4.4 Realistic Work Environment (RWE)

All units can be assessed using observation in RWE, however a mixture of evidence from RWE and the workplace must be supplied for achievement of the units.

Where the network is being simulated, the pipework must be pressurised to a level consistent with the workplace and contain a suitable substance which replicates that which is contained in the workplace network.

4.5 New Roads and Streetworks Act (NRSWA) Observations

NRSWA observations can be used as evidence to contribute towards achievement of these units, however additional evidence from the workplace is required.

5 Units

Availability of units

The units for these qualifications follow. The learning outcomes and assessment criteria are also viewable on the Register of Regulated Qualifications **http://register.ofqual.gov.uk/**

Structure of units

The units in these qualifications are written in a standard format and comprise the following:

- City & Guilds reference number
- unit accreditation number (UAN)
- title
- level
- credit value
- unit aim
- relationship to NOS, other qualifications and frameworks
- endorsement by a sector or other appropriate body
- information on assessment
- learning outcomes which are comprised of a number of assessment criteria

Summary of units

City & Guilds unit	Title	QCF unit number (UAN)	Credits
101	Assist in locating and avoiding supply apparatus and sub structures	F/502/9663	2
102	Working under supervision, excavate holes and trenches in ground and pavement structures	L/502/9665	2
103	Assist in preparing for reinstatement of excavation and pavement surface	R/502/9666	2
104	Working under supervision, contribute to an efficient and effective work environment in gas network construction	A/503/0214	2
105	Working under supervision, contribute to health, safety and environment in the workplace during gas network construction	T/503/0213	2
106	Working under supervision, operate powered tools and equipment for network construction operations	Y/502/9670	2
107	Working under supervision, join polyethylene pipe by electrofusion welding	H/502/9672	2
108	Working under supervision, assemble components to meet specifications for gas network construction operations	M/503/0212	1
109	Assist in preparing resources and signing, lighting and guarding the area for highway works	K/502/9673	2

City & Guilds unit	Title	QCF unit number (UAN)	Credits
110	Assist in preparing resources and signing and guarding the area for site works	M/502/9674	2
111	Working under supervision, join polyethylene pipe by butt fusion welding	T/502/9675	2
201	Create an efficient and effective environment in Utilities Network Construction	R/503/0316	3
202	Maintain a safe and secure working environment in Utilities Network Construction	R/503/0669	3
203	Establish and maintain effective working relationships	A/503/0665	2
204	Install equipment for safe working on the highway for utilities network construction	A/503/0682	4
205	Install equipment for safe working on sites for utilities network construction	F/503/0683	3
206	Locate and avoid supply apparatus for utilities network construction	J/503/0684	4
207	Excavate and maintain holes and trenches for utilities network construction	L/503/0685	5
208	Reinstate excavation and pavement surfaces after utility network construction operations	R/503/0686	5
209	Operate powered tools and equipment for routine and predictable requirements on utilities network construction	Y/503/0687	4
210	Join materials by electrofusion processes on utilities network construction	F/503/0666	2
211	Joint materials by butt fusion processes on Utilities Network Construction, up to 180mm diameter	J/503/0667	2
212	Join materials by butt fusion processes on Utilities Network Construction, above 180mm diameter	L/503/0668	2
213	Install or replace external gas service risers	A/503/0696	8
214	Conduct specified testing of Gas network engineering products or assets - mains	F/503/0697	3
215	Conduct specified testing of Gas services	J/503/0698	2
216	Conduct specified connections to gas network mains and commissioning	L/503/0699	3
217	Restore gas network components to operational condition by repair	L/503/0671	2
218	Conduct specified testing of gas networks associated with leakage location	Y/503/0673	3
219	Disconnection of Gas Meters	T/503/0700	2
301	Install Gas services up to 63mm	T/503/0695	9
302	Install gas engineering products or assets up to 180mm	M/503/0694	13
304	Minimise risks to life, property and the environment during Gas escapes	R/503/0672	3
305	Analyse and interpret the results of surveys to determine the location of gas escapes	D/503/0674	3
306	Joint materials by fusion processes on utilities network construction, above 180mm diameter	J/506/4754	9

City & Guilds unit	Title	QCF unit number (UAN)	Credits
307	Decommissioning and abandonment of mains and services 63mm and above	H/506/0789	7
308	Install gas engineering products or assets above 355mm	L/506/4755	9
309	Install gas engineering products or assets above 180mm, up to and including 355mm	R/506/4756	7
310	Operate within the gas intermediate pressure range	Y/506/4757	3
311	Operate safely in emergency situations within the gas intermediate pressure range	D/506/4758	2

Unit 101 Assist in locating and avoiding supply apparatus and sub structures

Level: 1
Credit value: 2
URN: F/502/9663

Unit aim

This unit allows learners to demonstrate competence in assisting with location and avoidance of supply apparatus and sub-structures on site. Working under supervision at all times, and reporting to a team leader, learners must use appropriate search techniques to locate underground apparatus, identifying and avoiding risks of damage to services and danger to personnel. Learners must contribute to keeping records updated, and must work according to industry standards and specifications, following safe working practices.

Learning outcomes

There are **three** learning outcomes to this unit. The learner will:

1. Identify, mark and confirm the location of supply apparatus and sub-structures
2. Maintain the safety and integrity of supply apparatus and sub-structures
3. Demonstrate knowledge and understanding of location and avoidance of supply apparatus and sub-structures

Guided learning hours

It is recommended that **8** hours should be allocated for this unit, although patterns of delivery are likely to vary.

Details of the relationship between the unit and relevant national standards

This unit is linked to the following Energy & Utility Skills National Occupational Standards (NOS) for Network Construction Operations: NC0101 Assist in locating and avoiding supply apparatus and sub-structures.

Support of the unit by a sector or other appropriate body

This unit is endorsed by Energy & Utility Skills.

Assessment

This unit will be assessed by:

- Portfolio of evidence

Unit 101 Assist in locating and avoiding supply apparatus and sub structures

Outcome 1 Identify, mark and confirm the location of supply apparatus and sub-structures

Assessment criteria

The learner can:

1.1 Identify the extent of the work site from the work instructions and plans

1.2 Check that the position and type of **supply apparatus and sub-structures** are:

- accurately identified from records, surface evidence and **search techniques**
- marked on the work site in line with work instructions and relevant **Codes of Practice**.
- recorded in line with instructions and organisational requirements.

1.3 Report deviations in the position of equipment and identification of other structures according to instruction and organisational requirements.

1.4 Communicate the details of position and type of **supply apparatus and sub-structures** to relevant personnel in line with instruction and organisational requirements.

1.5 Refer problems and conditions outside their responsibility according to **approved procedures and practices.**

1.6 Carry out work to **approved procedures and practices** and in line with statutory requirements.

Range

Supply apparatus and sub-structures: the supply apparatus for utilities and other agencies; above ground services; built structures; the natural environment.

Search techniques: electronic location equipment; trial holes; visual examination; use of drawing and records.

Codes of Practice: statutory and regulatory as directed by the team leader.

Approved procedures and practices: Health, safety and environmental compliance; regulatory; emergency; operational; organisational; relevant company procedures, within the remit of learners responsibility.

Unit 101 Assist in locating and avoiding supply apparatus and sub structures

Outcome 2 Maintain the safety and integrity of supply apparatus and sub-structures

Assessment criteria

The learner can:

2.1 Ensure that working practices on site avoid damage to **supply apparatus and sub-structures.**

2.2 Ensure that exposed **supply apparatus and sub-structures** are supported correctly, safely and securely, relevant to their specification and in accordance with approved procedures.

2.3 Ensure appropriate precautions are taken to protect personnel and equipment from the consequent effects of damage to **supply apparatus and sub-structures** in accordance with **approved procedures and practices**.

2.4 Promptly report damage to **supply apparatus and sub-structures** to the appropriate authority and make the area safe, in accordance with **approved procedures and practices**.

2.5 Refer problems and conditions outside their responsibility in accordance with **approved procedures and practices.**

2.6 Ensure work is carried out to **approved procedures and practices** and in compliance with statutory requirements.

Range

Supply apparatus and sub-structures: the supply apparatus for utilities and other agencies; above ground services; built structures; the natural environment.

Approved procedures and practices: Health, safety and environmental compliance; regulatory; emergency; operational; organisational; relevant company procedures, within the remit of learners responsibility.

Unit 101 Assist in locating and avoiding supply apparatus and sub structures

Outcome 3 Demonstrate knowledge and understanding of location and avoidance of supply apparatus and sub-structures

Assessment criteria

The learner can:

3.1 Describe the different types of **supply apparatus and sub-structures** that may be encountered and exposed in excavation work.

3.2 Outline the key features of the medium being carried by the different types of supply apparatus (e.g. ignition characteristics, density relative to air, electrocution).

3.3 Describe the different types of natural and man-made features that may be encountered during excavation work, and the hazards associated with them.

3.4 Describe the different methods and markers, signs and features used to identify underground utilities and other agency apparatus and sub-structures.

3.5 Describe the basic **search techniques** for **supply apparatus and sub-structures**, including the use of:

- electronic location equipment
- trial holes
- visual examination
- drawings and records.

3.6 Describe how to ensure the accurate location of the required excavation by marking out.

3.7 Explain the possible outcomes of incorrect marking out of excavations, including:

- costs
- loss of time
- material wastage.

3.8 Describe the precautions to be taken during excavation work to avoid damage to concealed supply apparatus or sub-structures.

3.9 Outline the risks associated with maintaining the safety and integrity of **supply apparatus and sub-structures.**

3.10 Describe the possible effects of damage to the supply apparatus.

3.11 Explain the implications of damaging supply apparatus, including:

- personal danger to the personnel on site
- risks to the environment
- delays to job progress
- additional costs in repair.

3.12 Explain the importance of protecting and supporting **supply apparatus and sub-structures** services exposed during excavation work.

3.13 Give examples of how to provide appropriate temporary and permanent support for **supply apparatus and sub-structures** exposed during site excavations.

3.14 Describe the possible outcomes of leaving exposed **supply apparatus and sub-structures** unsupported.

3.15 Explain the basic requirements of **Codes of Practice** and guidance notes for locating and avoiding **supply apparatus and sub-structures**.

3.16 Outline the **approved procedures and practices** for the locating, marking and maintaining the integrity of **supply apparatus and sub-structures**.

3.17 State the roles and responsibilities of people involved in locating and avoiding supply apparatus and sub-structures.

3.18 Describe the importance of referring problems outside their responsibility or experience to the team leaders.

3.19 State the procedures for reporting to team leaders and others.

3.20 Outline the procedures for recording and reporting job progress, problems and deviations to work programmes.

3.21 Outline the main responsibilities of the employer and employee under the Health and Safety at Work Act.

3.22 State the safe procedures for:

- working in excavations
- handling the range of location equipment
- handling hazardous materials

3.23 Describe the legislative requirements and company procedures for recording and reporting accidents

3.24 List the different types of personal protective equipment used when locating and avoiding underground supply apparatus and sub-structures.

Range

Supply apparatus and sub-structures: the supply apparatus for utilities and other agencies; above ground services; built structures; the natural environment.

Search techniques: electronic location equipment; trial holes; visual examination; use of drawing and records.

Codes of Practice: statutory and regulatory as directed by the team leader.

Unit 102 Working under supervision, excavate holes and trenches in ground and pavement structures

Level: 1
Credit value: 2
URN: L/502/9665

Unit aim:
This unit allows learners to demonstrate their competence in preparing and carrying out the excavation of holes and trenches in ground and pavement structures. Working under supervision at all times, and reporting to a team leader, learners must show that they can follow instructions to excavate on site. Learners must follow safe working practices and protect utility supply apparatus and sub-structures.

Learning outcomes
There are **two** learning outcomes to this unit. The learner will:
1. Carry out excavations on site
2. Demonstrate knowledge and understanding of excavation on site

Guided learning hours
It is recommended that **8** hours should be allocated for this unit, although patterns of delivery are likely to vary.

Details of the relationship between the unit and relevant national standards
This unit is linked to the following Energy & Utility Skills National Occupational Standards (NOS) for Network Construction Operations: NC0102 Working under supervision, excavate holes and trenches in ground and pavement structures.

Support of the unit by a sector or other appropriate body
This unit is endorsed by Energy & Utility Skills.

Assessment
This unit will be assessed by:
- Portfolio of evidence.

Unit 102 Working under supervision, excavate holes and trenches in ground and pavement structures

Outcome 1 Carry out excavations on site

Assessment criteria

The learner can:

1.1 Identify the work site and area to be excavated from the work instructions and plans.

1.2 Determine which **excavation method** is suitable for the **surface and sub-surface** materials being removed and ensure it meets with relevant **Codes of Practice**.

1.3 Select **tools and equipment** and confirm they are suitable to the **excavation method**.

1.4 Confirm the position and **size of excavation** meets the requirements of instructions and the work specification.

1.5 Identify and select excavated materials, and segregate and store them in accordance with work instructions and relevant **Codes of Practice**.

1.6 Ensure the excavation is carried out in a manner that avoids damage to **supply apparatus and sub-structures.**

1.7 Ensure damage to the natural environment is minimised in line with the relevant technical guidance.

1.8 Identify, support and protect exposed **supply apparatus and sub-structures** in accordance with work instructions and relevant **Codes of Practice**.

1.9 Identify and report any damage to **supply apparatus and sub-structures** in accordance with work instructions and organisational procedures.

1.10 Ensure that surplus materials are removed in accordance with work instructions and requirements.

1.11 Confirm that the dimensions and condition of base of the excavation are in line with instructions and the works specification.

1.12 Ensure the work is carried out to **approved procedures and practices**.

1.13 Refer any problems and conditions outside their responsibility in line with **approved procedures and practices.**

Range

Excavation method: hand dig; machine dig

Surface and sub-surface: flexible; composite; rigid; modular; verge; natural ground

Codes of Practice: statutory and regulatory, as directed by the team leader

Tools and equipment: hand tools; powered tools; motorised equipment for excavation

Size of excavation: must be appropriate for the work activities being undertaken

Supply apparatus and sub-structures: supply apparatus for utilities and other agency apparatus and above ground services; built structures; the natural environment (eg foundations, tree roots, natural watercourses)

Approved procedures and practices: Health, safety and environmental compliance; regulatory; emergency; operational; organisational; relevant company procedures, within the remit of learners' responsibility.

Unit 102 Working under supervision, excavate holes and trenches in ground and pavement structures

Outcome 2 Demonstrate knowledge and understanding of excavation on site

Assessment criteria

The learner can:

2.1 Outline the circumstances where ground support would be needed.

2.2 State the causes of instability in excavated areas.

2.3 Describe the circumstances where excavation supports must be installed.

2.4 Describe how to identify the different types of pavement surface.

2.5 List the types of sub-surface materials used for the different pavement surfaces.

2.6 Describe the main **excavation methods**, including hand and machine methods.

2.7 list the different types and range of **tools and equipment** used for hand and machine excavation, including:

- hand tools
- power tools
- motorised equipment

2.8 Describe the hazards associated with working in excavations without natural or assisted ventilation

2.9 State when operator training or certification would be needed for the use of motorised excavation machinery.

2.10 Describe how to select, use and take care of hand and power tools.

2.11 State the essential maintenance required for hand and power tools.

2.12 List the types and function of the different **supply apparatus and sub-structures** that may be encountered during excavation work.

2.13 Describe how to identify the different types of supplies encountered during excavation work.

2.14 Identify the hazards associated with:

- leaks or damaged supply apparatus
- damage to electrical supply apparatus

2.15 Explain how failure to adequately support and protect **supply apparatus and sub-structures** can lead to:

- damage to supply apparatus and sub-structures
- the need for work to be re-done, with serious cost and operational implications
- major safety hazards.

2.16 State the implications of using incorrect excavation practices, including:

- types of damage to supply apparatus and sub-structures
- possible risks to safety
- possible cost implications.

2.17 Explain the implications of exceeding the minimum size for excavations, as determined by site requirements, including:

- safety implications
- costs of additional labour and materials for the job
- inconvenience to the general public or customer.

2.18 Explain how the use of incorrect materials could lead to:

- damage to the supply apparatus or sub-structure

- costs of re-doing work
- delays in the job programme
- costs of materials.

2.19 Explain why the incorrect storage of materials could make them unfit for use, and the related cost implications.

2.20 Explain the importance of economy when using powered or motorised equipment for excavation works.

2.21 Describe safe methods of storage or disposal of materials with a potential environmental hazard.

2.22 State the main requirements of Codes of Practice and guidance notes for excavation work in terms of:

- personal protection
- excavation activities
- the support of supply apparatus
- the support of excavations.

2.23 State how site and resource requirements are determined in accordance with approved **procedures and practices.**

2.24 State the roles and responsibilities of people involved in carrying out and supervising excavation operations.

2.25 Explain the importance of referring problems outside their responsibility to appropriate people.

2.26 Describe the procedures for recording and reporting to team leaders and others regarding:

- work progress
- problems
- deviations to work programmes.

2.27 Outline the main responsibilities of the employer and employee under the Health and Safety at Work Act for work in excavations.

2.28 State the legislation that governs work in excavations.

2.29 Describe safe procedures for:

- handling the range of **tools and equipment** for excavation, including hand and power tools.
- handling hazardous materials encountered during excavation work.

2.30 Outline the legislative requirements and company procedures for recording and reporting accidents.

2.31 List the personal protective equipment (PPE) used for excavation work.

Range

Excavation method: hand dig; machine dig

Tools and equipment: hand tools; powered tools; motorised equipment for excavation

Supply apparatus and sub-structures: supply apparatus for utilises and other agency apparatus and above ground services; built structures; the natural environment (eg foundations, tree roots, natural watercourses)

Approved procedures and practices: Health, safety and environmental compliance; regulatory; emergency; operational; organisational; relevant company procedures, within the remit of learners' responsibility.

Unit 103 Assist in preparing for reinstatement of excavation and pavement surfaces

Level: 1
Credit value: 2
URN: R/502/9666

Unit aim

This unit allows learners to demonstrate their competence in assisting in preparing for the reinstatement of excavations and the surfaces of highway and footway pavements. Working under supervision at all times, and reporting to a team leader, learners must show that they can interpret and follow instructions to plan and organise reinstatement activities. Learners must ensure that the appropriate fine fill sub-grade, sub-base and road-base materials are used and that suitable surface materials are selected. Safe working practices must be followed at all times.

Learning outcomes

There are **two** learning outcomes to this unit. The learner will:

1. Assist in preparing for reinstatement of excavation and pavement surfaces
2. Demonstrate knowledge and understanding of reinstatement of excavation and pavement surfaces

Guided learning hours

It is recommended that **9** hours should be allocated for this unit, although patterns of delivery are likely to vary.

Details of the relationship between the unit and relevant national standards

This unit is linked to the following Energy & Utility Skills National Occupational Standards (NOS) for Network Construction Operations: NC0103 Assist in preparing for reinstatement of excavation and pavement surfaces.

Support of the unit by a sector or other appropriate body

This unit is endorsed by Energy & Utility Skills.

Assessment

This unit will be assessed by:

- Portfolio of evidence

Unit 103 Assist in preparing for reinstatement of excavation and pavement surfaces

Outcome 1 Assist in preparing for reinstatement of excavation and pavement surfaces

Assessment criteria

The learner can:

1.1 Carry out the work to **approved procedures and practices** and in compliance with statutory requirements.

1.2 Identify and confirm the location of the excavation and the **extent of reinstatement** in accordance with instructions and work specifications.

1.3 Identify the **area and type of structure** for reinstatement in accordance with the relevant **Codes of Practice.**

1.4 Carry out **preparation procedures** for the reinstatement of excavation in accordance with the relevant **Codes of Practice**.

1.5 Report remedial work and defects in the excavation which are outside their level of responsibility, in accordance with organisational and operational procedures.

1.6 Identify and protect **supply apparatus and sub-structures** in accordance with the relevant **Codes of Practice**.

1.7 Identify, select, handle and store **materials** for reinstatement in accordance with relevant **Codes of Practice**.

1.8 Select and confirm that **tools and equipment** are appropriate for the **materials** to be used for reinstatement.

1.9 Identify that **tools and equipment** are in a condition suitable for use in accordance with the manufacturer's specifications and operational requirements.

1.10 Refer problems and conditions outside their responsibility in accordance with **approved procedures and practices.**

Range

Approved procedures and practices: Health, safety and environmental compliance; regulatory; emergency; operational; organisational; relevant company procedures, within the remit of the learners responsibility

Extent of reinstatement: excavations appropriate to the work activity

Area and type of structure: appropriate to the work activity

Codes of Practice: statutory and regulatory as directed by the team leader

Preparation procedures: edge trimming; formation surface removal; removal of loose debris; repair of formation

Supply apparatus and sub-structures: the supply apparatus for utilities and other agencies; above ground services; built structures; the natural environment (eg foundations, tree roots, natural watercourses)

Materials: new and re-usable materials for fine fill, backfill, sub-base, road-base pavement surfaces (relative to the type of pavement)

Tools and equipment: hand tools; powered tools; equipment for excavation

Unit 103 Assist in preparing for reinstatement of excavation and pavement surfaces

Outcome 2 Demonstrate knowledge and understanding of reinstatement of excavation and pavement surfaces

Assessment criteria

The learner can:

2.1 Name the different types of pavement structure including flexible, composite, rigid and modular pavement construction, verge and natural ground.

2.2 State **preparation procedures** including edge trimming, formation surface removal, removal of loose debris, repair formation.

2.3 List the sub-surface requirements for each type of pavement surface.

2.4 Name the various types of excavation.

2.5 List the **materials** in excavations and possible defects.

2.6 State the remedial actions to take when defects are encountered including advising the team leader.

2.7 State the importance of complying with team leader's safety and procedural instructions.

2.8 List the types of **supply apparatus and sub-structures** that may be encountered including utilities and other agencies.

2.9 List the methods of protecting the different types of supply apparatus and sub-structures.

2.10 State the methods of segregating the different **materials** including new and re-usable **materials** for fine fill, backfill, sub-base, road base, and pavement surface.

2.11 Describe the methods of checking the condition of material that is to be reused.

2.12 State the main characteristics of surface, sub-surface and general reinstatement materials including:

- suitable fine fill materials
- suitable back-fill materials
- granular sub-bases
- road base materials
- bituminous road base materials
- surfacing materials
- concrete
- modular surfacing.

Range

Preparation procedures: edge trimming; formation surface removal; removal of loose debris; repair of formation

Supply apparatus and sub-structures: the supply apparatus for utilities and other agencies; above ground services; built structures; the natural environment (eg foundations, tree roots, natural watercourses)

Materials: new and re-usable materials for fine fill, backfill, sub-base, road-base pavement surfaces (relative to the type of pavement)

Unit 104 Working under supervision, contribute to an efficient and effective work environment in gas network construction

Level: 1
Credit value: 2
URN: A/503/0214

Unit aim:
This unit allows learners to demonstrate their competence in contributing to an efficient and effective work environment, to support network construction operations. Learners will need to show that they exchange information and develop and maintain productive working relationships with colleagues, associates and visitors to the work site. Working at all times under supervision, and reporting to a team leader, they will also need to organise their own work, operating efficiently and effectively, to maintain work standards and to work as part of a team. Safe working practices must be followed at all times.

Learning outcomes
There are **six** learning outcomes to this unit. The learner will:
1. Be able to contribute to efficiency in the workplace
2. Be able to develop and maintain effective working relationships
3. Be able to organise work and maintain standards
4. Know health and safety guidance and legislation in gas network construction
5. Know tools, equipment and materials used in gas network construction
6. Understand how to maintain a safe and secure working environment

Guided learning hours
It is recommended that **7** hours should be allocated for this unit, although patterns of delivery are likely to vary.

Details of the relationship between the unit and relevant national standards
This unit is linked to the following Energy & Utility Skills National Occupational Standards (NOS) for Network Construction Operations: NCO104G Working under supervision, contribute to an efficient and effective work environment in gas network construction.

Support of the unit by a sector or other appropriate body
This unit is endorsed by Energy & Utility Skills.

Assessment
This unit will be assessed by:
- Portfolio of evidence

Unit 104 Working under supervision, contribute to an efficient and effective work environment in gas network construction

Outcome 1 Be able to contribute to efficiency in the workplace

Assessment criteria

The learner can:

1.1 Organise the work and operational area in an orderly way to minimise hazards

1.2 Use and store work materials in accordance with the work activity and to **approved procedures and practices**

1.3 Confirm tools and equipment are maintained ready for use and stored in designated places

1.4 Confirm any restrictions to progress of work are communicated to the appropriate person(s) for appropriate action

1.5 **Communicate** clearly in accordance with operational and organisational procedures

1.6 Report problems and conditions outside the responsibility of the job holder in accordance with **approved procedures and practices**

1.7 Confirm work is carried out to **approved procedures and practices** and in compliance with statutory requirements

Range

Approved procedures and practices: Health, Safety & Environment compliance; regulatory; emergency; operational; organisational; relevant company procedures, within the remit of the learners' responsibility.

Communicate: oral; visual; written

Unit 104 Working under supervision, contribute to an efficient and effective work environment in gas network construction

Outcome 2 Be able to develop and maintain effective working relationships

Assessment criteria

The learner can:

2.1 Treat work **colleagues and associates** in a manner that promotes goodwill and maintains good working practices

2.2 Respond to working requests positively and willingly

2.3 Support **colleagues and associates** who appear to be in work-related difficulties

2.4 Communicate effectively and respond to colleagues and associates in line with **approved procedures and practices**

2.5 Report problems and conditions outside their responsibility in line with **approved procedures and practices**

Range

Colleagues and associates: working personnel on a day-to-day basis; occasional site users; team leader.

Approved procedures and practices: Health, Safety & Environment compliance; regulatory; emergency; operational; organisational; relevant company procedures, within the remit of the learner's responsibility.

Unit 104 Working under supervision, contribute to an efficient and effective work environment in gas network construction

Outcome 3 Be able to organise work and maintain standards

Assessment criteria

The learner can:

3.1 Ensure work is organised to comply with instructions and the agreed schedules

3.2 Co-ordinate their work with other relevant personnel and related activities as required

3.3 Ensure suggestions for improvements to work methods are referred in accordance with **approved procedures and practices** for confirmation and agreement on the action to be taken

3.4 Carry out the work to the agreed **standards** and in accordance with the specification and the organisational policy

3.5 Report to the team leader any deviations in **standards** or specifications

3.6 Report any work which may be detrimental to safety or the environment to the appropriate person(s) in accordance with organisational and operational procedures

Range

Approved procedures and practices: Health, Safety & Environment compliance; regulatory; emergency; operational; organisational; relevant company procedures, within the remit of the learner's responsibility.

Standards: organisational; work specified; quality and quantity.

Unit 104 Working under supervision, contribute to an efficient and effective work environment in gas network construction

Outcome 4 Know health and safety guidance and legislation in gas network construction

Assessment criteria

The learner can:

4.1 State the **approved procedures and practices** for the work activity as directed by the team leader

4.2 Outline how to comply with the requirements of the Health and Safety at Work Act

4.3 Describe how to safely lift and handle the range of tools, equipment and materials

4.4 Identify hazardous materials and the precautions to take to deal with them

4.5 List the protective equipment appropriate to the range of work operations

4.6 Outline **approved procedures and practices** for reporting

Range

Approved procedures and practices: Health, Safety & Environment compliance; regulatory; emergency; operational; organisational; relevant company procedures, within the remit of the learner's responsibility.

Unit 104 Working under supervision, contribute to an efficient and effective work environment in gas network construction

Outcome 5 Know tools, equipment and materials used in gas network construction

Assessment criteria

The learner can:

5.1 Identify the different types of hand tools and equipment used for work activities
5.2 Describe how to **store tools and equipment**
5.3 List the different materials used for the work processes
5.4 Describe the main physical properties of the range of materials used in work operations
5.5 Identify **types of packaging** for the usual range of materials
5.6 Explain how the range of materials may be affected by weather conditions
5.7 Identify materials that pose a health hazard
5.8 Describe the residual and waste materials that can arise from work operations

Range

Store tools and equipment: storage arrangements and procedures, with and without external security arrangements; the importance of locking up stores; appropriate storage methods for the nature and characteristics of materials; methods of checking materials into and out of storage

Types of packaging: loose, bagged, containerised – volume/ weight of standard packages

Unit 104 Working under supervision, contribute to an efficient and effective work environment in gas network construction

Outcome 6 Understand how to maintain a safe and secure working environment

Assessment criteria

The learner can:

6.1 State the organisational and operational **standards** that apply to the work activity and environment
6.2 Identify ways of **communicating** during work activities
6.3 State the procedures for exchanging and recording information and reporting problems to the team leader
6.4 Identify **roles** of others involved in the work activities
6.5 Outline the responsibilities and authority of others who may visit or pass through the site
6.6 State how to organise work within the instructions advised by the team leader
6.7 List the different techniques used in the work activities
6.8 Outline industry best practice for the work activities
6.9 Describe the type of preparatory work that is required, including ensuring safety provisions
6.10 Describe the condition in which a finished work site should be left

Range

Standards: NJUG; NRSWA; Environmental Act 1990; HASAWA
Communicating: Oral; written; visual
Roles: other trades; management representatives; inspectorate

Unit 105 Working under supervision, contribute to health, safety and environment in the workplace during gas network construction

Level: 1
Credit value: 2
URN: T/503/0213

Unit aim:
This unit allows learners to demonstrate their competence in contributing to health, safety, the environment in the workplace gas network construction operations. Working at all times under supervision, and reporting to a team leader, learners must be able to identify hazards in the workplace, and deal with them appropriately, ensuring they are reported to the team leader or other relevant persons. Learners must be aware of their own responsibilities for health, safety and the environment in the workplace and must follow safe working and hygiene practices throughout their work activities. Learners must show that they have a basic understanding of emergency services and procedures and that they can respond appropriately to workplace emergencies. Learners must also contribute to workplace security procedures, and respond correctly to breaches of security involving damage or theft of plant, equipment materials and property.

Learning outcomes
There are **five** learning outcomes to this unit. The learner will:
1. Be able to operate safely in the workplace
2. Be able to respond to emergencies
3. Be able to assist in maintaining the security of the workplace
4. Know Health and Safety guidance and legislation in gas network construction
5. Understand emergency and security procedures in gas network construction

Guided learning hours
It is recommended that **12** hours should be allocated for this unit, although patterns of delivery are likely to vary.

Details of the relationship between the unit and relevant national standards
This unit is linked to the following Energy & Utility Skills National Occupational Standards (NOS) for Network Construction Operations: NCO105G Working under supervision, contribute to health, safety and environment in the workplace during gas network construction.

Support of the unit by a sector or other appropriate body
This unit is endorsed by Energy & Utility Skills

Assessment
This unit will be assessed by:
- Portfolio of evidence

Unit 105 Working under supervision, contribute to health, safety and environment in the workplace during gas network construction

Outcome 1 Be able to operate safely in the workplace

Assessment criteria

The learner can:

1.1 Confirm work activities are carried out safely to avoid creating hazardous situations that may endanger operators of the work and other personnel

1.2 Identify and confirm that **hazards** and potential **hazards** in the workplace are dealt with appropriately within the responsibility and capability of the work operator

1.3 Confirm that **communications** are clear and information or instruction is understood

1.4 Use all **tools and equipment** safely in accordance with organisational procedures, manufacturers' instructions and relevant statutory regulations

1.5 Handle and store work materials and components in accordance with **approved procedures and practices**

1.6 Confirm that manual handling is carried out safely using appropriate handling techniques

1.7 Report accidents and incidents promptly in accordance with **approved procedures and practices**

1.8 Use appropriate personal protective equipment in compliance with safe working practices

1.9 Confirm that work is carried out to **approved procedures and practices** and in compliance with statutory requirements

Range

Hazards: restrictions to access and egress; misuse of tools and equipment; faulty equipment; hazardous substances; interference with and from adjacent activities; obstructions; exposed apparatus, structures and services; flooding; wet or uneven surfaces; biological (infection); toxic, oxygen deficient and explosive atmospheres; risks from the general public.

Communications: oral; written; visual

Tools and equipment: hand tools and equipment; safety equipment required for work activities in hazardous areas

Approved procedures and practices: Health, Safety & Environment compliance; regulatory (including Construction Management Regulations, PUWER, LOLER, NRSWA, Control of Substances Hazardous to Health – COSHH); emergency; operational; organisational; relevant company procedures within the remit of the learner's responsibility; construction management regulations

Unit 105 Working under supervision, contribute to health, safety and environment in the workplace during gas network construction

Outcome 2 Be able to respond to emergencies

Assessment criteria

The learner can:

2.1 Use procedures correctly in accordance with recognised safe practice and organisational policy, in the event of an **emergency**

2.2 Promptly report and respond to accident(s) and incident(s) within the responsibility and capability of the work operator in accordance with **approved procedures and practices**

2.3 Use **emergency** appliances in accordance with **approved procedures and practices**

2.4 Confirm details of accident(s) and incident(s) are reported in accordance with **approved procedures and practices**

Range

Emergency: gas escapes; fire; toxic fumes; accidents; electrocutions; dangerous occurrences; explosion; gaseous atmospheres; flooding; pollution of the environment; structural or trench collapse; water contamination

Approved procedures and practices: Health, Safety & Environment compliance; regulatory (including Construction Management Regulations, PUWER, LOLER, NRSWA, Control of Substances Hazardous to Health – COSHH); emergency; operational; organisational; relevant company procedures within the remit of the learner's responsibility; construction management regulations

Unit 105 Working under supervision, contribute to health, safety and environment in the workplace during gas network construction

Outcome 3 Be able to assist in maintaining the security of the workplace

Assessment criteria

The learner can:

3.1 Confirm that unauthorised personnel seen in the workplace are dealt with in accordance with organisational procedures and the appropriate person(s) advised

3.2 Confirm that arrangements for **security** are observed and maintained in accordance with **approved procedures and practices**

3.3 Report potential risks to **security** promptly to the appropriate person(s) and remedial action taken as necessary in accordance with organisational procedures

3.4 Report breaches of **security** immediately in accordance with **approved procedures and practices**

3.5 Refer problems and conditions outside the responsibility of the job holder in accordance with **approved procedures and practices**

Range

Security: Personnel; property; the surrounding environment; operational area; plant and equipment

Approved procedures and practices: Health, Safety & Environment compliance; regulatory (including Construction Management Regulations, PUWER, LOLER, NRSWA, Control of Substances Hazardous to Health – COSHH); emergency; operational; organisational; relevant company procedures, within the remit of the learner's responsibility; construction Management Regulations

Unit 105 Working under supervision, contribute to health, safety and environment in the workplace during gas network construction

Outcome 4 Know Health and Safety guidance and legislation in gas network construction

Assessment criteria

The learner can:

4.1 State the definitions of a hazard and a risk

4.2 List the **hazards** arising from the **work activity and environment**

4.3 List the organisational and operational procedures for reporting **hazards** and reporting to the team leader

4.4 Identify examples of **tools and equipment** used in work activity including safety equipment for working in hazardous areas and with pipe coil trailers

4.5 Identify types of **materials** used in the work operations

4.6 Identify **approved procedures and practices** in the workplace

4.7 List the training and certification requirements for operating plant and equipment

4.8 List the recommended safety precautions and checks before, during and after work operations

4.9 Describe Safe lifting and handling techniques for the range of tools, equipment and materials

4.10 State the appropriate protective equipment for the range of work operations

4.11 Describe how to check personal protective equipment (PPE) is in safe condition

Range

Hazards: restrictions to access and egress; misuse of tools and equipment; faulty equipment; hazardous substances; interference with and from adjacent activities; obstructions; exposed apparatus, structures and services; flooding; wet or uneven surfaces; biological (infection); toxic, oxygen deficient and explosive atmospheres; risks from the general public.

Work activity and environment: traffic; activities of other trades; other services; working in confined spaces

Tools and equipment: hand tools and equipment; safety equipment required for work activities in hazardous areas

Materials: fuel and chemicals; cement; bitumen; lubricants

Approved procedures and practices: Health, Safety & Environment compliance; regulatory (including Construction Management Regulations, PUWER, LOLER, NRSWA, Control of Substances Hazardous to Health – COSHH); emergency; operational; organisational; relevant company procedures, within the remit of the learner's responsibility; construction Management Regulations

Unit 105 Working under supervision, contribute to health, safety and environment in the workplace during gas network construction

Outcome 5 Understand emergency and security procedures in gas network construction

Assessment criteria

The learner can:

5.1 Describe how to identify hazardous materials, including toxic fumes, dust, and the appropriate action to take

5.2 Outline fire and emergency procedures, including those actions required to safeguard life and property

5.3 Identify the different classification of fires and the appropriate extinguishers used for dealing with them associated in the workplace

5.4 State the procedures for reporting accidents and incidents

5.5 List the common types of personal accidents and health **emergencies** associated with the type of work to be carried out

5.6 Describe the actions to take in cases of personal accidents and health **emergencies**

5.7 Describe the company **security** policy and procedures and how, where and when they should be applied

5.8 Describe the actions to take in cases of breaches of **security**, acts of vandalism and theft

5.9 List potential **security** risks to themselves, colleagues, personnel, materials, equipment and the environment, including risks of contamination

5.10 Explain how to deal with unauthorised personnel

5.11 State their responsibilities under Health, Safety and Environment Act as it relates to their job role, including the importance of security of pipes and fittings

Range

Emergencies: gas escapes; fire; toxic fumes; accidents; electrocutions; dangerous occurrences; explosion; gaseous atmospheres; flooding; pollution of the environment; structural or trench collapse; water contamination

Security: Personnel; property; the surrounding environment; operational area; plant and equipment

Unit 106 Working under supervision, operate powered tools and equipment for network construction operations

Level: 1
Credit value: 2
URN: Y/502/9670

Unit aim:
This unit allows learners to demonstrate their competence in operating powered tools and equipment for network construction operations for routine activities. Working at all times under supervision, and reporting to a team leader, learners must follow regular safe working practices and procedures. Whether dealing with powered static equipment, hand-operated powered tools or designated small mobile plant, learners must show that they can operate safely and in line with manufacturers' instructions and specifications.

Learning outcomes
There are **four** learning outcomes to this unit. The learner will:
1. Prepare powered tools and equipment for use
2. Run and operate powered tools and equipment
3. Shut down and carry out post-stop checks on powered tools and equipment
4. Demonstrate knowledge and understanding of operating powered tools and equipment

Guided learning hours
It is recommended that **7** hours should be allocated for this unit, although patterns of delivery are likely to vary.

Details of the relationship between the unit and relevant national standards
This unit is linked to the following Energy & Utility Skills National Occupational Standards (NOS) for Network Construction Operations: NCO106 Working under supervision, operate powered tools and equipment for network construction operations.

Support of the unit by a sector or other appropriate body
This unit is endorsed by Energy & Utility Skills

Assessment
This unit will be assessed by:
- Portfolio of evidence

Unit 106 Working under supervision, operate powered tools and equipment for network construction operations

Outcome 1 Prepare powered tools and equipment for use

Assessment criteria

The learner can:

1.1 Ensure that **operations** requiring **powered tools and equipment** are identified and confirmed in accordance with the specifications and work instructions

1.2 Carry out pre-start inspections on the **powered tools and equipment** in line with **approved procedures and practices**

1.3 Ensure any defects of the **powered tools and equipment** are identified, recorded and appropriate action taken to correct them

1.4 Confirm the **powered tools and equipment** are safe, correct and ready for use to meet the work requirements and **approved procedures and practices**

1.5 Refer any problems and conditions outside their responsibility in line with **approved procedures and practices**

1.6 Carry out work to meet statutory requirements and **approved procedures and practices.**

Range

Operations: routine; predictable

Powered tools and equipment: hand operated; mobile and static (eg compressor, generator, water pump, vibro-tampers, vibrating plate, pavement and road saws); pneumatic or hydraulic breakers

Approved procedures and practices: Health, safety and environmental compliance; regulatory; emergency; operational; organisational; relevant company procedures within the remit of the learners' responsibility

Unit 106 Working under supervision, operate powered tools and equipment for network construction operations

Outcome 2 Run and operate powered tools and equipment

Assessment criteria

The learner can:

2.1 Carry out start and stop procedures to confirm functions are in accordance with safe control and the manufacturers' operating instructions

2.2 Run and operate **powered tools and equipment** to meet the work requirement

2.3 Carry out **operations** safely in line with specifications and **approved procedures and practices**

2.4 Ensure that defects in performance are identified, recorded and reported to the appropriate person(s)

2.5 Ensure the work is carried out to meet statutory requirements and **approved procedures and practices**

2.6 Refer any problems and conditions outside their responsibility in line with **approved procedures and practices**

Range

Powered tools and equipment: hand operated; mobile and static (eg compressor, generator, water pump, vibro-tampers, vibrating plate, pavement and road saws); pneumatic or hydraulic breakers

Operations: routine; predictable

Approved procedures and practices: Health, safety and environmental compliance; regulatory; emergency; operational; organisational; relevant company procedures within the remit of the learners' responsibility

Unit 106 Working under supervision, operate powered tools and equipment for network construction operations

Outcome 3 Shut down and carry out post-stop checks on powered tools and equipment

Assessment criteria

The learner can:

3.1 Safely stop **powered tools and equipment** in line with **approved procedures and practices**

3.2 Carry out post-stop checks in accordance with organisational and operational procedures

3.3 Ensure any defects and replacement needs identified after use are recorded and reported to the appropriate person(s)

3.4 Ensure the **powered tools and equipment** are left safe and secure in accordance with **approved procedures and practices**

3.5 Carry out the work to meet statutory requirements and **approved procedures and practices**

3.6 Refer any problems and conditions outside their responsibility in line with **approved procedures and practices**

Range

Powered tools and equipment: hand operated; mobile and static (eg compressor, generator, water pump, vibro-tampers, vibrating plate, pavement and road saws); pneumatic or hydraulic breakers

Approved procedures and practices: Health, safety and environmental compliance; regulatory; emergency; operational; organisational; relevant company procedures within the remit of the learners' responsibility

Unit 106 Working under supervision, operate powered tools and equipment for network construction operations

Outcome 4 Demonstrate knowledge and understanding of operating powered tools and equipment

Assessment criteria

The learner can:

4.1 Describe the purpose of the power tools and how they are to be used with the specified work requirement (e.g. compaction, excavation, cutting, finishing surfaces and removing materials)

4.2 List the types of powered tools and equipment used within their job role and work activities

4.3 Describe the work to be done and how the equipment will be used in accordance with manufacturers' specifications

4.4 Outline the operational and safety procedures associated with using the tools and equipment and how to ensure the safety of the **operations** and the surrounding environment

4.5 State the manufacturers' recommendations and relevant organisational and operational procedures for:

- routine checks
- pre-start checks
- requirements for the safety of the work and the surrounding environment
- handling **powered tools and equipment**
- starting and stopping the equipment
- post-stop checks on equipment after use
- routine and emergency shut down of equipment
- storing equipment after use

4.6 Outline the main **approved procedures and practices** to follow when operating **powered tools and equipment**

4.7 List the training and certification requirements for operating tools and equipment

4.8 State their responsibilities under the Health and Safety at Work Act

4.9 Outline the recommended safety precautions before, during, and after **operations** for:

- use of hats, ear protectors, eye protection, footwear, gloves and masks
- recognising the implications of toxic fumes, dust and hazardous materials to other personnel, adjacent activities and surrounding environment
- applying correct lifting and handling techniques.

4.10 Describe the operational safety procedures to observe when starting and stopping **powered tools and equipment**

4.11 Outline the manufacturers' recommendations and relevant company procedures when handling powered tools and equipment

4.12 Give examples of the different types of defects related to the types of tools and equipment being used

4.13 Outline the adjustments that can be made and how problems and damage are reported for operational problems with equipment, including

- broken or missing protective guards
- worn securing pins
- damaged hoses
- incorrectly fitted blades
- damaged power leads
- fuel leaks

4.14 State your responsibilities under the Health, Safety and Environment at work for:

- lifting and handling techniques
- use of personal protective equipment
- handling hazardous substances
- approved reporting procedures

4.15 Give examples of the typical types of damage and replacement needs for the **powered tools and equipment**

Range

Operations: routine; predictable

Powered tools and equipment: hand operated; mobile and static (eg compressor, generator, water pump, vibro-tampers, vibrating plate, pavement and road saws); pneumatic or hydraulic breakers

Approved procedures and practices: Health, safety and environmental compliance; regulatory; emergency; operational; organisational; relevant company procedures within the remit of the learners' responsibility

Unit 107 Working under supervision, join polyethylene pipe by electrofusion welding

Level: 1
Credit value: 2
URN: H/502/9672

Unit aim:
This unit allows learners to demonstrate their competence in jointing polyethylene pipes by electrofusion welding. Working under supervision at all times, and reporting to a team leader, learners must show that they can follow instructions to make socket and saddle joints using appropriate materials and SDR rating, in vertical and horizontal planes, both in and out of excavations, and working in all weather conditions. Learners must work according to industry standards and specifications and follow safe working practices at all times.

Learning outcomes
There are **two** learning outcomes to this unit. The learner will:
1. Working under supervision, join polyethlyene pipe by electrofusion welding
2. Demonstrate knowledge and understanding of electrofusion jointing

Guided learning hours
It is recommended that **7** hours should be allocated for this unit, although patterns of delivery are likely to vary.

Details of the relationship between the unit and relevant national standards
This unit is linked to the following Energy & Utility Skills National Occupational Standards (NOS) for Network Construction Operations: NCO107 Working under supervision, join materials by electrofusion welding.

Support of the unit by a sector or other appropriate body
This unit is endorsed by Energy & Utility Skills

Assessment
This unit will be assessed by:
- Portfolio of evidence

Unit 107 Working under supervision, join polyethylene pipe by electrofusion welding

Outcome 1 Working under supervision, join polyethlyene pipe by electrofusion welding

Assessment criteria

The learner can:

1.1 Comply with Health, Safety and Environment and other relevant regulations and guidelines.
1.2 Follow the relevant **jointing procedure** and job instructions.
1.3 Check that the joint preparation complies with the specification.
1.4 Check that **jointing and related equipment** and consumables are as specified and fit for purpose.
1.5 Make the **joints** as specified using the appropriate thermal jointing technique.
1.6 Produce **joints** of the required **quality** and of specified dimensional accuracy.
1.7 Shut down the **equipment** to a safe condition on completion of jointing activities.
1.8 Deal promptly with excess and waste materials and temporary attachments, in line with approved and agreed procedures.
1.9 Deal promptly and effectively with problems within your control and report those that cannot be solved.

Range

Jointing procedures: for services – electrofusion jointing up to and including 63 mm; for mains – electrofusion jointing up to and including 315 mm.

Jointing and related equipment: manual; automatic machines

Joints: socket; saddle

Quality: water industry standards; manufacturers' instructions and specifications; relevant company procedures; Codes of Practice; Health, Safety and Environment Compliance.

Unit 107 Working under supervision, join polyethylene pipe by electrofusion welding

Outcome 2 Demonstrate knowledge and understanding of electrofusion jointing

Assessment criteria

The learner can:

2.1 Outline the basic safety requirements for
- lifting and handling
- working in excavations
- working beside excavations
- working with electricity
- working alongside other plant
- working in gaseous atmospheres
- hazards arising from jointing operations.

2.2 Describe the joint preparation techniques and the importance of preparation complying with specifications.

2.3 Outline the electrofusion jointing process and procedures.

2.4 Describe how to select the correct materials for the **joints**.

2.5 Describe how to inspect the completed joints for defects.

2.6 Explain how to connect, shut down and disconnect equipment.

2.7 Explain what to do if a problem occurs and to whom it should be reported.

Range

Joints: socket; saddle

Unit 108 Working under supervision, assemble components to meet specifications for gas network construction operations

Level: 1
Credit value: 1
URN: M/503/0212

Unit aim:
This unit is designed to allow learners to demonstrate their competence in assembling pipes and fittings according to work instructions. Working at all times under supervision, and reporting to a team leader, they will show that they can use various assembly methods and techniques, including cutting, electrofusion welding, drilling and tapping and mechanical jointing on metallic and polyethylene materials. They will also show that they can produce assemblies using bolt, screwed, compression and flanged joints, to industry standards and specifications. Safe working practices must be followed at all times.

Learning outcomes
There are **two** learning outcomes to this unit. The learner will:
1. Be able to assemble components to meet specifications whilst working under supervision
2. Understand how to assemble components to meet specifications

Guided learning hours
It is recommended that **6** hours should be allocated for this unit, although patterns of delivery are likely to vary.

Details of the relationship between the unit and relevant national standards
This unit is linked to the following Energy & Utility Skills National Occupational Standards (NOS) for Network Construction Operations: NCO108G Working under supervision, assemble components to meet specifications.

Support of the unit by a sector or other appropriate body
This unit is endorsed by Energy & Utility Skills

Assessment
This unit will be assessed by:
- Portfolio of evidence

Unit 108 Working under supervision, assemble components to meet specifications for gas network construction operations

Outcome 1 Be able to assemble components to meet specifications whilst working under supervision

Assessment criteria

The learner can:

1.1 Work safely at all times, complying with Health, Safety and Environment requirements, technical guidance notes and other relevant regulations and guidelines

1.2 Follow the relevant instructions, assembly drawings and any other specifications

1.3 Ensure that the specified **components** are available and that they are in a usable condition

1.4 Use the appropriate **methods and techniques** to assemble the components in their correct positions

1.5 Secure the **components** using the specified connectors and securing devices

1.6 Check the completed **assembly** to ensure that all operations have been completed and the finished **assembly** meets the required specification

Range

Components: pipes; fittings

Methods and techniques: as per work instructions; cutting; drilling and tapping; mechanical jointing on metallic and polyethylene

Assembly: bolt; compression; flanged

Unit 108 Working under supervision, assemble components to meet specifications for gas network construction operations

Outcome 2 Understand how to assemble components to meet specifications

Assessment criteria

The learner can:

2.1 State the Health, Safety and Environment legislation and environmental procedures, Codes of practice and company procedures relevant to specific work activities, including
- manual handling
- use of equipment

2.2 Use basic drawings and related specifications as directed by the team leader

2.3 Describe basic **methods and techniques** associated with assembling **components**

2.4 Explain the need for **quality control procedures and accuracy**

2.5 Describe the various types of handling equipment and procedures associated with the work activity

2.6 Describe the correct preparation **techniques** for simple joints

2.7 Outline the tools and equipment required to carry out specific work activities

2.8 Explain the importance of looking after tools and equipment

2.9 Explain what to do in the event of a problem occurring

Range

Methods of techniques: as per work instructions; cutting; drilling and tapping; mechanical jointing on metallic and polyethylene

Components: pipes; fittings

Quality control procedures and accuracy: gas industry standards; manufacturers' instructions and specifications; relevant company procedures; Codes of Practice; Health, Safety and Environment Compliance; as directed by the team leader

Techniques: joints in line and level; under all weather conditions, in accordance with specifications

Unit 109 Assist in preparing resources and signing, lighting and guarding the area for highway works

Level: 1
Credit value: 2
URN: K/502/9673

Unit aim

This unit is designed to allow learners to demonstrate their competence in assisting with preparing resources and segregating the area for highways works. Working at all times under supervision, and reporting to a team leader, learners must show that they can interpret instructions, prepare materials, tools and equipment and install signs, lights and guards to segregate the work area in advance of site operations. Learners must follow safe working practices at all times and contribute to the protection of personnel, property and the working area.

Learning outcomes

There are **three** learning outcomes to this unit. The learner will:

1. Determine site and resource requirements for highway works
2. Install signs, lights and guarding requirements for work on the highway
3. Demonstrate knowledge and understanding of signing, lighting and guarding the work site

Guided learning hours

It is recommended that **8** hours should be allocated for this unit, although patterns of delivery are likely to vary.

Details of the relationship between the unit and relevant national standards

This unit is linked to the following Energy & Utility Skills National Occupational Standards (NOS) for Network Construction Operations: NCO109 Assist in preparing resources and segregating the area for highway works.

Support of the unit by a sector or other appropriate body

This unit is endorsed by Energy & Utility Skills

Assessment

This unit will be assessed by:

- Portfolio of evidence

Unit 109 Assist in preparing resources and signing, lighting and guarding the area for highway works

Outcome 1 Determine site and resource requirements for highway works

Assessment criteria

The learner can:

1.1 Confirm the location and extent of the work site according to instructions and specified requirements.

1.2 Report any shortages and defects of **materials, tools and equipment** in accordance with operational and organisational procedures.

1.3 Set out the work area in accordance with the specified requirements.

1.4 Identify any hazards and risks and take appropriate action to provide for the safety of the work area and the natural environment.

1.5 Confirm that **materials** supplies and **tools and equipment** are correct for the work requirement, in accordance with instructions and organisational procedures.

1.6 Maintain the security of **materials, tools and equipment** in line with instruction and organisational requirements.

1.7 Report any problems and conditions outside their responsibility in accordance with **approved procedures and practices**.

1.8 Carry out the work to **approved procedures and practices** and in compliance with statutory requirements.

Range

Materials: required for work activity; correct quality and quantity; backfill and sub-courses

Tools and equipment: hand tools; powered tools; motorised equipment for excavation; protection equipment for excavations (signs, lights, guards).

Approved practices and procedures: Health, Safety and Environmental compliance; regulatory; emergency; operational; organisational; relevant company procedures, within the remit of the learners' responsibility.

Unit 109 Assist in preparing resources and signing, lighting and guarding the area for highway works

Outcome 2 Install signs, lights and guarding requirements for work on the highway

Assessment criteria

The learner can:

2.1 Identify the safety and security requirements for the highways work site from the work instructions and specifications and in accordance with relevant **Codes of Practice**.

2.2 Set out and erect **protection equipment** in line with relevant **Codes of Practice**.

2.3 Confirm the positioning and condition of the **protection equipment** are satisfactory to the work requirement and meet the relevant **Codes of Practice**.

2.4 Ensure that the **traffic control equipment** is positioned, adjusted, maintained and controlled appropriate to the progress and changes of the work activity and in line with the work requirement and relevant **Codes of Practice**.

2.5 Report defective and damaged equipment to the appropriate person.

2.6 Remove **protection equipment** and **traffic control equipment** in accordance with relevant **Codes of Practice**.

2.7 Refer problems and conditions outside their responsibility in accordance with **approved procedures and practices**.

2.8 Carry out work to **approved procedures and practices** and in compliance with statutory requirements.

Range

Codes of Practice: statutory; regulatory, including New Roads and Street Works Act.

Protection equipment: signs; lights; guards

Traffic control equipment: warning signs; priority signs; Stop/Go boards; portable traffic signals

Approved practices and procedures: Health, Safety and Environmental compliance; regulatory; emergency; operational; organisational; relevant company procedures, within the remit of the learners' responsibility.

Unit 109 Assist in preparing resources and signing, lighting and guarding the area for highway works

Outcome 3 Demonstrate knowledge and understanding of signing, lighting and guarding the work site

Assessment criteria

The learner can:

3.1 Describe the main materials encountered in excavation work including:

- paving
- sub-surface
- general fill materials.

3.2 List the range of hand and powered tools used for excavations and reinstatement.

3.3 Describe the maintenance requirements for the range of hand and power tools used for excavation and reinstatement

3.4 Explain the importance of confirming that the work location has been correctly identified from verbal instructions

3.5 Describe the key requirements of an effective and safe work area

3.6 Identify common hazards in excavation and reinstatement work and appropriate safety precautions

3.7 Explain the methods of dealing with emergencies in excavations

3.8 Identify the range of safety equipment required for highways operations

3.9 Identify materials posing a health hazard and the appropriate methods of handling them safely

3.10 List the personal protective equipment for use in highways operations

3.11 Outline the main industry **approved procedures and practices** for preparing resources and signing, lighting and guarding the work site.

3.12 List the roles and responsibilities of persons within the highways operations team

3.13 State the roles and responsibilities of the different people on site

3.14 State the importance of referring to team leaders problems that are outside their area of responsibility.

3.15 Explain the importance of checking and reporting defects in signs, guards, lighting, and traffic control systems to the team leader

3.16 State the importance of complying with team leader's safety and procedural instructions

3.17 State the main responsibilities of the employer and employee under the Health and Safety at Work Act

3.18 Outline the main Health, Safety and Environment responsibilities of employer and employee engaged in highways operations

3.19 Outline the employer's responsibilities for providing a safe place of work, including appropriate safety equipment

3.20 Explain the employee's responsibility for safety of themselves and others

3.21 Outline the safe procedures for handling the range of signing, guarding, and lighting equipment used for highways works

3.22 Outline safe procedures for handling hazardous materials

3.23 Describe the accident recording and reporting procedures

3.24 State the procedure for reporting and recording job progress, problems and deviations to work programmes to the immediate team leader

3.25 Explain the actions to take in the event of an accident or emergency during operations on the highway

3.26 Outline the procedure for summoning the emergency services

3.27 List the range and purpose of personal protective equipment used during highways operations
3.28 Explain the importance of checking and reporting defects in personal protective equipment to the team leader
3.29 State the reason for using equipment to protect highways works.
3.30 List the different types of protection equipment and traffic control equipment.
3.31 List the types of guards used to protect highways works and how to position them relative to the work
3.32 Outline how to position and operate traffic controls under supervision.
3.33 Confirm how to follow instructions from the team leader to ensure the correct sequences for erection and dismantling of traffic control arrangements.
3.34 State the importance of cleaning signs and lights in the immediate work area during the course of highways works

Range

Approved practices and procedures: Health, Safety and Environmental compliance; regulatory; emergency; operational; organisational; relevant company procedures, within the remit of the learners' responsibility.

Unit 110 Assist in preparing resources and signing and guarding the area for site works

Level: 1
Credit value: 2
URN: M/502/9674

Unit aim:
This unit is designed to allow learners to demonstrate their competence in assisting with preparing resources and segregating the area for site works. Working at all times under supervision, and reporting to a team leader, learners must show that they can interpret instructions and prepare materials, tools and equipment for site operations. They must check that the correct resources are available for site operations, and check that equipment and materials are stored safely and securely. Learners must follow safe working practise at all times and contribute to the protection of personnel, property and the working area.

Learning outcomes
There are **two** learning outcomes to this unit. The learner will:
1. Determine the site and resource requirements for site works
2. Demonstrate knowledge and understanding of signing and guarding the area for site works

Guided learning hours
It is recommended that **8** hours should be allocated for this unit, although patterns of delivery are likely to vary.

Details of the relationship between the unit and relevant national standards
This unit is linked to the following Energy & Utility Skills National Occupational Standards (NOS) for Network Construction Operations: NCO110 Assist in preparing resources and signing and guarding the area for site works.

Support of the unit by a sector or other appropriate body
This unit is endorsed by Energy & Utility Skills.

Assessment
This unit will be assessed by:
- Portfolio of evidence

Unit 110 Assist in preparing resources and signing and guarding the area for site works

Outcome 1 Determine the site and resource requirements for site works

Assessment criteria

The learner can:

1.1 Locate and confirm the area for site works according to instructions and specified requirements.

1.2 Report any shortages and defects of **materials** and **tools and equipment** in accordance with operational and organisational procedures.

1.3 Set out the area for the site works in accordance with the specified requirement.

1.4 Identify any hazards and risks and take appropriate action to provide for the safety of the work area and the natural environment.

1.5 Confirm that the supplies of **materials, tools and equipment** are correct for the work requirement, in line with instructions and organisational requirements.

1.6 Maintain the security of **materials** and **equipment** in accordance with instruction and organisational requirements.

1.7 Ensure any problems and conditions outside their responsibility are referred in accordance with **approved procedures and practices**.

1.8 Carry out work to **approved procedures and practices** and in compliance with statutory requirements.

Range

Materials: required for the work activity; correct quality and quantity; backfill and sub-courses.

Tools and equipment: hand tools; powered tools; motorised equipment for excavation; protection equipment for excavations (signs, lights, guards).

Approved practices and procedures: Health, Safety and Environmental compliance; regulatory; emergency; operational; organisational; relevant company procedures, within the remit of the learners' responsibility.

Unit 110 Assist in preparing resources and signing and guarding the area for site works

Outcome 2 Demonstrate knowledge and understanding of signing and guarding the area for site works

Assessment criteria

The learner can:

2.1 Explain the importance of confirming that the work location is identified correctly from verbal instructions.

2.2 Describe the key requirements of an effective and safe work area.

2.3 List the main materials encountered in excavation work including paving, sub-surface and general fill **materials**.

2.4 List the different types and range of **tools and equipment** used for hand and machine excavation, including:

- hand tools
- power tools
- motorised equipment
- protection equipment for excavations.

2.5 State the essential maintenance required for hand and power tools.

2.6 Identify common hazards in excavation and reinstatement work and the appropriate safety precautions.

2.7 Describe how to deal with emergencies in excavations.

2.8 Identify the safety equipment required for site operations.

2.9 Give examples of materials which pose a health hazard and explain safe handling methods.

2.10 List the personal protective equipment (PPE) that would be required for site operations.

2.11 Explain the appropriate lifting and handling techniques for the **materials, tools and equipment** used.

2.12 Outline the **approved procedures and practices** for determining site and resource requirements.

2.13 List the people involved in site operations and their roles and responsibilities.

2.14 Outline the job control structures for site operations.

2.15 Describe the importance of referring problems outside their responsibility to team leaders.

2.16 Describe the procedures for recording and reporting to team leaders and others regarding:

- work progress
- problems
- deviations to work programmes.

2.17 Outline the Health, Safety and Environment responsibilities of the employer and employees engaged in site operations.

2.18 Outline the employer's responsibilities for providing a safe place of work, including appropriate safety equipment.

2.19 Describe the employee's responsibility for their own safety and the safety of others.

2.20 Outline the legislative requirements and company procedures for recording and reporting accidents

Range

Materials: required for the work activity; correct quality and quantity; backfill and sub-courses.

Tools and equipment: hand tools; powered tools; motorised equipment for excavation; protection equipment for excavations (signs, lights, guards).

Approved practices and procedures: Health, Safety and Environmental compliance; regulatory; emergency; operational; organisational; relevant company procedures, within the remit of the learners' responsibility.

Unit 111 Working under supervision, join polyethylene pipe by butt fusion welding

Level: 1
Credit value: 2
URN: T/502/9675

Unit aim:
This unit allows learners to demonstrate their competence in jointing polyethylene pipe by butt fusion welding. Working under supervision at all times, and reporting to a team leader, learners must show that they can follow instructions to make butt fusion joints in different positions, both in-line and level, and working in all weather conditions. Learners must work according to industry standards and specifications and follow safe working practices at all times.

Learning outcomes
There are **two** learning outcomes to this unit. The learner will:
1. Working under supervision, join polyethylene pipe by butt fusion welding
2. Demonstrate knowledge and understanding of butt fusion welding

Guided learning hours
It is recommended that **5** hours should be allocated for this unit, although patterns of delivery are likely to vary.

Details of the relationship between the unit and relevant national standards
This unit is linked to the following Energy & Utility Skills National Occupational Standards (NOS) for Network Construction Operations: NCO111 Working under supervision, join materials by butt fusion welding.

Support of the unit by a sector or other appropriate body
This unit is endorsed by Energy & Utility Skills

Assessment
This unit will be assessed by:
- Portfolio of Evidence

Unit 111 Working under supervision, join polyethylene pipe by butt fusion welding

Outcome 1 Working under supervision, join polyethylene pipe by butt fusion welding

Assessment criteria

The learner can:

1.1 Work safely at all times, complying with Health, Safety and Environment and other relevant regulations and guidelines.

1.2 Follow the relevant **jointing procedure** and work instructions.

1.3 Confirm that the machine is set up and operating correctly, ready for the **jointing process** to be carried out.

1.4 Check that the polyethylene pipe, components, consumables and **joint** preparation comply with specifications.

1.5 Carry out and monitor the machine operations in accordance with specifications and job instructions.

1.6 Achieve joints of the required **quality** and specified dimensional accuracy.

1.7 Deal promptly and effectively with problems within your control and report those that you cannot solve.

1.8 Shut down the equipment to a safe condition on conclusion of the jointing activities.

Range

Jointing procedure/process: butt fusion; automatic and fully automatic appropriate to the company procedures

Joint: butt

Quality: manufacturers' instructions and specifications; relevant company procedures; Codes of Practice; Health, Safety and Environment Compliance; calibration.

Unit 111 Working under supervision, join polyethylene pipe by butt fusion welding

Outcome 2 Demonstrate knowledge and understanding of butt fusion welding

Assessment criteria

The learner can:

2.1 Explain the Health, Safety and Environment legislation and environmental procedures relevant to the work activities, manual handling, and company procedures including standard checklists and Codes of Practice.

2.2 State the basic safety requirements for

- lifting and handling
- working in excavations
- working beside excavations
- working with electricity
- working alongside other plant
- working in gaseous atmospheres
- hazards arising from jointing operations.

2.3 Outline joint preparation techniques and the importance of preparation according to the specification.

2.13 Explain why only pipes of similar specifications (SDR) can be joined together.

2.14 Outline the jointing process and procedures.

2.6 Explain the cause and effect of defects and contamination, including:

- misalignment split defects
- inadequate bead
- excessive bead.

2.7 Outline why pipe support, alignment and protection is needed and the consequences of not providing this.

2.8 Describe how to select the correct materials for the joints.

2.9 Describe how to inspect completed joints for defects.

2.10 Explain how to connect, shut down and disconnect equipment.

2.11 Explain what to do if a problem occurs and who to report it to.

Unit 201 Create an efficient and effective environment in Utilities Network Construction

Level: 2
Credit value: 3
URN: R/503/0316

Unit aim:
The purpose of the unit is to assess the competence of individuals to recognised national occupational standards. This unit is designed to assess the competence of individuals required to create an efficient and effective work environment in Utilities Network Construction. It involves planning recourses, the work area and requires an understanding of the work activity. It includes working efficiently and effectively with other personnel.

Learning outcomes
There are **six** learning outcomes to this unit. The learner will:
1. Be able to work efficiently and effectively
2. Be able to organise their work and maintain standards to minimise hazards
3. Be able to use and communicate data and information
4. Be able to resolve problems that arise from work activities
5. Know health and safety guidance and legislation in utilities network construction operations
6. Understand how to create an efficient and effective environment in utilities network construction

Guided learning hours
It is recommended that **10** hours should be allocated for this unit, although patterns of delivery are likely to vary.

Details of the relationship between the unit and relevant national standards
This unit is linked to the following Energy & Utility Skills National Occupational Standards (NOS) for Network Construction Operations: MUNC001 Create an efficient and effective environment in utilities network construction.

Support of the unit by a sector or other appropriate body
This unit is endorsed by Energy & Utility Skills.

Assessment
This unit will be assessed by:
- Portfolio

Unit 201 Create an efficient and effective environment in Utilities Network Construction

Outcome 1 Be able to work efficiently and effectively

Assessment criteria

The learner can:

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

Unit 201 Create an efficient and effective environment in Utilities Network Construction

Outcome 2 Be able to organise their work and maintain standards to minimise hazards

Assessment criteria

The learner can

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**

Range

Approved procedures and practices: use of appropriate work methods; optimise the use of time; remove and dispose of waste and surplus materials

Standards and approved codes of practice: the agreed standards and specification; the organisational policy; approved procedures and practices; statutory requirements

Designated person: specified within work and health and safety procedures

Work process: any work which may be detrimental to safety or the environment; suggestions for improvements to work methods; any deviations in standards or specification

Unit 201 Create an efficient and effective environment in Utilities Network Construction

Outcome 3 Be able to use and communicate data and information

Assessment criteria

The learner can:

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

3.4 Use organisational information systems to record and store, data and information

Unit 201 Create an efficient and effective environment in Utilities Network Construction

Outcome 4 Be able to resolve problems that arise from work activities

Assessment criteria

The learner can:

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

Unit 201 Create an efficient and effective environment in Utilities Network Construction

Outcome 5 Know health and safety guidance and legislation in utilities network construction operations

Assessment criteria

The learner can:

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

Unit 201 Create an efficient and effective environment in Utilities Network Construction

Outcome 6 Understand how to create an efficient and effective environment in utilities network construction

Assessment criteria

The learner can:

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

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

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

Range

Approved procedures and practices: Environmental; organisational; regulatory; emergency; operational; company procedure

Categories and uses: materials used in carrying out the work; materials arising as a result of the work

Safe methods of handling and storing: disposal of residual or waste materials; recovery of reusable materials; approved reporting procedures

Range of materials: hazardous; non-hazardous

Packaging: loose; bagged; containerised; volume/weight of standard packages

Tools and equipment: hand tools; power tools; equipment for general and specific work activities.

Arrangements, designated places and working procedures: the need for securing high value/high risk equipment; storage compounds; security arrangements; lock up stores; methods of checking materials into and out of storage.

Means of communication: written; electronic; visual signals

Company policy: statutory; organisational; emergency

Work activity and sequence of events: how to collect information from plans, schedules, work programmes; the preparatory work required, including ensuring safely provisions are in place; the processes and work methods being used for the work activity; post- work activity to satisfactorily conclude the work activity; quality control being used for the work activity

Unit 202 Maintain a safe and secure working environment in utilities network construction

Level: 2
Credit value: 3
URN: R/503/0669

Unit aim

The purpose of this unit is to assess the competence of individuals to recognised national occupational standards. The unit supports workforce development and describes the competencies necessary to maintain a safe and secure working environment in Utilities Network Construction. It involves on-going monitoring during routine work. It requires taking steps to make safe any situations or work practices or referring them to designated people as specified in the work procedures. It includes being alert to, and assessing, risk or hazardous conditions, security breaches, the need to wear safety clothing, and an ability to follow procedures where emergencies arise.

Learning outcomes

There are **eight** learning outcomes to this unit. The learner will:

1. Be able to maintain the health and safety of themselves and others
2. Be able to maintain the safety and security of plant, equipment, and the working environment
3. Be able to respond to emergencies
4. Be able to use and communicate data and information
5. Be able to resolve problems that could affect health and safety
6. Know health and safety guidance and legislation in utilities network construction operations
7. Understand how to use information and communicate efficiently in network construction operations
8. Understand how to maintain a safe and secure working environment

Guided learning hours

It is recommended that **10** hours should be allocated for this unit, although patterns of delivery are likely to vary.

Details of the relationship between the unit and relevant national standards

This unit is linked to the following Energy & Utility Skills National Occupational Standards (NOS) for Network Construction Operations: MUNCG002 Maintain a safe and secure working environment in Utilities Network Construction

Support of the unit by a sector or other appropriate body

This unit is endorsed by Energy & Utility Skills.

Assessment

This unit will be assessed by:

- Portfolio

Unit 202 Maintain a safe and secure working environment in utilities network construction

Outcome 1 Be able to maintain the health and safety of themselves and others

Assessment criteria

The learner can:

1.1 Carry out site specific risk assessments for their area of work and review in accordance with company procedures

1.2 Select and wear PPE in the site specific risk assessment and company procedures

1.3 Ensure work activity is carried out in accordance with **approved practices and procedures**

1.4 Monitor site conditions/work activities and their potential to harm

- yourself
- other people
- the environment

1.5 Adjust working practices and other aspects of the workplace to ensure the safety of operatives

1.6 Handle hazards, accidental breakages and spillages promptly in accordance with safe **working practices** and organisational requirements

1.7 Comply with emergency procedures in the event of an emergency

Range

Approved practices and procedures: safe working practices; workplace policies; health and safety requirements

Working practices: any activities, procedures, use of materials or equipment and working techniques used in carrying out your job

Unit 202 Maintain a safe and secure working environment in utilities network construction

Outcome 2 Be able to maintain the safety and security of plant, equipment, and the working environment

Assessment criteria

The learner can:

2.1 Maintain in accordance with health and safety specifications, site specifications and safe **working practices**
- plant
- equipment
- hazardous locations
- safe access/egress

2.2 Store, maintain and use in accordance with safe **working practices** and organisational requirements safety clothing, PPE and health and safety equipment

2.3 Handle unauthorised personnel in the workplace in accordance with organisational procedures

2.4 Maintain site safety by routine health and safety checks

Range

Working practices: any activities, procedures, use of materials or equipment and working techniques used in carrying out your job

Unit 202 Maintain a safe and secure working environment in utilities network construction

Outcome 3 Be able to respond to emergencies

Assessment criteria

The learner can

3.1 Use the designated response procedures promptly in accordance with recognised safe practice and organisational policy
3.2 Respond to all accidents and emergencies that are within own capability and responsibility and report promptly to a **designated person**
3.3 Use emergency appliances in accordance with approved procedures and practices.

Range

Designated person
Those people specified within work and health and safety procedures

Unit 202 Maintain a safe and secure working environment in utilities network construction

Outcome 4 Be able to use and communicate data and information

Assessment criteria

The learner can:

4.1 Comply with procedures where operating as a lone worker

4.2 Report promptly, to the designated people, **potential hazards**

4.3 Report situations which have the potential to escalate and pose risks to people that emerge from visual inspections and monitoring data

4.4 Maintain accurate and up-to-date records that conform to health and safety specifications and safe **working practices** on routine matters and emergencies

4.5 Maintain audit trails of records for quality assurance purposes

4.6 Comply with the organisation's confidentiality policies.

Range

Potential hazards: Unsafe plant, equipment, hazardous locations outside own area of responsibility, high risk hazards outside own responsibility, emergencies, breaches of security

Working practices: any activities, procedures, use of materials or equipment and working techniques used in carrying out your job

Unit 202 Maintain a safe and secure working environment in utilities network construction

Outcome 5 Be able to resolve problems that could affect health and safety

Assessment criteria

The learner can:

5.1 Handle unsafe behaviour in accordance with the responsibilities of the job role and workplace procedures

5.2 Demonstrate how to resolve day-to-day problems within the responsibility of the job role

5.3 Refer matters outside the responsibility of the job role to designated people

Unit 202 Maintain a safe and secure working environment in utilities network construction

Outcome 6 Know health and safety guidance and legislation in utilities network construction operations

Assessment criteria

The learner can:

6.1 State the main responsibilities of the employer and employee under the Health and Safety at Work Act

6.2 Explain the health and safety guidance governing work in excavations

6.3 Describe the safe procedures for handling hazardous materials

6.4 Explain the organisational accident recording and reporting procedures

6.5 Identify the range and use of personal protective equipment for the work

Unit 202 Maintain a safe and secure working environment in utilities network construction

Outcome 7 Understand how to use information and communicate efficiently in network construction operations

Assessment criteria

The learner can:

7.1 Describe the organisational requirements for storing information and documentation
7.2 Explain the importance of supplying accurate information in a fit-for purpose format
7.3 Explain the importance of supplying information within identified timescales
7.4 Explain the importance of checking information received for accuracy, validity and meaning
7.5 Identify inaccurate information and resolve misunderstandings
7.6 Identify ways of recording verbal, written, and computerised information
7.7 Describe when verbal, written, and computerised information should be used
7.8 Explain how to interpret data in text, tabular and graphical formats
7.9 Explain how to use data storage systems
7.10 Explain the importance of storing information and documentation in the correct location
7.11 Explain the way information is utilised when operating the processing plant and the implications of its use

Unit 202 Maintain a safe and secure working environment in utilities network construction

Outcome 8 Understand how to maintain a safe and secure working environment

Assessment criteria

The learner can:

8.1 Describe duties for health and safety as defined by specific legislation covering job role, specific responsibilities and scope in job description
8.2 Identify hazards that may exist in the workplace
8.3 Explain the importance of remaining alert to the presence of hazards in the work place
8.4 Describe own job scope and responsibility for correcting risks
8.5 Explain the importance of dealing with risks and promptly, reporting risks
8.6 Explain the procedures for dealing with risks beyond the scope of own responsibility
8.7 Define the monitoring procedures for hazardous-area work
8.8 Explain the dangers associated with working in a confined space
8.9 Explain the emergency procedures to follow when working in a confined space
8.10 Explain the danger of work activities that could turn a relatively safe excavation into a confined space
8.11 Explain the workplace requirements and guidance on precautions.

Unit 203 Establish and maintain effective working relationships in utilities network construction

Level: 2
Credit value: 2
URN: A/503/0665

Unit aim

The purpose of this unit is to assess the competence of individuals to recognised national occupational standards. The unit supports workforce development and describes the competencies necessary to establish and maintain effective working relationships in Utilities Network Construction. It includes working effectively with work colleagues, the general public, local authorities, other utilities, job management and emergency services.

Learning outcomes

There are **five** learning outcomes to this unit. The learner will:

1. Be able to establish and maintain productive working relationships
2. Be able to use and communicate data and information
3. Be able to resolve problems that could damage effective working relationships
4. Know health and safety guidance and legislation in utilities network construction operations
5. Understand how to establish and maintain effective working relationships in utilities network construction

Guided learning hours

It is recommended that **5** hours should be allocated for this unit, although patterns of delivery are likely to vary.

Details of the relationship between the unit and relevant national standards

This unit is linked to the following Energy & Utility Skills National Occupational Standards (NOS) for Network Construction Operations: MUNC003 Establish and maintain effective working relationships in Utilities Network Construction

Support of the unit by a sector or other appropriate body

This unit is endorsed by Energy & Utility Skills.

Assessment

This unit is assessed by:

- Portfolio

Unit 203 Establish and maintain effective working relationships in utilities network construction

Outcome 1 Be able to establish and maintain productive working relationships

Assessment criteria

The learner can:

1.1 Demonstrate how to deal with **working relationships** appropriately
1.2 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.

Range

Working relationships: colleagues, associates, managers, supervisors, customers, outside bodies and members of the general public
Designated person: those people specified within work and health and safety procedures

Unit 203 Establish and maintain effective working relationships in utilities network construction

Outcome 2 Be able to use and communicate data and information

Assessment criteria

The learner can:

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

Unit 203 Establish and maintain effective working relationships in utilities network construction

Outcome 3 Be able to resolve problems that could damage effective working relationships

Assessment criteria

The learner can:

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

Range

Designated person: people specified within work and health and safety procedures

Unit 203 Establish and maintain effective working relationships in utilities network construction

Outcome 4 Know health and safety guidance and legislation in utilities network construction operations

Assessment criteria

The learner can:

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

Unit 203 Establish and maintain effective working relationships in utilities network construction

Outcome 5 Understand how to establish and maintain effective working relationships in utilities network construction

Assessment criteria

The learner can:

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
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.

Range

Types of personnel: work colleagues and associates, suppliers, contractors, other utilities, those working for statutory bodies, other organisations, other trades, representatives from statutory organisations
Other persons: other trades; representatives from statutory organisations
Method of communication: oral, written, electronic

Unit 204 Install equipment for safe working on the highway for utilities network construction

Level: 2
Credit value: 4
URN: A/503/0682

Unit aim

This unit allows learners to show that they have the skills and knowledge to install equipment for safe working on the highway during utilities network construction operations.

The learner must select appropriate signing, lighting, guarding and traffic control equipment for the site, according to the current Codes of Practice and legislation. They must prepare the appropriate types and quantities of materials and equipment for the works and maintain their safety and security. Learners must also show that they can communicate information to the relevant people and organisations throughout the operation and must resolve or refer problems that arise during highways works in line with their job responsibility.

Learning outcomes

There are **six** learning outcomes to this unit. The learner will:

1. Set out temporary signing, lighting and guarding traffic control equipment in line with industry Codes of Practice and current legislation
2. Prepare resources for highway works
3. Use and communicate data and information
4. Resolve problems which could arise from work on the highway
5. Demonstrate general knowledge and understanding for utilities network construction operations
6. Demonstrate knowledge and understanding of installing equipment for safe working on the highway

Guided learning hours

It is recommended that **25** hours should be allocated for this unit, although patterns of delivery are likely to vary.

Details of the relationship between the unit and relevant national standards

This unit is linked to the following Energy & Utility Skills National Occupational Standards (NOS) for Network Construction Operations: MUNC04 Install equipment for safe working on the highway for utilities network construction

Support of the unit by a sector or other appropriate body

This unit is endorsed by Energy & Utility Skills.

Assessment

This unit will be assessed by:

- Portfolio

Unit 204 Install equipment for safe working on the highway for utilities network construction

Outcome 1 Set out temporary signing, lighting and guarding traffic control equipment in line with industry Codes of Practice and current legislation

Assessment criteria

The learner can:

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.

Range

Characteristics and conditions of the carriageway: speed and volume of traffic; volume of pedestrian traffic; number and directions of lanes; proximity of other features such as junctions, railway crossings, pedestrian crossings, roundabouts, traffic lights.
Approved procedures and practices: environmental; statutory; regulatory; emergency; operational; health and safety; organisational and company procedures; risk assessments.
Hazards: traffic; weather; other activities
Control signs and protection equipment: traffic signs; cones; lights; barriers; traffic lights; stop and go boards.
Codes of Practice: statutory; regulatory, including New Roads and Street Works Act.

Unit 204 Install equipment for safe working on the highway for utilities network construction

Outcome 2 Prepare resources for highway works

Assessment criteria

The learner can:

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:

(a) the **materials and equipment** in storage.

(b) the security of **materials and equipment**.

Range

Materials and equipment: backfill and reinstatement materials; spoil; digging and hand tools; road breaking and cutting equipment; compaction equipment

Unit 204 Install equipment for safe working on the highway for utilities network construction

Outcome 3 Use and communicate data and information

Assessment criteria

The learner can:

3.1 use the work instructions and specifications:

(a) to determine the safety and security requirements for the area of the highways works.

(b) 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.

Range

Approved procedures and practices: environmental; statutory; regulatory; emergency; operational; health and safety; organisational and company procedures; risk assessments.

Designated personnel: those people specified within work and health and safety procedures

Unit 204 Install equipment for safe working on the highway for utilities network construction

Outcome 4 Resolve problems which could arise from work on the highway

Assessment criteria

The learner can:

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.

Range

Problems: traffic control; pedestrians; access to premises; equipment failure; materials shortage
Designated person: those people specified within work and health and safety procedures

Unit 204 Install equipment for safe working on the highway for utilities network construction

Outcome 5 Demonstrate general knowledge and understanding for utilities network construction operations

Assessment criteria

The leaner can:

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.

Unit 204 Install equipment for safe working on the highway for utilities network construction

Outcome 6 Demonstrate knowledge and understanding of installing equipment for safe working on the highway

Assessment criteria

The leaner can:

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:
(a) checking and reporting defects in signs, guards, lighting and traffic control systems.
(b) ensuring that defective equipment is taken out of use.

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:
(a) signs
(b) lights
(c) guards
(d) traffic controls.

6.8 describe guarding arrangements for highways works, including:
(a) the different types of guards used to protect highways works
(b) 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:
(a) warning signs
(b) priority signs
(c) stop/go boards
(d) portable traffic signals.

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.
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.

Range

Approved procedures and practices: environmental; statutory; regulatory; emergency; operational; health and safety; organisational and company procedures; risk assessments.

Unit 205 Install equipment for safe working on sites for utilities network construction

Level: 2
Credit value: 3
URN F/503/0683

Unit aim

This unit allows learners to show that they have the skills and knowledge to install equipment for safe working on site during utilities construction operations.

The learner must select appropriate safety equipment for the site, according to current Codes of Practice and legislation. They must prepare the appropriate types and quantities of materials and equipment for the works and maintain their safety and security. Learners must also show that they can communicate information to the relevant people and organisations throughout the operation and must resolve or refer problems that arise during site works in line with their job responsibility.

Learning outcomes

There are **six** learning outcomes to this unit. The learner will:

1. Prepare, segregate and protect the work site
2. Prepare resources for site works
3. Use and communicate data and information
4. Resolve problems which could arise from preparing the site and resource requirements
5. Demonstrate knowledge and understanding for utilities network construction operations
6. Demonstrate knowledge and understanding of installing equipment for safe working on site

Guided learning hours

It is recommended that **20** hours should be allocated for this unit, although patterns of delivery are likely to vary.

Details of the relationship between the unit and relevant national standards

This unit is linked to the following Energy & Utility Skills National Occupational Standards (NOS) for Network Construction Operations: MUNC05 Install equipment for safe working on site for utilities network construction

Support of the unit by a sector or other appropriate body

This unit is endorsed by Energy & Utility Skills.

Assessment

This unit will be assessed by:

- Portfolio.

Unit 205 Install equipment for safe working on sites for utilities network construction

Outcome 1 Prepare, segregate and protect the work site

Assessment criteria

The learner can:

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.

Range

Approved procedures and practices: environmental; statutory; regulatory; emergency; operational; health and safety; organisational and company procedures; risk assessments.

Hazards: traffic; weather; other activities

Control signs and protection equipment: traffic signs; cones; lights; barriers; traffic lights; stop and go boards.

Unit 205 Install equipment for safe working on sites for utilities network construction

Outcome 2 Prepare resources for site works

Assessment criteria

The learner can:

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

(a) the **materials and equipment** in storage

(b) the security of **materials and equipment**.

Range

Materials and equipment: backfill and reinstatement materials; spoil; digging and hand tools; road breaking and cutting equipment; compaction equipment.

Unit 205 Install equipment for safe working on sites for utilities network construction

Outcome 3 Use and communicate data and information

Assessment criteria

The learner can:

3.1 use information in the work instructions and specified requirements to locate the work site.

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.

Range

Approved procedures and practices: environmental; statutory; regulatory; emergency; operational; health and safety; organisational and company procedures; risk assessments.

Unit 205 Install equipment for safe working on sites for utilities network construction

Outcome 4 Resolve problems which could arise from preparing the site and resource requirements

Assessment criteria

The learner can:

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

Range

Materials and equipment: backfill and reinstatement materials; spoil; digging and hand tools; road breaking and cutting equipment; compaction equipment.

Problems: traffic control; pedestrians; access to premises; equipment failure; materials shortage.

Unit 205 Install equipment for safe working on sites for utilities network construction

Outcome 5 Demonstrate knowledge and understanding for utilities network construction operations

Assessment criteria

The learner can:

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.

Unit 205 Install equipment for safe working on sites for utilities network construction

Outcome 6 Demonstrate knowledge and understanding of installing equipment for safe working on site

Assessment criteria

The learner can:

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:

(a) job progress

(b) problems

(c) 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.

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.

Unit 206 Locate and avoid supply apparatus for utilities network construction

Level: 2
Credit value: 4
URN: J/503/0684

Unit aim

This unit allows learners to show that they have the skills and knowledge to locate and avoid supply apparatus during utilities network construction operations. The learner will be able to use appropriate search and detection methods to identify the supply apparatus for utilities and other agencies, and to mark them on the site prior to excavation. Learners must identify and avoid risks of damage to services and danger to personnel and must follow safe working practices throughout the operation. Learners must also show that they can communicate information to the relevant people and organisations throughout location and avoidance activities, and must resolve or refer problems that arise during the work in line with their job responsibility.

Learning outcomes

There are **eight** learning outcomes to this unit. The learner will:

1. Locate supply apparatus
2. Maintain the safety and integrity of supply apparatus
3. Use and communicate data and information
4. Resolve problems which could arise from work on the highway
5. Demonstrate general knowledge and understanding for utilities network construction operations
6. Demonstrate knowledge and understanding of the different types of utility apparatus
7. Demonstrate knowledge and understanding of equipment and techniques used for locating supply apparatus
8. Demonstrate knowledge and understanding of roles, responsibilities and communication requirements for locating utilities apparatus

Guided learning hours

It is recommended that **25** hours should be allocated for this unit, although patterns of delivery are likely to vary.

Details of the relationship between the unit and relevant national standards

This unit is linked to the following Energy & Utility Skills National Occupational Standards (NOS) for Network Construction Operations: MUNC06 Locate and avoid supply apparatus for utilities network construction.

Support of the unit by a sector or other appropriate body

This unit is endorsed by Energy & Utility Skills.

Assessment

This unit will be assessed by:

- Portfolio.

Unit 206 Locate and avoid supply apparatus for utilities network construction

Outcome 1 Locate supply apparatus

Assessment criteria

The learner can:

1.1 use work instructions and interpret utility plans to determine the extent of the work site 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 work site 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.

Range

Supply apparatus: relevant for utilities and other agencies including cables, metal pipes and non-metallic pipes; above and below ground services; built structures (eg foundations); the natural environment (eg tree roots, natural watercourses).

Search techniques: electronic location in following modes: with and without generator, induction, connection, radio, power; trial holes; visual examination; use of drawing and records.

Codes of Practice: statutory; regulatory, including New Roads and Street Works Act.

Approved procedures and practices: environmental; statutory; regulatory; emergency; operational; health and safety; organisational and company procedures; risk assessments.

Unit 206 Locate and avoid supply apparatus for utilities network construction

Outcome 2 Maintain the safety and integrity of supply apparatus

Assessment criteria

The learner can:

2.1 maintain the position and condition of **supply apparatus** within the work site 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:
(a) the latest specifications
(b) statutory regulations
(c) company **Codes of Practice**.

Range

Supply apparatus: relevant for utilities and other agencies including cables, metal pipes and non-metallic pipes; above and below ground services; built structures (eg foundations); the natural environment (eg tree roots, natural watercourses).

Codes of Practice: statutory; regulatory, including New Roads and Street Works Act.

Approved procedures and practices: environmental; statutory; regulatory; emergency; operational; health and safety; organisational and company procedures; risk assessments.

Unit 206 Locate and avoid supply apparatus for utilities network construction

Outcome 3 Use and communicate data and information

Assessment criteria

The learner can:

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.

Unit 206 Locate and avoid supply apparatus for utilities network construction

Outcome 4 Resolve problems which could arise from work on the highway

Assessment criteria

The learner can:

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**.

Range

Supply apparatus: relevant for utilities and other agencies including cables, metal pipes and non-metallic pipes; above and below ground services; built structures (eg foundations); the natural environment (eg tree roots, natural watercourses).

Approved procedures and practices: environmental; statutory; regulatory; emergency; operational; health and safety; organisational and company procedures; risk assessments.

Unit 206 Locate and avoid supply apparatus for utilities network construction

Outcome 5 Demonstrate general knowledge and understanding for utilities network construction operations

Assessment criteria

The learner can:

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.

Unit 206 Locate and avoid supply apparatus for utilities network construction

Outcome 6 Demonstrate knowledge and understanding of the different types of utility apparatus

Assessment criteria

The learner can:

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** (e.g. identification tape).

6.6 describe the possible effects of damage to the **supply apparatus**.

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.

Range

Supply apparatus: relevant for utilities and other agencies including cables, metal pipes and non-metallic pipes; above and below ground services; built structures (eg foundations); the natural environment (eg tree roots, natural watercourses).

Unit 206 Locate and avoid supply apparatus for utilities network construction

Outcome 7 Demonstrate knowledge and understanding of equipment and techniques used for locating supply apparatus

Assessment criteria

The learner can:

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.
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.

Range

Supply apparatus: relevant for utilities and other agencies including cables, metal pipes and non-metallic pipes; above and below ground services; built structures (eg foundations); the natural environment (eg tree roots, natural watercourses).

Unit 206 Locate and avoid supply apparatus for utilities network construction

Outcome 8 Demonstrate knowledge and understanding of roles, responsibilities and communication requirements for locating utilities apparatus

Assessment criteria

The learner can:

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 programmes.

8.7 outline the roles and responsibilities of the various organisations involved location work and how to liaise with them effectively.

Range

Supply apparatus: relevant for utilities and other agencies including cables, metal pipes and non-metallic pipes; above and below ground services; built structures (eg foundations); the natural environment (eg tree roots, natural watercourses).

Unit 207 Excavate and maintain holes and trenches for utilities network construction

Level: 2
Credit value: 5
URN: L/503/0685

Unit aim

This unit allows learners to show that they have the skills and knowledge to excavate holes and trenches for utilities network operations.

The learner will be able to confirm the requirements for excavation on site and select and use the most appropriate tools and equipment for the specified excavation activity. Learners must confirm the excavation requirements with the work specification and minimise damage to supply apparatus and the natural environment during the operation. The learner will be able to maintain the integrity of the excavation and maintain access and egress arrangements in line with safety requirements. Learners must also show that they can communicate information to the relevant people and organisations throughout excavation activities, and must resolve or refer problems that arise during the work in line with their job responsibility. Throughout the operation, the learner must follow the work specification and Codes of Practice, and must maintain safe working procedures.

Learning outcomes

There are **nine** learning outcomes to this unit. The learner will:

1. Excavate on site to requirements
2. Maintain the integrity of the excavation
3. Use and communicate data and information
4. Resolve problems which could arise from excavation work
5. Demonstrate general knowledge and understanding for utilities network construction operation
6. Demonstrate knowledge and understanding of how excavation work must be carried out to comply with legal and industry requirements
7. Demonstrate knowledge and understanding of excavating in a variety of situations using different techniques and equipment
8. Demonstrate knowledge and understanding of the tools and equipment used in the course of excavation activities
9. Demonstrate knowledge and understanding of responsibilities to others during excavation work

Guided learning hours

It is recommended that **35** hours should be allocated for this unit, although patterns of delivery are likely to vary.

Details of the relationship between the unit and relevant national standards

This unit is linked to the following Energy & Utility Skills National Occupational Standards (NOS) for Network Construction Operations: MUNC07 Excavate holes and trenches for utilities network construction.

Support of the unit by a sector or other appropriate body

This unit is endorsed by Energy & Utility Skills.

Assessment

This unit will be assessed by:

- Portfolio.

Unit 207 Excavate and maintain holes and trenches for utilities network construction

Outcome 1 Excavate on site to requirements

Assessment criteria

The learner can:

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.
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.

Range

Approved procedures and practices: environmental; statutory; regulatory; emergency; operational; health and safety; organisational and company procedures; risk assessments.

Supply apparatus: supply apparatus for utilities and other agencies; above and below ground services; built structures (eg foundations); the natural environment (eg tree roots, natural watercourses).

Surface and sub-surface: flexible, composite, rigid and modular pavement construction; verge; natural ground.

Unit 207 Excavate and maintain holes and trenches for utilities network construction

Outcome 2 Maintain the integrity of the excavation

Assessment criteria

The learner can:

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.

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.

Range

Approved procedures and practices: environmental; statutory; regulatory; emergency; operational; health and safety; organisational and company procedures; risk assessments.

Unit 207 Excavate and maintain holes and trenches for utilities network construction

Outcome 3 Use and communicate data and information

Assessment criteria

The learner can:

3.1 use the information in the work instructions and specification to determine the work site 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.

Range

Approved procedures and practices: environmental; statutory; regulatory; emergency; operational; health and safety; organisational and company procedures; risk assessments.

Unit 207 Excavate and maintain holes and trenches for utilities network construction

Outcome 4 Resolve problems which could arise from excavation work

Assessment criteria

The learner can:

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.

Range

Supply apparatus: supply apparatus for utilities and other agencies; above and below ground services; built structures (eg foundations); the natural environment (eg tree roots, natural watercourses).

Unit 207 Excavate and maintain holes and trenches for utilities network construction

Outcome 5 Demonstrate general knowledge and understanding for utilities network construction operations

Assessment criteria

The learner can:

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..

Unit 207 Excavate and maintain holes and trenches for utilities network construction

Outcome 6 Demonstrate knowledge and understanding of how excavation work must be carried out to comply with legal and industry requirements

Assessment criteria

The learner can:

6.1 outline how **activities 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 involved in excavation**.

Range

Activities involved in excavation: assessment of risk; personal protection; excavation activities; the support of supply apparatus; the support of excavations; the competence of personnel; care for the environment; provision and use of equipment; reporting of accidents; dealing with hazardous materials and substances.

Unit 207 Excavate and maintain holes and trenches for utilities network construction

Outcome 7 Demonstrate knowledge and understanding of excavating in a variety of situations using different techniques and equipment

Assessment criteria

The learner can:

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.
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.

Range

Methods of excavation: by hand; by machine

Consequences and implications: other utilities; cost of operation; time; customers; members of the public; colleagues and other workers; scale of activity.

Excavation support systems: timber; steel; mechanical

Unit 207 Excavate and maintain holes and trenches for utilities network construction

Outcome 8 Demonstrate knowledge and understanding of the tools and equipment used in the course of excavation activities

Assessment criteria

The learner can:

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.

Unit 207 Excavate and maintain holes and trenches for utilities network construction

Outcome 9 Demonstrate knowledge and understanding of responsibilities to others during excavation work

Assessment criteria

The learner can:

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**.

Range

Detail of excavation activities: job progress; problems; deviations from the programme of work

Unit 208 Reinstate excavation and pavement surfaces after utility network construction operations

Level: 2
Credit value: 5
URN: R/503/0686

Unit aim

This unit allows learners to show that they have the skills and knowledge to reinstate excavations and pavement surfaces following utilities network construction operations.

The learner will be able to confirm the requirements and prepare for reinstating excavations and select and use the most appropriate tools, equipment and materials for the required reinstatement activity. They must confirm that all materials and equipment are fit for purpose and complete the reinstatement, replacing ironwork, kerbs and edge restraints in line with requirements. Learners must also show that they can communicate information to the relevant people and organisations throughout reinstatement activities and must resolve or refer problems that arise during the work in line with their job responsibility. Throughout the operation, the learner must follow the work specification and Codes of Practice, and must maintain safe working procedures.

Learning outcomes

There are **nine** learning outcomes to this unit. The learner will:

1. Prepare for reinstatement of excavation and pavement surface
2. Carry out reinstatement of excavation and pavement surface
3. Use and communicate data and information
4. Resolve problems which could arise from reinstatement work
5. Demonstrate general knowledge and understanding for utilities network construction operations
6. Demonstrate knowledge and understanding of plant and equipment used for reinstatement activities
7. Demonstrate knowledge and understanding of legislation and best practice for reinstatement operations
8. Demonstrate knowledge and understanding of reinstatement activities
9. Demonstrate knowledge and understanding of other agencies, utilities, their apparatus and communication requirements

Guided learning hours

It is recommended that **35** hours should be allocated for this unit, although patterns of delivery are likely to vary.

Details of the relationship between the unit and relevant national standards

This unit is linked to the following Energy & Utility Skills National Occupational Standards (NOS) for Network Construction Operations: MUNC08 Reinstate excavation and pavement surfaces after utilities network construction.

Support of the unit by a sector or other appropriate body

This unit is endorsed by Energy & Utility Skills.

Assessment

This unit will be assessed by:

- Portfolio

Unit 208 Reinstate excavation and pavement surfaces after utility network construction operations

Outcome 1 Prepare for reinstatement of excavation and pavement surface

Assessment criteria

The learner can:

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.

1.10 confirm that tools and equipment are:

(a) appropriate for the materials to be used in reinstatement

(b) 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

Range

Area for reinstatement: flexible pavement construction; composite pavement construction; rigid pavement construction; modular pavement construction; verge/natural ground

Supply apparatus and sub-structures: supply apparatus for utilities and other agencies; above and below ground services; built structures (eg foundations); the natural environment (eg tree roots, natural watercourses)

Approved procedures and practices: environmental; statutory; regulatory; emergency; operational; health and safety; organisational and company procedures; risk assessments

Unit 208 Reinstate excavation and pavement surfaces after utility network construction operations

Outcome 2 Carry out reinstatement of excavation and pavement surface

Assessment criteria

The learner can:

2.1 confirm that materials to be used for reinstatement are fit for purpose and meet statutory and regulatory Codes of Practice, including:

(a) new and reusable materials for backfill, sub-base, road-base and pavement surface

(b) 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.

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 work site conform to statutory and regulatory Codes of Practice.

Unit 208 Reinstate excavation and pavement surfaces after utility network construction operations

Outcome 3 Use and communicate data and information

Assessment criteria

The learner can:

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 work site 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.

Unit 208 Reinstate excavation and pavement surfaces after utility network construction operations

Outcome 4 Resolve problems which could arise from reinstatement work

Assessment criteria

The learner can:

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.

Range

Supply apparatus and sub-structures: supply apparatus for utilities and other agencies; above and below ground services; built structures (eg foundations); the natural environment (eg tree roots, natural watercourses)

Unit 208 Reinstate excavation and pavement surfaces after utility network construction operations

Outcome 5 Demonstrate general knowledge and understanding for utilities network construction operations

Assessment criteria

The learner can:

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.

Unit 208 Reinstate excavation and pavement surfaces after utility network construction operations

Outcome 6 Demonstrate knowledge and understanding of plant and equipment used for reinstatement activities

Assessment criteria

The learner can:

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.
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.

Unit 208 Reinstate excavation and pavement surfaces after utility network construction operations

Outcome 7 Demonstrate knowledge and understanding of legislation and best practice for reinstatement operations

Assessment criteria

The learner can:

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.

Range

Approved procedures and practices: environmental; statutory; regulatory; emergency; operational; health and safety; organisational and company procedures; risk assessments

Reinstatement activities: personal protection; handling and operating equipment; provision and use of equipment; working with hazardous substances; excavation and reinstatement

Unit 208 Reinstate excavation and pavement surfaces after utility network construction operations

Outcome 8 Demonstrate knowledge and understanding of reinstatement activities

Assessment criteria

The learner can:

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.

Range

Reinstatement surfaces: flexible; composite; rigid; modular; cold-lay bituminous material; verge/natural ground

Preparation procedures: edge trimming; surface formation; removal of loose debris; repair information

Types of materials: backfill; sub-base; road-base; pavement surface

Surface, sub-surface and general reinstatement materials: fine fill materials; backfill materials; granular sub-bases; cement bound excavated material; road-base materials; bituminous road-based materials; surfacing materials; concrete footways; modular surfacing; cold lay

Unit 208 Reinstate excavation and pavement surfaces after utility network construction operations

Outcome 9 Demonstrate knowledge and understanding of other agencies, utilities, their apparatus and communication requirements

Assessment criteria

The learner can:

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.

Range

Supply apparatus and sub-structures: supply apparatus for utilities and other agencies; above and below ground services; built structures (eg foundations); the natural environment (eg tree roots, natural watercourses)

Unit 209 Operate powered tools and equipment for routine and predictable requirements on utilities network construction

Level: 2
Credit value: 4
URN: Y/503/0687

Unit aim
This unit allows learners to show that they have the skills and knowledge to operate powered tools and equipment during utilities construction operations.

Learners must show that they can communicate information to the relevant people and organisations throughout reinstatement activities, and must resolve or refer problems that arise during the work in line with their job responsibility. Throughout the operation, the learner must follow the work specification and Codes of Practice, and must maintain safe working procedures.

Learning outcomes
There are **seven** learning outcomes to this unit. The learner will:
1. Prepare powered tools and equipment for routine and predictable use
2. Run and operate powered tools and equipment
3. Shut down and carry out post-stop checks on powered tools and equipment
4. Use and communicate data and information
5. Resolve problems which arise from operating powered tools and equipment
6. Demonstrate general knowledge and understanding for utilities network construction operations
7. Demonstrate knowledge and understanding of working with powered tools and equipment

Guided learning hours
It is recommended that **25** hours should be allocated for this unit, although patterns of delivery are likely to vary.

Details of the relationship between the unit and relevant national standards
This unit is linked to the following Energy & Utility Skills National Occupational Standards (NOS) for Network Construction Operations: MUNC09 Operate powered tools and equipment for routine and predictable requirements on utilities network construction.

Support of the unit by a sector or other appropriate body
This unit is endorsed by Energy & Utility Skills.

Assessment
This unit is assessed by:
- Portfolio.

Unit 209 Operate powered tools and equipment for routine and predictable requirements on utilities network construction

Outcome 1 Prepare powered tools and equipment for routine and predictable use

Assessment criteria

The learner can:

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.

Range

Powered tools and equipment: power generation (including electric, pneumatic and hydraulic); cutting and grinding; pumping; compacting; pipe jointing

Personal protective equipment (PPE): head; eyes; ears; respiratory system; hands; feet; body.

Unit 209 Operate powered tools and equipment for routine and predictable requirements on utilities network construction

Outcome 2 Run and operate powered tools and equipment

Assessment criteria

The learner can:

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.

Range

Equipment: power generation (including electric, pneumatic and hydraulic); cutting and grinding; pumping; compacting; pipe jointing

Unit 209 Operate powered tools and equipment for routine and predictable requirements on utilities network construction

Outcome 3 Shut down and carry out post-stop checks on powered tools and equipment

Assessment criteria

The learner can:

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.

Range:

Powered tools and equipment: power generation (including electric, pneumatic and hydraulic); cutting and grinding; pumping; compacting; pipe jointing

Unit 209 Operate powered tools and equipment for routine and predictable requirements on utilities network construction

Outcome 4 Use and communicate data and information

Assessment criteria

The learner can:

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.

Range

Equipment: power generation (including electric, pneumatic and hydraulic); cutting and grinding; pumping; compacting; pipe jointing

Unit 209 Operate powered tools and equipment for routine and predictable requirements on utilities network construction

Outcome 5 Resolve problems which arise from operating powered tools and equipment

Assessment criteria

The learner can:

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.

Range

Equipment: power generation (including electric, pneumatic and hydraulic); cutting and grinding; pumping; compacting; pipe jointing

Unit 209 Operate powered tools and equipment for routine and predictable requirements on utilities network construction

Outcome 6 Demonstrate general knowledge and understanding for utilities network construction operations

Assessment criteria

The learner can:

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.

Unit 209 Operate powered tools and equipment for routine and predictable requirements on utilities network construction

Outcome 7 Demonstrate knowledge and understanding of working with powered tools and equipment

Assessment criteria

The learner can:

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:
(a) starting and stopping routines
(b) 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**.

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.

Range

Hazards: vibration; handling; fumes; dust; moving parts; heat; electricity; fuel; substances
Powered tools and equipment: power generation (including electric, pneumatic and hydraulic); cutting and grinding; pumping; compacting; pipe jointing
Personal Protective Equipment (PPE): head; eyes; ears; respiratory system; hands; feet; body.
Approved procedures and practices: environmental; statutory; regulatory; emergency; operational; health and safety; organisational and company procedures; risk assessments; manufactures' instructions

Unit 210 Join materials by electrofusion processes on utilities network construction

Level: 2
Credit value: 2
URN: F/503/0666

Unit aim

The purpose of this unit is to assess the competence of individuals to recognised national occupational standards. This unit is designed to assess the competence of individuals required to joint materials by electrofusion processes on Utilities Network Construction. It includes using non-automatic and automatic techniques. The jointing process may be carried out in all weather conditions in accordance with industry standards and specifications.

Learning outcomes

There are **five** learning outcomes to this unit. The learner will:

1. Be able to make joints using electrofusion jointing techniques
2. Be able to use and communicate data and information
3. Be able to resolve problems that arise during jointing work
4. Know health and safety guidance and legislation in utilities network construction operations
5. Understand jointing materials by electrofusion processes on utilities network construction

Guided learning hours

It is recommended that **10** hours should be allocated for this unit, although patterns of delivery are likely to vary.

Details of the relationship between the unit and relevant national standards

This unit is linked to the following Energy & Utility Skills National Occupational Standards (NOS) for Network Construction Operations: MUNC010 Join materials by electrofusion processes on Utilities Network Construction.

Support of the unit by a sector or other appropriate body

This unit is endorsed by Energy & Utility Skills.

Assessment

This unit is assessed by:

- Portfolio

Unit 210 Join materials by electrofusion processes on utilities network construction

Outcome 1 Be able to make joints using electrofusion jointing techniques

Assessment criteria

The learner can:

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.

Unit 210 Join materials by electrofusion processes on utilities network construction

Outcome 2 Be able to use and communicate data and information

Assessment criteria

The learner can:

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.

Range

Designated personnel: those people specified within work and health and safety procedures

Unit 210 Join materials by electrofusion processes on utilities network construction

Outcome 3 Be able to resolve problems that arise during jointing work

Assessment criteria

The learner can:

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

Range

Designated person
Those people specified within work and health and safety procedures

Unit 210 Join materials by electrofusion processes on utilities network construction

Outcome 4 Know health and safety guidance and legislation in utilities network construction operations

Assessment criteria

The learner can:

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

Unit 210 Join materials by electrofusion processes on utilities network construction

Outcome 5 Understand jointing materials by electrofusion processes on utilities network construction

Assessment criteria

The learner can:

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
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.

Range

Defects: poor pipe restraint, poor pipe support, misalignment, contamination

Unit 211 Joint materials by butt fusion processes on utilities network construction, up to 180mm diameter

Level: 2
Credit value: 2
URN: J/503/0667

Unit aim

The purpose of this unit is to assess the competence of individuals to recognised national occupational standards. This unit is designed to assess the competence of individuals required to joint materials by butt fusion processes using pipes with diameters up to and including 180mm diameter. It includes using non-automatic and automatic machines on parent materials with the same SDR rating and polymer type. The jointing process may be carried out in all weather conditions in accordance with industry standards and specifications

Learning outcomes

There are **five** learning outcomes to this unit. The learner will:

1. Be able to make joints using butt fusion techniques
2. Be able to use and communicate data and information
3. Be able to resolve problems which arise from jointing materials
4. Know health and safety guidance and legislation in utilities network construction operations
5. Understand jointing materials by butt fusion processes on utilities network construction, up to 180mm diameter

Guided learning hours

It is recommended that **10** hours should be allocated for this unit, although patterns of delivery are likely to vary.

Details of the relationship between the unit and relevant national standards

This unit is linked to the following Energy & Utility Skills National Occupational Standards (NOS) for Network Construction Operations: MUNC011A Joint materials by butt fusion processes on Utilities Network Construction, up to 180mm diameter.

Support of the unit by a sector or other appropriate body

This unit is endorsed by Energy & Utility Skills.

Assessment

This unit is assessed by:

- Portfolio.

Unit 211 Joint materials by butt fusion processes on utilities network construction, up to 180mm diameter

Outcome 1 Be able to make joints using butt fusion techniques

Assessment criteria

The learner can:

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.

Unit 211 Joint materials by butt fusion processes on utilities network construction, up to 180mm diameter

Outcome 2 Be able to use and communicate data and information

Assessment criteria

The learner can:

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

Range

Designated personnel
Those people specified within work and health and safety procedures

Unit 211 Joint materials by butt fusion processes on utilities network construction, up to 180mm diameter

Outcome 3 Be able to resolve problems which arise from jointing materials

Assessment criteria

The learner can:

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

Range

Designated person

Those people specified within work and health and safety procedures

Unit 211 Joint materials by butt fusion processes on utilities network construction, up to 180mm diameter

Outcome 4 Know health and safety guidance and legislation in utilities network construction operations

Assessment criteria

The learner can:

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.

Unit 211 Joint materials by butt fusion processes on utilities network construction, up to 180mm diameter

Outcome 5 Understand jointing materials by butt fusion processes on utilities network construction, up to 180mm diameter

Assessment criteria

The learner can:

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.

Range

Defects and contaminations
Split defects, inadequate bead, excessive bead, pipe specifications, compatibility, different types of materials and consumables
Quality assurance procedures
non-destructive and destructive testing

Unit 212 Join materials by butt fusion processes on utilities network construction, above 180mm diameter

Level: 2
Credit value: 2
URN: L/503/0668

Unit aim

The purpose of this unit is to assess the competence of individuals to recognised national occupational standards. This unit supports workforce development and describes the competencies necessary to joint materials by butt fusion processes on Utilities Network Construction, above 180mm diameter. It includes using non-automatic and automatic machines on parent materials with the same SDR rating and polymer type. The jointing process may be carried out in all weather conditions in accordance with industry standards and specifications.

Learning outcomes

There are **five** learning outcomes to this unit. The learner will:

1. Be able to make joints using butt fusion techniques
2. Be able to use and communicate data and information
3. Be able to resolve problems which arise from jointing materials
4. Know health and safety guidance and legislation in utilities network construction operations
5. Understand jointing materials by butt fusion processes on utilities network construction, above 180mm diameter

Guided learning hours

It is recommended that **10** hours should be allocated for this unit, although patterns of delivery are likely to vary.

Details of the relationship between the unit and relevant national standards

This unit is linked to the following Energy & Utility Skills National Occupational Standards (NOS) for Network Construction Operations: MUNC011B Joint materials by butt fusion processes on Utilities Network Construction, above 180mm diameter.

Support of the unit by a sector or other appropriate body

This unit is endorsed by Energy & Utility Skills.

Assessment

This unit is assessed by:

- Portfolio.

Unit 212 Join materials by butt fusion processes on utilities network construction, above 180mm diameter

Outcome 1 Be able to make joints using butt fusion techniques

Assessment criteria

The learner can:

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

Unit 212 Join materials by butt fusion processes on utilities network construction, above 180mm diameter

Outcome 2 Be able to use and communicate data and information

Assessment criteria

The learner can:

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.

Range

Designated personnel: those people specified within work and health and safety procedures

Unit 212 Join materials by butt fusion processes on utilities network construction, above 180mm diameter

Outcome 3 Be able to resolve problems which arise from jointing materials

Assessment criteria

The learner can:

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

Range

Designated person: those people specified within work and health and safety procedures

Unit 212 Join materials by butt fusion processes on utilities network construction, above 180mm diameter

Outcome 4 Know health and safety guidance and legislation in utilities network construction operations

Assessment criteria

The learner can:

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

Unit 212 Join materials by butt fusion processes on utilities network construction, above 180mm diameter

Outcome 5 Understand jointing materials by butt fusion processes on utilities network construction, above 180mm diameter

Assessment criteria

The learner can:

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 Describe 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.

Range

Defects and contamination: Split defects, inadequate bead, excessive bead, pipe specifications, compatibility, different types of material and consumables

Quality assurance procedures: non-destructive and destructive testing

Unit 213 Install or replace external gas service risers

Level: 2
Credit value: 8
URN: A/503/0696

Unit aim

The purpose of this unit is to assess the competence of individuals to recognised national occupational standards. This unit is designed to assess the competence of individuals required to interpret technical specifications and design and install or replace external gas service risers. It includes being alert to and assessing, risk or hazardous conditions, the need to wear suitable safety clothing and the ability to follow operational procedures.

Learning outcomes

There are **seven** learning outcomes to this unit. The learner will:

1. Be able to interpret technical information and design for installing components of the system
2. Be able to select components and resources for installation of the system
3. Be able to install components of the system
4. Be able to use and communicate data and information
5. Be able to resolve problems that arise from technical information and installation work
6. know health and safety guidance and legislation in utilities network construction operations
7. Understand how to install or replace external gas service risers

Guided learning hours

It is recommended that **50** hours should be allocated for this unit, although patterns of delivery are likely to vary.

Details of the relationship between the unit and relevant national standards

This unit is linked to the following Energy & Utility Skills National Occupational Standards (NOS) for Network Construction Operations: MUNCG013G Install or replace external gas service risers.

Support of the unit by a sector or other appropriate body

This unit is endorsed by Energy & Utility Skills.

Assessment

This unit is assessed by:

- Portfolio.

Unit 213 Install or replace external gas service risers

Outcome 1 Be able to interpret technical information and design for installing components of the system

Assessment criteria

The learner can:

1.1 Produce **work details** for **component** installation use

1.2 From the technical and design information take off

- dimensions
- lengths
- widths
- quantities
- utilities plant
- services
- buildings
- kerbs
- valve requirements
- boundaries
- termination points

1.3 Demonstrate how to make corrections through drawings, records and work documents.

Range

Work details: drawings, records, work documents, manuals, technical specification and design and restriction

Component: metallic and non-metallic and all ancillary pipes and fittings

Unit 213 Install or replace external gas service risers

Outcome 2 Be able to select components and resources for installation of the system

Assessment criteria

The learner can:

2.1 Select the type of **components** in compliance with the work and quality specifications
2.2 Comply with procedures to replace defective **components**
2.3 Comply with procedures to replace non-match **components**
2.4 Comply with procedures to replace sub-standard **components**
2.5 Confirm the availability of sufficient components and **resources**
2.6 Handle changes to the planned use of the resource
2.7 Confirm **components** and installation meets design criteria

Range

Components: metallic and non-metallic and all ancillary pipes and fittings
Resources: labour, plant, equipment, materials, consumables

Unit 213 Install or replace external gas service risers

Outcome 3 Be able to install components of the system

Assessment criteria

The learner can:

3.1 Determine the **method** of installation to be used when installing **components** of the system, i.e. follow the design
3.2 Carry out a site-specific risk assessment and review in accordance with company policy
3.3 Select and wear the designated PPE
3.4 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 manufactures instructions
3.6 Assemble **components** to industry standards using mechanical and/or fusion welding techniques
3.7 Carry out site-specific tasks appropriately to prevent **equipment** damage
3.8 Position **components** in accordance with the specification
3.9 Protect installed assets with fine fill in accordance with specification and approved codes of practice
3.10 Maintain proximity distances from other utilities apparatus in accordance with approved codes of practice
3.11 Connect to the existing system using in-line squeeze off, side entry or top entry tee in accordance with codes of practice
3.12 Support and anchor installed assets in accordance with codes of practice
3.13 Confirm that the quality of the installation complies with the specified standard
3.14 Maintain the security and safety of the system and third parties where work is not complete or not to schedule
3.15 Ensure work practices conform to safe working procedures throughout the work activity
3.16 Confirm the installation is fire stopped and sleeved where appropriate

Range

Method: Dead insertion, live insertion, new installation
Equipment: Components, tools
Components: Metallic and non-metallic and all ancillary pipes and fittings

Unit 213 Install or replace external gas service risers

Outcome 4 Be able to use and communicate data and information

Assessment criteria

The learner can:

4.1 Provide **instructions** to individuals who will be using technical information and designs
4.2 Confirm instructions have been understood by individuals using technical information and designs
4.3 Report to a designated person, inaccuracies in the technical information sources used
4.4 Complete work documentation accurately
4.5 Record work documentation in the specified place or pass to a **designated person**
4.6 Comply with procedures if working on a 'Permit to Work' designated activity

Range

Instructions: Oral, written
Designated person: Those people specified within work and health and safety procedures

Unit 213 Install or replace external gas service risers

Outcome 5 Be able to resolve problems that arise from technical information and installation work

Assessment criteria

The learner can:

5.1 Report to the **designated person** damage or defects to **resources** using approved procedures

5.2 Report to the **designated person** work which is incomplete and not to schedule

5.3 Report to the **designated person** problems and conditions outside the responsibility of the job role.

Range

Designated person: Those people specified within work and health and safety procedures

Resources: Materials, tools

Unit 213 Install or replace external gas service risers

Outcome 6 know health and safety guidance and legislation in utilities network construction operations

Assessment criteria

The learner can:

6.1 State the main responsibilities of the employer and employee under the Health and Safety at Work Act

6.2 Explain the health and safety guidance governing work in excavations

6.3 Describe the safe procedures for handling hazardous materials

6.4 Explain the organisational accident recording and reporting procedures

6.5 Identify the range and use of personal protective equipment for the work

6.6 Explain the health and safety guidance governing working at heights

Unit 213 Install or replace external gas service risers

Outcome 7 Understand how to install or replace external gas service risers

Assessment criteria

The learner can:

7.1 State the main responsibilities of employers and employees under the current working at height regulations
7.2 Explain the importance of carrying out on-site risk assessments and the need for constant review
7.3 Explain the importance of implementing a safe system of work (SSOW) document
7.4 Explain the importance of obtaining necessary permissions for isolation of any part of utilities network
7.5 Explain the importance of complying with current industry standards
7.6 State the organisation's policy and procedures for meeting the relevant
- statutory requirements
- regulations
- codes of practice

7.7 Explain the implications of not obtaining the correct authorisation
7.8 Explain the implications of using incorrect plant, tools and materials
7.9 Explain the implications of using incorrect system **components**
7.10 Explain the actions to be taken where plant, tools, materials and system **components** fail to meet required specification
7.11 Describe faults associated with the use of inappropriate installation methods and tools
7.12 Identify potential dangers in the working environment
7.13 Describe the factors affecting, and means of confirming, the suitability of excavations
7.14 Explain the dangers of taking actions that can create confined space risks in excavations
7.15 Describe the range of isolation methods available and the rationale for their selection
7.16 Explain the procedure for obtaining authorisation to proceed with connections
7.17 Identify the range of actions to be taken if work cannot proceed to schedule
7.18 Explain how to determine appropriate safe remedial action if for any reason work cannot proceed
7.19 Identify methods of accessing information from different **sources**
7.20 Identify types and causes of likely disruptions
7.21 Identify methods of avoiding disruption
7.22 Explain the dangers of inadequate handling and lifting procedure
7.23 Describe the types and signs of defect likely to be present on sub-system and means of determining the appropriate safe action
7.24 Explain the requirements for the protection of the work site and area

Range

Sources: Reference documents, regulations, code of practice
Components: Metallic and non-metallic and all ancillary pipes and fittings

Unit 214 Conduct specified testing of gas network engineering products or assets - mains

Level: 2
Credit value: 3
URN: F/503/0697

Unit aim

The purpose of this unit is to assess the competence of individuals to recognised national occupational standards. The unit supports workforce development and describes the competencies necessary to conduct specified testing of gas mains. It includes making sure the manner in which tests are conducted and recorded meets the standards of quality assurance set by the organisation. It requires an understanding of safety requirements that need to be followed and adopted when carrying out test activities and procedures.

Learning outcomes

There are **five** learning outcomes to this unit. The learner will:

1 Be able to perform test activities
2 Be able to use and communicate data and information
3 Be able to resolve problems which arise when performing test activities
4 Know health and safety guidance and legislation in utilities network construction operations
5 Understand specified testing of gas network engineering products or assets - mains

Guided learning hours

It is recommended that **10** hours should be allocated for this unit, although patterns of delivery are likely to vary.

Details of the relationship between the unit and relevant national standards

This unit is linked to the following Energy & Utility Skills National Occupational Standards (NOS) for Network Construction Operations: MUNCG015A Conduct specified testing of Gas network engineering products or assets – mains

Support of the unit by a sector or other appropriate body

This unit is endorsed by Energy & Utility Skills.

Assessment

This unit is assessed by:

- Portfolio.

Unit 214 Conduct specified testing of gas network engineering products or assets - mains

Outcome 1 Be able to perform test activities

Assessment criteria

The learner can:

1.1 Perform tasks safely and ensure all work is carried out in accordance with **legislative and regulatory requirements**

1.2 Carry out a site specific risk assessment

1.3 Select and wear the designated PPE

1.4 Protect the test site from third party interference and the consequences of test failure on third parties

1.5 Comply with procedures in accordance with work instructions and manufacturers specifications when using tools and equipment

1.6 Anchor cap ends to withstand test pressures

1.7 Confirm equipment is functioning in accordance with system operating requirements and parameters

Range

Legislative and regulatory requirements: Health and safety and environment regulations, legislation, company procedures, statutory procedures

Unit 214 Conduct specified testing of gas network engineering products or assets - mains

Outcome 2 Be able to use and communicate data and information

Assessment criteria

The learner can:

2.1 Set up and carry out the test activities, within agreed timescales, following **agreed industry standards and approved codes of practice**

2.2 Review test results to establish that the performance of the system is in accordance with specifications and performance parameters

2.3 Record the results of test activities and complete test record documents following reporting systems

2.4 Use documentation in accordance with company procedures and statutory requirements

Range

Agreed industry standards and approved codes of practice: work instructions; approved procedures and practices; statutory and regulatory requirements; drawings; plans; specifications for the pressure testing of gas network mains and services

Unit 214 Conduct specified testing of gas network engineering products or assets - mains

Outcome 3 Be able to resolve problems which arise when performing test activities

Assessment criteria

The learner can:

3.1 Handle problems within the limits of the responsibility of the job role

3.2 Communicate problems outside the responsibilities of the job role to the **designated person**

Range

Designated person: Those people specified within work and health and safety procedures

Unit 214 Conduct specified testing of gas network engineering products or assets - mains

Outcome 4 Know health and safety guidance and legislation in utilities network construction operations

Assessment criteria

The learner can:

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

Unit 214 Conduct specified testing of gas network engineering products or assets - mains

Outcome 5 Understand specified testing of gas network engineering products or assets - mains

Assessment criteria

The learner can:

5.1 Outline the health, safety and environmental requirements relevant to this activity
5.2 Explain the importance of adequate anchorage during the testing procedure
5.3 Explain how to use various types of test, purging and commissioning specifications for gas mains
5.4 Describe how to use various types of test, purging and commissioning equipment
5.5 Explain how to calibrate the relevant pressure gauges
5.6 Describe why pressure gauges need calibrating
5.7 Explain how to interpret test results against specifications and codes of practice
5.8 Describe the effect of atmospheric pressure and temperature on test results on mains
5.9 Outline the potential consequences of test failure to the environment

Unit 214 Conduct specified testing of gas network engineering products or assets - mains

Supporting information

Evidence requirements

For learning outcome 1, competence in testing **must** be evidenced on pressure ranges:

- up to and including 75 mb
- above 75 mb to a maximum of 4 bar.

Learning outcome 2 **must** be evidenced through workplace observation by an assessor. Competence in testing **must** be evidenced on pressure ranges:

- up to and including 75 mb
- above 75 mb to a maximum of 4 bar.

At least **one** of these pressure ranges **must** be evidenced as part of workplace observed assessment; the other can be assessed in a RWE through an Assessor Observation Report.

Unit 215 Conduct specified testing of gas services

Level: 2
Credit value: 2
URN: J/503/0698

Unit aim

The purpose of the Unit is to assess the competence of individuals to recognised national occupational standards. The unit supports workforce development and describes the competencies necessary to conduct specified testing of gas services. It includes making sure the manner in which tests are conducted and recorded meets the standards of quality assurance set by the organisation. It requires an understanding of safety requirements that need to be followed and adopted when carrying out test activities and procedures.

Learning outcomes

There are **five** learning outcomes to this unit. The learner will:

1. Be able to perform test activities
2. Be able to use and communicate data and information
3. Be able to resolve problems which arise when performing test activities
4. Know health and safety guidance and legislation in utilities network construction operations
5. Understand specified testing of gas services

Guided learning hours

It is recommended that **10** hours should be allocated for this unit, although patterns of delivery are likely to vary.

Details of the relationship between the unit and relevant national standards

This unit is linked to the following Energy & Utility Skills National Occupational Standards (NOS) for Network Construction Operations: MUNCG015B Conduct specified testing of Gas services

Support of the unit by a sector or other appropriate body

This unit is endorsed by Energy & Utility Skills.

Assessment

This unit is assessed by:

- Portfolio.

Unit 215 Conduct specified testing of gas services

Outcome 1 Be able to perform test activities

Assessment criteria

The learner can:

1.1 Perform tasks safely and ensure all work is carried out in accordance with **legislative and regulatory requirements**

1.2 Carry out a site specific risk assessment

1.3 Select and wear the designated PPE

1.4 Protect the test site from third party interference and the consequences of test failure on third parties

1.5 Comply with procedures in accordance with work instructions and manufacturers specifications when using tools and equipment

1.6 Anchor cap ends to withstand test pressures

1.7 Confirm equipment is functioning in accordance with system operating requirements and parameters

Range

Legislative and regulatory requirements: Health and safety and environment regulations, legislation, company procedures, statutory procedures

Unit 215 Conduct specified testing of gas services

Outcome 2 Be able to use and communicate data and information

Assessment criteria

The learner can:

2.1 Set up and carry out the test activities, within agreed timescales, following **agreed industry standards and approved codes of practice**

2.2 Review test results to establish that the performance of the system is in accordance to specifications and performance parameters

2.3 Record the results of test activities and complete test record documents following reporting systems

2.4 Use documentation in accordance with company procedures and statutory requirements.

Range

Agreed industry standards and approved codes of practice: work instructions; approved procedures and practices; statutory and regulatory requirements; drawings; plans; specifications for the pressure testing of gas network mains and services

Unit 215 Conduct specified testing of gas services

Outcome 3 Be able to resolve problems which arise when performing test activities

Assessment criteria

The learner can:

3.1 Handle problems within the limits of the responsibility of the job role

3.2 Communicate problems outside the responsibilities of the job role to the **designated person**

Range

Designated person: Those people specified within work and health and safety procedures

Unit 215 Conduct specified testing of gas services

Outcome 4 Know health and safety guidance and legislation in utilities network construction operations

Assessment criteria

The learner can:

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

Unit 215 Conduct specified testing of gas services

Outcome 5 Understand specified testing of gas services

Assessment criteria

The learner can:

5.1 Outline the health, safety and environmental requirements relevant to this activity
5.2 Explain the importance of adequate anchorage during the testing procedure
5.3 Explain how to use various types of test, purging and commissioning specifications for gas services
5.4 Describe how to use various types of test, purging and commissioning equipment
5.5 Explain how to calibrate the relevant pressure gauges
5.6 Describe why pressure gauges need calibrating
5.7 Explain how to interpret test results against specifications and codes of practice
5.8 Describe the effect of atmospheric pressure and temperature on test results on services
5.9 Outline the potential consequences of test failure to the environment.

Unit 215 Conduct specified testing of gas services

Supporting information

Evidence requirements

Learning outcome 2 **must** be evidenced through workplace observation by an assessor. Competence in testing **must** be evidenced on pressure ranges:

- up to and including 75 mb
- above 75 mb to a maximum of 4 bar.

At least **one** of these pressure ranges **must** be evidenced as part of workplace observed assessment; the other can be assessed in a RWE through an Assessor Observation Report.

Unit 216 Conduct specified connections to gas network mains and commissioning

Level: 2
Credit value: 3
URN: L/503/0699

Unit aim

The purpose of this unit is to assess the competence of individuals to recognised national occupational standards. The unit supports workforce development and describes the competencies necessary to conduct specified connections to gas network mains and commissioning. It requires a high level of knowledge of the various types of connection techniques available, and the particular circumstances in which they can be used. It includes being alert to and assessing, risk or hazardous conditions, the need to wear suitable safety clothing and the ability to follow operational procedures.

Learning outcomes

There are **eight** learning outcomes to this unit. The learner will:

1. Be able to interpret technical information for connecting engineering assets to the system
2. Be able to select components and resources for the connection
3. Be able to connect engineering products or assets to the system
4. Be able to commission new engineering products or assets
5. Be able to use and communicate data and information
6. Be able to resolve problems that arise during assembly or sub-assembly replacement
7. Know health and safety guidance and legislation in utilities network construction operations
8. Understand specified connections to gas network mains and commissioning

Guided learning hours

It is recommended that **18** hours should be allocated for this unit, although patterns of delivery are likely to vary.

Details of the relationship between the unit and relevant national standards

This unit is linked to the following Energy & Utility Skills National Occupational Standards (NOS) for Network Construction Operations: MUNC016 Conduct specified connections to gas network mains and commissioning

Support of the unit by a sector or other appropriate body

This unit is endorsed by Energy & Utility Skills.

Assessment

This unit is assessed by:

- Portfolio.

Unit 216 Conduct specified connections to gas network mains and commissioning

Outcome 1 Be able to interpret technical information for connecting engineering assets to the system

Assessment criteria

The learner can:

1.1 Produce work details for the connection using technical **information**

1.2 Use technical information to 'take off' **measurements**

1.3 Identify where the connection is affected on **structures**.

Range

Information: Drawings, records, work documents, manuals and technical specifications

Measurements: Dimensions, lengths, widths, quantities

Structures: Other utilities plant, sub-structures, buildings, kerbs, boundaries

Unit 216 Conduct specified connections to gas network mains and commissioning

Outcome 2 Be able to select components and resources for the connection

Assessment criteria

The learner can:

2.1 Select the type of **components** in compliance with the work and specifications
2.2 Comply with procedures to replace defective **components**
2.3 Comply with procedures to replace non-match **components**
2.4 Comply with procedures to replace sub-standard **components**
2.5 Confirm the availability of sufficient **resources**
2.6 Handle actual and predicted changes to the planned use of resource.

Range

Components: Metallic and non-metallic and all ancillary pipes and fittings
Resources: Labour, plant, equipment, materials, consumables

Unit 216 Conduct specified connections to gas network mains and commissioning

Outcome 3 Be able to connect engineering products or assets to the system

Assessment criteria

The learner can:

3.1 Determine the method of connection to be used
3.2 Carry out a site-specific risk assessment and review as job progresses, in accordance with company policy
3.3 Select and wear the designated PPE
3.4 Confirm the condition and size of the excavation is sufficient and conforms to instructions and specifications
3.5 Install, test and configure bypass in accordance with approved codes of practice and organisational procedure
3.6 Position fire extinguishers alongside the excavation
3.7 Check fire extinguishers are in good working order
3.8 Check sufficient sets of breathing apparatus are assembled ready for use
3.9 Support and anchor installed engineering assets in accordance with approved codes of practice
3.10 Comply with safe working procedures throughout the whole of the work activity
3.11 Confirm the condition and size of the excavation is sufficient and conforms to instructions and specifications
3.12 Confirm the availability of authorised job instructions, **operational procedures** and permits to work, prior to commencement of connection work
3.13 Carry out site-specific tasks appropriately to prevent damage to **equipment**
3.14 Use selected technique to connect to the existing system

Range

Operational procedures: Routine; non-routine
Equipment: components and tools

Unit 216 Conduct specified connections to gas network mains and commissioning

Outcome 4 Be able to commission new engineering products or assets

Assessment criteria

The learner can:

4.1 Confirm that a written routine or non-routine operational procedure has been produced and authorised

4.2 Carry out the commissioning in accordance with operational procedure document.

Unit 216 Conduct specified connections to gas network mains and commissioning

Outcome 5 Be able to use and communicate data and information

Assessment criteria

The learner can:

5.1 Provide **instructions** to individuals who will be using technical information
5.2 Confirm instructions have been understood by individuals using technical information
5.3 Report to a designated person inaccuracies in the technical information sources used
5.4 Complete work documentation accurately.

Range

Instructions: oral; written

Unit 216 Conduct specified connections to gas network mains and commissioning

Outcome 6 Be able to resolve problems that arise during assembly or sub-assembly replacement

Assessment criteria

The learner can:

6.1 Report to the **designated person** damage or defects to **resources** using approved procedures

6.2 Report to the **designated person** work which is incomplete and not to schedule, using approved procedures

6.3 Report to the **designated person** problems and conditions outside the responsibility of the job role, using approved procedures.

Range

Resources: Tools, equipment, materials

Designated person: Those people specified within work and health and safety procedures

Unit 216 Conduct specified connections to gas network mains and commissioning

Outcome 7 Know health and safety guidance and legislation in utilities network construction operations

Assessment criteria

The learner can:

7.1 State the main responsibilities of the employer and employee under the Health and Safety at Work Act
7.2 Explain the health and safety guidance governing work in excavations
7.3 Describe the safe procedures for handling hazardous materials
7.4 Explain the organisational accident recording and reporting procedures
7.5 Identify the range and use of personal protective equipment for the work.

Unit 216 Conduct specified connections to gas network mains and commissioning

Outcome 8 Understand specified connections to gas network mains and commissioning

Assessment criteria

The learner can:

8.1 State the organisation's policy and procedures for meeting the relevant
- statutory requirements
- regulations
- codes of practice

8.2 Explain the importance of compliance with current industry standards
8.3 Explain the importance of obtaining necessary permissions for isolation of any part of network
8.4 Explain the importance of carrying out on-site risk assessments and their constant review
8.5 Explain the importance of wearing PPE
8.6 Explain the procedure for obtaining authorisation to proceed with connections
8.7 Explain the implications of not obtaining appropriate authorisation
8.8 Explain the implications of using incorrect plant, tools, materials and system **components**
8.9 Explain the actions to be taken where plant, tools, materials and system **components** fail to meet required specification
8.10 Describe faults associated with the use of inappropriate installation methods and tools
8.11 Identify potential dangers in excavations
8.12 Describe the factors affecting, and means of confirming, the suitability of excavations
8.13 Explain the dangers of taking actions that can create confined space risks in excavations
8.14 Explain the dangers of inadequate handling and lifting procedure
8.15 Describe the range of isolation methods available and the rationale for their selection
8.16 Identify actions to be taken if work cannot proceed to schedule
8.17 Explain how to determine appropriate safe remedial action if for any reason work cannot proceed
8.18 Explain the organisation's reporting procedures
8.19 Describe different methods of accessing information obtainable from different **sources**
8.20 Identify types and causes of likely disruptions
8.21 Identify methods of avoiding disruption

Range

Components: Metallic and non-metallic and all ancillary pipes and fittings
Sources: Reference documents, regulations, codes of practice

Unit 216 Conduct specified connections to gas network mains and commissioning

Supporting information

Evidence requirements

Learning outcome 4 **must** be evidenced through workplace observation by an assessor. Competence in testing **must** be evidenced on pressure ranges:

- up to and including 75 mb
- above 75 mb to a maximum of 4 bar.

At least **one** of these pressure ranges **must** be evidenced as part of workplace observed assessment; the other can be assessed in a RWE through an Assessor Observation Report.

Unit 217 Restore gas network components to operational condition by repair

Level: 2
Credit value: 2
URN: L/503/0671

Unit aim

The purpose of this unit is to assess the competence of individuals to recognised national occupational standards. This unit supports workforce development and is designed to assess the competence of individuals to carry out repairs to components on mains or services. It requires the installation of external mechanical fittings, both temporary and permanent.

Learning outcomes

There are **five** learning outcomes to this unit. The learner will:

1. Be able to restore components to operational condition
2. Be able to use and communicate data and information
3. Be able to resolve problems that arise when restoring components to operational condition
4. Know health and safety guidance and legislation in utilities network construction operations
5. Understand the restoration of gas network components to operational condition by repair

Guided learning hours

It is recommended that **10** hours should be allocated for this unit, although patterns of delivery are likely to vary.

Details of the relationship between the unit and relevant national standards

This unit is linked to the following Energy & Utility Skills National Occupational Standards (NOS) for Network Construction Operations: MUNC019 Restore gas components to operational condition by repair

Support of the unit by a sector or other appropriate body

This unit is endorsed by Energy & Utility Skills.

Assessment

This unit is assessed by:

- Portfolio.

Unit 217 Restore gas network components to operational condition by repair

Outcome 1 Be able to restore components to operational condition

Assessment criteria

The learner can:

1.1 Perform work activities in accordance with **legislative and regulatory practices**
1.2 Carry out a site specific risk assessment in accordance with company procedures
1.3 Select and wear the designated PPE and breathing apparatus
1.4 Check and position a minimum of two fire extinguishers in suitable locations for the work activity
1.5 Prepare the **component** for repair
1.6 Carry out **repairs** in accordance with specifications and work instructions, to agreed timescale using approved materials and components
1.7 Confirm the repaired component meets the specified operating conditions and parameters

Range

Legislative and regulatory practices: Health and safety and environment regulations, legislation, statutory and regulatory requirements, company procedures, safe working practices

Component: metallic and non-metallic and all ancillary pipes and fittings

Repairs: Joints, horizontal and circumferential cracks and breaks, corrosion and interference damage

Unit 217 Restore gas network components to operational condition by repair

Outcome 2 Be able to use and communicate data and information

Assessment criteria

The learner can:

2.1 Produce accurate and complete records of all **repair** work carried out.

Range

Repair: Joints, horizontal and circumferential cracks and breaks, corrosion and interference damage

Unit 217 Restore gas network components to operational condition by repair

Outcome 3 Be able to resolve problems that arise when restoring components to operational condition

Assessment criteria

The learner can:

3.1 Handle problems within the limits of own responsibility

3.2 Communicate problems outside job responsibilities to **designated person.**

Range

Designated person: Those people specified within work and health and safety procedures

Unit 217 Restore gas network components to operational condition by repair

Outcome 4 Know health and safety guidance and legislation in utilities network construction operations

Assessment criteria

The learner can:

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.

Unit 217 Restore gas network components to operational condition by repair

Outcome 5 Understand the restoration of gas network components to operational condition by repair

Assessment criteria

The learner can:

5.1 State the health, safety and environment legislation, relevant to the work activities
5.2 State environmental procedures, relevant to the work activities
5.3 State codes of practice, relevant to the work activities
5.4 State company procedures, relevant to the work activities
5.5 Describe how to select the **repair technique** to be used for the specification of the **component** to be repaired
5.6 Identify various **components** in use on the gas network
5.7 Identify types of tools and equipment to be used when restoring **components** to operating condition by repair
5.8 Define the care and control procedures to be used to ensure compliance with live gas working
5.9 Explain the need to deploy fire extinguishers at the scene of a gas escape
5.10 Explain the need to wear breathing apparatus when working on a live gas repair
5.11 Explain the types of records and documentation used to record maintenance activities
5.12 Explain the reporting procedures to use.

Range

Components: Metallic and non-metallic and all ancillary pipes and fittings

Repair techniques: mains and services; pressure ranges to include up to and including 75mb and above 75mb

Unit 218 Conduct specified testing of gas networks associated with leakage location

Level: 2
Credit value: 3
URN: Y/503/0673

Unit aim

The purpose of the Unit is to assess the competence of individuals to recognised national occupational standards. This Unit supports workforce development and is designed to assess the competence of individuals to conduct tests to determine the location of gas leaks. It involves making sure all work is carried out safely in accordance with all health and safety requirements and regulations, industry standards, and standards set by the organisation.

Learning outcomes

There are **five** learning outcomes to this unit. The learner will:

1. Be able to conduct specified testing of gas networks associated with leakage location
2. Be able to use and communicate data and information
3. Be able to resolve problems that arise when testing gas networks for leaks
4. Know health and safety guidance and legislation in utilities network construction operations
5. Understand specified testing of gas networks associated with leakage location

Guided learning hours

It is recommended that **20** hours should be allocated for this unit, although patterns of delivery are likely to vary.

Details of the relationship between the unit and relevant national standards

This unit is linked to the following Energy & Utility Skills National Occupational Standards (NOS) for Network Construction Operations: MUNC021 Conduct specified testing of gas networks associated with leakage location

Support of the unit by a sector or other appropriate body

This unit is endorsed by Energy & Utility Skills.

Assessment

This unit is assessed by:

- Portfolio.

Unit 218 Conduct specified testing of gas networks associated with leakage location

Outcome 1 Be able to conduct specified testing of gas networks associated with leakage location

Assessment criteria

The learner can:

1.1 Perform work activities safely at all times in accordance with **legislative and regulatory requirements**

1.2 Carry out a site specific risk assessment and review in accordance with company procedures

1.3 Select and wear the designated PPE

1.4 Select and use the specified equipment for **testing**

1.5 Use **testing** and purging tools and equipment in accordance with **industry standards and codes of practice**

1.6 Determine the **testing** methods to be employed and procedure to be followed to locate the escape of gas in ducts and underground apparatus

1.7 Set up and carry out the tests within agreed timescales

Range

Legislative and regulatory requirements: Health, safety and environment requirements, legislation, industry standards, statutory requirements, company procedures, work instructions

Testing: Bar hole and other leakage surveys, pressure tests, and decay testing

Industry standards and codes of practice: work instructions; health and safety regulations; codes of practice; equipment specifications

Unit 218 Conduct specified testing of gas networks associated with leakage location

Outcome 2 Be able to use and communicate data and information

Assessment criteria

The learner can:

2.1 Communicate to individuals affected by the risk control measures in place

2.2 Confirm information provided about safety systems is clear, accurate and concise

2.3 Review the results of the test to make sure the type and precise location of the leak has been established

2.4 Record the results of testing activities using company reporting systems and documentation.

Unit 218 Conduct specified testing of gas networks associated with leakage location

Outcome 3 Be able to resolve problems that arise when testing gas networks for leaks

Assessment criteria

The learner can:

3.1 Handle problems within the limits of the responsibility of the job role

3.2 Communicate problems outside the responsibilities of the job role to the **designated person**

Range

Designated person: those people specified within work and health and safety procedures

Unit 218 Conduct specified testing of gas networks associated with leakage location

Outcome 4 Know health and safety guidance and legislation in utilities network construction operations

Assessment criteria

The learner can:

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

Unit 218 Conduct specified testing of gas networks associated with leakage location

Outcome 5 Understand specified testing of gas networks associated with leakage location

Assessment criteria

The learner can:

5.1 State the reporting lines and procedures to be used
5.2 Identify types of test procedures that can be used to locate leaks
5.3 Identify the correct and appropriate test procedure for a given situation
5.4 Interpret and follow test procedures and documentation
5.5 Explain how to calibrate the relevant pressure gauge
5.6 Explain why the relevant pressure gauge should be calibrated
5.7 Demonstrate bar holing, sampling and escape surveying techniques used on services and mains
5.8 Interpret test and purging results against specifications
5.9 Describe the consequences of test failures to the public, property and the environment
5.10 Identify various test records that are required
5.11 Describe the consequences of incorrectly recording and reporting test results in line with industry requirements.

Unit 219 Disconnection of gas meters

Level: 2
Credit value: 2
URN: T/503/0700

Unit aim

The purpose of this unit is to assess the competence of individuals to recognised national occupational standards. The unit supports workforce development and describes the competencies necessary to disconnect gas meters.

Learning outcomes

There are **five** learning outcomes to this unit. The learner will:

1. Be able to disconnect gas meters
2. Be able to use and communicate data and information
3. Be able to resolve problems which arise during the disconnection of gas meters
4. Know health and safety guidance and legislation in utilities network construction operations
5. Understand how to disconnect gas meters

Guided learning hours

It is recommended that **10** hours should be allocated for this unit, although patterns of delivery are likely to vary.

Details of the relationship between the unit and relevant national standards

This unit is linked to the following Energy & Utility Skills National Occupational Standards (NOS) for Network Construction Operations: MUNC023 Disconnection of Gas Meters

Support of the unit by a sector or other appropriate body

This unit is endorsed by Energy & Utility Skills.

Assessment

This unit is assessed by:

- Portfolio.

Unit 219 Disconnection of gas meters

Level: 2
Credit value: 2
URN: T/503/0700

Unit aim

The purpose of this unit is to assess the competence of individuals to recognised national occupational standards. The unit supports workforce development and describes the competencies necessary to disconnect gas meters up to $6m^3/hr$.

This work is not classed as working on the downstream installation.

Learning outcomes

There are **five** learning outcomes to this unit. The learner will:

1. Be able to disconnect gas meters
2. Be able to use and communicate data and information
3. Be able to resolve problems which arise during the disconnection of gas meters
4. Know health and safety guidance and legislation in utilities network construction operations
5. Understand how to disconnect gas meters

Guided learning hours

It is recommended that **10** hours should be allocated for this unit, although patterns of delivery are likely to vary.

Details of the relationship between the unit and relevant national standards

This unit is linked to the following Energy & Utility Skills National Occupational Standards (NOS) for Network Construction Operations: MUNC023 Disconnection of Gas Meters

Support of the unit by a sector or other appropriate body

This unit is endorsed by Energy & Utility Skills.

Assessment

This unit is assessed by:

- Portfolio.

Unit 219 Disconnection of gas meters

Outcome 1 Be able to disconnect gas meters

Assessment criteria

The learner can:

1.1 Perform work activities safely at all times in accordance with **legislative and regulatory requirements**

1.2 Carry out site specific risk assessment

1.3 Select and wear designated PPE

1.4 Prepare instant voltage tester (Volt Stick) ready for use

1.5 Determine the pressure in the supply as being low or medium pressure, in line with approved procedures

1.6 Determine the suitability of existing Equipotential Bonding, in line with approved procedures

1.7 Determine the type of meter in use i.e. $6m^3/hr$, in line with approved procedures

1.8 Comply with industry standards and approved codes of practice when

- installing temporary continuity bonding
- isolating the gas supply and appliances
- disconnecting components
- removing meter
- cap open ends of meter and internal supply
- cap and secure the emergency control valve

1.9 Prevent damage to components, the meter and supply apparatus

1.10 Confirm there is no damage to the supply apparatus

1.11 Handle excess, waste materials and temporary attachments in line with approved and agreed procedures

1.12 Comply with procedures where lone working is required

Range

Legislative and regulatory requirements: Health, safety and environment requirements, legislation, industry standards, statutory requirements, company procedures, work instructions

Unit 219 Disconnection of gas meters

Outcome 2 Be able to use and communicate data and information

Assessment criteria

The learner can:

2.1 Use organisational information systems to record and store data and information

2.2 Complete work documentation accurately

2.3 Record work documentation in the specified place or pass to a designated person

2.4 Explain the types of records and documentation used when disconnecting meters.

Unit 219 Disconnection of gas meters

Outcome 3 Be able to resolve problems which arise during the disconnection of gas meters

Assessment criteria

The learner can:

3.1 Report promptly to the designated person damage or defects to **resources** using approved procedures

3.2 Report promptly to the designated person suspected theft of gas using approved procedures

3.3 Handle problems within the limits of own responsibility

3.4 Report to the designated person problems and conditions outside the responsibility of the job role

Range

Resources: Tools, equipment, materials

Unit 219 Disconnection of gas meters

Outcome 4 Know health and safety guidance and legislation in utilities network construction operations

Assessment criteria

The learner can:

4.1 State the main responsibilities of the employer and employee under the Health and Safety at Work Act

4.2 State the main responsibilities of employers and employees under working at height regulations

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 Describe the safe use of a standard voltage stick and the limitations of use

Unit 219 Disconnection of gas meters

Outcome 5 Understand how to disconnect gas meters

Assessment criteria

The learner can:

5.1 Explain the specific gravity of natural gas and its relationship to air

5.2 Identify different types of meter

5.3 Explain how to correctly handle different **types** of meters

5.4 Describe effective methods for the prevention of dangerous concentrations of gas

5.5 Describe potential ignition sources

5.6 Explain Equipotential Bonding including

- risks where bonding is not used
- cross sectional area
- warning labels
- distance from meter outlet

5.7 Identify situations where it is necessary to leave temporary continuity bonding in place on completion of the work

5.8 Explain correct reporting procedures.

Range

Types: U6; E6; Quantum

Unit 301 Install gas services up to 63mm

Level: 3
Credit value: 9
URN: T/503/0695

Unit aim:
The purpose of this unit is to assess the competence of individuals to recognised national occupational standards. The unit supports workforce development and describes the competencies necessary to install gas services up to 63mm.

It includes being alert to and assessing, risk or hazardous conditions, the need to wear suitable safety clothing and the ability to follow operational procedures. Each individual will need to demonstrate competence in a minimum of three different installation techniques. Self-Lay Operatives completing this unit can be excluded from demonstrating competence in the full range of installation techniques but will usually be able to gather evidence of installing gas services by open cut, soil displacement and by insertion through suitable ducting.

Learning outcomes
There are **seven** learning outcomes to this unit. The learner will:
1. Be able to interpret technical information for installing components of the system
2. Be able to select components and resources for installation of the system
3. Be able to install components of the system
4. Be able to use and communicate data and information
5. Be able to resolve problems that arise from technical information and installation work
6. Know health and safety guidance and legislation in utilities network construction operations
7. Understand how to install gas services up to 63mm

Guided learning hours
It is recommended that **40** hours should be allocated for this unit, although patterns of delivery are likely to vary.

Details of the relationship between the unit and relevant national standards
This unit is linked to the following Energy & Utility Skills National Occupational Standards (NOS) for Network Construction Operations: MUNCG013A Install Gas services up to 63mm

Support of the unit by a sector or other appropriate body
This unit is endorsed by Energy & Utility Skills.

Assessment
This unit will be assessed by:
- Portfolio

Unit 301 Install gas services up to 63mm

Outcome 1 Be able to interpret technical information for installing components of the system

Assessment criteria

The learner can:

1.1 Produce **work details** for **component** installation use

1.2 From the technical information take off

- dimensions
- lengths
- widths
- quantities
- utilities plant
- services
- buildings
- kerbs
- boundaries

1.3 Demonstrate how to make corrections through drawings, records and work documents

Range

Work details: Drawings, records, work documents, manuals, technical specifications
Components: Metallic and non-metallic and all ancillary pipes and fittings

Unit 301 Install gas services up to 63mm

Outcome 2 Be able to select components and resources for installation of the system

Assessment criteria

The learner can:

2.1 Select the type of **components** in compliance with the work and quality specifications
2.2 Comply with procedures to replace defective **components**
2.3 Comply with procedures to replace non-match **components**
2.4 Comply with procedures to replace sub-standard **components**
2.5 Confirm the availability of sufficient **resources**
2.6 Handle changes to the planned use of the **resource**
2.7 Confirm **components** and installation equipment are operational

Range

Components: Metallic and non-metallic and all ancillary pipes and fittings
Resources: Labour, plant, equipment, materials, consumables

Unit 301 Install gas services up to 63mm

Outcome 3 Be able to install components of the system

Assessment criteria

The learner can:

3.1 Determine the **method** of installation to be used when installing components of the system
3.2 Carry out a site-specific risk assessment and review in accordance with company policy
3.3 Select and wear the designated PPE
3.4 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 manufactures instructions
3.6 Assemble components to industry standards using mechanical and/or fusion welding techniques
3.7 Carry out site-specific tasks appropriately to prevent **equipment** damage
3.8 Position **components** in accordance with the specification
3.9 Protect installed assets with fine fill in accordance with specification and approved codes of practice
3.10 Maintain proximity distances from other utilities apparatus in accordance with approved codes of practice
3.11 Connect to the existing system using in-line squeeze off, side entry or top entry tee in accordance with codes of practice
3.12 Support and anchor installed assets in accordance with codes of practice
3.13 Confirm that the quality of the installation complies with the specified standard
3.14 Maintain the security and safety of the system and third parties where work is not complete or not to schedule
3.15 Ensure work practices conform to safe working procedures throughout the work activity
3.16 Comply with procedures where lone working is required

Range

Method: Dead insertion, live insertion, soil displacement, open cut
Equipment: Components, tools
Components: Metallic and non-metallic and all ancillary pipes and fittings

Unit 301 Install gas services up to 63mm

Outcome 4 Be able to use and communicate data and information

Assessment criteria

The learner can:

4.1 Provide **instructions** to individuals who will be using technical information
4.2 Confirm instructions have been understood by individuals using technical information
4.3 Report to a designated person inaccuracies in the technical information sources used
4.4 Complete work documentation accurately
4.5 Record work documentation in the specified place or pass to a **designated person**
4.6 Comply with procedures if working on a 'Permit to Work' designated activity

Range

Instructions: Oral, written
Designated person: Those people specified within work and health and safety procedures

Unit 301 Install gas services up to 63mm

Outcome 5 Be able to resolve problems that arise from technical information and installation work

Assessment criteria

The learner can:

5.1 Report to the designated person damage or defects to **resources** using approved procedures

5.2 Report to the **designated person** work which is incomplete and not to schedule

5.3 Report to the **designated person** problems and conditions outside the responsibility of the job role

Range

Resources: Equipment, materials and tools

Designated person: Those people specified within work and health and safety procedures

Unit 301 Install gas services up to 63mm

Outcome 6 Know health and safety guidance and legislation in utilities network construction operations

Assessment criteria

The learner can:

6.1 State the main responsibilities of the employer and employee under the Health and Safety at Work Act

6.2 Explain the health and safety guidance governing work in excavations

6.3 Describe the safe procedures for handling hazardous materials

6.4 Explain the organisational accident recording and reporting procedures

6.5 Identify the range and use of personal protective equipment for the work

Unit 301 Install gas services up to 63mm

Outcome 7 Understand how to install gas services up to 63mm

Assessment criteria

The learner can:

7.1 State the main responsibilities of employers and employees under the current working at height regulations

7.2 Explain the importance of carrying out on-site risk assessments and the need for constant review

7.3 Explain the importance of implementing a safe system of work (SSOW) document when working in excavations

7.4 Explain the importance of obtaining necessary permissions for isolation of any part of utilities network

7.5 Explain the importance of complying with current industry standards

7.6 State the organisation's policy and procedures for meeting the relevant

- statutory requirements
- regulations
- codes of practice

7.7 Explain the implications of not obtaining the correct authorisation

7.8 Explain the implications of using incorrect plant, tools and materials

7.9 Explain the implications of using incorrect system components

7.10 Explain the actions to be taken where plant, tools, materials and system **components** fail to meet required specification

7.11 Describe faults associated with the use of inappropriate installation methods and tools

7.12 Identify potential dangers in excavations

7.13 Describe the factors affecting, and means of confirming, the suitability of excavations

7.14 Explain the dangers of taking actions that can create confined space risks in excavations

7.15 Describe the range of isolation methods available and the rationale for their selection

7.16 Explain the procedure for obtaining authorisation to proceed with connections

7.17 Identify the range of actions to be taken if work cannot proceed to schedule

7.18 Explain how to determine appropriate safe remedial action if for any reason work cannot proceed

7.19 Identify methods of accessing information from different **sources**

7.20 Identify types and causes of likely disruptions

7.21 Identify methods of avoiding disruption

7.22 Explain the dangers of inadequate handling and lifting procedure

7.23 Describe the types and signs of defect likely to be present on sub-system and means of determining the appropriate safe action

Range

Components: metallic and non-metallic and all ancillary pipes and fittings

Sources: Reference documents, regulations, codes of practice

Unit 301 Install gas services up to 63mm

Supporting information

Evidence requirements

Learning outcome 3 **must** be evidenced through workplace observation by an assessor. Competence in testing **must** be evidenced on pressure ranges

- up to and including 75 mb
- above 75 mb to a maximum of 4 bar.

At least **one** of these pressure ranges **must** be evidenced as part of workplace observed assessment; the other can be assessed in a RWE through an Assessor Observation Report

At least **one** of the methods specified in the range **must** be evidenced as part of workplace observed assessment; the other can be assessed in a RWE through an Assessor Observation Report.

Unit 302 Install gas engineering products or assets up to 180mm

Level: 3
Credit value: 13
URN: M/503/0694

Unit aim:
The purpose of this unit is to assess the competence of individuals to recognised national occupational standards. This unit is designed to assess the competence of individuals required to interpret technical specifications and install gas engineering products or assets up to and including 180mm.

It includes being alert to and assessing, risk or hazardous conditions, the need to wear suitable safety clothing and the ability to follow operational procedures. Each individual will need to demonstrate competence in a minimum of three different installation techniques. Self-Lay Operatives completing this unit can be excluded from demonstrating competence in the full range of installation techniques but will usually be able to gather evidence of installing engineering products or assets by open cut, soil displacement and by insertion through suitable ducting.

Learning outcomes
There are **seven** learning outcomes to this unit. The learner will:
1. Be able to interpret technical information for installing components of the system
2. Be able to select components and resources for installation of the system
3. Be able to install components of the system
4. Be able to use and communicate data and information
5. Be able to resolve problems that arise from technical information and installation work
6. Know health and safety guidance and legislation in utilities network construction operations
7. Understand how to install gas engineering products or assets up to 180mm

Guided learning hours
It is recommended that **50** hours should be allocated for this unit, although patterns of delivery are likely to vary.

Details of the relationship between the unit and relevant national standards
This unit is linked to the following Energy & Utility Skills National Occupational Standards (NOS) for Network Construction Operations: MUNCG013C Install gas engineering products or assets up to 180mm

Support of the unit by a sector or other appropriate body
This unit is endorsed by Energy & Utility Skills.

Assessment
This unit will be assessed by:
- Portfolio

Unit 302 Install gas engineering products or assets up to 180mm

Outcome 1 Be able to interpret technical information for installing components of the system

Assessment criteria

The learner can:

1.1 Produce **work details** for component installation use

1.2 From the technical information take off

- dimensions
- lengths
- widths
- quantities
- utilities plant
- services
- buildings
- kerbs
- boundaries

1.3 Demonstrate how to make corrections through drawings, records and work documents

Range

Work details: Drawings, records, work documents, manuals, technical specifications

Unit 302 Install gas engineering products or assets up to 180mm

Outcome 2 Be able to select components and resources for installation of the system

Assessment criteria

The learner can:

2.1 Select the type of **components** in compliance with the work and quality specifications
2.2 Comply with procedures to replace defective **components**
2.3 Comply with procedures to replace non-match **components**
2.4 Comply with procedures to replace sub-standard **components**
2.5 Confirm the availability of sufficient **resources**
2.6 Handle changes to the planned use of the resource
2.7 Confirm **components** and installation equipment are operational

Range

Resources: Labour, plant, equipment, materials, consumables
Components: Metallic and non-metallic and all ancillary pipes and fittings

Unit 302 Install gas engineering products or assets up to 180mm

Outcome 3 Be able to install components of the system

Assessment criteria

The learner can:

3.1 Determine the **method** of installation to be used when installing **components** of the system
3.2 Carry out a site-specific risk assessment and review in accordance with company policy
3.3 Select and wear the designated PPE
3.4 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 manufactures instructions
3.6 Assemble components to industry standards using mechanical and/or fusion welding techniques
3.7 Carry out site-specific tasks appropriately to prevent **equipment** damage
3.8 Position **components** in accordance with the specification
3.9 Protect installed assets with fine fill in accordance with specification and approved codes of practice
3.10 Maintain proximity distances from other utilities apparatus in accordance with approved codes of practice
3.11 Connect to the existing system using in-line squeeze off, side entry or top entry tee in accordance with codes of practice
3.12 Support and anchor installed assets in accordance with codes of practice
3.13 Confirm that the quality of the installation complies with the specified standard
3.14 Maintain the security and safety of the system and third parties where work is not complete or not to schedule
3.15 Ensure work practices conform to safe working procedures throughout the work activity
3.16 Comply with procedures where lone working is required

Range

Method: Dead insertion, live insertion, soil displacement, open cut
Components: Metallic and non-metallic and all ancillary pipes and fittings
Equipment: Components, tools

Additional Guidance

This outcome **must** be evidenced through workplace observation by an assessor.

At least **one** of the methods specified in the range **must** be evidenced as part of workplace observed assessment; the other can be assessed in a RWE through an Assessor Observation Report

Unit 302 Install gas engineering products or assets up to 180mm

Outcome 4 Be able to use and communicate data and information

Assessment criteria

The learner can:

4.1 Provide **instructions** to individuals who will be using technical information
4.2 Confirm instructions have been understood by individuals using technical information
4.3 Report to a **designated person** inaccuracies in the technical information sources used
4.4 Complete work documentation accurately
4.5 Record work documentation in the specified place or pass to a **designated person**
4.6 Comply with procedures if working on a 'Permit to Work' designated activity

Range

Instructions: Oral, written
Designated person: Those people specified within work and health and safety procedures

Unit 302 Install gas engineering products or assets up to 180mm

Outcome 5 Be able to resolve problems that arise from technical information and installation work

Assessment criteria

The learner can:

5.1 Report to the **designated person** damage or defects to **resources** using approved procedures

5.2 Report to the **designated person** work which is incomplete and not to schedule

5.3 Report to the **designated person** problems and conditions outside the responsibility of the job role

Range

Designated person: Those people specified within work and health and safety procedures

Resources: Equipment, materials and tools

Unit 302 Install gas engineering products or assets up to 180mm

Outcome 6 Know health and safety guidance and legislation in utilities network construction operations

Assessment criteria

The learner can:

6.1 State the main responsibilities of the employer and employee under the Health and Safety at Work Act

6.2 Explain the health and safety guidance governing work in excavations

6.3 Describe the safe procedures for handling hazardous materials

6.4 Explain the organisational accident recording and reporting procedures

6.5 Identify the range and use of personal protective equipment for the work.

Unit 302 Install gas engineering products or assets up to 180mm

Outcome 7 Understand how to install gas engineering products or assets up to 180mm

Assessment criteria

The learner can:

7.1 State the main responsibilities of employers and employees under the current working at height regulations

7.2 Explain the importance of carrying out on-site risk assessments and the need for constant review

7.3 Explain the importance of implementing a safe system of work (SSOW) document when working in excavations

7.4 Explain the importance of obtaining necessary permissions for isolation of any part of utilities network

7.5 Explain the importance of complying with current industry standards

7.6 State the organisation's policy and procedures for meeting the relevant

- statutory requirements
- regulations
- codes of practice

7.7 Explain the implications of not obtaining the correct authorisation

7.8 Explain the implications of using incorrect plant, tools and materials

7.9 Explain the implications of using incorrect system components

7.10 Explain the actions to be taken where plant, tools, materials and system components fail to meet required specification

7.11 Describe faults associated with the use of inappropriate installation methods and tools

7.12 Identify potential dangers in excavations

7.13 Describe the factors affecting, and means of confirming, the suitability of excavations

7.14 Explain the dangers of taking actions that can create confined space risks in excavations

7.15 Describe the range of isolation methods available and the rationale for their selection

7.16 Explain the procedure for obtaining authorisation to proceed with connections

7.17 Identify the range of actions to be taken if work cannot proceed to schedule

7.18 Explain how to determine appropriate safe remedial action if for any reason work cannot proceed

7.19 Identify methods of accessing information from different **sources**

7.20 Identify types and causes of likely disruptions

7.21 Identify methods of avoiding disruption

7.22 Explain the dangers of inadequate handling and lifting procedure

7.23 Describe the types and signs of defect likely to be present on sub-system and means of determining the appropriate safe action.

Range

Sources: Reference documents, regulations, codes of practice

Unit 304 Minimise risks to life, property and the environment during gas escapes

Level: 3
Credit value: 3
URN: R/503/0672

Unit aim:
The purpose of this unit is to assess the competence of individuals to recognised national occupational standards. This unit is designed to assess the competence of individuals to assess, prioritise and minimise risks and hazards to life, property and the environment during gas emergencies. It involves implementing the appropriate procedures and policies that must be followed to reduce or remove risks and hazards. It includes making sure all the work is carried out safely in accordance with industry specific operational procedures, and systems associated with risk reduction and/or removal.

Learning outcomes
There are **seven** learning outcomes to this unit. The learner will:
1. Be able to assess risks to life, property and the environment during gas emergencies
2. Be able to minimise and prioritise risks to life, property and the environment during gas emergencies
3. Be able to use approved gas detection and safety equipment
4. Be able to use and communicate data and information
5. Be able to resolve problems that arise when testing for escapes of gas
6. Know health and safety guidance and legislation in utilities network construction operations
7. Understand how to minimise risks to life, property and the environment during gas escapes

Guided learning hours
It is recommended that **20** hours should be allocated for this unit, although patterns of delivery are likely to vary.

Details of the relationship between the unit and relevant national standards
This unit is linked to the following Energy & Utility Skills National Occupational Standards (NOS) for Network Construction Operations: MUNC020 Minimise risks to life, property and the environment during Gas escapes

Support of the unit by a sector or other appropriate body
This unit is endorsed by Energy & Utility Skills.

Assessment
This unit will be assessed by:
- Portfolio

Unit 304 Minimise risks to life, property and the environment during gas escapes

Outcome 1 Be able to assess risks to life, property and the environment during gas emergencies

Assessment criteria

The learner can:

1.1 Perform work activities in accordance with **legislative and regulatory requirements**
1.2 Carry out a site specific risk assessment, both inside and outside of properties
1.3 Select and wear the designated PPE
1.4 Assess the hazards and the level and severity of the risk involved
1.5 Record the findings of hazard assessment

Range

Legislative and regulatory requirements: Health, safety and environment regulations, legislation, statutory and regulatory requirements, company procedures, safe working practices, risk assessments

Unit 304 Minimise risks to life, property and the environment during gas escapes

Outcome 2 Be able to minimise and prioritise risks to life, property and the environment during gas emergencies

Assessment criteria

The learner can:

2.1 Prioritise hazards and minimise the risk to safeguard life, property and the environment, including evacuation and forced entry

2.2 Make safe hazards that can be rectified safely

2.3 Make safe sources and potential sources of ignition

2.4 Monitor the effectiveness of the risk control measures and take prompt additional action where it is required

2.5 Establish and maintain a safe working area

2.6 Demonstrate how to ventilate

- property
- voids
- ducts
- drains
- other street furniture

2.7 Excavate to prevent underground tracking gas from entering

- property
- voids
- ducts
- drains
- other street furniture

2.8 Recheck the site and ensure it is clear.

Unit 304 Minimise risks to life, property and the environment during gas escapes

Outcome 3 Be able to use approved gas detection and safety equipment

Assessment criteria

The learner can:

3.1 Confirm safety equipment is available for use in accordance with site specific risk assessment

3.2 Confirm that gas detection equipment meets **standards**

3.3 Take and record, high and low level atmosphere samples from

- internal spaces
- external sources
- no access properties
- voids
- bar holes
- plant
- street furniture

3.4 Check for gas ingress to properties and voids

Range

Standards: Approved, in date, correctly calibrated

Unit 304 Minimise risks to life, property and the environment during gas escapes

Outcome 4 Be able to use and communicate data and information

Assessment criteria

The learner can:

4.1 Maintain contact with the emergency call centre

4.2 Communicate to individuals affected by the risk control measures which are in place

4.3 Confirm information provided about safety systems is clear, accurate and concise

4.4 Record the results of testing activities and steps taken, using company reporting systems and documentation

Unit 304 Minimise risks to life, property and the environment during gas escapes

Outcome 5 Be able to resolve problems that arise when testing for escapes of gas

Assessment criteria

The learner can:

5.1 Handle problems within the limits of the responsibility of the job role

5.2 Communicate problems outside the responsibilities of the job role to the **designated person**

Range

Designated person: Those people specified within work and health and safety procedures

Unit 304 Minimise risks to life, property and the environment during gas escapes

Outcome 6 Know health and safety guidance and legislation in utilities network construction operations

Assessment criteria

The learner can:

6.1 State the main responsibilities of the employer and employee under the Health and Safety at Work Act

6.2 Explain the health and safety guidance governing work in excavations

6.3 Describe the safe procedures for handling hazardous materials

6.4 Explain the organisational accident recording and reporting procedures

6.5 Identify the range and use of personal protective equipment for the work.

Unit 304 Minimise risks to life, property and the environment during Gas escapes

Outcome 7 Understand how to minimise risks to life, property and the environment during gas escapes

Assessment criteria

The learner can:

7.1 State the order of priority to safeguard life, property and the environment

7.2 State the **reporting lines and procedures** to be used when dealing with gas emergencies

7.3 Identify different types of hazards and risks that could occur during a gas emergency

7.4 State the properties of liquified petroleum gas (LPG)

7.5 Explain the criticality of different types of risk

7.6 Explain why it is important to reduce the risk quickly

7.7 Describe the consequences of failure to control the risks to the public, property and the environment

7.8 Identify the type of information on the risk which is important

Range

Reporting lines and procedures: Who should be kept informed of progress, the criteria to be used for forced entry into buildings, the criteria to be used for excavation of properties, the policy for dealing with media and emergency services during a gas emergency

Unit 305 Analyse and interpret the results of gas leakage surveys to determine the location of gas escapes

Level: 3
Credit value: 3
URN: D/503/0674

Unit aim:
The purpose of this unit is to assess the competence of individuals to recognised national occupational standards. The unit supports workforce development and describes the competencies necessary to analyse and interpret tests for escape location on services and mains operating at all relevant pressures. It includes the need to work safely to industry standards in accordance with health, safety and environment legislation, regulations and safe working practices, engineering specifications for the products, analysis methods and techniques.

Learning outcomes
There are **five** learning outcomes to this unit. The learner will:
1. Be able to analyse and interpret the results of surveys to determine the location of escapes
2. Be able to use and communicate data and information
3. Be able to resolve problems that arise when analysing and interpreting the results of surveys
4. Know Health and Safety guidance and legislation in utilities network construction operations
5. Understand how to analyse and interpret the results of gas leakage surveys to determine the location of gas escapes

Guided learning hours
It is recommended that **20** hours should be allocated for this unit, although patterns of delivery are likely to vary.

Details of the relationship between the unit and relevant national standards
This unit is linked to the following Energy & Utility Skills National Occupational Standards (NOS) for Network Construction Operations: MUNC022 Analyse and interpret the results of surveys to determine the location of gas escapes

Support of the unit by a sector or other appropriate body
This unit is endorsed by Energy & Utility Skills.

Assessment
This unit will be assessed by:
- Portfolio

Unit 305 Analyse and interpret the results of gas leakage surveys to determine the location of gas escapes

Outcome 1 Be able to analyse and interpret the results of surveys to determine the location of escapes

Assessment criteria

The learner can:

1.1 Perform work activities safely in accordance with **legislative and regulatory requirements**
1.2 Obtain the necessary **test data** on which to conduct the analysis
1.3 Analyse data using specified methods in accordance quality assurance standards
1.4 Check the data analysis is accurate, thorough and takes account of the test conditions
1.5 Compare the analysis against the product or asset specification
1.6 Identify faults and variations from specification
1.7 Perform necessary actions based on the findings of the analysis activity

Range

Legislative and regulatory requirements: Health, safety and environment requirements, legislation, industry standards, statutory requirements, company procedures, work instruction

Test data: Results obtained from bar hole and other leakage surveys, pressure tests, and decay testing

Unit 305 Analyse and interpret the results of gas leakage surveys to determine the location of gas escapes

Outcome 2 Be able to use and communicate data and information

Assessment criteria

The learner can:

2.1 Record the results of the analysis in accordance with company communication and documentation systems

2.2 Record actions taken as a result of the analysis in accordance with company reporting systems and documentation

Unit 305 Analyse and interpret the results of gas leakage surveys to determine the location of gas escapes

Outcome 3 Be able to resolve problems that arise when analysing and interpreting the results of surveys

Assessment criteria

The learner can:

3.1 Resolve inconsistencies in the **test data** in accordance with company procedures

3.2 Handle problems within the limits of the responsibility of the job role

3.3 Communicate problems outside the responsibilities of the job role to the **designated person**

Range

Test data: Results obtained from bar hole and other leakage surveys, pressure tests, and decay testing

Designated person: Those people specified within work and health and safety procedures

Unit 305 Analyse and interpret the results of gas leakage surveys to determine the location of gas escapes

Outcome 4 Know health and safety guidance and legislation in utilities network construction operations

Assessment criteria

The learner can:

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 requirements and regulations relating to the management of gas.

Unit 305 Analyse and interpret the results of gas leakage surveys to determine the location of gas escapes

Outcome 5 Understand how to analyse and interpret the results of gas leakage surveys to determine the location of gas escapes

Assessment criteria

The learner can:

5.1 Explain the engineering specifications for products and assets, including pressure gauge, pipe supply configurations, and location

5.2 Describe how to use analysis methods and techniques, including comparison of standard conditions with **test data**

5.3 Describe the various types of standard test documentation and procedures for survey completion

5.4 Identify the measures to take in the event of an **escape** being located

Range

Test data: Results obtained from bar hole and other leakage surveys, pressure tests, and decay testing

Escape: Controlled or uncontrolled release of gas from an engineering product or asset

Unit 306 Joint materials by fusion processes on utilities network construction, above 180mm diameter

Level: 3
Credit value: 9
URN: J/506/4754

Unit aim:
The aim of this unit is to provide the learner with the knowledge, understanding and skills to joint materials by fusion processes on utilities network construction, above 180mm diameter for mains jointing only.

Learning outcomes
There are **seven** learning outcomes to this unit. The learner will:
1. Be able to prepare for jointing
2. Be able to make joints using butt fusion techniques
3. Be able to make joints using electrofusion techniques
4. Be able to use and communicate data and information
5. Be able to resolve problems which arise from jointing materials
6. Know Health and Safety guidance and legislation in utilities network construction operations
7. Understand jointing materials by fusion processes on utilities network construction, above 180mm diameter.

Guided learning hours
It is recommended that **83** hours should be allocated for this unit, although patterns of delivery are likely to vary.

Details of the relationship between the unit and relevant national standards
This unit is linked to NOS EUSMUNC24 Joint materials by fusion processes on Utilities Network Construction, above 180mm diameter

Support of the unit by a sector or other appropriate body
This unit is endorsed by Energy & Utility Skills.

Assessment
This unit will be assessed by:
- Portfolio

Unit 306 Joint materials by fusion processes on utilities network construction, above 180mm diameter

Outcome 1 Be able to prepare for jointing

Assessment criteria

The learner can:

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.

Range

Jointing and related equipment: electro fusion, butt fusion, peelable level pipe, trackstar

Unit 306 Joint materials by fusion processes on utilities network construction, above 180mm diameter

Outcome 2 Be able to make joints using butt fusion techniques

Assessment criteria

The learner can:

2.1 carry out and monitor the machine operations to produce butt fusion joints of the required quality

2.2 confirm compliance with:

a. job instructions

b. correct preparation

c. specification

d. specified dimensional accuracy

2.3 demonstrate how to de-bead and carry out approved quality assurance test on bead

2.4 confirm joint and bead are identifiable by marking in accordance with company procedures

2.5 confirm the equipment is in a safe condition on completion of jointing activities

2.6 handle excess and waste materials and temporary attachments, in line with approved and agreed procedures

2.7 apply the correct manual handling procedures.

Unit 306 Joint materials by fusion processes on utilities network construction, above 180mm diameter

Outcome 3 Be able to make joints using electrofusion techniques

Assessment criteria

The learner can:

3.1 use the correct electrofusion jointing technique to produce joints of the required quality and confirm compliance with the
   a. specified standard
   b. specified dimensional accuracy

3.2 confirm that on completion of jointing activities the equipment is shut down to a safe condition

3.3 confirm temporary attachments; excess and waste materials are dealt with promptly in line with approved and agreed procedures

3.4 apply the correct manual handling procedures.

Unit 306 Joint materials by fusion processes on utilities network construction, above 180mm diameter

Outcome 4 Be able to use and communicate data and information

Assessment criteria

The learner can:

4.1 comply with approved procedures and practices involved in the work activity

4.2 confirm with designated personnel any circumstances where information appears incorrect

4.3 use organisational information systems to record and store jointing data and information.

Unit 306 Joint materials by fusion processes on utilities network construction, above 180mm diameter

Outcome 5 Be able to resolve problems which arise from jointing materials

Assessment criteria

The learner can:

5.1 report promptly to the designated person damage or defects to tools, equipment, materials
5.2 report promptly to the designated person matters outside the responsibility of the job role
5.3 resolve day to day problems within the responsibility of the job role
5.4 handle emergency situations as specified in approved procedures.

Unit 306 Joint materials by fusion processes on utilities network construction, above 180mm diameter

Outcome 6 Know health and safety guidance and legislation in utilities network construction operations

Assessment criteria

The learner can:

6.1 state the main responsibilities of the employer and employee under the Health and Safety at Work Act

6.2 explain the health and safety guidance governing work in excavations

6.3 describe the safe procedures for handling hazardous materials

6.4 explain the organisational accident recording and reporting procedures

6.5 identify the range and use of personal protective equipment for the work

6.6 state the health, safety and environment legislation and environmental procedures relevant to the work activities.

Unit 306 Joint materials by fusion processes on utilities network construction, above 180mm diameter

Outcome 7 Understand jointing materials by fusion processes on utilities network construction, above 180mm diameter

Assessment criteria

The learner can:

7.1 explain the industry codes of practice and company procedures
7.2 identify different types of **pipe materials**
7.3 explain why only pipes of similar specifications can be joined together
7.4 interpret engineering specifications relevant to the engineering activity
7.5 describe the different stages that take place during the **jointing process** and the importance of allowing each phase to complete
7.6 explain the need for pipe support, restraint, alignment and the consequences of poor support, restraint and mis-alignment
7.7 explain the cause and effect of defects and contaminations
7.8 describe equipment maintenance procedures
7.9 describe equipment calibration
7.10 describe consequences of poor equipment maintenance
7.11 identify different quality assurance procedures that can be applied in recognising defects
7.12 explain the correct reporting procedures.

Range

Pipe materials: PE80, PE100

Jointing process: electro fusion, butt fusion

Unit 306 Joint materials by fusion processes on utilities network construction, above 180mm diameter

Supporting information

Evidence requirements

In accordance with EU Skills Assessment Strategy, assessment on both types of fusion is to be covered via both workplace and RWE.

Guidance

AC 1.1: Company procedures to be interpreted as industry standards.

AC 1.2: The learner must select and wear the designated PPE as per company procedure.

AC 1.3: Assessment should reflect type of pipe and equipment used in the candidates' own environment, i.e. peelable pipe, trackstar, yellow MDPE black core with yellow MDPE outer layer.

AC 6.3: Company COSHH assessment to be referred to for each material.

Unit 307 Decommissioning and abandonment of mains and services 63mm and above

Level: 3
Credit value: 7
URN: H/506/0789

Unit aim:
The aim of this unit is to provide the learner with the knowledge, understanding and skills to decommission and abandon mains and services 63mm and above.

Learning outcomes
There are **eight** learning outcomes to this unit. The learner will:
1. Be able to conduct specified testing of gas networks associated with decommissioning
2. Be able to interpret technical information for decommissioning
3. Be able to select components and resources for decommissioning
4. Be able to decommission the system
5. Be able to use and communicate data and information
6. Be able to resolve problems that arise from technical information and decommissioning work
7. Know health and safety guidance and legislation in utilities network construction operations
8. Understand how to decommission gas engineering products or assets.

Guided learning hours
It is recommended that **60** hours should be allocated for this unit, although patterns of delivery are likely to vary.

Details of the relationship between the unit and relevant national standards
This unit is linked to NOS EUSMUNC25 Decommissioning and Abandonment of mains and services 63mm and above

Support of the unit by a sector or other appropriate body
This unit is endorsed by Energy & Utility Skills.

Assessment
This unit will be assessed by:
- Portfolio

Unit 307 Decommissioning and abandonment of mains and services 63mm and above

Outcome 1 Be able to conduct specified testing of gas networks associated with decommissioning

Assessment criteria

The learner can:

1.1 perform work activities safely at all times in accordance with legislative and regulatory requirements

1.2 carry out a site specific risk assessment and review in accordance with company procedures

1.3 select and wear the designated PPE

1.4 select and use the specified equipment for testing

1.5 use testing and purging tools and equipment in accordance with industry standards and codes of practice

1.6 purge system in accordance with industry standards and codes of practice

1.7 carry out mains decay tests in accordance with codes of practice

1.8 interpret decay test results to determine if asset in suitable condition for abandonment

1.9 take actions within your own level of responsibility

1.10 report results that require action that are outside your authority to authorised persons in accordance with codes of practice.

Unit 307 Decommissioning and abandonment of mains and services 63mm and above

Outcome 2 Be able to interpret technical information for decommissioning

Assessment criteria

The learner can:

2.1 produce work details for component installation use

2.2 from the technical information take off:

- a. dimensions
- b. lengths
- c. widths
- d. volumes
- e. utilities plant

2.3 demonstrate how to make corrections through drawings, records and work documents.

Unit 307 Decommissioning and abandonment of mains and services 63mm and above

Outcome 3 Be able to select components and resources for decommissioning

Assessment criteria

The learner can:

3.1 select the type of components in compliance with the work and quality specifications
3.2 comply with procedures to replace defective components
3.3 comply with procedures to replace non-match components
3.4 comply with procedures to replace sub-standard components
3.5 confirm the availability of sufficient resources
3.6 handle changes to the planned use of the resource
3.7 confirm components and decommissioning equipment are operational.

Unit 307 Decommissioning and abandonment of mains and services 63mm and above

Outcome 4 Be able to decommission the system

Assessment criteria

The learner can:

4.1 determine the **method** for decommissioning when abandoning the system
4.2 carry out a site-specific risk assessment and review in accordance with company policy
4.3 select and wear the designated PPE
4.4 confirm the condition of the excavation conforms with instructions and specifications
4.5 select, prepare and operate decommissioning equipment in accordance with the specification and manufactures instructions
4.6 assemble components to industry standards using mechanical and/or fusion welding techniques
4.7 carry out site-specific tasks appropriately to prevent equipment damage
4.8 position components in accordance with the specification
4.9 disconnection of the existing system using flowstopping in accordance with codes of practice
4.10 confirm that the decommissioning process is completed in accordance with codes of practice
4.11 maintain the security and safety of the system and third parties where work is not complete or not to schedule
4.12 ensure work practices conform to safe working procedures throughout the work activity.

Range

Method: direct and indirect purging

Unit 307 Decommissioning and abandonment of mains and services 63mm and above

Outcome 5 Be able to use and communicate data and information

Assessment criteria

The learner can:

5.1 provide instructions to individuals who will be using technical information
5.2 confirm instructions have been understood by individuals using technical information
5.3 report to a designated person inaccuracies in the technical information sources used
5.4 complete work documentation accurately
5.5 record work documentation in the specified place or pass to a designated person
5.6 comply with procedures if working on a 'permit to work' designated activity.

Unit 307 Decommissioning and abandonment of mains and services 63mm and above

Outcome 6 Be able to resolve problems that arise from technical information and decommissioning work

Assessment criteria

The learner can:

6.1 report to the designated person damage or defects to resources using approved procedures

6.2 report to the designated person work which is incomplete and not to schedule

6.3 report to the designated person problems and conditions outside the responsibility of the job role.

Unit 307 Decommissioning and abandonment of mains and services 63mm and above

Outcome 7 Know health and safety guidance and legislation in utilities network construction operations

Assessment criteria

The learner can:

7.1 state the main responsibilities of the employer and employee under the Health and Safety at Work Act

7.2 explain the health and safety guidance governing work in excavations

7.3 describe the safe procedures for handling hazardous materials

7.4 explain the organisational accident recording and reporting procedures

7.5 identify the range and use of personal protective equipment for the work.

Unit 307 Decommissioning and abandonment of mains and services 63mm and above

Outcome 8 Understand how to decommission gas engineering products or assets.

Assessment criteria

The learner can:

8.1 state the main responsibilities of employers and employees under the current working at height regulations
8.2 explain the importance of carrying out on-site risk assessments and the need for constant review
8.3 explain the importance of implementing a Safe System of Work (SSOW) document when working in excavations
8.4 explain the importance of obtaining necessary permissions for isolation of any part of utilities network
8.5 explain the importance of complying with current industry standards
8.6 state the organisation's policy and procedures for meeting the relevant
   a. statutory requirements
   b. regulations
   c. codes of practice
8.7 explain the implications of not obtaining the correct authorisation
8.8 explain the implications of using incorrect plant, tools and materials
8.9 explain the implications of using incorrect system components
8.10 explain the actions to be taken where plant, tools, materials and system components fail to meet required specification
8.11 describe faults associated with the use of inappropriate installation methods and tools
8.12 identify potential dangers in excavations
8.13 describe the factors affecting, and means of confirming, the suitability of excavations
8.14 explain the dangers of taking actions that can create confined space risks in excavations
8.15 describe the range of isolation methods available and the rationale for their selection
8.16 explain the procedure for obtaining authorisation to proceed with decommissioning
8.17 identify the range of actions to be taken if work cannot proceed to schedule
8.18 explain how to determine appropriate safe remedial action if for any reason work cannot proceed
8.19 identify methods of accessing information from different sources
8.20 identify types and causes of likely **disruption**
8.21 identify methods of avoiding **disruption**
8.22 explain the dangers of inadequate handling and lifting procedure
8.23 explain the procedure for returning to work on an abandoned system.

Range

Disruption: equipment failure, weather conditions, system load, ground conditions, lack of available resources, communication breakdown.

Unit 307 Decommissioning and abandonment of mains and services 63mm and above

Supporting information

Guidance

AC 1.1: Performing work activities safely must include the use of appropriate safety equipment.

AC 1.2: Company procedures to be interpreted as industry standards.

AC 1.5: 'Purging tools' can also be referred to as 'decommissioning tools'.

AC 1.6: 'Purge system' can also mean 'decommission system'.

AC 2.1: Some work details would not necessarily need to be produced by the learner, such as SCO documentation.

AC 2.2: Pressure and purge rates must also be calculated.

AC 3.2-3.4: Compliance with procedures to be achieved through following manufacturer's instructions and industry standards.

AC 4.2: Company procedures to be interpreted as industry standards.

AC 5.6: 'Permit to work' will fall under the remit of SCO; learners may not have an SCO qualification, but would be expected to comply with the procedures within the Permit to Work.

AC 8.16: To include procedure following a decay test.

Unit 308 Install gas engineering products or assets above 355mm

Level: 3
Credit value: 9
URN: L/506/4755

Unit aim:
The aim of this unit is to provide the learner with the knowledge, understanding and skills to install gas engineering products or assets above 355mm

Learning outcomes
There are **eight** learning outcomes to this unit. The learner will:

1. Be able to interpret technical information for installing components of the system
2. Be able to select components and resources for installation of the system
3. Be able to install components of the system
4. Be able to use and communicate data and information
5. Be able to resolve problems that arise from technical information and installation work
6. Know Health and Safety guidance and legislation in utilities network construction operations
7. Understand how to install gas engineering products or assets above 355mm.
8. Understand isolation and connection methods

Guided learning hours
It is recommended that **86** hours should be allocated for this unit, although patterns of delivery are likely to vary.

Details of the relationship between the unit and relevant national standards
This unit is linked to NOS EUSMUNC26 Install gas engineering products or assets above 355mm.

Support of the unit by a sector or other appropriate body
This unit is endorsed by Energy & Utility Skills.

Assessment
This unit will be assessed by:

- Portfolio

Unit 308 Install gas engineering products or assets above 355mm

Outcome 1 Be able to interpret technical information for installing components of the system

Assessment criteria

The learner can:

1.1 produce work details for component installation use

1.2 from the technical information take off:

- a. dimensions
- b. lengths
- c. widths
- d. quantities
- e. utilities plant
- f. services
- g. buildings
- h. kerbs
- i. boundaries

1.3 demonstrate how to make corrections through drawings, records and work documents.

Unit 308 Install gas engineering products or assets above 355mm

Outcome 2 Be able to select components and resources for installation of the system

Assessment criteria

The learner can:

2.1 select the type of **components** in compliance with the work and quality specifications
2.2 comply with procedures to replace defective components
2.3 comply with procedures to replace non-match components
2.4 comply with procedures to replace sub-standard components
2.5 confirm the availability of sufficient **resources**
2.6 confirm relevant authorisations and notices are in place to complete project
2.7 handle changes to the planned use of the resource
2.8 confirm components and installation equipment are operational.

Range

Components: pipes, fittings, pipe support, anchorage
Resources: Gas networks engineering staff, contractors

Unit 308 Install gas engineering products or assets above 355mm

Outcome 3 Be able to install components of the system

Assessment criteria

The learner can:

3.1 determine the method of installation to be used when installing components of the system
3.2 carry out a site-specific risk assessment and review in accordance with company policy
3.3 select and wear the designated PPE
3.4 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 assemble components to industry standards using mechanical and/or fusion welding techniques
3.7 carry out site-specific tasks appropriately to prevent equipment damage
3.8 position components in accordance with the specification
3.9 install products or assets in accordance with the specification
3.10 protect installed assets with fine fill in accordance with specification and approved codes of practice
3.11 maintain proximity distances from other utilities apparatus in accordance with approved codes of practice
3.12 make connections to existing systems using in-line flowstopping and under pressure connections in accordance with codes of practice
3.13 support and anchor installed assets in accordance with codes of practice
3.14 confirm that the quality of the installation complies with the specified standard
3.15 maintain the security and safety of the system and third parties where work is not complete or not to schedule
3.16 ensure work practices conform to safe working procedures throughout the work activity
3.17 ensure all on-site personnel comply with relevant work specifications and complete tasks safely.

Unit 308 Install gas engineering products or assets above 355mm

Outcome 4 Be able to use and communicate data and information

Assessment criteria

The learner can:

4.1 provide instructions to individuals who will be using technical information
4.2 confirm instructions have been understood by individuals using technical information
4.3 report to a designated person inaccuracies in the technical information sources used
4.4 complete work documentation accurately
4.5 record work documentation in the specified place or pass to a designated person
4.6 comply with procedures if working on a 'permit to work' designated activity.

Unit 308 Install gas engineering products or assets above 355mm

Outcome 5 Be able to resolve problems that arise from technical information and installation work

Assessment criteria

The learner can:

5.1 report to the designated person damage or defects to resources using approved procedures

5.2 report to the designated person work which is incomplete and not to schedule

5.3 report to the designated person problems and conditions outside the responsibility of the job role.

Unit 308 Install gas engineering products or assets above 355mm

Outcome 6 Know health and safety guidance and legislation in utilities network construction operations

Assessment criteria

The learner can:

6.1 state the main responsibilities of the employer and employee under the Health and Safety at Work Act

6.2 explain the health and safety guidance governing work in excavations

6.3 describe the safe procedures for handling hazardous materials

6.4 explain the organisational accident recording and reporting procedures

6.5 identify the range and use of personal protective equipment for the work.

Unit 308 Install gas engineering products or assets above 355mm

Outcome 7 Understand how to install gas engineering products or assets above 355mm

Assessment criteria

The learner can:

7.1 state the organisation's policy and procedures for meeting the relevant:
   a. statutory requirements
   b. regulations
   c. codes of practice

7.2 explain the importance of carrying out on-site risk assessments and the need for constant review

7.3 explain the importance of implementing a Safe System of Work (SSOW) document when working in excavations

7.4 explain the importance of obtaining necessary permissions for isolation of any part of utilities network

7.5 explain the importance of complying with current industry standards

7.6 explain the implications of not obtaining the correct authorisation

7.7 explain the implications of using incorrect plant, tools and materials

7.8 explain the implications of using incorrect system components

7.9 explain the actions to be taken where plant, tools, materials and system components fail to meet required specification

7.10 describe faults associated with the use of inappropriate installation methods and tools

7.11 state the main responsibilities of employers and employees under Working at Height Regulations

7.12 identify potential dangers in excavations

7.13 describe the factors affecting, and means of confirming, the suitability of excavations

7.14 explain the dangers of taking actions that can create confined space risks in excavations

7.15 explain the dangers of inadequate handling and lifting procedure

7.16 explain the dangers of lifting operations to on-site personnel on site

7.17 describe the types and signs of defect likely to be present, and means of determining the appropriate safe action.

Unit 308 Install gas engineering products or assets above 355mm

Outcome 8 Understand isolation and connection methods

Assessment criteria

The learner can:

8.1 describe the range of isolation methods available and the rationale for their selection
8.2 explain the procedure for obtaining authorisation to proceed with connections
8.3 identify the range of actions to be taken if work cannot proceed to schedule
8.4 explain how to determine appropriate safe remedial action if for any reason work cannot proceed
8.5 identify methods of accessing information from different sources
8.6 identify types and causes of likely **disruption**
8.7 identify methods of avoiding **disruption**.

Range

Disruption: equipment failure, weather conditions, system load, ground conditions, lack of available resources, communication breakdown, traffic, public.

Unit 308 Install gas engineering products or assets above 355mm

Supporting information

Guidance

Each individual organisation, such as Distribution Networks will have their own suite of policy and procedural documents. Accordingly, it is not deemed appropriate to name these although they would include for example Network Emergency Suite of Policies and Procedures. It is envisaged that whilst training is being conducted in separate Networks, individual Networks will ask training personnel to brief out these unique documents.

AC 1.1: Work details to include project file including installation method.

AC 3.1: To cover PE and metallic; assessment on metallic can be covered under RWE.

AC3.3: The learner must select and wear the designated PPE as per company procedure.

AC 4.6: 'Permit to work' will fall under the remit of SCO; learners may not have an SCO qualification, but would be expected to comply with the procedures within the Permit to Work.

AC 6.3: Refer to company COSHH assessment for each hazardous material.

AC 7.12: Learners to be made aware of different trench support methods.

AC 7.14: Learners to be made aware of emergency rescue techniques.

AC 8.1: Learners need to demonstrate a background knowledge of all isolation methods, i.e. valves, stopple, iris stopple, in-line flowstopping.

AC 8.2: Obtaining authorisation will fall under the remit of SCO; learners may not have an SCO qualification, but would be expected to comply with the procedures within the Permit to Work.

Unit 309 Install gas engineering products or assets above 180mm up to and including 355mm

Level: 3
Credit value: 7
URN: R/506/4756

Unit aim:
The aim of this unit is to provide the learner with the knowledge, understanding and skills to install gas engineering products or assets above 180mm up to and including 355mm.

Learning outcomes
There are **seven** learning outcomes to this unit. The learner will:
1. Be able to interpret technical information for installing components of the system
2. Be able to select components and resources for installation of the system
3. Be able to install components of the system
4. Be able to use and communicate data and information
5. Be able to resolve problems that arise from technical information and installation work.
6. Know health and safety guidance and legislation in utilities network construction operations.
7. Understand how to install gas engineering products or assets above 180mm up to and including 355mm.

Guided learning hours
It is recommended that **63** hours should be allocated for this unit, although patterns of delivery are likely to vary.

Details of the relationship between the unit and relevant national standards
This unit is linked to NOS EUSMUNC27 Install gas engineering products or assets above 180mm up to and including 355mm.

Support of the unit by a sector or other appropriate body
This unit is endorsed by Energy & Utility Skills.

Assessment
This unit will be assessed by:
- Portfolio.

Unit 309 Install gas engineering products or assets above 180mm up to and including 355mm

Outcome 1 Be able to interpret technical information for installing components of the system

Assessment criteria

The learner can:

1.1 produce **work details** for component installation use

1.2 from the technical information take off

a. dimensions
b. lengths
c. widths
d. quantities
e. utilities plant
f. services
g. buildings
h. kerbs
i. boundaries

1.3 demonstrate how to make corrections through drawings, records and work documents.

Range

Work details: project file including installation method

Unit 309 Install gas engineering products or assets above 180mm up to and including 355mm

Outcome 2 Be able to select components and resources for installation of the system

Assessment criteria

The learner can:

2.1 select the type of **components** in compliance with the work and quality specifications
2.2 comply with procedures to replace defective components
2.3 comply with procedures to replace non-match components
2.4 comply with procedures to replace sub-standard components
2.5 confirm the availability of sufficient **resources**
2.6 confirm relevant authorisations and notices are in place to complete project
2.7 handle changes to the planned use of the resource
2.8 confirm components and installation equipment are operational.

Range

Components: pipes, fittings, pipe support, anchorage

Resources: gas networks, engineering staff, contractors

Unit 309 Install gas engineering products or assets above 180mm up to and including 355mm

Outcome 3 Be able to install components of the system

Assessment criteria

The learner can:

3.1 determine the method of installation to be used when installing components of the system
3.2 carry out a site-specific risk assessment and review in accordance with company policy
3.3 select and wear the designated PPE
3.4 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 manufacturers' instructions
3.6 assemble components to industry standards using mechanical and/or fusion welding techniques
3.7 carry out site-specific tasks appropriately to prevent equipment damage
3.8 position components in accordance with the specification
3.9 protect installed assets with fine fill in accordance with specification and approved codes of practice
3.10 maintain proximity distances from other utilities apparatus in accordance with approved codes of practice
3.11 make connections to existing systems using in-line flowstopping and under pressure connections in accordance with codes of practice
3.12 support and anchor installed assets in accordance with codes of practice
3.13 confirm that the quality of the installation complies with the specified standard
3.14 maintain the security and safety of the system and third parties where work is not complete or not to schedule
3.15 ensure work practices conform to safe working procedures throughout the work activity
3.16 ensure all on-site personnel comply with relevant work specifications and complete tasks safely.

Unit 309 Install gas engineering products or assets above 180mm up to and including 355mm

Outcome 4 Be able to use and communicate data and information

Assessment criteria

The learner can:

4.1 provide instructions to individuals who will be using technical information
4.2 confirm instructions have been understood by individuals using technical information
4.3 report to a designated person inaccuracies in the technical information sources used
4.4 complete work documentation accurately
4.5 record work documentation in the specified place or pass to a designated person
4.6 comply with procedures if working on a 'permit to work' designated activity.

Unit 309 Install gas engineering products or assets above 180mm up to and including 355mm

Outcome 5 Be able to resolve problems that arise from technical information and installation work

Assessment criteria

The learner can:

5.1 report to the designated person damage or defects to resources using approved procedures

5.2 report to the designated person work which is incomplete and not to schedule

5.3 report to the designated person problems and conditions outside the responsibility of the job role.

Unit 309 Install gas engineering products or assets above 180mm up to and including 355mm

Outcome 6 Know health and safety guidance and legislation in utilities network construction operations

Assessment criteria

The learner can:

6.1 state the main responsibilities of the employer under the Health and Safety at Work Act
6.2 state the main responsibilities of the employee under the Health and Safety at Work Act
6.3 explain the health and safety guidance governing work in excavations
6.4 describe the safe procedures for handling hazardous materials
6.5 explain the organisational accident recording and reporting procedures
6.6 identify the range and use of personal protective equipment for the work.

Unit 309 Install gas engineering products or assets above 180mm up to and including 355mm

Outcome 7 Understand how to install gas engineering products or assets above 180mm up to and including 355mm.

Assessment criteria

The learner can:

7.1 state the main responsibilities of employers and employees under the current Working at Height regulations
7.2 explain the importance of carrying out on-site risk assessments and the need for constant review
7.3 explain the importance of implementing a Safe System of Work (SSOW) document when working in excavations
7.4 explain the importance of obtaining necessary permissions for isolation of any part of utilities network
7.5 explain the importance of complying with current industry standards
7.6 state the organisation's policy and procedures for meeting the relevant:
   a. statutory requirements
   b. regulations
   c. codes of practice
7.7 explain the implications of not obtaining the correct authorisation
7.8 explain the implications of using incorrect plant, tools and materials
7.9 explain the implications of using incorrect system components
7.10 explain the actions to be taken where plant, tools, materials and system components fail to meet required specification
7.11 describe faults associated with the use of inappropriate installation methods and tools
7.12 identify potential dangers in excavations
7.13 describe the factors affecting, and means of confirming, the suitability of excavations
7.14 explain the dangers of taking actions that can create confined space risks in excavations
7.15 describe the range of isolation methods available and the rationale for their selection
7.16 explain the procedure for obtaining authorisation to proceed with connections
7.17 identify the range of actions to be taken if work cannot proceed to schedule
7.18 explain how to determine appropriate safe remedial action if for any reason work cannot proceed
7.19 identify methods of accessing information from different sources
7.20 identify types and causes of likely **disruption**
7.21 identify methods of avoiding **disruption**
7.22 explain the dangers of inadequate handling and lifting procedure
7.23 explain the dangers of lifting operations to on-site personnel on site
7.24 describe the types and signs of defect likely to be present, and means of determining the appropriate safe action.

Range

Disruption: equipment failure, weather conditions, system load, ground conditions, lack of available resources, communication breakdown, traffic, public.

Unit 309 Install gas engineering products or assets above 180mm up to and including 355mm

Supporting information

Guidance

AC 3.11: To cover PE and metallic; assessment on metallic can be covered under RWE.

AC 4.6: 'Permit to work' will fall under the remit of SCO; learners may not have an SCO qualification, but would be expected to comply with the procedures within the Permit to Work.

AC6.4: Learners to refer to company COSHH assessment for each hazardous material.

AC 7.12: Learners to be made aware of different trench support methods.

AC7.14: Learners to be made aware of emergency rescue techniques.

AC7.15: Learners need to demonstrate a background knowledge of all isolation methods i.e. squeeze off, valves, stopple, iris stopple, in-line flowstopping.

Unit 310 Operate within the gas intermediate pressure range

Level: 3
Credit value: 3
URN: Y/506/4757

Unit aim:
The aim of this unit is to provide the learner with the knowledge, understanding and skills to operate in compliance with legislation, regulation, policies, procedures, instructions and guidance in the gas industry, specifically within the gas intermediate pressure range.

Learning outcomes
There are **eight** learning outcomes to this unit. The learner will:

1. Understand key documents that apply to working in the gas intermediate pressure range.
2. Be able to comply with key legislation, organisational policies and procedures that apply to work instructions in the gas intermediate pressure range
3. Know how to evaluate hazards and risks associated with the gas intermediate pressure range
4. Know the correct personal protective equipment (PPE) used within the gas intermediate pressure range
5. Be able to identify and install pressure reduction equipment within the gas intermediate pressure range on services up to and including 63 mm or 2” diameter.
6. Understand how to comply with organisational procedures within the gas intermediate pressure range.
7. Be able to use cathodic protection within the gas intermediate pressure range
8. Be able to identify and install pressure reduction equipment within the gas intermediate pressure range to assets above 63 mm or 2” diameter.

Guided learning hours
It is recommended that **23** hours should be allocated for this unit, although patterns of delivery are likely to vary.

Support of the unit by a sector or other appropriate body
This unit is endorsed by Energy & Utility Skills.

Assessment
This unit will be assessed by:

- An assignment covering underpinning knowledge/understanding and practical skills.

Unit 310 Operate within the gas intermediate pressure range

Outcome 1 Understand key documents that apply to working in the gas intermediate pressure range

Assessment criteria

The learner can:

1.1 list the **key legislative** and **industry standard documents** in relation to work in the gas intermediate pressure range

1.2 state the **consequences** of not complying with key legislative and industry standard documents

1.3 state employer responsibilities within the Health and Safety at Work Act

1.4 state employee responsibilities within the Health and Safety at Work Act.

Range

Key legislative documents: Health & Safety at Work Act, Control of Substances Hazardous to Health (COSHH), Construction (Design and Management) Regulations, Dangerous Substances & Explosive Atmosphere Regulations, Gas Safety (Management) Regulations, Management of Health & Safety at Work Regulations, Pipeline Safety Regulations, Pressure Systems Safety Regulations, Gas Safety Regulations (Installations and Use) Regulations, The Lifting Operations & Lifting Regulations Equipment Regulations (LOLER), Provision & Use of Work Equipment Regulations (PUWER), Reporting on Injuries, Diseases and Dangerous Occurrences (RIDDOR).

Industry standard documents: external documents: Health & Safety Executive Approved Codes of Practice, Health & Safety Executive Guidance notes, Institute of Gas Engineers and Managers (IGEM) suite of documents applicable to work in the gas intermediate pressure range (IGEM/TD/1 – Handling, Transport and Storage of Steel Pipe, IGEM/TD/3 – Distribution Mains <16 bar, IGEM/TD/4 – Distribution Services <16 bar, IGEM/TD/13 – Pressure Regulating Installations, IGEM/GL/5 – Procedures for Managing New Works, Modifications and Repairs).

Consequences: injury or death, prosecution, prohibition and enforcement notices, disciplinary procedures.

Unit 310 Operate within the gas intermediate pressure range

Outcome 2 Be able to comply with key legislation, organisational policies and procedures that apply to work instructions in the gas intermediate pressure range

Assessment criteria

The learner can:

2.1 produce a detailed **work instruction**

2.2 comply with legislation according to information contained within a work instruction

2.3 comply with organisational policy and procedural information contained within a work instruction.

Range

Work instruction: SCO, site specific risk assessment, environmental risk assessment, generic risk assessment, industry standard documents.

Unit 310 Operate within the gas intermediate pressure range

Outcome 3 Know how to evaluate hazards and risks associated with the gas intermediate pressure range

Assessment criteria

The learner can:

3.1 identify **hazards** associated with the gas intermediate pressure range

3.2 identify **risks** associated with the gas intermediate pressure range

3.3 identify **control measures** associated with the gas intermediate pressure range.

Range

Hazards: catastrophic failure of pipe wall and fittings, working at the parent main, disturbing anchorage of pipe, fittings and end caps, sudden release of pressure from a pressurised system, ignition of gas, potential escape at elevated pressure, working with elevated pressure in the gas intermediate pressure range, lifting operations, trench collapse.

Risks: fire, explosion, airborne/noise/water/land pollution, debris, environmental damage, asphyxiation, escape of gas, personal injury, loss of gas supply.

Control measures: staff competency, PPE, fire fighting equipment, breathing apparatus, lifting plan, mechanised lifting equipment, trench support, access and egress, emergency services, pressure reduction/isolation of supply, media coverage, evacuation and safeguarding of life and property, extinguish sources of ignition, effective communication, use of correct waste streams, Safe Control of Operations (SCO).

Unit 310 Operate within the gas intermediate pressure range

Outcome 4 Know the correct personal protective equipment (PPE) used within the gas intermediate pressure range.

Assessment criteria

The learner can:

4.1 list **personal protective equipment** (PPE) typically used in the gas intermediate pressure range

4.2 list **safety equipment** typically used in the gas intermediate pressure range.

Range

Personal protective equipment: full fire suit made from suitable fire retardant material, fire resistant clothing made from suitable fire retardant material, eye protection, safety headgear, ear defenders, reflective garments, gloves, safety footwear, dust masks, welding visors where appropriate.

Safety equipment: breathing apparatus with forced air available, personal alarm/gas monitor, fire extinguishers, intrinsically safe equipment.

Unit 310 Operate within the gas intermediate pressure range

Outcome 5 Be able to identify and install pressure reduction equipment within the gas intermediate pressure range on services up to and including 63 mm or 2” diameter

Assessment criteria

The learner can:

5.1 identify locations for pressure regulating equipment
5.2 identify locations for emergency isolation valves
5.3 state housing requirements for pressure reduction equipment
5.4 select materials and equipment to be used in the gas intermediate pressure range sector
5.5 identify **jointing techniques** applicable to services up to and including 63 mm or 2” diameter
5.6 install pressure reduction equipment up to and including 63 mm or 2” diameter
5.7 test pressure reduction equipment up to and including 63 mm or 2” diameter
5.8 commission pressure reduction equipment up to and including 63 mm or 2” diameter
5.9 decommission pressure reduction equipment up to and including 63 mm or 2” diameter.

Range

Jointing techniques: fillet weld joints for steel services, mechanical jointing – flanged, electrofusion joints, branch saddles for intermediate pressure services.

Unit 310 Operate within the gas intermediate pressure range

Outcome 6 Understand how to comply with organisational procedures within the gas intermediate pressure range.

Assessment criteria

The learner can:

6.1 explain the importance of quality assurance certification

6.2 identify the organisational procedures to be followed when incorrect materials are encountered in the gas intermediate pressure range.

Unit 310 Operate within the gas intermediate pressure range

Outcome 7 Be able to use cathodic protection within the gas pressure range

Assessment criteria

The learner can:

7.1 explain the purpose of cathodic protection on metallic systems
7.2 interpret design details for cathodic protection
7.3 explain the requirements for insulating joints
7.4 identify equipment for identifying exposed metallic pipework
7.5 select components used for cathodic protection
7.6 install cathodic protection within the gas intermediate pressure range.

Unit 310 Operate within the gas intermediate pressure range

Outcome 8 Be able to identify and install pressure reduction equipment within the gas intermediate pressure range to assets above 63 mm or 2” diameter

Assessment criteria

The learner can:

8.1 state the restrictions on **installation techniques** in the gas intermediate pressure range
8.2 describe typical valve arrangements in the gas intermediate pressure range
8.3 state approved flow stop methods in the gas intermediate pressure range
8.4 select materials and equipment to be used in the gas intermediate pressure range sector above 63 mm or 2” diameter
8.5 identify **jointing techniques** applicable to assets above 63 mm or 2” diameter
8.6 install pressure reduction equipment to assets above 63 mm or 2” diameter
8.7 test pressure reduction equipment to assets above 63 mm or 2” diameter
8.8 commission pressure reduction equipment to assets above 63 mm or 2” diameter
8.9 decommission pressure reduction equipment to assets above 63 mm or 2” diameter.

Range

Installation techniques: trenchless technology, inserted systems, open cut.

Jointing techniques: Butt weld joints for steel mains, hot work at the parent main, mechanical jointing – flanged, butt fusion on polyethylene mains, electrofusion joints on mains, branch saddle connections on, polyethylene parent main.

Unit 310 Operate within the gas intermediate pressure range

Supporting information

Evidence requirements

For outcome 5, the learner will be required to partake in a practical assessment to demonstrate competence in the installation, commissioning and decommissioning of pressure reduction equipment up to and including 2'' diameter. This is to be carried out through direct observation through realistic working environment (RWE) conditions.

For outcome 7 and 8, the learner will be required to partake in a practical assessment to demonstrate competence in the installation, commissioning and decommissioning assets above 63 mm or 2'' diameter. This is to be carried out through either work based observation or through realistic working environment (RWE) conditions.

Guidance

Each individual organisation, such as Gas Networks will have their own suite of policy and procedural documents. Accordingly, it is not deemed appropriate to name these although they would include for example Network Emergency Suite of Policies and Procedures. It is envisaged that whilst training is being conducted in separate Networks, individual Networks will ask training personnel to brief out these unique documents.

Unit 311 Operate safely in emergency situations within the gas intermediate pressure range

Level: 3
Credit value: 2
URN: D/506/4758

Unit aim:
The aim of this unit is to provide the learner with the knowledge, understanding and skills to operate in compliance with legislation, regulation, policies, procedures, instructions and guidance in the gas industry, specifically within the gas intermediate pressure range sector for emergency working.

Learning outcomes
There are **six** learning outcomes to this unit. The learner will:

1. Understand key documents that apply to emergency situations when working in the gas intermediate pressure range.
2. Be able to evaluate hazards and risks that apply to emergency situations in the gas intermediate pressure range sector.
3. Be able to evaluate environmental hazards and environmental risks that apply to emergency situations in the gas intermediate pressure range sector.
4. Know the importance of using the correct personal protective equipment and safety equipment when working in emergency situations in the gas intermediate pressure range sector.
5. Know how to set up a safety exclusion zone at the location of a gas escape within the gas intermediate pressure range sector for emergency working.
6. Be able to identify and use repair methods and materials within emergency situations in the gas intermediate pressure range sector.

Guided learning hours
It is recommended that **16** hours should be allocated for this unit, although patterns of delivery are likely to vary.

Support of the unit by a sector or other appropriate body
This unit is endorsed by Energy & Utility Skills.

Entry requirements
Learners must hold a relevant ELR/Repair and maintenance qualification.

Assessment
This unit will be assessed by:

- An assignment covering underpinning knowledge/understanding and practical skills.

Unit 311 Operate safely in emergency situations within the gas intermediate pressure range

Outcome 4 Understand key documents that apply to emergency situations when working in the gas intermediate pressure range

Assessment criteria

The learner can:

1.1 list the **key legislative** and **industry standard documents** in relation to emergency situations when working in the gas intermediate pressure range

1.2 state the **consequences** of not complying with key legislative and industry standard documents

1.3 state employer responsibilities within the Health and Safety at Work Act

1.4 state employee responsibilities within the Health and Safety at Work Act.

Range

Key legislative documents: Health & Safety at Work Act, Control of Substances Hazardous to Health (COSHH), Dangerous Substances & Explosive Atmosphere Regulations, Gas Safety (Management) Regulations, Management of Health & Safety at Work Regulations, Pipeline Safety Regulations, Pressure Systems Safety Regulations, Gas Safety Regulations (Installations and Use) Regulations, The Lifting Operations & Lifting Regulations Equipment Regulations (LOLER), Provision & Use of Work Equipment Regulations (PUWER), Reporting on Injuries, Diseases and Dangerous Occurrences (RIDDOR), Personal Protective Equipment (PPE) Regulations, Control of Noise at Work Regulations, Manual Handling Regulations.

industry standard documents: External Documents: Health & Safety Executive Approved Codes of Practice, Health & Safety Executive Guidance notes, Institute of Gas Engineers and Managers (IGEM) suite of documents applicable to work in the gas intermediate pressure range (IGEM/TD/1 – Handling, Transport and Storage of Steel Pipe, IGEM/TD/3 – Distribution Mains <16 bar, IGEM/TD/4 – Distribution Services <16 bar, IGEM/TD/13 – Pressure Regulating Installations, IGEM/GL/5 – Procedures for Managing New Works, Modifications and Repairs), Health and safety in construction (HSG 150), Health and Safety in Excavations (HSG 185).

Consequences: injury or death, prosecution, prohibition and enforcement notices, disciplinary procedures.

Unit 311 Operate safely in emergency situations within the gas intermediate pressure range

Outcome 2 Be able to evaluate hazards and risks that apply to emergency situations in the gas intermediate pressure range sector

Assessment criteria

The learner can

2.1 identify **generic risks** and **hazards** that apply to work in emergency situations in the gas intermediate pressure range sector

2.2 evaluate **increased risks** that apply to work in emergency situations in the gas intermediate pressure range sector

2.3 describe **control measures** associated with emergency situations when working in the gas intermediate pressure range

2.4 produce a site specific risk assessment associated with emergency situations in the gas intermediate pressure range sector

2.5 explain risks to other team members that apply to work in emergency situations in the gas intermediate pressure range sector.

Range

Generic risks: elevated pressure, catastrophic failure of pipe wall and fittings, anchorage of pipe, fittings and end caps, sudden release of pressure from a pressurised system, potential escape at elevated pressure, proximity to occupied property, public buildings, railways, roads, etc, potential for gas ingress to property over a wider than normal area, potential for gas ingress to underground apparatus over a wider than normal area, potential for ignition, personal injury, asphyxiation, loss of gas supply.

Hazards: fire, catastrophic failure of pipe wall and fittings, working at the parent main, disturbing anchorage of pipe, fittings and end caps, sudden release of pressure from a pressurised system, ignition of gas, potential escape at elevated pressure, working with elevated pressure in the gas, intermediate pressure range, lifting operations, trench collapse, airborne/noise pollution, debris.

Increased risks: working with elevated pressure in the gas intermediate pressure range, control measures for specialised equipment, control measures for specialised contractors, control measures differ from other pressure ranges, increased potential of an incident, differing requirements for Personal Protective Equipment (PPE), manual handling of materials and equipment, mechanised lifting.

Control measures: staff competency, PPE, fire fighting equipment, breathing apparatus, lifting plan, mechanised lifting equipment, trench support, access and egress, emergency services, pressure reduction/isolation of supply, media coverage, evacuation and safeguarding of life and property, extinguish sources of ignition, effective communication, use of correct waste streams, Safe Control of Operations (SCO).

Unit 311 Operate safely in emergency situations within the gas intermediate pressure range

Outcome 3 Be able to evaluate environmental hazards and environmental risks that apply to emergency situations in the gas intermediate pressure range sector.

Assessment criteria

The learner can:

3.1 identify **environmental hazards** that apply to emergency situations in the gas intermediate pressure range sector

3.2 identify **environmental risks** that apply to emergency situations in the gas intermediate pressure range sector

3.3 produce a site specific environmental risk assessment that applies to an emergency situation in the gas intermediate pressure range sector

3.4 explain environmental risks to other team members that apply to emergency situations in the gas intermediate pressure range sector

3.5 dispose of all waste in proper waste management streams in order to comply with ISO 14001 regulations.

Range

Environmental hazards: noise pollution, airborne pollution, water pollution, land pollution.

Environmental risks: contamination to the environment, failure to protect the health and safety of operatives and the general public, incorrect disposal of waste and excess hazardous materials.

Unit 311 Operate safely in emergency situations within the gas intermediate pressure range

Outcome 4 Know the importance of using the correct personal protective equipment and safety equipment when working in emergency situations in the gas intermediate pressure range sector

Assessment criteria

The learner can:

4.1 list **personal protective equipment** (PPE) required when working in emergency situations in the gas intermediate pressure range sector

4.2 list **safety equipment** required when working in emergency situations in the gas intermediate pressure range sector.

Range

Personal protective equipment (PPE): full fire suit made from suitable fire retardant material, fire resistant clothing made from suitable fire retardant material, eye protection, safety headgear, ear defenders, reflective garments, gloves, safety footwear, dust masks, welding visors where appropriate, breathing apparatus with forced air available.

Safety equipment: air movers, personal alarm/gas monitor, fire extinguishers, intrinsically safe equipment.

Unit 311 Operate safely in emergency situations within the gas intermediate pressure range

Outcome 5 Know how to set up a safety exclusion zone at the location of a gas escape within the gas intermediate pressure range sector for emergency working

Assessment criteria

The learner can:

5.1 explain the requirements for safety exclusion zones

5.2 state exclusion distances at different operational pressures

5.3 describe **support** to be given to personnel following emergency situations in the gas intermediate pressure range.

Range

Support: monitoring of gas levels, customer liaison, liaising with emergency services, incident control.

Unit 311 Operate safely in emergency situations within the gas intermediate pressure range

Outcome 6 Be able to identify and use repair methods and materials within emergency situations in the gas intermediate pressure range sector

Assessment criteria

The learner can:

6.1 explain the characteristics of differing valve types

6.2 explain the effect of strategic valve closure on a Gas Distribution Network in an emergency situation

6.3 comply with manufacturers instructions for valve operation and repair

6.4 select approved materials to Gas Industry Standards

6.5 comply with organisational procedures when incorrect materials are encountered in the gas intermediate pressure range sector

6.6 explain the importance of compliance for approved methods of repair

6.7 explain the role of manufacturers in a repair process

6.8 carry out an approved **repair method** on an intermediate pressure installation as used in an emergency situation.

Unit 311 Operate safely with apparatus in the intermediate gas pressure range

Supporting information

Guidance

It is recommended that learners complete unit 310 (Operate within the gas intermediate pressure range) before taking this unit.

Each individual organisation, such as Distribution Networks will have their own suite of policy and procedural documents. Accordingly, it is not deemed appropriate to name these although they would include for example Network Emergency Suite of Policies and Procedures. It is envisaged that whilst training is being conducted in separate Networks, individual Networks will ask training personnel to brief out these unique documents.

Appendix 1 Relationships to other qualifications

Links to other qualifications

This qualification will be contained within the Energy and Utility Skills Apprenticeship framework. Please visit the EUSkills website **www.euskills.co.uk** for more details.

Literacy, language, numeracy and ICT skills development

These qualifications include opportunities to develop and practise many of the skills and techniques required for success in the following qualifications:

- Functional Skills (England) – see **www.cityandguilds.com/functionalskills**
- Essential Skills (Northern Ireland) – see **www.cityandguilds.com/essentialskillsni**
- Essential Skills Wales (from September 2010) – see **www.cityandguilds.com/esw**

Appendix 2 Sources of general information

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

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

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

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

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

- **Walled Garden:** how to register and certificate candidates on line
- **Qualifications and Credit Framework (QCF)**: general guidance about the QCF and how qualifications will change, as well as information on the IT systems needed and FAQs
- **Events**: dates and information on the latest Centre events
- **Online assessment**: information on how to register for e-assessment.

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www.cityandguilds.com

Useful contacts

UK learners General qualification information	E: **learnersupport@cityandguilds.com**
International learners General qualification information	E: **intcg@cityandguilds.com**
Centres Exam entries, Certificates, Registrations/enrolment, Invoices, Missing or late exam materials, Nominal roll reports, Results	E: **centresupport@cityandguilds.com**
Single subject qualifications Exam entries, Results, Certification, Missing or late exam materials, Incorrect exam papers, Forms request (BB, results entry), Exam date and time change	E: **singlesubjects@cityandguilds.com**
International awards Results, Entries, Enrolments, Invoices, Missing or late exam materials, Nominal roll reports	E: **intops@cityandguilds.com**
Walled Garden Re-issue of password or username, Technical problems, Entries, Results, e-assessment, Navigation, User/menu option, Problems	E: **walledgarden@cityandguilds.com**
Employer Employer solutions, Mapping, Accreditation, Development Skills, Consultancy	E: **business@cityandguilds.com**
Publications Logbooks, Centre documents, Forms, Free literature	

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

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