ENERGY & UTILITIES INDEPENDENT ASSESSMENT SERVICE

Skills for a greener world

Qualification Specification

Level 2 Diploma in Network Construction Operations (Water) – Main Layer / Service Layer / Repair and Maintenance

Level 2 Diploma in Network Construction Operations (Gas) – Main Layer / Service Layer / Escape, Locate and Repair

March 2025 V3.2

Contents

Updates to this Specification

Since the first publication of this Qualification Specification, the following updates have been made.

Version 2.0	Page 6	Ofqual qualification numbers added in.
Version 2.0	Page 23 - 194	Ofqual unit numbers added in.
Version 3.0	Page 24	Assessment Criteria (AC) 1.10 – reference to noise removed as this is covered in AC1.9
Version 3.1	Page 65	Amended reference to “polyethylene” in the range to refer to “polyethylene PE/AL/PE (Barrier Pipe)”
Version 3.2	Page 105	Amended NOS reference to remove MUNC14

1 Qualification Overview

At a Glance Qualification Summary

Qualification titles	Level 2 Diploma in Network Construction Operations (Water) – Main Layer (610/3802/7) – Service Layer (610/3802/9) – Repair and Maintenance (610/3804/0) Level 2 Diploma in Network Construction Operations (Gas) – Main Layer (610/3805/2) – Service Layer (610/3806/4) – Escape, Locate and Repair (610/3807/6)
Min. Guided Learning Hours (GLH)	Level 2 Diploma in Network Construction Operations (Water) – Main Layer: **227 GLH** – Service Layer: **217 GLH** – Repair and Maintenance: **222 GLH** Level 2 Diploma in Network Construction Operations (Gas) – Main Layer: **300 GLH** – Service Layer: **237 GLH** – Escape, Locate and Repair: **237 GLH**
Min. Total Qualification Time (TQT)	Level 2 Diploma in Network Construction Operations (Water) – Main Layer: **340 TQT** – Service Layer: **310 TQT** – Repair and Maintenance: **320 TQT** Level 2 Diploma in Network Construction Operations (Gas) – Main Layer: **430 TQT** – Service Layer: **340 TQT** – Escape, Locate and Repair: **350 TQT**
RQF Level	2
Qualification credit value	Level 2 Diploma in Network Construction Operations (Water) – Main Layer: **34** – Service Layer: **31** – Repair and Maintenance: **32** Level 2 Diploma in Network Construction Operations (Gas) – Main Layer: **43** – Service Layer: **34** – Escape, Locate and Repair: **35**

Entry requirements	There is a pre-requisite for learners who wish to complete the (Gas) - Escape, Locate and Repair qualification; these learners must have previously completed Gas – Main Layer or Gas – Service Layer pathways. They can then “top” up to complete the Gas – Escape, Locate and Repair qualification. Centres **must** check evidence of prior achievement or ensure that learners complete one of the other Gas qualifications with EUIAS prior to completing the Escape, Locate and Repair qualification.
Assessment requirements	Each qualification is assessed by Portfolio of Evidence. There is an assessment strategy which underpins the qualification and some unit-specific evidence requirements.
Progression opportunities	These qualifications are considered to be a licence to practice within both the Water and Gas industries. Learners are able to progress onto further qualifications within the relevant industries.
Regulatory Body / Status	These qualifications are regulated by Ofqual, the independent qualifications regulator for England.
Nation	These qualifications are for delivery in England only.

Energy & Utilities Independent Assessment Service (EUIAS)

EUIAS is an Ofqual recognised Awarding Organisation, offering End-point Assessments and Qualifications within the energy and utilities footprint.

Introduction

EUIAS has secured recognition from Ofqual, the independent qualifications regulator for England, to offer the:-

- Level 2 Diploma in Network Construction Operations (Water) – Main Layer
- Level 2 Diploma in Network Construction Operations (Water) – Service Layer
- Level 2 Diploma in Network Construction Operations (Water) – Repair and Maintenance
- Level 2 Diploma in Network Construction Operations (Gas) – Main Layer
- Level 2 Diploma in Network Construction Operations (Gas) – Service Layer
- Level 2 Diploma in Network Construction Operations (Gas) – Escape, Locate and Repair

These qualifications have been developed through consultation with key external stakeholders, including Employers, Training Providers and technical experts.

This Qualification Specification provides guidance for approved Centres on how to consistently apply the ***EUIAS Assessment Strategy for Level 2 Diploma in Network Construction Operations (Water) – Main Layer / Service Layer / Repair and Maintenance and Level 2 Diploma in Network Construction Operations (Gas) – Main Layer / Service Layer / Escape, Locate and Repair*** (herein referred to as the ***EUIAS Assessment Strategy for NCO***) along with unit content and relevant additional information to support the delivery of these qualification.

The ***EUIAS Assessment Strategy for NCO*** is available to download from https://www.euias.co.uk/network-construction-operations-gas-and-water-level-2/.

Aims and Objectives of the Qualification

The purpose of the Level 2 Diploma in Network Construction Operations (Gas) and the Level 2 Diploma in Network Construction Operations (Water) qualification is to develop the learner's technical skills and underpinning knowledge in all aspects of Gas or Water

Network Construction Operations. Within each of the qualifications there are different pathways which allow the learner to specialise and achieve units according to their particular role and areas of responsibility.

These qualifications are suitable for individuals who are employed on the networks as Main layers, Service Layers or Repair and Maintenance Operatives in either Gas or Water and are aged 16 or above. These qualifications contain the underpinning knowledge and skills that are required to deem a learner competent to undertake mains or service laying, repairs, or maintenance on the distribution networks. These qualifications have been designed and developed in accordance with legislative and industry requirements for both the Water and Gas industries.

The qualification structures have been designed through consultation with Employers, Training Providers and technical experts to reduce the need for learners to repeat core content and instead provides learners with the opportunity to transfer some common, core units across qualifications. For example, if a learner completes the Water qualification with EUIAS and goes onto complete the Gas qualification, some of the mandatory units they have already completed will also count towards their second qualification. Similarly, the units themselves have been designed to reduce duplication of content and learning across units.

2 Assessment

Assessment Strategy

EUIAS have issued, and own, the ***EUIAS Assessment Strategy for NCO*** which provides crucial information on the expected delivery, administration and quality assurance of the assessment for these qualifications.

EUIAS have broken down the key elements of the assessment strategy in the sections which follow to make it easier for EUIAS Centres to understand and follow. However, Centres are also required to familiarise themselves with the full content of the ***EUIAS Assessment Strategy for NCO*** in order to comply with EUIAS requirements, particularly in relation to the Portfolio of Evidence and the role of the Assessor and Internal Quality Assurer (herein referred to as IQA).

The information which follows should therefore be read in conjunction with the ***EUIAS Assessment Strategy for NCO***.

Assessors

Centres must comply with both the qualification and sector experience requirements for Assessors, as outlined in the ***EUIAS Assessment Strategy for NCO***, as part of the qualification-specific Centre approval requirements. Assessors are responsible for making and recording assessment decisions in the Portfolio of Evidence.

Further information, advice and guidance relating to the EUIAS expectations on Assessors and the Portfolio of Evidence can be found in the sections which follow.

Overview of Assessment Methods

These qualifications are assessed wholly by Portfolio of Evidence, underpinned by the ***EUIAS Assessment Strategy for NCO*.**

Assessment Method: Portfolio of Evidence

Assessment Preparation

Assessors will need to prepare fully for supporting learners in their collation of evidence for the Portfolio of Evidence. It is our expectation that the Centre's Assessor will ensure the learner's Portfolio of Evidence meets the requirements of the ***EUIAS Assessment Strategy for NCO*** and any unit-specific evidence requirements / guidance. In order to sufficiently prepare for the assessment, Centres, and specifically Assessors, will need to:-

1. Liaise with the learner's Employer to provide clear expectations on their role within the assessment process, including any requirement to contribute to assessment evidence and/or to sign off pieces of evidence.
2. Fully understand the unit-specific assessment / evidence requirements and/or guidance, including any range statements included within the unit content.
3. Fully understand the requirements of the ***EUIAS Assessment Strategy for NCO***.
4. Familiarise themselves with the information and documentation contained within the ***EUIAS Learner Assessment Guidance Pack*.**

5. Ensure each learner has a copy of the ***EUIAS Learner Assessment Guidance Pack*** for the qualification and understands how to use the documentation appropriately.
6. Seek approval from EUIAS for the use of realistic work environments (RWE) and simulation as supporting evidence, where allowed within the individual unit.

Assessment

These qualifications are assessed wholly by a Portfolio of Evidence, which is a collection of pieces of evidence generated by the learner, which demonstrate a learner's competence and underpinning knowledge for each unit they are registered on. The ***EUIAS Assessment Strategy for NCO*** outlines the EUIAS requirements for ensuring the Portfolio of Evidence constitutes a valid measurement of the learner's skills and underpinning knowledge for the unit and/or qualification being assessed, including providing details of acceptable types of evidence that can be incorporated into the learner's Portfolio of Evidence. In addition to this, unit-specific evidence requirements and/or guidance are also stipulated in the individual unit within the EUIAS Qualification Specification.

With evidence generation it is important to note that the learner's workplace should, where possible, be used as the assessment location and that naturally occurring workplace evidence is the primary source for determining competence. There may be exceptions to this, for example, where an environment similar to the learner's own workplace (for example another site) is allowed to be used to demonstrate competence where it is not possible within the learner's own workplace, as recognised in the ***EUIAS Assessment Strategy for NCO*** as a realistic work environment (RWE). Similarly, some units allow the use of simulation where it is not possible to complete the work activity in a real work situation, for example a gas emergency. Individual units stipulate whether RWE and/or simulation is allowed and approved Centres wishing to deliver an assessment in an RWE or through simulation must have been approved by EUIAS as having the specific, appropriate resources and site environment to use RWE or simulation according to the requirements of each unit.

Types of Evidence

The ***EUIAS Assessment Strategy for NCO*** outlines some examples of suitable types of evidence for use within the learner's Portfolio. It is important to note that this list is not exhaustive but does provide a starting point for learners and Assessors to identify suitable pieces of evidence. With any piece of evidence it is important to include the following:-

- Details of the work activity undertaken by the learner or their role within the task where it has been completed as part of a group activity.
- Learner declaration to confirm that the evidence generated is the learner's own work with details of where a third party or additional source may have been used to support the evidence generated. The ***EUIAS Evidence Declaration Form*** within the ***Learner Assessment Guidance Pack*** can be used for this purpose.
- Training provider and Employer declaration to confirm that the evidence provided is an accurate reflection of the learner's knowledge, understanding and/or competence and that it is the learner's own work (***EUIAS Evidence Declaration Form*** within the **EUIAS Learner Assessment Guidance Pack**).
- Cross-reference mapping to indicate which learning outcomes and assessment criteria have been achieved through each piece of evidence (***EUIAS Evidence Matrices*** within the ***EUIAS Learner Assessment Guidance Pack***).

As referenced above EUIAS has provided documentation in the ***EUIAS Learner Assessment Guidance Pack*** for these qualifications. Although Centres may use their own documentation or electronic Portfolio systems if they prefer, provided that the content is in line with, and equivalent to, our requirements.

Assessment Decisions

The Assessor will review each piece of evidence in full, ensuring it meets the requirements of the ***EUIAS Assessment Strategy for NCO*** and the individual unit requirements including learning outcomes and assessment criteria. The Assessor will determine which pieces of evidence best demonstrate the learner's knowledge, understanding and skills for each unit and cross reference these pieces of evidence to the relevant assessment criteria that they address on the unit-specific evidence matrix.

EUIAS has provided an evidence matrix for each unit within these qualifications in the ***EUIAS Learner Assessment Guidance Pack*.** Although Centres may use their own documentation or electronic portfolio systems for this purpose if they prefer.

In order to assess a learner as "competent" in the required skills and underpinning knowledge and understanding, EUIAS would typically expect a learner to produce three pieces of evidence; one of which should be generated on a work site (unless this is not appropriate to the work activity being assessed and the unit allows for simulation or realistic working environment). Where possible, evidence should be collected from a range of sites and/or from different sources, this enables the learner to demonstrate that they have consistently applied the relevant skills and/or knowledge and understanding to their work activities. However, EUIAS recognises that there may be occasions when fewer pieces of evidence or even one piece of evidence, can also fully meet these requirements. Similarly, a single piece of evidence may cover, or partially cover, the assessment criteria within more than one unit.

When a learner is deemed to be competent in an individual unit the Assessor needs to ensure the EUIAS evidence matrix (or Centre-specific form) for the relevant unit is completed in full and is signed by the learner, the Assessor and the Employer. There is also space for the Centre's IQA to sign in line with the Centre's IQA sampling policy. The Centre will record the assessment decision as "Achieved" on QuartzWeb. QuartzWeb is the EUIAS web based learner management system for Approved Centres.

All learners must be registered with EUIAS through QuartzWeb in order for learners' achievement to be recognised and certificated.

Internal Quality Assurance

The Centre's IQA will sample learners' assessment decisions and documentation and observe assessment discussions between the Assessor and the learner according to the Centre's IQA sampling approach, which will have been approved by EUIAS as meeting the quality assurance requirements for these qualifications.

IQAs will keep records of the assessments which are sampled in line with their IQA policy and process. These reports provide essential evidence for the EUIAS External Quality Assurer (herein referred to as EQA) for determining whether the qualification is being assessed in line with the ***EUIAS Assessment Strategy for NCO***, EUIAS

Centre approval requirements and the Centre's own quality assurance policies and procedures.

IQAs are also required to ensure consistency across the Centre's Assessors through monitoring assessment decisions, holding regular standardisation meetings and ensuring the ***EUIAS Assessment Strategy for NCO*** is fully understood and being implemented appropriately. IQAs are also involved in the escalation and/or investigation of any issues or queries or potential malpractice relating to the assessment, grading decisions and the Assessor's occupational competence.

Further details about the role and responsibilities of the Centre's IQA are found in the ***EUIAS Assessment Strategy for NCO***.

External Quality Assurance

EUIAS externally quality assures the Level 2 Diploma in Network Construction Operations (Water) and the Level 2 Diploma in Network Construction Operations (Gas) qualifications through appointing each Centre an EQA, who is responsible for checking and monitoring the assessment and quality assurance practices within the Centre to ensure assessments are conducted and quality assured in a robust, consistent manner, in line with the ***EUIAS Assessment Strategy for NCO***. The EQA does this through:-

- Approving Centres according to the EUIAS qualification-specific Centre approval criteria and carrying out a visit as part of this approval, where required.
- Approving and monitoring where an assessment can be carried out in either a realistic work environment (RWE) or through simulation.
- Determining the sampling approach for each Centre, according to their risk, volume of learners and history as an approved Centre.
- Planning and conducting EQA visits to Centres, at least once a year. The frequency of these visits will again be determined on a risk-based approach and the volume of learners. An EQA may also visit a Centre more frequently where assessments are being conducted in a live work-based site situation rather than at a Centre in a simulated environment. EQA visits will enable the EQA to observe live assessments, sample learner's evidence and assessment decisions and to review internal quality assurance documentation and practices

to ensure the Centre is delivering a robust internal quality assurance of the assessment decisions which Assessors make.

- Writing a report on their findings for both the Centre and EUIAS which details the EQAs findings, including any areas where remedial action is required and an action plan to be agreed with the Centre.
- Providing advice and support to Centres in relation to meeting the requirements of the ***EUIAS Assessment Strategy for NCO***.

3 Qualification Information

Unit Achievements

As you will see from the qualification structures in the section that follows all of the units in Group A are mandatory units which are common to all of the NCO qualifications. There are also some units within groups B and C which are common to multiple qualifications. Once the learner has achieved these units with EUIAS they do not need to complete them again if they decide to move onto a further Level 2 Diploma in Network Construction Operations qualification with EUIAS, instead they can be exempt from having to achieve the unit a second time. Please see below for an example.

Sarina is a learner who has achieved the EUIAS Level 2 Diploma in Network Construction Operations for (Gas) – Main Layer qualification and she has recently changed jobs and would now like to complete the EUIAS Level 2 Diploma in (Water) – Main Layer. From looking at the Qualification Structure she can see that she has achieved all of the units in Group A. She has also achieved "Joint materials by butt fusion processes on Utilities Network Construction, up to 180mm diameter" which is one of the mandatory units in Group B1.

She now needs to complete the remaining two units in Group B1: Main Layer pathway plus any additional optional units she wishes to achieve.

Recognition of Prior Learning

EUIAS has a comprehensive Recognition of Prior Learning (RPL) and Recognition of Prior Achievement (RPA) Policy, which all approved Centres have access to and is available at www.euias.co.uk/qualifications. This policy sets out our approach to the Recognition of Prior Learning (RPL) and Recognition of Prior Achievement (RPA), providing guidance on what constitutes acceptable evidence and the circumstances when RPL or RPA would, and would not be acceptable, in order to for us to meet our Regulatory requirements.

Recognition of Prior Learning applies to the acceptance of evidence that the learner has completed learning which may exempt them from certain elements of training but it will not exempt them from the assessment(s). This may, for example, apply to experienced workers who do not require as much training as new entrants to the role / sector. EUIAS has produced ***RPL Guidance for Level 2 Diploma in Network Construction Operations*** which provides guidance for Centres on applying the EUIAS RPL/RPA policy to the NCO qualifications. This document is available to download at https://www.euias.co.uk/network-construction-operations-gas-and-water-level-2/.

Similarly, there is important information with the ***EUIAS Assessment Strategy for NCO*** about learners who have achieved certain Street Works Certificates being able to use these achievements as partial evidence towards some of the units within the Level 2 Diploma in Network Construction Operations qualifications.

Learners are also able to be registered on, and achieve, individual units where appropriate instead of completing the full qualification.

Pre-requisites

It is important to note that there is a pre-requisite for learners wishing to complete the Level 2 Diploma in Network Construction Operations for (Gas) – Escape, Locate and Repair qualification. This pre-requisite states that they must already have achieved either the ***Level 2 Diploma in Network Construction Operations for (Gas) – Service Layer*** or ***Level 2 Diploma in Network Construction Operations for (Gas) – Main Layer*** qualification. They will be exempt from any of the units which they have already achieved in the Main Layer or Service Layer qualification and which comprise part of

the Network Construction Operations for (Gas) – Escape, Locate and Repair qualification.

Centres are required to manage this pre-requisite requirement and only register learners on the Escape, Locate and Repair qualification if they have appropriate evidence that the pre-requisite has been met. Centres must retain this evidence for EQA monitoring purposes.

Qualification Structures

Level 2 Diploma in Network Construction (Water)

In order to achieve the **Level 2 Diploma in Network Construction Operations (Water) – Main Layer** qualification, learners must complete all mandatory units in Group A and all the mandatory units in Group B1. Learners may choose additional units from Group D.

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In order to achieve the **Level 2 Diploma in Network Construction Operations (Water) – Service Layer** qualification, learners must complete all mandatory units in Group A and all the mandatory units in Group B2. Learners may choose additional units from Group D.

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In order to achieve the **Level 2 Diploma in Network Construction Operations (Water) – Repair and Maintenance** qualification, learners must complete all mandatory units in Group A and all the mandatory units in Group B3. Learners may choose additional units from Group D.

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Group A: Mandatory Units for all NCO Qualifications	
EUIAS Unit Ref:	**Unit Title:**
1078	Principles of health and safety in utilities network construction
1079	Install equipment for safe working on the highway in utilities network construction
1080	Locate and avoid supply apparatus for utilities network construction
1081	Excavate and maintain holes and trenches for utilities network construction
1082	Operate powered tools, and equipment for utilities network construction
1083	Joint materials by electrofusion processes on utilities network

Group B: Mandatory Units for Water Qualifications	
Group B1: Main Layer	
Unit Ref:	**Unit Title:**
1084	Joint materials by mechanical means on water network construction
1085	Install water mains up to 150mm nominal bore or 180mm polyethylene
1086	Joint materials by butt fusion processes on Utilities Network Construction, up to 180mm diameter
Group B2: Service Layer	
Unit Ref:	**Unit Title:**
1084	Joint materials by mechanical means on water network construction
1087	Install water services up to 50mm nominal bore or 63mm polyethylene
Group B3: Repair and Maintenance	
Unit Ref:	**Unit Title:**
1084	Joint materials by mechanical means on water network construction
1088	Restore water network assets to operational condition by repair

Group D: Optional Units for Water Qualifications	
Unit Ref:	**Unit Title:**
1089	Install water mains from 150mm – 300mm nominal bore or 180mm-355mm polyethylene
1090	Install water mains above 300mm nominal bore or 355mm polyethylene
1091	Joint materials by butt fusion processes between 180mm and 355mm for utilities network construction
1092	Joint materials by butt fusion processes above 355mm for utilities network construction
1093	Conduct pressure testing, swabbing and disinfection of water network engineering products of assets

Level 2 Diploma in Network Construction (Gas)

In order to achieve the **Level 2 Diploma in Network Construction Operations for (Gas) – Main Layer** qualification, learners must complete all mandatory units in Group A and all the mandatory units in Group C1. Learners may choose additional units from Group E.

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In order to achieve the **Level 2 Diploma in Network Construction Operations for (Gas) – Service Layer** qualification, learners must complete all mandatory units in Group A and all the mandatory units in Group C2. Learners may choose additional units from Group E.

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Pre-Requisite: *Learners must have completed either the Main Layer or Service Layer pathway before attempting this pathway.*

In order to achieve the **Level 2 Diploma in Network Construction Operations for (Gas) – Escape, Locate and Repair** qualification, learners must complete all mandatory units in Group A and all the mandatory units in Group C3. Where learners have completed the units in Group A as part of their Main Layer or Service Layer qualification, Centres can apply to EUIAS to exempt learners from having to complete the same units again. Learners may choose additional units from Group E.

Group A: Mandatory Units for all NCO Qualifications	
Unit Ref:	**Unit Title:**
1078	Principles of health and safety in utilities network construction
1079	Install equipment for safe working on the highway in utilities network construction
1080	Locate and avoid supply apparatus for utilities network construction
1081	Excavate and maintain holes and trenches for utilities network construction
1082	Operate powered tools, and equipment for utilities network construction
1083	Joint materials by electrofusion processes on utilities network

Group C: Mandatory Units for Gas Qualifications	
Group C1: Main Layer	
Unit Ref:	**Unit Title:**
1094	Conduct specified testing of gas network components and assets – mains
1095	Conduct specified connections to gas network mains and commissioning
1086	Joint materials by butt fusion processes on Utilities Network Construction, up to 180mm diameter
1096	Install gas engineering products or assets up to 180mm
1097	Decommissioning and abandonment of mains and services 63mm and above
Group C2: Service Layer	
Unit Ref:	**Unit Title:**
1098	Conduct specified testing of Gas services
1099	Install gas services up to 63mm
1100	Disconnection of gas meters and regulators

Learners may only complete the units in C3 when they have completed the Main Layer or Service Layer pathways. Learners can either achieve the full Level 2 Diploma in Network Construction Operations (Gas) – Escape, Locate and Repair qualification or achieve individual units and be certificated for these units where the full qualification requirements are not achieved.

Group C3: Escape, Locate and Repair	
Unit Ref:	**Unit Title:**
1101	Conduct specified testing of gas networks associated with leakage location
1102	Minimise risks to life, property and the environment during Gas escapes
1103	Analyse and interpret the results of surveys to determine the location of gas escapes
1104	Restore gas network components to operational condition

Group E: Optional Units for Gas Qualifications	
Unit Ref:	**Unit Title:**
1091	Joint materials by butt fusion processes between 180mm and 355mm for utilities network construction
1105	Install or replace external gas service risers
1106	Install gas engineering products or assets above 355mm

1107	Install gas engineering products or assets above 180mm, up to and including 355mm
1108	Operate within the gas intermediate pressure range
1109	Principles of operating safely in emergency situations within the gas intermediate pressure range

4 Unit Content

In each of the units there are some words which are emboldened in the assessment criteria. These emboldened words have a range statement associated with them, which appears at the end of the unit, which indicates what the learner must cover in their assessment for this unit. These range statements often refer to words or statements in the assessment criteria where there are multiple elements for the learner to be trained on and subsequently assessed on, or where the statement in the assessment criteria is very broad. They provide a focus for the learner and an indicator of what the learner must cover. For example, **“potential dangers”** refers to “trench collapse, flooding, contamination, poor access and egress”.

EUIAS Unit Ref:	1078
Ofqual Unit Ref:	A/651/0393
Unit Title:	Principles of Health and Safety in Network Construction Operations
Level:	2
Credit value:	4
GLH:	37
Unit aim(s):	This unit is designed to develop the learner's underpinning knowledge of health and safety in network construction operations, including how to work safely in excavations.
Assessment requirements:	This unit is knowledge only and should be assessed by Portfolio of Evidence.
Relationship to NOS:	None

Learning Outcome: The learner will:	Assessment Criteria: The learner can:	
1. Know and understand general Health and Safety guidance, legislation and organisational procedures in utilities network construction operations	1.1	State the main responsibilities of the Employer and employee under the Health and Safety at Work Act and environmental protection legislation
	1.2	Describe the safe procedures for handling hazardous materials
	1.3	Explain the organisational accident recording and reporting procedures
	1.4	Identify the range, use and importance of personal protective equipment for network construction operations
	1.5	Describe the procedures for lone working
	1.6	Explain the importance of organisational procedures for safe **lifting and handling**
	1.7	Describe the procedures, regulatory requirements and Employer / employee responsibilities for working at heights
	1.8	Explain the importance of carrying out on-site risk assessments, and implementing safe systems of work and the need for constant review
	1.9	Describe the implications of noise to self, others, adjacent activities, the public and surrounding environment including the action levels for provision and wearing of hearing protection
	1.10	Describe the implications of toxic fumes, dust and hazardous materials to self, others, adjacent activities, the public and surrounding environment

	1.11	Explain the importance of environmental control and reporting procedures
2. Know and understand how to work in excavations safely	2.1	Explain the health and safety guidance governing work in excavations and with live gases
	2.2	Explain the importance of understanding and implementing a safe system of work (SSOW) document when working in excavations
	2.3	Describe the implications of using **poor excavation practices**
	2.4	Explain the **potential dangers** of working in trenches and excavations
	2.5	Explain the dangers of working with or near to **pressurised pipelines**
	2.6	Explain the dangers of taking actions that can create **confined spaces risks** in excavations

Range Statements:

Learning Outcome 1:

Lifting and Handling

(a) Manual lifting & handling

(b) Lifting with machinery

Learning Outcome 2:

Poor excavation practices: cost, time, damage to other utility apparatus

Potential Dangers: trench collapse, flooding, contamination, poor access and egress

Pressurised Pipelines: Water, Gas, Pumped sewer

Confined Space risks: Poor access & egress, flammable gases, noxious gases, lack of oxygen, introduction of incorrect cutting equipment

Evidence Guidance:

This unit is knowledge only and therefore the evidence type should provide an assessment of the learner's knowledge and understanding. Some examples are provided but please note this list is not exhaustive; professional discussion, Centre-devised knowledge test, written case study etc.

EUIAS Unit Ref:	1079
Ofqual Unit Ref.	L/561/0361
Unit Title:	Install equipment for safe working on the highway in utilities network construction
Level:	2
Credit value:	4
GLH:	25
Unit aim(s):	This unit allows learners to develop skills and knowledge required to install equipment for safe working on the highway during utilities network construction operations. This unit requires the learner to demonstrate that they can select appropriate signing, lighting, guarding and traffic control equipment for the site, according to the current Codes of Practice and legislation. They are also required to prepare the appropriate types and quantities of materials and equipment for the works and maintain their safety and security. Communication skills and the ability to either resolve or refer problems that arise during work on the highways is also assessed as part of this unit.
Assessment requirements:	Portfolio of evidence
Relationship to NOS:	MUNC15

Learning Outcome: The learner will:	Assessment Criteria: The learner can:	
1. Be able to set out temporary signing, lighting and guarding traffic control equipment	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.
2. Be able to prepare resources for highway works	2.1	Select the **materials and equipment** for the planned works in accordance with the work instructions and specifications.
	2.2	Confirm the **materials and equipment** supplies are correct

		for the work requirement and are of the quality and quantity required.
	2.3	Maintain in accordance with operational and organisational requirements: (a) the materials and equipment in storage. (b) the security of materials and equipment
3. Be able to use and communicate data and information when working on highways	3.1	Use 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	Demonstrate how to check with **designated personnel** any circumstances where information appears incorrect.
4. Be able to resolve or refer problems which could arise from work on the highway	4.1	Resolve **problems** which arise from work on the highway.
	4.2	Record defects, replacements or additional equipment required and report them to the **designated person**.
	4.3	Refer **problems** and conditions outside their responsibility to the **designated person** using approved procedures.

5. Know and understand the health and safety requirements for safe working on the highway	5.1	State the main sources of information on statutory requirements for the control of highways works.
	5.2	Give examples of the range and purpose of personal protective equipment used during highways works.
	5.3	Explain the importance of checking and reporting defects in personal protective equipment.
6. Know and understand how to install equipment for safe working on the highway	6.1	Give examples of the different types of signs, lights and guarding equipment
	6.2	Give examples of the different types of traffic control equipment.
	6.3	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.
	6.4	State the implications of incorrect signing, lighting, guarding and traffic control.
	6.5	Describe the purpose of each of the signs used for protecting highways works.
	6.6	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

6.7	Describe guarding arrangements for highway works, including: (a) the different types of guards used to protect highways works (b) their positioning requirements relative to the work.
6.8	Give examples of when and which type of lighting is required for highways works.
6.9	Outline the operation, and maintenance requirements for traffic controls including: (a) warning signs (b) priority signs (c) stop/go boards (d) portable traffic signals.
6.10	Give examples of the different types of traffic control requirements for highways works in relation to traffic flow.
6.11	Explain the correct procedures and sequences for implementing two way portable traffic signals.
6.12	Explain the correct procedures for moving traffic controls as work progresses.
6.13	Explain the importance of ensuring that signing, lighting, guarding and traffic control arrangements are checked and updated regularly as work progresses.
6.14	Explain the importance of regular maintenance and cleaning of signs and lights throughout highways works.

6.15	Describe the statutory requirements and recommendations for signing, lighting and guarding highways works on single and dual carriageways.
6.16	List the persons and organisations with whom it is necessary to liaise on highways operations.

Range Statements:

Learning Outcome 1:

Characteristics and conditions of the carriageway: speed and volume of traffic; volume of pedestrian traffic; number and directions of lanes

Approved procedures and practices: environmental; statutory; regulatory; 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.

Learning Outcome 2:

Materials and equipment: Signs, lights, guards, traffic control equipment.

Learning Outcome 3:

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

Learning Outcome 4:

Problems: equipment failure; materials shortage

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

Evidence Guidance:

The ***EUIAS Assessment Strategy for Level 2 Network Construction Operations (Water) and Level 2 Network Construction Operations (Gas)*** includes a list of suitable evidence types for use within the learner's Portfolio of Evidence. This list is not exhaustive but is designed to provide an indication of what may be used as acceptable sources of evidence. Some sources of evidence will be more relevant to the unit content and the assessment of the learner's skills and/or knowledge than others.

It is a requirement that workplace evidence is used where possible.

For this unit, EUIAS also allows assessment:-

✓ In a Realistic Work Environment

EUIAS Unit Ref:	1080
Ofqual Unit Ref.	M/651/0362
Unit Title:	Locate and avoid supply apparatus for utilities network construction
Level:	2
Credit value:	4
GLH:	25
Unit aim(s):	This unit enables learners to develop skills and knowledge in locating and avoiding supply apparatus during utilities network construction operations. This unit covers the primary safety requirements relating to supply apparatus before excavation can commence and during all excavation activities. The learner will be able to use appropriate search and location methods and keep up to date records. Learners must identify and avoid risks of damage to services. Learners must follow safe working practices throughout the operation.
Assessment requirements:	Portfolio of evidence
Relationship to NOS:	MUNC06

Learning Outcome: The learner will:	Assessment Criteria: The learner can:	
1. Be able to locate supply apparatus	1.1	Apply 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 Search Techniques including electronic location equipment, trial holes and up-to-date records to enable the location, identification and marking of supply apparatus.
	1.4	Demonstrate how to 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.
2. Be able to maintain the safety and integrity of supply apparatus	2.1	Maintain the position and condition of supply apparatus within the work site according to their specification and Codes of Practice.
	2.2	Take measures to ensure working practices on the site avoid damage to supply apparatus.
	2.3	Carry out all work so that it complies with: (a) the latest technical specifications (b) Health and Safety regulations (c) Company codes of practice
3. Be able to resolve problems which could arise during activities to locate and avoid supply apparatus	3.1	Identify and report any damage to supply apparatus promptly to the designated person and make the area safe.

	3.2	Take precautions to protect personnel and equipment from the effects of damage to supply apparatus according to approved procedures and practices.
	3.3	Resolve day-to-day problems within their area of responsibility and refer matters outside of own area of responsibility to the relevant designated people.
4. Know and understand the different types of utility apparatus	4.1	Explain industry procedures and practices for confirming the location and marking of supply apparatus
	4.2	State the key physical properties of the supply apparatus, including: • size (diameter) • colour • material and its resistance to impact from excavation activities • methods of identification • typical locations • typical depths
	4.3	Describe the physical properties of the medium being carried by different types of supply apparatus, including where relevant: • ignition characteristics • density relative to air • electrocution risk • reaction to water damage • impact of sudden release of pressure
	4.4	Describe the potential risks and consequences that may arise when supply apparatus is damaged.
5. Know and understand equipment and techniques used for locating supply equipment	5.1	Describe how to use electronic detection equipment.
	5.2	Explain the possible effects of external influences on electronic detection equipment readings.

	5.3	Explain how to visually locate and identify underground supply apparatus, using: • Markers • Signs and features • Existing records
	5.4	Describe the situations where trial holes can be used to locate underground supplies.
	5.5	Describe how to mark the position of supply services on the surface to ensure accurate location of the excavation.
	5.6	Explain the consequences of marking out excavations incorrectly, including: • costs • loss of time
	5.7	State the precautions to be taken when locating supply apparatus, including statutory and regulatory requirements.
6. Know and understand roles, responsibilities and communication requirements for locating utilities apparatus	6.1	Know how to communicate details of the position and type of supply apparatus and sub-structures to personnel in accordance with instruction and organisational requirements.
	6.2	Know how to check with appropriate people any circumstances where information appears incorrect.
	6.3	State the main sources of legislation relating to highways operations in the proximity of other supply apparatus.
	6.4	Identify the persons or organisations who must be notified where there is damage to supply apparatus or other underground structures.
	6.5	List the regulations that govern the location of supply apparatus where this exposes other services.

6.6	Outline the requirements of the legislation that applies to new roads and street works.
6.7	Explain why it is important to refer problems outside their area of job role responsibility to designated people.
6.8	Describe the procedures for reporting and recording: job progress; problems; deviations to work programmes.
6.9	Know how to report deviations in the position of apparatus and identification of other structures in accordance with instruction and organisational requirements.

Range Statements:

Throughout the unit:

Supply apparatus: relevant for utilities and other agencies including cables, metal pipes and non-metallic pipes; above and below ground services.

Learning Outcome 1:

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

Learning Outcome 4:

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

Learning Outcome 5:

External influences: Cables not under load; reinforced concrete; pipe materials that do not carry a signal.

Evidence Guidance:

The ***EUIAS Assessment Strategy for Level 2 Network Construction Operations (Water) and Level 2 Network Construction Operations (Gas)*** includes a list of suitable evidence types for use within the learner's Portfolio of Evidence. This list is not exhaustive but is designed to provide an indication of what may be used as acceptable sources of evidence. Some sources of evidence will be more relevant to the unit content and the assessment of the learner's skills and/or knowledge than others.

It is a requirement that workplace evidence is used where possible.

For this unit, EUIAS also allows assessment:-

✓ In a Realistic Work Environment

EUIAS Unit Ref:	1081
Ofqual Unit Ref.	T/651/0364
Unit Title:	Excavate and maintain holes and trenches for utilities network construction
Level:	2
Credit value:	5
GLH:	35
Unit aim(s):	This unit provides learners with the skills and knowledge to excavate holes and trenches for utilities network operations. The learner will develop skills in interpreting instructions, planning, organising and adopting safe working practices while preparing for and excavating holes and trenches. Learners will also be able to maintain the integrity of the excavation, considering other utility services and sub-structures. Throughout the operation, the learner must follow the work specification and Codes of Practice, and must maintain safe working procedures. Please note that trench support and deep excavations are covered on a knowledge only basis and completion of this unit does not provide the learner with the skills for these activities.
Assessment requirements:	Portfolio of evidence
Relationship to NOS:	MUNC07

Learning Outcome: The learner will:	Assessment Criteria: The learner can:	
1. Be able to prepare to excavate holes and trenches	1.1	Use information in work instructions and specification to determine the **work site** and the area to be excavated
	1.2	Determine the suitable excavation method for the **surface and sub-surface** materials being removed, and which meets with statutory and regulatory Codes of Practice.
	1.3	Carry out and review site-specific risk assessments according to company procedures.
	1.4	Select and wear the designated personal protective equipment (PPE).
	1.5	Confirm the condition of the ground adjacent to excavations is safe
2. Be able to excavate on site to requirements	2.1	Select and use the most suitable tools and equipment for the excavation method to be used.
	2.2	Excavate, identify, select, segregate, remove and store materials in accordance with work instructions and Codes of Practice.
	2.3	Carry out the excavation in a manner that avoids damage to supply apparatus.
	2.4	Minimise damage to the natural environment according to technical guidance.
	2.5	Remove surplus materials according to work instructions and requirements.
	2.6	Carry out excavations of a position and size that concurs

		with instructions and work specifications.
	2.7	Confirm the condition of excavations in accordance with approved procedures, practices and statutory requirements.
	2.8	Carry out checks to ensure the excavation is safe to enter and that it remains safe whilst carrying out work.
	2.9	Take measures to ensure work is carried out to **approved procedures and practices** and complies with statutory requirements.
3. Be able to maintain the integrity of the excavation	3.1	Maintain the condition of excavations in line with safety standards.
	3.2	Implement arrangements for access to and egress from the excavation in line with statutory requirements and **approved procedures and practices**.
	3.3	Resolve day-to-day problems within your responsibility in line with **approved procedures and practices**, including checking any circumstances where information appears incorrect with appropriate people.
	3.4	Report detrimental conditions, defects or damage to excavations or **supply apparatus** which are outside your responsibility to appropriate people.
	3.5	Use organisational information systems to record and store data and information relating to excavation work.

4. Be able to resolve problems which could arise from excavation work	4.1	Report any damage to **supply apparatus** promptly to the designated person.
	4.2	Advise colleagues or managers where situations need them to intervene.
	4.3	Refer matters that are outside their responsibility to the designated people using approved procedures.
5. Know and understand how excavation work must be carried out to comply with legal, health and safety and industry requirements	5.1	Explain how **activities involved in excavation** work can be carried out in compliance with legislative requirements and good industry practice.
	5.2	Explain the responsibilities of the Employer and employee in relation to activities involved in excavation.
	5.3	Explain how to store and dispose of materials and the consequences of incorrect storage, including those with an environmental hazard.
6. Know and understand how to excavate in a variety of situations using different techniques and equipment	6.1	Describe the safe procedures for handling the range of trench support equipment.
	6.2	Explain your responsibilities, the steps you should take to deal with dangerous situations and who to report to, whilst working in holes and trenches including poor atmosphere, instability and damaged utilities.
	6.3	Describe the different **methods of excavation**, including hand dig and machine and the safety risks of incorrect excavation practices.

6.4	Describe how to use hand tools and power tools for excavation.
6.5	Explain when a competent banksman is required and the associated benefits of having a banksman.
6.6	Describe the different types of surfaces and sub-surfaces that may require to be excavated, including flexible, composite, rigid and modular pavement construction, verge and natural ground.
6.7	Describe the types of sub-surface materials used for the different paving surfaces.
6.8	Describe the **consequences and implications** of using incorrect excavation and reinstatement practices.
6.9	Explain how to recognise when an excavation is or could become a confined space, and how to deal effectively with this.
6.10	Identify circumstances where excavation support must be installed including those relating to excavation depth, soil type or where subsidence is likely.
6.11	Explain the principles of **trench support systems,** including the materials and methods used.
6.12	Describe the safe procedures for monitoring and maintaining the condition of support mechanisms.
6.13	Identify causes of instability in excavated areas, including soil types, presence of ground water, leaks from water and drainage pipework.

	6.14	Describe how to remove water from excavations and the reasons why this would be necessary.
	6.15	Outline hazards that could arise from leaks, damaged supply or electrical apparatus or from working without natural or assisted ventilation.
7. Know and understand the impact of excavation activities on others and the environment	7.1	Describe how to identify types of supplies encountered in excavation work, including **supply apparatus** for above and below ground services and built structures.
	7.2	Describe how to minimize damage to the natural environment including foundations, tree roots and natural water courses.
	7.3	Describe the potential consequences of not providing the necessary support or use of incorrect materials to **supply apparatus** and sub-structures, including major safety hazards.
	7.4	Explain how your work can impact on costs and schedule.
	7.5	Describe the procedures for reporting and recording job progress, problems and any deviations to work programmes.

Range Statements:

Throughout the unit:

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

Learning Outcome 1:

Work site: Work on the highway
Surface and sub-surface: flexible, composite, rigid and modular pavement construction; verge; natural ground.
Excavation is safe: to ensure the safety and integrity of trenches and holes to avoid collapse.

Learning Outcome 3:

Approved procedures and practices: environmental; statutory; regulatory; emergency; operational; health and safety; organisational and company procedures; risk assessments, HSE guidance HSG47.

Learning Outcome 5:

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.

Learning Outcome 6:

Methods of excavation: by hand; with use of equipment
Consequences and implications: damage to other utilities; interruption to supplies, cost of operation; time; customers; members of the public; colleagues and other workers; scale of activity, company reputation.
Trench support systems: timber; steel; mechanical, proprietary systems.

Evidence Guidance:

The ***EUIAS Assessment Strategy for Level 2 Network Construction Operations (Water) and Level 2 Network Construction Operations (Gas)*** includes a list of suitable evidence types for use within the learner's Portfolio of Evidence. This list is not exhaustive but is designed to provide an indication of what may be used as acceptable sources of evidence. Some sources of evidence will be more relevant to the unit content and the assessment of the learner's skills and/or knowledge than others.

It is a requirement that workplace evidence is used where possible.

For this unit, EUIAS also allows assessment:-

✓ In a Realistic Work Environment

EUIAS Unit Ref:	1082
Ofqual Unit Ref.	Y/651/0365
Unit Title:	Operate powered tools and equipment for utilities network construction
Level:	2
Credit value:	4
GLH:	25
Unit aim(s):	This unit allows learners to develop skills and knowledge to operate powered tools and equipment including powered static equipment and hand-operated power tools. Learners must show that they can carry out pre-use inspections, prepare, run, operate, shut down, carry out post stop checks and store powered tools and equipment in an efficient and safe way. Throughout all activities the learner must follow the work specification and Codes of Practice, and must maintain safe working practices.
Assessment Requirements:	Portfolio of evidence
Relationship to NOS:	MUNC9

Learning Outcome: The learner will:	Assessment Criteria: The learner can:	
1. Be able to prepare powered tools and equipment for routine and predictable use	1.1	Use work instructions and specifications to confirm the operations requiring the use of powered tools and equipment.
	1.2	Carry out a site specific risk assessment, and review in accordance with company procedures.
	1.3	Apply control measures identified in risk assessments.
	1.4	Select, check condition, use and store the appropriate personal protective equipment (**PPE**).
	1.5	Carry out pre-use inspections on powered tools and equipment.
	1.6	Record and report any defects of the powered tools and equipment in accordance with company procedures.
	1.7	Take measures to check and confirm powered tools and equipment are safe and ready for use in accordance with the work requirements.
2. Be able to run and operate powered tools and equipment	2.1	Carry out start and stop procedures to confirm functions are in accordance with safe control and the manufacturers' operating instructions.
	2.2	Operate tools and **equipment** safely in accordance with specifications.
	2.3	Carry out all work to approved procedures and practice and in compliance with statutory and regulatory requirements.
3. Be able to shut down and carry out post-stop checks on powered tools and equipment	3.1	Take measures to stop powered tools and equipment safely.
	3.2	Carry out required post-stop checks in accordance

		with organisational and operational procedures.
	3.3	Store powered tools and equipment in accordance with safety requirements.
4. Be able to use, apply and communicate data and information for the safe operation of powered tools and equipment	4.1	Record and report the need for replacement tools and equipment to the appropriate people.
	4.2	Use organisational information systems to record and store data and information.
	4.3	Refer problems outside the responsibility of own job role to appropriate people using approved procedures.
5. Know and understand the health and safety requirements for the safe operation of powered tools and equipment	5.1	Explain how to carry out and review risk assessments for the safe operation of powered tools and equipment.
	5.2	Outline the company's reporting lines, roles, responsibilities and levels of authority.
	5.3	Describe the **hazards** posed by powered tools and equipment and explain how the associated risks must be controlled.
	5.4	Describe the full range of personal protective equipment (**PPE**) that must be worn when operating powered tools and equipment.
	5.5	Explain how to apply safety precautions before, during and after operations in accordance with company procedures.
	5.6	Explain how to apply correct handling and lifting

		techniques when using powered tools and equipment.
6. Know how to work with powered tools and equipment	6.1	Describe the competency requirements for operating power tools and equipment.
	6.2	Describe the manufacturers' requirements for pre-performance checks and other routine checks.
	6.3	Identify the potential uses for a range of hand-operated, mobile and static powered tools and equipment available for work including:- • Drills • Saws • Compressors • Generators • Water pumps • Vibrating plate compactors • Trench rollers • Pavement and road saws • Pneumatic or hydraulic breakers • Disc cutters
	6.4	Explain how to select and use appropriate tools and equipment.
	6.5	Describe the manufacturers' recommendations for operating powered tools and equipment.
	6.6	Explain the importance of maintaining tools and equipment in good working order.

Range Statements:

Learning Outcome 1:

Personal Protective Equipment (PPE): head; eyes; ears; respiratory system; hands; feet; body.

Learning Outcome 2:

Equipment: electric, pneumatic and hydraulic, cutting, grinding; pumping; compacting; pipe jointing, hand tools

Learning Outcome 5:

Hazards: vibration; handling; fumes; dust; moving parts; heat; electricity; fuel; substances, noise

Personal Protective Equipment (PPE): head; eyes; ears; respiratory system; hands; feet; body.

Evidence Guidance:

The ***EUIAS Assessment Strategy for Level 2 Network Construction Operations (Water) and Level 2 Network Construction Operations (Gas)*** includes a list of suitable evidence types for use within the learner's Portfolio of Evidence. This list is not exhaustive but is designed to provide an indication of what may be used as acceptable sources of evidence. Some sources of evidence will be more relevant to the unit content and the assessment of the learner's skills and/or knowledge than others.

It is a requirement that workplace evidence is used where possible.

For this unit, EUIAS also allows assessment:-

✓ In a Realistic Work Environment

EUIAS Unit Ref:	1083
Ofqual Unit Ref.	D/651/0367
Unit Title:	Joint materials by electrofusion processes on utilities network construction
Level:	2
Credit value:	2
GLH:	10
Unit aim(s):	The purpose of this unit is to develop the learner's skills and knowledge to be able 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.
Assessment Requirements:	Portfolio of evidence
Relationship to NOS:	MUNC16

Learning Outcome: The learner will:	Assessment Criteria: The learner can:	
1. Be able to make joints using electrofusion jointing techniques	1.1	Carry out site specific risk assessments, and review in accordance with company procedures.
	1.2	Interpret engineering specifications relevant to the engineering activity.
	1.3	Select and wear the designated PPE.
	1.4	Take measures to check that jointing related equipment and consumables are as specified and fit for purpose.
	1.5	Prepare joints in line with industry standards, using appropriate equipment.
	1.6	Provide adequate weather protection during the entire jointing cycle.
	1.7	Demonstrate how to mark and clamp the joint and in line with company procedures to ensure that they are secure and identifiable.
	1.8	Use the correct electrofusion jointing technique to produce joints of the required quality and confirm compliance with the: • Specified standard • Specified dimensional accuracy
	1.9	Confirm that on completion of jointing activities the equipment is shut down to a safe condition.
	1.10	Confirm temporary attachments, excess and waste materials are dealt with promptly in line with approved and agreed procedures.
	1.11	Comply with approved procedures, practices, statutory and regulatory requirements involved in the work activity.

2. Be able to use data and information when jointing materials	2.1	Check with **designated personnel** any circumstances where information appears incorrect.
	2.2	Use organisational information systems to record and store data and information.
3. Be able to resolve problems that arise during jointing work	3.1	Report to the **designated person** damage to jointing equipment.
	3.2	Report to the designated person matters outside the responsibility of the job role.
	3.3	Demonstrate how to resolve day-to-day problems within the responsibility of the job role.
	3.4	Handle emergency situations when they arise.
4. Know and understand how to joint Polyethylene pipes by electrofusion processes on utilities network construction	4.1	State the health, safety and environment legislation and environmental procedures relevant to the work activities.
	4.2	Outline the industry codes of practice and company procedures relevant to jointing by electrofusion.
	4.3	Describe the different stages that take place during the jointing process and the importance of allowing each phase to complete.
	4.4	Explain the need for pipe restraint, pipe support and pipe alignment.
	4.5	Explain the cause and effect of **defects** caused by poor preparation.
	4.6	Interpret pipe specifications.
	4.7	Explain pipe compatibility.
	4.8	Identify different types of pipe materials.

4.9	Describe equipment maintenance procedures.
4.10	Describe equipment calibration.
4.11	State the consequences of poor equipment maintenance.
4.12	Identify quality assurance procedures that can be applied in recognising defects.
4.13	Explain the correct reporting procedures.

Range Statements:

Learning Outcome 2 and 3:

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

Learning Outcome 4:

Defects: poor pipe restraint, poor pipe support, misalignment, contamination

Evidence Guidance:

The ***EUIAS Assessment Strategy for Level 2 Network Construction Operations (Water) and Level 2 Network Construction Operations (Gas)*** includes a list of suitable evidence types for use within the learner's Portfolio of Evidence. This list is not exhaustive but is designed to provide an indication of what may be used as acceptable sources of evidence. Some sources of evidence will be more relevant to the unit content and the assessment of the learner's skills and/or knowledge than others.

It is a requirement that workplace evidence is used where possible.

For this unit, EUIAS also allows assessment:-

✓ In a Realistic Work Environment

EUIAS Unit Ref:	1084
Ofqual Unit Ref.	F/651/0368
Unit Title:	Joint materials by mechanical means on water network construction
Level:	2
Credit value:	4
GLH:	30
Unit aim(s):	This unit allows learners to develop skills and knowledge to joint materials by mechanical means on water networks. Jointing can be carried out on a range of materials used in the water industry. The learner will be able to assemble and position pipes and components, using mechanical jointing techniques, and ensuring finished work meets industry standards and specifications.
Assessment Requirements:	Portfolio of evidence
Relationship to NOS:	EUSWNC4

Learning Outcome: The learner will:	Assessment Criteria: The learner can:	
1. Be able to meet health and safety requirements when jointing materials by mechanical means	1.1	Work safely at all times in accordance with health, safety and environmental legislation.
	1.2	Work hygienically in accordance with water quality requirements.
	1.3	Select and wear the appropriate personal protective equipment (PPE).
	1.4	Carry out and review site-specific risk assessments, and review in accordance with company procedures.
2. Be able to use and communicate data and information to carry out work activities	2.1	Interpret task requirements from relevant method statements and work instructions.
	2.2	Take action to check with **designated personnel** any circumstances where information appears incorrect.
	2.3	Use organisational information systems to record and store relevant jointing data and information.
	2.4	Provide technical information using appropriate verbal and written communication techniques.
	2.5	Report any inaccuracies in the technical information sources used to the designated person.
	2.6	Complete work documentation accurately and record it in the specified place or pass to a designated person.
3. Be able to joint materials by mechanical means	3.1	Check that jointing and related equipment is approved for installation in water networks and are fit for purpose.
	3.2	Ensure all consumables and components are fit for purpose.

	3.3	Use mechanical **joint types** and jointing techniques that are appropriate for the material being jointed.
	3.4	Carry out jointing on various pipe types in accordance with the industry specifications and company procedures.
	3.5	Secure the components using connectors and securing devices in accordance with specifications and work instructions.
	3.6	Check to make sure that the finished joint assembly is complete and meets its operating requirements.
	3.7	Carry out work in accordance with company procedures and manufacturers' specifications.
	3.8	Take steps to deal with excess, waste materials in a timely manner in line with organisational and environmental procedures.
4. Be able to resolve problems which arise when performing jointing activities	4.1	Deal with problems within the limits of own responsibility.
	4.2	Report problems that are outside the responsibility of their job role to the designated person.
5. Know and understand how to meet health and safety requirements when jointing materials by mechanical means	5.1	Outline the requirements of legislation, environmental procedures, Codes of Practice and company procedures relevant to the specific **work activities**.
	5.2	Explain the importance of following all **hygiene procedures**, including personal hygiene in order to ensure the integrity and wholesomeness of the water
	5.3	Describe the need for hygiene and health checks to protect water quality and to maintain public health.
6. Know how to joint materials by mechanical means	6.1	Describe the **methods and techniques for assembling and jointing components** by

		mechanical means on all **pipe types**.
	6.2	Explain the purpose of quality control procedures and how to interpret them.
	6.3	Describe the handling equipment, tools and equipment required for mechanical jointing.
	6.4	Explain how to select preparation techniques for mechanical jointing activities.
	6.5	Explain why it is important to look after tools and equipment and how to do it.
	6.6	Describe assembly methods, techniques and control methods.
	6.7	Describe how to use mechanical fittings for transition between metallic and Polyethylene (PE).
7. Know how to resolve problems which arise when performing jointing activities	7.1	Describe typical problems that can occur during pipe jointing activities and explain possible remedial activities.
	7.2	Describe approved procedures for dealing with, and reporting problems.
	7.3	Describe how to use information and data storage systems.

Range Statements:

Learning Outcome 3:

Joint types include:

(a) Flanged
(b) Flexible
(c) Endload resistant (Anchored)
(d) Pushfit
(e) Metallic pipes

Learning Outcome 6:

Specific **work activities** include:

(a) manual handling

(b) the provision and use of equipment
(c) hygiene and health checks
(d) working with or near hazardous materials
(e) personal protection
(f) working in excavations.

Learning Outcome 7:

Pipe types:

(a) Rigid - Metallic – Non metallic.
(b) Polyethylene
(c) PE/AL/PE (Barrier Pipe)

Methods and techniques for assembling and jointing components: includes cutting, and mechanical jointing on metallic and non-metallic rigid materials and the use of thrust blocks**.**

Evidence Guidance:

The ***EUIAS Assessment Strategy for Level 2 Network Construction Operations (Water) and Level 2 Network Construction Operations (Gas)*** includes a list of suitable evidence types for use within the learner's Portfolio of Evidence. This list is not exhaustive but is designed to provide an indication of what may be used as acceptable sources of evidence. Some sources of evidence will be more relevant to the unit content and the assessment of the learner's skills and/or knowledge than others.

It is a requirement that workplace evidence is used where possible.

For this unit, EUIAS also allows assessment:-

✓ In a Realistic Work Environment

EUIAS Unit Ref:	1085
Ofqual Unit Ref.	H/651/0369
Unit Title:	Install water mains up to 150mm nominal bore or 180mm polyethylene
Level:	2
Credit value:	5
GLH:	35
Unit aim(s):	This unit allows learners to show that they have the skills and knowledge to install water mains up to 150mm nominal bore (180mm PE). The learner will be able to interpret technical information and specifications and prepare the resources necessary to install the system. The learner must safely & hygienically install the various components required in line with the specification and relevant company procedures. They must record and report information about the installation to the relevant people, and must resolve or refer problems that arise during the work in line with their job responsibility.
Assessment Requirements:	Portfolio of evidence
Relationship to NOS:	MUNC13C EUSWNC2 EUSWNC4

Learning Outcome: The learner will:	Assessment Criteria: The learner can:	
1. Be able to interpret **technical information** for installing water mains	1.1	Use drawings, records, work documents, manuals and technical specifications to provide work details for component installation.
	1.2	Use the technical information to confirm dimensions, lengths, widths and quantities required.
	1.3	Use the technical information to determine the positions of utilities plant, services, buildings, kerbs and boundaries.
	1.4	Take measures to ensure where discrepancies occur, ensure that necessary corrections are made or communicated to those who need to know.
	1.5	Follow the correct procedures if working on a 'Permit to Work' activity.
2. Be able to select main components and resources for installation of the system	2.1	Select the **components** in compliance with the work and quality specifications.
	2.2	Ensure **components** are in good condition and are fit for purpose.
	2.3	Follow procedures to ensure that defective, non-matching or sub-standard **components** are replaced.
	2.4	Ensure that sufficient quantities of suitable **tools, plant and equipment** are available, checked and fit for purpose.
	2.5	Ensure there is sufficient competent labour to carry out the work effectively and safely.
3. Be able to install components of the system	3.1	Carry out and review a site-specific risk assessment.
	3.2	Select and wear the designated personal protective equipment (PPE).
	3.3	Demonstrate how to check and confirm the condition of the

		excavation conforms with instructions and specifications.
	3.4	Select, prepare and operate installation equipment in accordance with the specification and manufacturer's instructions.
	3.5	Position **components** in accordance with the specification.
	3.6	Assemble components to industry standards using appropriate **jointing techniques**.
	3.7	Take adequate precautions to prevent damage to **components**, tools and equipment during installation.
	3.8	Take measures to protect installed assets and other utilities using appropriate **protective techniques**.
	3.9	Demonstrate how to Make connection to the existing **water main** using appropriate connection techniques.
	3.10	Demonstrate how to complete the connection in the specified time frame.
	3.11	Check the quality of the installation and confirm compliance with the specified standard.
	3.12	Demonstrate how to install all chambers covers and associated ancillary items in accordance with specifications.
	3.13	Maintain the security and safety of the site, job and third parties at all times.
	3.14	Demonstrate how to ensure **safe working procedures** are followed throughout the work activities.
4. Be able to use and communicate data and information	4.1	Provide **technical information** using appropriate verbal and written **communication techniques**.

	4.2	Ensure recipients have received and understood the information.
	4.3	Report any inaccuracies in the technical information sources used to the designated person.
	4.4	Complete work documentation accurately and record it in the specified place or pass to a designated person.
5. Be able to resolve problems that arise from technical information and installation work	5.1	Report to the designated person damage or defects to tools, equipment or materials 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.
6. Know how to install water mains	6.1	Explain the importance of carrying out on-site risk assessments and implementing safe systems of work and the need for constant review.
	6.2	Explain the importance of understanding and implementing a safe system of work (SSOW) document when working in excavations.
	6.3	Outline the organisation's policy and procedures for meeting relevant statutory requirements, regulations and Codes of Practice.
	6.4	Describe the factors that affect the suitability of excavations, and how to confirm that an excavation is suitable.
	6.5	Describe situations where particular authorisations are required before undertaking work.
	6.6	Explain the implications of not obtaining the required authorisations before undertaking work.

6.7	Explain the potential dangers of working in excavations.
6.8	Outline the main responsibilities of Employers and employees under the current working at height regulations.
6.9	Explain the dangers of taking actions that can create confined spaces risks in excavations.
6.10	Describe the implications of using incorrect plant and tools.
6.11	State the actions to be taken where plant, tools, materials and system **components** fail to meet required specification.
6.12	Describe situations where mains pipe installation can go wrong and suitable actions available to rectify them.
6.13	Describe the actions to be taken if work cannot proceed to schedule.
6.14	Explain how to determine appropriate safe remedial action if work cannot proceed.
6.15	Describe the types and causes of disruption that can occur when installing water mains pipes, and how to avoid them.
6.16	Describe the dangers of using inadequate handling and lifting procedures.
6.17	Describe the types and signs of defect likely to be encountered when installing water mains.
6.18	Explain how to determine the correct, and safe, action to take to resolve defects encountered during installation of water mains.
6.19	Explain the importance of compliance with current industry standards.

Range Statements:

Throughout the unit:

Components include:
(a) Pipe – coil and stick
(b) Joints
(c) Valves
(d) Hydrants and Wash outs

Technical information relates to:
(a) job progress
(b) discrepancies or deficiencies
(c) work instructions
(d) problems outside own responsibility
(e) requirements for mains isolation

Tools, plant and equipment are for:
(a) pipe cutting
(b) pipe jointing
(c) pumping

Learning Outcome 3:

Jointing techniques include:
(a) mechanical flexible
(b) mechanical flanged
(c) butt fusion
(d) electrofusion
(e) push-fit.
(f) Endload resistant

Protective techniques include:
(a) using particular types of backfill materials
(b) support
(c) thrust protection

Safe working procedures cover:
(a) working at height
(b) permit to work systems
(c) hygiene procedures
(d) hazardous materials
(e) lifting and handling.

Existing water main includes the following material:
(a) polyethylene PE/AL/PE (Barrier Pipe)

(a) Metallic / rigid

Learning Outcome 4:

Communication techniques include:

(a) written
(b) spoken face to face
(c) spoken via telephone.

Evidence Requirements:

On-site observation is a mandatory requirement for this unit.

Evidence Guidance:

The ***EUIAS Assessment Strategy for Level 2 Network Construction Operations (Water) and Level 2 Network Construction Operations (Gas)*** includes a list of suitable evidence types for use within the learner's Portfolio of Evidence. This list is not exhaustive but is designed to provide an indication of what may be used as acceptable sources of evidence. Some sources of evidence will be more relevant to the unit content and the assessment of the learner's skills and/or knowledge than others.

It is a requirement that workplace evidence is used where possible.

For this unit, EUIAS also allows assessment:-

✓ In a Realistic Work Environment

EUIAS Unit Ref:	1086
Ofqual Unit Ref.	L/651/0370
Unit Title:	Joint materials by butt fusion processes on utilities network construction up to 180mm diameter
Level:	2
Credit value:	2
GLH:	10
Unit aim(s):	The purpose of this unit is to develop the learner's skills and knowledge to be able to joint materials by butt fusion processes on Utilities Network Construction, up to and including 180mm diameter. Using 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.
Assessment Requirements:	Portfolio of evidence
Relationship to NOS:	MUNC011A

Learning Outcome: The learner will:	Assessment Criteria: The learner can:	
1. Be able to make joints using butt fusion techniques	1.1	Carry out site specific risk assessment, and review in accordance with company procedures.
	1.2	Select and wear the designated PPE.
	1.3	Interpret engineering specifications relevant to the engineering activity.
	1.4	Take measures to check that jointing and related equipment and consumables are as specified and **fit for purpose**.
	1.5	Confirm there is adequate weather protection during the entire jointing cycle.
	1.6	Carry out and monitor the machine operations to produce butt fusion joints of the required quality.
	1.7	Confirm compliance with (a) job instructions (b) correct preparation (c) specification (d) specified dimensional accuracy (e) approved practices and procedures
	1.8	Demonstrate how to de-bead and carry out approved quality assurance test on bead.
	1.9	Confirm joint and bead are identifiable by marking in accordance with company procedures.
	1.10	Confirm the equipment is in a safe and clean condition on completion of jointing activities.
	1.11	Handle excess and waste materials and temporary attachments, in line with approved and agreed procedures.

	1.12	Apply the correct manual handling procedures.
2. Be able to use and communicate data and information when jointing materials	2.1	Take action to confirm with **designated personnel** any circumstances where information appears incorrect.
	2.2	Use organisational information systems to record and store jointing data and information.
3. Be able to resolve problems which arise from jointing materials	3.1	Report promptly to the **designated person** damage or defects to tools, equipment, materials.
	3.2	Report promptly to the **designated person** matters outside the responsibility of the job role.
	3.3	Resolve day to day problems within the responsibility of the job role.
4. Know how to joint materials by butt fusion processes on utilities network construction above 180mm diameter	4.1	State the health, safety and environment legislation and environmental procedures relevant to the work activities.
	4.2	Explain the industry codes of practice and company procedures.
	4.3	Explain why only pipes of similar specifications can be joined together.
	4.4	Describe the different stages that take place during the jointing process and the importance of allowing each phase to complete.
	4.5	Explain the need for pipe support, alignment and the consequences of poor support and mis-alignment.
	4.6	Explain the cause and effect of **defects and contaminations.**
	4.7	Describe maintenance procedures.
	4.8	Describe equipment calibration.
	4.9	Describe consequences of poor maintenance.

4.10	Describe different **quality assurance procedures** that can be applied in recognising defects.
4.11	Explain the correct reporting procedures.

Range Statements:

Learning Outcome 1:

Fit for purpose: Clean, undamaged, compatible.

Learning Outcome 2:

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

Learning Outcome 3:

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

Learning Outcome 5:

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.

Evidence Guidance:

The ***EUIAS Assessment Strategy for Level 2 Network Construction Operations (Water) and Level 2 Network Construction Operations (Gas)*** includes a list of suitable evidence types for use within the learner's Portfolio of Evidence. This list is not exhaustive but is designed to provide an indication of what may be used as acceptable sources of evidence. Some sources of evidence will be more relevant to the unit content and the assessment of the learner's skills and/or knowledge than others.

It is a requirement that workplace evidence is used where possible.

For this unit, EUIAS also allows assessment:-

✓ In a Realistic Work Environment

EUIAS Unit Ref:	1087
Ofqual Unit Ref.	M/651/0371
Unit Title:	Install water services up to 50mm nominal bore or 63mm polyethylene
Level:	2
Credit value:	4
GLH:	30
Unit aim(s):	This unit allows learner to show that they have the skills knowledge and behaviours to install water services up to 50mm nominal bore (63mm PE). The learner will be able to interpret technical information and specifications and prepare the resources necessary to install the system. The learner must install all components required in line with the specifications and relevant company procedures. They must record and report information about the installation to the relevant people, and must resolve or refer problems that arise during the work in line with their job responsibilities.
Assessment Requirements:	Portfolio of evidence
Relationship to NOS:	EUSWNC10

Learning Outcome: The learner will:	Assessment Criteria: The learner can:	
1. Be able to interpret technical information for installing water services	1.1	Use drawings, records, work documents, manuals and technical specifications to provide work details for component installation.
	1.2	Check that a service inspection has taken place before commencing work in line with relevant regulations.
	1.3	Use the **technical information** to confirm dimensions, lengths, widths and quantities required.
	1.4	Confirm site conditions are suitable for installation in line with technical information.
	1.5	Where discrepancies occur, ensure that the necessary corrections are made or arrangements are in place to correct them.
2. Be able to select water service components and resources for installation of the system	2.1	Select the **components** in compliance with the work and quality specifications.
	2.2	Ensure **components** are in good condition and are fit for purpose.
	2.3	Follow procedures to ensure that defective, non-matching or sub-standard **components** are replaced.
	2.4	Ensure that sufficient quantities of suitable tools, plant and equipment are available, checked and fit for purpose.
3. Be able to install components of the system	3.1	Carry out and review site-specific risk assessments.
	3.2	Select and wear the designated PPE.
	3.3	Select, prepare and operate installation equipment in accordance with the specification and manufacturer's instructions.

	3.4	Demonstrate how to position **components** in accordance with the specification.
	3.5	Assemble **components** to industry standards using appropriate **jointing techniques**.
	3.6	Take adequate precautions to prevent damage to **components**, tools and equipment during installation.
	3.7	Take measures to protect installed assets and other utilities using appropriate **protective techniques**.
	3.8	Demonstrate how to make connection to the **water main** using appropriate techniques and equipment.
	3.9	Check the quality of the installation and confirm compliance with the specified standard.
	3.10	Maintain the security and safety of the site, job and third parties at all times.
4. Be able to use and communicate data and information during installation	4.1	Provide technical information using appropriate verbal and written **communication techniques**.
	4.2	Report any inaccuracies in the **technical information** sources used to the designated person.
	4.3	Complete work documentation accurately and record it in the specified place or pass to a designated person.
	4.4	Follow the correct procedures if working on a 'Permit to Work' activity.
5. Know how to install water services	5.1	Outline the organisation's policy and procedures for meeting relevant statutory requirements, regulations and Codes of Practice for installing water services.

5.2	Describe suitable trench conditions to enable **water services** to be installed in line with relevant statutory requirements, regulations and Codes of Practice.
5.3	Describe suitable pre-installation supply pipe conditions to enable service connections to be made in line with relevant statutory requirements and regulations and codes of practice.
5.4	Explain the implications of not obtaining the required authorisations before undertaking work.
5.5	Describe the implications of using incorrect plant and tools for installing **water services.**
5.6	Describe the implications of using unapproved materials and system **components.**
5.7	Describe situations where service pipe installation can go wrong and suitable actions available to rectify them.
5.8	Describe how to access information from reference documents, Regulations and Codes of Practice.
5.9	Describe the procedures you follow to resolve problems within your control and to report and escalate problems which you cannot resolve.
5.10	Describe typical pipe defects likely to be encountered when installing water services.
5.11	Explain how to determine the correct, and safe, action to take to resolve trench defects encountered during installation of water services.

5.12	Describe how to access **information** from reference documents, Regulations and Codes of Practice.
5.13	Explain the importance of compliance with current industry legislation and regulations when installing water services.
5.14	Describe what could cause the weld on an electrofusion tapping tee to fail?
5.15	Explain why all electrofusion-welds must be securely clamped.
5.16	Describe your actions if a gun metal ferrule leaks where it is threaded into the water main.
5.17	Explain why all service connections should be flushed on completion and the potential implications of not doing so.

Range Statements:

Throughout the unit:

Technical information

(a) The tightening sequence for flanges and the importance of correctly applied torques.
(b) The importance of end-load resistance in mechanical fittings for PE pipe
(c) The importance of compatibility for barrier pipe fittings when jointing barrier pipes
(d) Minimum and maximum depths for service pipes

Learning Outcome 2 and 5:

Components:

(a) ferrule or tapping tee
(b) pipe
(c) joints
(d) meter chamber
(e) meter

Learning Outcome 3:

Jointing techniques include:

(a) mechanical
(b) fusion
(c) push-fit.
(d) Flanged

Water Main (Three from)

(b) polyethylene

(c) polyethylene PE/AL/PE (Barrier Pipe)
(d) UPVC or asbestos cement
(e) Metallic

Protective techniques include:
(a) using particular types of backfill materials
(b) thrust protection

Learning Outcome 4:

Technical information relates to:
(a) job progress
(b) discrepancies or deficiencies
(c) work instructions
(d) problems outside own responsibility.

Communication techniques include:
(a) written
(b) spoken face to face
(c) spoken via telephone.

Learning Outcome 5:

Water services include the following materials:
(a) pipes
(b) polyethylene
(c) barrier

Evidence Guidance:

The ***EUIAS Assessment Strategy for Level 2 Network Construction Operations (Water) and Level 2 Network Construction Operations (Gas)*** includes a list of suitable evidence types for use within the learner's Portfolio of Evidence. This list is not exhaustive but is designed to provide an indication of what may be used as acceptable sources of evidence. Some sources of evidence will be more relevant to the unit content and the assessment of the learner's skills and/or knowledge than others.

It is a requirement that workplace evidence is used where possible.

For this unit, EUIAS also allows assessment:-

✓ In a Realistic Work Environment

EUIAS Unit Ref:	1088
Ofqual Unit Ref.	R/651/0372
Unit Title:	Restore water network assets to operational condition by repair
Level:	2
Credit value:	5
GLH:	35
Unit aim(s):	This unit enables learners to develop the necessary skills and knowledge to restore water networks to operational condition, including the repair and replacement of short sections of mains and service pipe and installing temporary or permanent external mechanical fittings on water mains or services. The learner will be able to prepare to restore components and carry out the repair or replacement within agreed timescales, using approved materials whilst working in accordance with industry standards and company procedures.
Assessment Requirements:	Portfolio of evidence
Relationship to NOS:	EUSWNC3

Learning Outcome: The learner will:	Assessment Criteria: The learner can:	
1. Be able to restore components to operational condition	1.1	Perform work activities in accordance with health, safety, and environment **legislation and procedures**.
	1.2	Perform work activities in accordance with water quality and other relevant **legislation and procedures**.
	1.3	Carry out and review site specific risk assessments in accordance with company procedures.
	1.4	Select and wear the designated personal protective equipment (PPE).
	1.5	Demonstrate how to interpret method statements, work instructions, drawings, plans, water company design and construction specifications and other specifications.
	1.6	Select the correct types of tools and equipment to be used when restoring assets to operational condition by repair.
	1.7	Demonstrate how to prepare water network assets for **repair or replacement**.
	1.8	Demonstrate how to repair or replace water network assets in accordance with manufacturers' instructions, work instructions within agreed timescales.
	1.9	Use approved suitable materials and assets for repairs or replacement.
	1.10	Use jointing methods that are suitable for water network assets.
	1.11	Take measures to ensure that repaired assets meet the specified operating conditions and parameters.
	1.12	Carry out all work in accordance

		with industry standards and company procedures.
2. Be able to use, and communicate, data and information during the restoration activities	2.1	Interpret task requirements from relevant method statements and work instructions.
	2.2	Record information about possible cause, ground and asset conditions and work carried out in line with company procedures.
	2.3	Take action to check with **designated personnel** any circumstances where information appears incorrect.
	2.4	Use organisational information systems to record and store relevant jointing data and information.
	2.5	Take action to make sure consumers are communicated with at relevant stages of the process.
3. Be able to resolve problems that arise when restoring components to operational condition	3.1	Demonstrate how to deal promptly and effectively with problems within own control and refer those that cannot be solved.
	3.2	Refer problems and conditions outside the responsibility of the job to the designated person using approved procedures.
	3.3	Show how to deal with any emergencies that may arise when restoring assets to operational condition.
4. Know and understand the health and safety requirements specific to restoring water network assets	4.1	Outline the requirements of H&S & environmental legislation and company procedures relevant to the restoration of assets to operational condition by **repair or replacement**.
	4.2	Explain the importance of following all **hygiene procedures**, including personal hygiene and **water supply quality regulations.**

5. Understand the restoration of water network components to operational condition by repair	5.1	Describe procedures for consumer notification, warnings and informing them about reconnection.
	5.2	Describe the different jointing methods and explain when it is appropriate to use them.
	5.3	Explain how to determine when & where **repair or replacement** is necessary.
	5.4	Describe the different techniques to repair assets.
	5.5	Describe asset replacement methods for mains and services.
	5.6	Describe the care and control procedures to be used to ensure compliance with hygiene regulations.
	5.7	State the different types of information about repair and replacement activity that are required for ongoing asset management.
	5.8	Describe the approved procedures for dealing with, and reporting, problems.

Range Statements:

Throughout the unit:

Assets include:

(a) Metallic
(b) Non-metallic
(c) All ancillary pipes and fittings, taps and valves

Learning Outcome 1:

Legislation and procedures include:

(a) Working in deep excavations
(b) Working with a near hazardous substance
(c) Lifting and handling
(d) Recording and reporting of accidents

Learning Outcomes 1, 4 and 5:

Jointing techniques include:

(a) Joints
(b) Horizontal and circumferential cracks and breaks

(c) Corrosion
(d) interference damage
(e) inoperable fittings.

Learning Outcome 4:

4.2 Water supply quality regulations and hygiene procedures related to ensuring the integrity and wholesomeness of water supplies.

Evidence Requirements:

Observation is a mandatory requirement for this unit and may be on-site or through Realistic Work Environment (RWE).

Evidence Guidance:

The ***EUIAS Assessment Strategy for Level 2 Network Construction Operations (Water) and Level 2 Network Construction Operations (Gas)*** includes a list of suitable evidence types for use within the learner's Portfolio of Evidence. This list is not exhaustive but is designed to provide an indication of what may be used as acceptable sources of evidence. Some sources of evidence will be more relevant to the unit content and the assessment of the learner's skills and/or knowledge than others.

It is a requirement that workplace evidence is used where possible.

For this unit, EUIAS also allows assessment:-

✓ In a Realistic Work Environment

EUIAS Unit Ref:	1089
Ofqual Unit Ref.	T/651/0373
Unit Title:	Install water mains from 150 mm – 300mm nominal bore or 180mm – 355mm Polyethylene (PE)
Level:	2
Credit value:	5
GLH:	40
Unit aim(s):	This unit allows learners to show that they have the skills and knowledge to install water mains using pipes with diameters of 150-300mm nominal bore (180-355mm PE). The learner will be able to interpret technical information and specifications and prepare the resources necessary to install the system, The learner must safely & hygienically install the components required in line with the specification and relevant company procedures. They must record and report information about the installation to the relevant people, and must resolve or refer problems that arise during the work in line with their job responsibility.
Assessment Requirements:	Portfolio of evidence
Relationship to NOS:	MUNC13D EUSWNC2 EUSWNC4

Learning Outcome: The learner will:	Assessment Criteria: The learner can:	
1. Be able to interpret **technical information** for installing water mains	1.1	Use drawings, records, work documents, manuals and technical specifications to provide work details for **component** installation.
	1.2	Use the technical information to confirm dimensions, lengths, widths and quantities required.
	1.3	Use the technical information to determine the positions of utilities plant, services, buildings, kerbs and boundaries.
	1.4	Take measures to ensure that where discrepancies occur necessary corrections are made or communicated to those who need to know using appropriate **communication techniques.**
	1.5	Follow the correct procedures if working on a 'Permit to Work' activity.
2. Be able to select main **components** and resources for installation of the system	2.1	Select the components in compliance with the work and quality specifications
	2.2	Ensure components are in good condition and are fit for purpose.
	2.3	Follow procedures to ensure that defective, non-matching or sub-standard components are replaced.
	2.4	Ensure that sufficient quantities of suitable **tools, plant and equipment** are available, checked and fit for purpose.
	2.5	Ensure there is sufficient competent labour to carry out the work effectively and safely.
3. Be able to install **components** of the system	3.1	Carry out and review a site-specific risk assessment.
	3.2	Select and wear the designated personal protective equipment (PPE).

3.3	Demonstrate how to check and confirm the condition of the excavation conforms with instructions and specifications.
3.4	Take measures to ensure a safe system of work is in place and communicated using appropriate **communication techniques** where lifting machinery is involved.
3.5	Select, prepare and operate installation equipment in accordance with the specification and manufacturer's instructions.
3.6	Position components in accordance with the specification.
3.7	Assemble components to industry standards using appropriate **jointing techniques.**
3.8	Take adequate precautions to prevent damage to components, **tools and equipment** during installation.
3.9	Take measures to protect installed assets and other utilities using appropriate **protective techniques**.
3.10	Demonstrate how to make connection to the **existing water main** using appropriate connection techniques.
3.11	Demonstrate how to complete the connection in the specified time frame.
3.12	Check the quality of the installation and confirm compliance with the specified standard.
3.13	Demonstrate how to Install all chambers covers and associated ancillary items in accordance with specifications.
3.14	Maintain the security and safety of the site, job and third parties at all times.

	3.15	Demonstrate how to ensure **safe working procedures** are followed throughout the work activities.
4. Be able to use and communicate data and information during installation	4.1	Provide technical information using appropriate verbal and written communication techniques.
	4.2	Ensure recipients have received and understood the information.
	4.3	Report any inaccuracies in the technical information sources used to the designated person.
	4.4	Complete work documentation accurately and record it in the specified place or pass to a designated person.
5. Be able to resolve problems that arise from technical information and installation work	5.1	Report to the designated person damage or defects to tools, equipment or materials 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.
6. Know how to install water mains	6.1	Explain the importance of carrying out on-site risk assessments and implementing safe systems of work and the need for constant review.
	6.2	Explain the importance of understanding and implementing a safe system of work (SSOW) document when working in excavations.
	6.3	Outline the organisation's policy and procedures for meeting relevant statutory requirements, regulations and Codes of Practice.
	6.4	Describe the factors that affect the suitability of excavations, and how to confirm that an excavation is suitable.

6.5	Describe situations where particular authorisations are required before undertaking work.
6.6	Explain the implications of not obtaining the required authorisations before undertaking work.
6.7	Explain the potential dangers of working in excavations and chambers.
6.8	Describe the implications of using incorrect plant and tools, materials and system components.
6.9	Describe the implications of using incorrect, materials and system components.
6.10	State the actions to be taken where **plant, tools, materials** and system components fail to meet required specification.
6.11	Describe situations where larger diameter mains pipe installation can go wrong and suitable actions available to rectify them.
6.12	Describe the actions to be taken if work cannot proceed to schedule.
6.13	Explain how to determine appropriate safe remedial action if work cannot proceed.
6.14	Describe the types and causes of disruption that can occur when installing water mains pipes, and how to avoid them.
6.15	Describe the dangers of using inadequate handling and lifting procedures to install larger diameter water mains.
6.16	Describe the types and signs of defect likely to be encountered when installing water mains.
6.17	Explain how to determine the correct, and safe, action to take to resolve defects encountered during installation of water mains.

6.18	Explain the importance of compliance with current industry standards.

Range Statements:

Learning Outcome 1 and throughout the unit:

Component requirements include:

(a) Pipe
(b) Joints
(c) Valves
(d) Hydrants and Wash outs

Technical information relates to:

(a) job progress
(b) discrepancies or deficiencies
(c) work instructions
(d) problems outside own responsibility
(e) requirements for mains isolation

Learning Outcome 2

Tools, plant and equipment are for:

(a) pipe cutting
(b) pipe jointing
(c) pumping
(d) lifting pipes and fittings.

Learning Outcome 3

Jointing techniques include:

(a) mechanical flexible
(b) mechanical flanged
(c) butt fusion
(d) electrofusion
(e) push-fit.
(f) Endload resistant.

Protective techniques include:

(a) using particular types of backfill materials
(b) support
(c) thrust protection
(d) Re-routing activities

Existing water main includes the following material:

(a) Metallic / rigid
(b) Polyethylene (PE)

Safe working procedures cover:
(a) working at height
(b) permit to work systems
(c) hygiene procedures
(d) hazardous materials
(e) lifting and handling.

Communication techniques include:
(a) written
(b) spoken face to face
(c) spoken via telephone
(d) hand signals

Evidence Requirements:

On-site observation is a mandatory requirement for this unit.

Evidence Guidance:

The ***EUIAS Assessment Strategy for Level 2 Network Construction Operations (Water) and Level 2 Network Construction Operations (Gas)*** includes a list of suitable evidence types for use within the learner's Portfolio of Evidence. This list is not exhaustive but is designed to provide an indication of what may be used as acceptable sources of evidence. Some sources of evidence will be more relevant to the unit content and the assessment of the learner's skills and/or knowledge than others.

It is a requirement that workplace evidence is used where possible.

For this unit, EUIAS also allows assessment:-

✓ In a Realistic Work Environment

EUIAS Unit Ref:	1090
Ofqual Unit Ref.	Y/651/0374
Unit Title:	Install water mains above 300mm nominal bore or 355 mm Polyethylene (PE)
Level:	2
Credit value:	5
GLH:	40
Unit aim(s):	This unit allows learners to show that they have the skills and knowledge to install water mains using pipes above 300mm nominal bore 355mm Polyethylene (PE) The learner will be able to interpret technical information and specifications and prepare the resources necessary to install the system, The learner must safely & hygienically install the various components required in line with the specification and relevant company procedures. They must record and report information about the installation to the relevant people, and must resolve or refer problems that arise during the work in line with their job responsibility.
Assessment Requirements:	Portfolio of evidence
Relationship to NOS:	MUNC13F EUSWNC2 EUSWNC4

Learning Outcome: The learner will:	Assessment Criteria: The learner can:	
1. Be able to interpret **technical information** for installing water mains	1.1	Use drawings, records, work documents, manuals and technical specifications to provide work details for component installation.
	1.2	Use the technical information to confirm dimensions, lengths, widths and quantities required.
	1.3	Use the technical information to determine the positions of utilities plant, services, buildings, kerbs and boundaries.
	1.4	Take measures to ensure that where discrepancies occur necessary corrections are made or communicated to those who need to know using appropriate **communication techniques.**
	1.5	Follow the correct procedures if working on a 'Permit to Work' activity.
2. Be able to select main **components** and resources for installation of the system	2.1	Select the **components** in compliance with the work and quality specifications.
	2.2	Ensure **components** are in good condition and are fit for purpose.
	2.3	Follow procedures to ensure that defective, non-matching or sub-standard **components** are replaced.
	2.4	Ensure that sufficient quantities of suitable **tools, plant and equipment** are available, checked and fit for purpose.
	2.5	Ensure there is sufficient competent labour to carry out the work effectively and safely.
3. Be able to install **components** of the system	3.1	Carry out and review a site-specific risk assessment
	3.2	Select and wear the designated personal protective equipment (PPE).

3.3	Demonstrate how to check and confirm the condition of the excavation conforms with instructions and specifications.
3.4	Take measures to ensure a safe system of work is in place and communicated where lifting machinery is involved.
3.5	Select, prepare and operate installation equipment in accordance with the specification and manufacturer's instructions.
3.6	Position **components** in accordance with the specification.
3.7	Assemble **components** to industry standards using appropriate **jointing techniques.**
3.8	Take adequate precautions to prevent damage to **components**, tools and equipment during installation.
3.9	Take measures to protect installed assets and other utilities using appropriate **protective techniques.**
3.10	Demonstrate how to make connection to the **existing water main** using appropriate connection techniques.
3.11	Demonstrate how to complete the connection in the specified time frame.
3.12	Check the quality of the installation and confirm compliance with the specified standard.
3.13	Demonstrate how to install all chambers covers and associated ancillary items in accordance with specifications.
3.14	Maintain the security and safety of the site, job and third parties at all times.
3.15	Demonstrate how to ensure **safe working procedures** are followed throughout the work activities.

4. Be able to use and communicate data and information during installation	4.1	Provide technical information using appropriate **communication techniques** that are appropriate to the type of information provided and the way it will be used.
	4.2	Use appropriate **communication techniques** on site where noise and visibility may be compromised.
	4.3	Ensure recipients have received and understood the technical information.
	4.4	Report any inaccuracies in the technical information sources used to the designated person.
	4.5	Complete work documentation accurately and record it in the specified place or pass to a designated person.
5. Be able to resolve problems that arise from technical information and installation work	5.1	Report to the designated person damage or defects to tools, equipment or materials 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.
6. Know how to install water mains	6.1	Explain the importance of carrying out on-site risk assessments and implementing safe systems of work and the need for constant review.
	6.2	Describe the factors that affect the suitability of excavations, and how to confirm that an excavation is suitable.
	6.3	Describe situations where particular authorisations are required before undertaking work.
	6.4	Explain the implications of not obtaining the required authorisations before undertaking work.

6.5	Explain the potential dangers of working in excavations and chambers.
6.6	Outline the main responsibilities of Employers and employees under the current working at height regulations.
6.7	Explain the dangers of taking actions that can create confined spaces risks in excavations.
6.8	Describe the implications of using incorrect plant and tools.
6.9	State the actions to be taken where plant, tools, materials and system **components** fail to meet required specification.
6.10	State the actions to be taken where plant, tools, materials and system **components** fail to meet required specification.
6.11	Describe situations where large diameter mains pipe installation can go wrong and suitable actions available to rectify them.
6.12	Describe how to access information from reference documents, Regulations and Codes of Practice.
6.13	Describe the actions to be taken if work cannot proceed to schedule.
6.14	Explain how to determine appropriate safe remedial action if work cannot proceed.
6.15	Describe the types and causes of disruption that can occur when installing water mains pipes, and how to avoid them.
6.16	Describe the dangers of using inadequate handling and lifting procedures to install large diameter water mains.
6.17	Describe the types and signs of defect likely to be encountered when installing large diameter water mains.

6.18	Explain how to determine the correct, and safe, action to take to resolve defects encountered during installation of large diameter water mains.
6.19	Explain the importance of compliance with current industry standards.

Range Statements:

Learning Outcome 1 and throughout the unit:

Technical information relates to:

(a) job progress
(b) discrepancies or deficiencies
(c) work instructions
(d) problems outside own responsibility
(e) requirements for mains isolation

Learning Outcome 2 and throughout the unit:

Tools, plant and equipment are for:

(a) pipe cutting
(b) pipe jointing
(c) pumping
(d) lifting pipes and fittings

Components include:

(a) Pipe
(b) Joints
(c) Valves
(d) Hydrants & Washouts

Learning Outcome 3:

Safe working procedures cover:

(a) working at height
(b) permit to work systems
(c) hygiene procedures
(d) hazardous materials
(e) lifting and handling

Existing water main includes the following material:

(a) Metallic / rigid
(b) Polyethylene (PE)

Jointing techniques include:

(a) mechanical flexible
(b) mechanical flanged

(c) Butt fusion
(d) Electrofusion
(e) push-fit.
(f) Endload resistant

Protective techniques include:
(a) using particular types of backfill materials
(b) support
(c) thrust protection
(d) re-routing activities.

Learning Outcome 4:
Communication techniques include:
(a) written
(b) spoken face to face
(c) spoken via telephone
(d) hand signals

Evidence Requirements:

On-site observation is a mandatory requirement for this unit.

Evidence Guidance:

The ***EUIAS Assessment Strategy for Level 2 Network Construction Operations (Water) and Level 2 Network Construction Operations (Gas)*** includes a list of suitable evidence types for use within the learner's Portfolio of Evidence. This list is not exhaustive but is designed to provide an indication of what may be used as acceptable sources of evidence. Some sources of evidence will be more relevant to the unit content and the assessment of the learner's skills and/or knowledge than others.

It is a requirement that workplace evidence is used where possible.

For this unit, EUIAS also allows assessment:-

✓ In a Realistic Work Environment

EUIAS Unit Ref:	1091
Ofqual Unit Ref.	D/651/0394
Unit Title:	Joint materials by butt fusion processes between 180mm and 355 mm for utilities network construction
Level:	2
Credit value:	3
GLH:	20
Unit aim(s):	The purpose of this unit is to develop the learner's skills and knowledge to be able to joint materials by butt fusion processes on Utilities Network Construction greater than 180mm and less than 355mm diameter, using 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.
Assessment Requirements:	Portfolio of evidence
Relationship to NOS:	MUNC11D

Learning Outcome: The learner will:		Assessment Criteria: The learner can:
1. Be able to make butt fusion joints on pipes between 180mm and 355mm	1.1	Carry out site specific risk assessment, and review in accordance with company procedures.
	1.2	Select and wear the designated Personal Protective Equipment (PPE).
	1.3	Interpret engineering specifications relevant to the engineering activity.
	1.4	Take measures to check that jointing and related equipment and consumables are as specified and **fit for purpose**.
	1.5	Follow the job instructions and procedures accurately to prepare and make joints.
	1.6	Check and confirm that joint preparation: • complies with the specification • meets quality requirements.
	1.7	Ensure suitable lifting and handling equipment is available.
	1.8	Provide adequate weather protection during the entire jointing cycle.
	1.9	Carry out and monitor the machine operations in line with specifications and job instructions.
	1.10	Demonstrate how to make butt fusion joints of the required quality and specified dimensions.
	1.11	Demonstrate how to de-bead and carry out the approved quality assurance test on the bead.
	1.12	Confirm joint and bead are identifiable by marking in accordance with company procedures.
	1.13	Confirm the equipment is in a safe and clean condition on completion

		of jointing activities.
	1.14	Handle excess and waste materials and temporary attachments, in line with approved and agreed procedures.
2. Be able to use and communicate data and information	2.1	Take action to check with **designated personnel** any circumstances where information appears incorrect.
	2.2	Use organisational information systems to record and store jointing data and information.
3. Be able to resolve problems which arise from jointing materials	3.1	Report promptly to the **designated person** damage or defects to tools, equipment, materials.
	3.2	Resolve day to day problems within the responsibility of the job role.
	3.3	Report promptly to the **designated person** matters outside the responsibility of the job role.
4. Know how to joint materials by butt fusion processes on utilities network construction between 180mm and 355mm diameter	4.1	Describe the correct handling procedures to be used during butt fusion jointing.
	4.2	Outline the industry codes of practice and company procedures relating to butt fusion jointing.
	4.3	Explain why only pipes of similar specifications can be joined together.
	4.4	Describe the different stages that take place during the butt fusion jointing process and the importance of allowing each phase to complete.
	4.5	Explain the need for pipe support, alignment and the consequences of poor support and mis-alignment.
	4.6	Explain the causes and effects of **defects and contamination.**

4.7	Describe the maintenance procedures that must be followed for butt fusion equipment.
4.8	Describe how equipment must be calibrated for butt fusion activities.
4.9	Describe the consequences of poor maintenance.
4.10	Describe the different **quality assurance procedures** that can be applied to recognise jointing defects.
4.11	Outline the correct reporting procedures used for butt fusion activities.

Range Statements:

Learning Outcome 1:

Fit for purpose: Clean, undamaged, compatible.

Learning Outcome 2:

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

Learning Outcome 3:

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

Learning Outcome 5:

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.

Evidence Guidance:

The ***EUIAS Assessment Strategy for Level 2 Network Construction Operations (Water) and Level 2 Network Construction Operations (Gas)*** includes a list of suitable evidence types for use within the learner's Portfolio of Evidence. This list is not exhaustive but is designed to provide an indication of what may be used as acceptable sources of evidence. Some sources of evidence will be more relevant to the unit content and the assessment of the learner's skills and/or knowledge than others.

It is a requirement that workplace evidence is used where possible.

For this unit, EUIAS also allows assessment:-

✓ In a Realistic Work Environment

EUIAS Unit Ref:	1092
Ofqual Unit Ref:	A/651/0375
Unit Title:	Joint materials by butt fusion processes above 355mm for utilities network construction
Level:	2
Credit value:	3
GLH:	20
Unit aim(s):	This unit allows learners to show that they have the skills and knowledge to carry out butt fusion jointing on polyethylene pipes with a diameter greater than 355 mm. The purpose of this unit is to develop the learner's skills and knowledge to be able to joint materials by butt fusion processes on Utilities Network Construction greater than 355mm diameter, Using 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.
Assessment Requirements:	Portfolio of evidence
Relationship to NOS:	MUNC11C

Learning Outcome: The learner will:	Assessment Criteria: The learner can:	
1. Be able to make butt fusion joints on pipes over 355mm	1.1	Carry out site specific risk assessment, and review in accordance with company procedures.
	1.2	Select and wear the designated Personal Protective Equipment (PPE)
	1.3	Interpret engineering specifications relevant to the engineering activity.
	1.4	Take measures to check that jointing and related equipment and consumables are as specified and **fit for purpose**.
	1.5	Follow the job instructions and procedures accurately to prepare and make joints.
	1.6	Check and confirm that joint preparation: • complies with the specification • meets quality requirements.
	1.7	Ensure suitable lifting and handling equipment is available.
	1.8	Provide adequate weather protection during the entire jointing cycle.
	1.9	Carry out and monitor the machine operations in line with specifications and job instructions.
	1.10	Confirm compliance with • job instructions • correct preparation • specification • specified dimensional accuracy • approved practices and procedures
	1.11	Demonstrate how to make butt fusion joints of the required quality and dimensions.
	1.12	Demonstrate how to de-bead and carry out the approved quality

		assurance test on the bead.
	1.13	Confirm joint and bead are identifiable by marking in accordance with company procedures.
	1.14	Confirm the equipment is in a safe and clean condition on completion of jointing activities
	1.15	Handle excess and waste materials and temporary attachments, in line with approved and agreed procedures.
2. Be able to use and communicate data and information	2.1	Take action to check with **designated personnel** any circumstances where information appears incorrect.
	2.2	Use organisational information systems to record and store jointing data and information.
3. Be able to resolve problems which arise from jointing materials	3.1	Report promptly to the **designated person** damage or defects to tools, equipment, materials.
	3.2	Resolve day to day problems within the responsibility of the job role.
	3.3	Report promptly to the **designated person** matters outside the responsibility of the job role using approved procedures.
4. Know how to joint materials by butt fusion processes on pipes over 355mm diameter	4.1	Describe the correct handling procedures to be used during butt fusion jointing.
	4.2	Outline the industry codes of practice and company procedures relating to butt fusion jointing.
	4.3	Explain why only pipes of similar specifications can be joined together.
	4.4	Describe the different stages that take place during the jointing process and the importance of allowing each phase to complete.

4.5	Explain the need for pipe support, alignment and the consequences of poor support & mis-alignment.
4.6	Explain the causes and effects of **defects and contamination**.
4.7	Describe the maintenance procedures that must be followed for butt fusion equipment.
4.8	Describe how equipment must be calibrated for butt fusion activities.
4.9	Describe the consequences of poor maintenance.
4.10	Describe the different **quality assurance procedures** that can be applied in recognising defects.
4.11	Outline the correct reporting procedures used for butt fusion activities.

Range Statements:

Learning Outcome 1:

Fit for purpose: Clean, undamaged, compatible.

Learning Outcome 2:

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

Learning Outcome 3:

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

Learning Outcome 5:

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.

Evidence Guidance:

The ***EUIAS Assessment Strategy for Level 2 Network Construction Operations (Water) and Level 2 Network Construction Operations (Gas)*** includes a list of suitable evidence types for use within the learner's Portfolio of Evidence. This list is not exhaustive but is designed to provide an indication of what may be used as acceptable sources of evidence. Some sources of evidence will be more relevant to the unit content and the assessment of the learner's skills and/or knowledge than others.

It is a requirement that workplace evidence is used where possible.

For this unit, EUIAS also allows assessment:-

✓ In a Realistic Work Environment

EUIAS Unit Ref:	1093
Ofqual Unit Ref:	D/651/0376
Unit Title:	Conduct pressure testing, swabbing and disinfection of water network engineering products or assets
Level:	2
Credit value:	4
GLH:	35
Unit aim(s):	This unit allows learners to show that they have the skills and knowledge to pressure test, swab, disinfect and flush mains or services in line with industry standards and requirements. The learner will be able to ensure that activities are conducted and recorded in line with industry specifications and codes of practice. They must understand and apply the health and safety requirements needed to carry out commissioning activities. They must record and report information about commissioning activities to the relevant people, and must resolve or refer problems that arise during the work in line with their responsibilities.
Assessment Requirements:	Portfolio of evidence
Relationship to NOS:	EUSWNC5

Learning Outcome: The learner will:	Assessment Criteria: The learner can:	
1. Be able to perform pressure **testing activities**	1.1	Carry out work safely in accordance with health and safety and environment regulations and legislation.
	1.2	Carry out a site-specific risk assessment, and review it in accordance with company procedures.
	1.3	Carry out and review method statements in accordance with company procedures.
	1.4	Select and wear the designated personal protective equipment (PPE).
	1.5	Demonstrate how to use all tools and equipment for pressure testing in accordance with work instructions and manufacturers specifications.
	1.6	Demonstrate how to remove excess air from the system and ensure that the system to be tested is isolated.
	1.7	Demonstrate how to carry out swabbing of the system to remove excess air and cleanse the system.
	1.8	Demonstrate how to safely set up the equipment and carry out hydrostatic pressure testing appropriate to system type.
	1.9	Demonstrate how to safely flush and reduce residual system pressure following system testing.
	1.10	Record and review test results to confirm the soundness of the system against the performance parameters.
	1.11	Report to the designated person the need for remedial action in the event of system **test failure.**
	1.12	Repeat test following suitable system recovery period.

	1.13	Dispose of **waste products** in accordance with environmental standards.
	1.14	Demonstrate how to select tools, equipment and consumables for contact disinfection of the new main in accordance with work instructions and manufacturers specifications.
	1.15	Demonstrate how to apply and measure the correct high range dosage of free chlorine in line with company procedures.
	1.16	Demonstrate how to flush and return the system to a normal low range residual chlorine content following contact.
	1.17	Carry out all work in line with industry and company standards whilst protecting the surrounding environment.
2. Be able to use and communicate data and information relating to testing activities	2.1	Record results of all test activities using required company reporting systems and documentation.
	2.2	Record results of contact disinfection following company procedures
3. Be able to resolve problems which arise when performing test activities	3.1	Demonstrate how to report damage or defects to test equipment to the designated person.
	3.2	Deal promptly and effectively with problems within their control and report those that cannot be solved.
	3.3	Refer problems and conditions outside their responsibility to the designated person using approved procedures.
	3.4	Deal with any emergencies that may arise.
4. Know how to conduct specified testing of water engineering product or assets	4.1	Explain how to interpret drawings, plans and specifications for different test activities and procedures.

4.2	Describe the lines and procedures for reporting problems associated with **testing activities**, including: (a) standard company documentation (b) relevant company procedures.
4.3	Describe the different types of pressure tests and how they are carried out depending on the pipe materials concerned.
4.4	Describe the importance of testing equipment being calibrated.
4.5	Explain the actions required when faults or problems occur with pressure testing equipment.
4.6	Explain how to respond to problems with the pipeline during **testing activities.**
4.7	Explain how the results of the test are recorded and interpreted.
4.8	Explain how air can enter pipe systems and the methods of removing it.
4.9	Explain the criteria for passing or failing a pressure test and the follow-up actions required in either case.
4.10	Explain the consequences **of test failure** and the likely remedial activities.
4.11	Explain the consequences of mechanical failures during testing due to the pressure ranges.
4.12	Describe the procedures to follow and documentation to be used to record test results.

Range Statements:

Learning Outcome 1 and throughout the unit:

Testing activities to be carried out safely with regard to:

(a) working in excavations
(b) handling hazardous materials
(c) working on or near to pressurised systems
(d) provision and use of work equipment
(e) accident reporting.

Consequences of **test failure** include those to:

(a) the environment
(b) operations
(c) cost
(d) time

Waste Products

(a) Chlorinated Water
(b) Chlorine solutions
(c) Flushed Water
(d) Used swabs
(e) Reagents

Evidence Guidance:

The ***EUIAS Assessment Strategy for Level 2 Network Construction Operations (Water) and Level 2 Network Construction Operations (Gas)*** includes a list of suitable evidence types for use within the learner's Portfolio of Evidence. This list is not exhaustive but is designed to provide an indication of what may be used as acceptable sources of evidence. Some sources of evidence will be more relevant to the unit content and the assessment of the learner's skills and/or knowledge than others.

It is a requirement that workplace evidence is used where possible.

For this unit, EUIAS also allows assessment:-

✓ In a Realistic Work Environment

EUIAS Unit Ref:	1094
Ofqual Unit Ref:	F/651/0377
Unit Title:	Conduct specified testing of gas network components and assets - mains
Level:	2
Credit value:	3
GLH:	15
Unit aim(s):	The purpose of this unit is to enable learners to develop the necessary skills and knowledge to be able to conduct specified testing of gas network components and assets in accordance with industry standards and expectations. It can apply to any type of fuel gas or combinations of fuel gas including, but not restricted to, natural gas, LPG, blended or 100% hydrogen. 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 applied when carrying out test activities and procedures. Learners will also develop skills in interpreting, recording and documenting test results.
Assessment Requirements:	Portfolio of evidence
Relationship to NOS:	EUSGNC4

Learning Outcome: The learner will:	Assessment Criteria: The learner can:	
1. Be able to prepare for carrying out test activities	1.1	Carry out site specific risk assessments and apply the appropriate control measures.
	1.2	Select, check condition, use and store the appropriate PPE.
	1.3	Check equipment is functioning in accordance with system operating requirements and parameters.
	1.4	Identify or calculate specified test timings and levels.
	1.5	Secure the test site from third party interference and trespass.
	1.6	Anchor components and assets to withstand test pressures.
2. Be able to perform test activities	2.1	Perform tasks safely and ensure all work is carried out in accordance with health and safety and environmental **legislative and regulatory requirements.**
	2.2	Use testing tools and equipment in accordance with work instructions and manufacturers' specifications.
	2.3	Follow current drawings, plans and specifications for testing activities.
	2.4	Set up and carry out all testing in compliance with approved **industry** and **company procedures.**
	2.5	Follow approved **industry and company procedures** to identify and solve problems that arise during testing.
	2.6	Comply with procedures in accordance with work instructions and manufacturers' specifications when using equipment.
	2.7	Report test failure to a **designated person.**
3. Be able to monitor test results	3.1	Monitor, interpret and review test results to establish that the performance of the system is in

		accordance with specifications, performance parameters and codes of practice.
	3.2	Record the results of test activities and complete test record documents following reporting systems and documentation in accordance with company procedures and requirements.
4. Know and understand health, safety and environmental requirements relevant to testing activities	4.1	Explain the company reporting lines, roles and responsibilities and levels of authority.
	4.2	Describe the range and use of PPE relevant to testing activities and the procedures for checking PPE is fit for purpose.
	4.3	Outline industry recognised methods for securing sites.
	4.4	Identify the potential dangers and hazards from stored energy in **pressurised systems.**
	4.5	Outline the potential consequences of test failure, including the protection of personnel and the environment and how to remediate them.
5. Know and understand specified testing of gas network – components and assets	5.1	Explain different pressure regimes and associated methods for testing and recording.
	5.2	Explain how to identify or calculate specified test timings and levels.
	5.3	Explain the importance of adequate anchorage during testing procedures and how to achieve it.
	5.4	Explain how to use various types of test, specifications for gas mains.
	5.5	Describe how to use **test equipment.**
	5.6	Describe the use of relevant pressure gauges and the importance of using calibrated and certified equipment.

5.7	Describe relevant specifications for system performance and codes of practice and how to interpret test results against them.
5.8	Describe the effect of atmospheric pressure and temperature variance on test results on components and assets.

Range Statements:

Learning Outcome 2:

Legislative and regulatory requirements: Health and safety and environment regulations, legislation, company procedures, statutory procedures.

Agreed industry and company procedures: work instructions; approved procedures and practices; statutory and regulatory requirements; drawings; plans; specifications for the pressure testing of gas network mains and services.

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

Pressurised systems: Gas services and mains operating at low and medium pressure.

Learning Outcome 5:

Test equipment: Pressure testing through the use of air.

Evidence Guidance:

The ***EUIAS Assessment Strategy for Level 2 Network Construction Operations (Water) and Level 2 Network Construction Operations (Gas)*** includes a list of suitable evidence types for use within the learner's Portfolio of Evidence. This list is not exhaustive but is designed to provide an indication of what may be used as acceptable sources of evidence. Some sources of evidence will be more relevant to the unit content and the assessment of the learner's skills and/or knowledge than others.

It is a requirement that workplace evidence is used where possible.

For this unit, EUIAS also allows assessment:-

✓ In a Realistic Work Environment

EUIAS Unit Ref:	1095
Ofqual Unit Ref:	H/651/0378
Unit Title:	Conduct specified connections to gas network mains and commissioning
Level:	2
Credit value:	3
GLH:	18
Unit aim(s):	The purpose of this unit is to enable the learner to develop the skills and knowledge required to conduct specified connections to gas network mains including commissioning. It requires knowledge of the various types of connection techniques available, and the particular circumstances in which they can be used. It includes the assessment of risk the ability to follow operational procedures.
Assessment Requirements:	Portfolio of evidence
Relationship to NOS:	EUSGNC3, EUSGNC5 and EUSGNC7

Learning Outcome: The learner will:	Assessment Criteria: The learner can:	
1. Be able to interpret technical information for connecting engineering assets to the system	1.1	Produce work details for the connection using **technical information.**
	1.2	Use technical information to determine **measurements.**
	1.3	Identify the location where the connection is to be made to the network.
2. Be able to select components and resources for the connection	2.1	Select the **components** for the work in compliance with specifications.
	2.2	Take action to comply with procedures to replace defective **components.**
	2.3	Take action to comply with procedures to replace sub-standard **components.**
	2.4	Take measures to ensure the availability of sufficient **resources.**
	2.5	Plan for actual and foreseeable changes to the availability of resources.
3. Be able to connect engineering products or assets to the system	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	Ensure 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	Appropriately position fire extinguishers on site.

	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 availability of authorised job instructions, **operational procedures** and permits to work, prior to commencement of connection work.
	3.12	Undertake site-specific tasks appropriately to prevent damage to **equipment.**
	3.13	Use selected techniques to make the connection to the existing system.
	3.14	Purge air from the connection and carry out the commissioning in accordance with operational procedures.
4. Be able to use and communicate data and information	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.
5. Be able to resolve problems that arise during assembly or sub-assembly replacement	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, using approved procedures.
	5.3	Report to the **designated person** problems and conditions outside the responsibility of the job role, using approved procedures.
6. Understand specified connections to gas network mains and commissioning	6.1	State the organisation's policy and procedures for connections to meet the relevant statutory requirements • regulations • codes of practice
	6.2	Explain the importance of compliance with current industry standards relating to connections.
	6.3	Explain the importance of obtaining necessary permissions for isolation of any part of network.
	6.4	Explain the importance of obtaining authorisation to proceed with connections.
	6.5	Explain the implications of using incorrect plant, tools, materials and system **components.**
	6.6	Explain the actions to be taken where plant, tools, materials and system **components** fail to meet required specification.
	6.7	Describe potential faults associated with the use of inappropriate installation methods and tools.
	6.8	Identify potential dangers in excavations.
	6.9	Describe the factors affecting, and means of confirming, the suitability of excavations.
	6.10	Describe actions that can create confined space risks in excavations.

6.11	Describe the range of isolation methods available and the rationale for their selection.
6.12	Identify actions to be taken if work cannot proceed to schedule.
6.13	Explain how to determine appropriate safe remedial action if for any reason work cannot proceed.
6.14	Explain the organisation's operational reporting procedures.
6.15	Describe different sources and ways to access information on operational procedures.
6.16	Identify types and causes of likely disruptions to work on site.
6.17	Identify methods of preventing disruption to work on site.

Range Statements:

Learning Outcome 1:

Technical Information: Drawings, records, work documents, manuals and technical specifications, Company policies and procedures.
Measurements: Dimensions, lengths, widths, depths, pressure, quantities.

Learning Outcome 2:

Components: Metallic and non-metallic and all ancillary pipes and fittings.
Resources: Labour, plant, equipment, materials, consumables.

Learning Outcome 3:

Operational procedures: method statement, company procedures.
Connection: main diameters >63mm but <=180mm.

Learning Outcome 4:

Instructions: Verbal, written.

Learning Outcome 5:

Designated Person: Team leader, manager.
Resources: Pipe, fittings, equipment.

Learning Outcome 6:

Components: Pipe, fittings, materials.

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.

Evidence Guidance:

The ***EUIAS Assessment Strategy for Level 2 Network Construction Operations (Water) and Level 2 Network Construction Operations (Gas)*** includes a list of suitable evidence types for use within the learner's Portfolio of Evidence. This list is not exhaustive but is designed to provide an indication of what may be used as acceptable sources of evidence. Some sources of evidence will be more relevant to the unit content and the assessment of the learner's skills and/or knowledge than others.

It is a requirement that workplace evidence is used where possible.

For this unit, EUIAS also allows assessment:-

✓ In a Realistic Work Environment

EUIAS Unit Ref:	1096
Ofqual Unit Ref:	J/651/0379
Unit Title:	Install gas engineering products or assets up to 180mm
Level:	3
Credit value:	6
GLH:	50
Unit aim(s):	The purpose of this unit is to develop the learner's required knowledge and skills to interpret technical specifications and install gas engineering products or assets up to and including 180mm. This unit is relevant to any type of fuel gas or combinations of fuel gas including, but not restricted to, natural gas, LPG, blended or 100% hydrogen. This unit includes interpreting work instructions, organising resources, delegating responsibilities and collating key project information. 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.
Assessment Requirements:	Portfolio of evidence
Relationship to NOS:	EUSGNC2

Learning Outcome: The learner will:	Assessment Criteria: The learner can:	
1. Be able to interpret technical information for installing components of the system	1.1	Produce **work details** for component installation use.
	1.2	Select and apply technical information from relevant technical specifications and work instructions including: • dimensions (length, width, depth) • diameter • quantities of products and assets
	1.3	Identify appropriate positions of: • utilities plant • services • buildings • kerbs • boundaries
	1.4	Demonstrate how to make corrections to drawings, records and work documents and report these in line with organisational procedures.
2. Be able to select components and resources for installation of the system	2.1	Confirm the availability of sufficient **resources.**
	2.2	Select the type of **components** in compliance with the work and quality specifications.
	2.3	Replace defective components in line with procedures.
	2.4	Replace non-match **components** in line with procedures.
	2.5	Replace sub-standard **components** in line with procedures.
	2.6	Respond to changes to the planned use of the resource.
	2.7	Confirm **components** and installation equipment are operational.
3. Be able to install components of the system	3.1	Determine the **method** of installation to be used that meet

	technical specifications and work instructions.
3.2	Carry out and review site-specific risk assessments and apply control measures in accordance with company policy.
3.3	Confirm the condition of the excavation conforms with instructions and specifications.
3.4	Select, prepare and operate installation equipment in accordance with the specification and manufacturers' instructions.
3.5	Assemble components to industry standards using mechanical and/or fusion welding techniques.
3.6	Carry out site-specific tasks appropriately to prevent **equipment** damage.
3.7	Position **components** in accordance with the specification.
3.8	Protect installed assets with fine fill in accordance with specification and approved codes of practice.
3.9	Maintain proximity distances from other utilities apparatus in accordance with approved codes of practice.
3.10	Connect to the existing system in accordance with codes of practice.
3.11	Support and anchor installed assets in accordance with codes of practice.
3.12	Confirm that the quality of the installation complies with the specified standard.
3.13	Maintain the security and safety of the system and third parties where work is not complete or not to schedule.
3.14	Ensure work practices conform to safe working procedures throughout the work activity.

	3.15	Comply with procedures where lone working is required.
4. Be able to use and communicate technical information to brief colleagues	4.1	Provide technical information to appropriate people when required.
	4.2	Check and confirm understanding of technical information.
	4.3	Brief team members on their delegated roles and responsibilities in line with work instructions.
	4.4	Report to a **designated person** problems and conditions outside own responsibility.
	4.5	Complete and store work documentation in line with organisational procedures.
5. Know and understand health and safety and environmental requirements for the installation of gas network products or assets	5.1	Explain the organisational reporting lines, roles, responsibilities and levels of authority.
	5.2	Identify the range and use of PPE for installing gas network products or assets and procedures for checking PPE is fit for purpose.
	5.3	Explain the procedures for, and importance of, obtaining necessary authorisations for isolation of any part of utilities network.
	5.4	Explain the importance of complying with current industry standards.
	5.5	State the organisation's policy and procedures for meeting the relevant statutory requirements, regulations and codes of practice.
	5.6	Describe the organisation's reporting procedures and who to report **problems** to.

6. Know how to install gas engineering products or assets up to 180mm	6.1	Describe different methods of accessing **technical specifications** and how to interpret them.
	6.2	Explain how to interpret work instructions including drawings, records, work authorisations and other project specific information.
	6.3	Describe the factors affecting, and means of confirming, the suitability of excavations.
	6.4	Explain how to determine appropriate safe remedial action if for any reason work cannot proceed.
	6.5	Identify types and causes of likely disruption to the work.
	6.6	Identify methods of avoiding disruption to the work.
	6.7	Describe how to relay technical information to others according to the recipient, the type of information and how it will be used.
	6.8	Describe techniques to check understanding of technical information and work instructions.
	6.9	Explain the importance of implementing and following a safe system of work (SSOW) document when working in excavations.
	6.10	Explain the implications of using incorrect plant, tools and materials.
	6.11	Explain the implications of using incorrect system components.
	6.12	Explain the actions to be taken where plant, tools, materials and system components fail to meet required specification.
	6.13	Describe faults associated with the use of inappropriate installation methods and tools.
	6.14	Describe the range of isolation methods available and the rationale for their selection.

6.15	Explain the procedure for obtaining authorisation to proceed with connections.
6.16	Identify the range of actions to be taken if work cannot proceed to schedule.
6.17	Identify methods of accessing information from different **sources.**
6.18	Describe the types and signs of defect likely to be present on sub-system and means of determining the appropriate safe action.

Range Statements:

The scope of this unit is for Mains 90mm – 180mm.

Learning Outcome 1:

Work details: Drawings, records, work documents, manuals, technical specifications.

Learning Outcome 2:

Resources: Labour, plant, equipment, materials, consumables.
Components: Metallic and non-metallic and all ancillary pipes and fittings.

Learning Outcome 3:

Method: Dead insertion, live insertion, soil displacement, open cut and connection method; in-line, top tee, side entry tee.
Components: Metallic and non-metallic and all ancillary pipes and fittings.
Equipment: Components, tools.

Learning Outcome 4:

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

Learning Outcome 5:

Problems: may include inaccuracies in technical information sources, damage or defects to tools, equipment or materials and work which is incomplete or not to schedule.

Learning Outcome 6:

Technical Specifications: from reference documents, manuals, regulations, codes of practice, risk assessments and method statements.
Sources: Reference documents, regulations, codes of practice.

Evidence Requirements:

Learning outcome 3 **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. In total **two** of the four identified installation methods should be assessed.

Evidence Guidance:

The ***EUIAS Assessment Strategy for Level 2 Network Construction Operations (Water) and Level 2 Network Construction Operations (Gas)*** includes a list of suitable evidence types for use within the learner's Portfolio of Evidence. This list is not exhaustive but is designed to provide an indication of what may be used as acceptable sources of evidence. Some sources of evidence will be more relevant to the unit content and the assessment of the learner's skills and/or knowledge than others.

It is a requirement that workplace evidence is used where possible.

For this unit, EUIAS also allows assessment:-

✓ In a Realistic Work Environment

EUIAS Unit Ref:	1097
Ofqual Unit Ref:	M/651/0380
Unit Title:	Decommissioning and abandonment of mains and services 63mm and above
Level:	3
Credit value:	6
GLH:	50
Unit aim(s):	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.
Assessment Requirements:	Portfolio of evidence
Relationship to NOS:	EUSGNC5

Learning Outcome: The learner will:	Assessment Criteria: The learner can:	
1. Be able to conduct specified testing of gas networks associated with decommissioning	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 for the testing activities.
	1.4	Select and use the specified equipment.
	1.5	Use tools and equipment in accordance with industry standards and codes of practice.
	1.6	Carry out mains decay tests in accordance with codes of practice.
	1.7	Interpret decay test results to determine if the asset is in a suitable condition for abandonment.
	1.8	Identify actions required if the decay test indicates there are connections to the pipe to be abandoned.
	1.9	Take actions within your own level of responsibility.
	1.10	Demonstrate how to purge the system in accordance with industry standards and codes of practice.
	1.11	Report results that require action that which are outside your authority to persons.
2. Be able to interpret technical information for decommissioning	2.1	Produce work details for the decommissioning operation.
	2.2	Use technical information to identify: • dimensions • lengths • widths • depth

		• diameters • pressure • volumes • utilities plant
	2.3	Demonstrate how to make corrections to drawings, records and work documents.
3. Be able to select components and resources for decommissioning	3.1	Select components in compliance with the work and quality specifications.
	3.2	Demonstrate how to comply with procedures to replace defective components.
	3.3	Take action to confirm the availability of sufficient resources.
	3.4	Respond to changes to the planned use of resource.
	3.5	Take action to confirm components and decommissioning equipment are operational.
4. Be able to decommission the system	4.1	Determine the **method** for decommissioning when abandoning the system.
	4.2	Identify the purge parameters and follow procedures to safely purge gas from the system.
	4.3	Take action to confirm that all gas has been removed from the system.
	4.4	Demonstrate how to 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	Disconnect the existing main or service system by **flowstopping** in accordance with codes of practice.
	4.10	Take action to 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	Demonstrate how to ensure work practices conform to safe working procedures throughout the work activity.
5. Be able to use and communicate data and information	5.1	Provide instructions to individuals who will be using technical information.
	5.2	Take action to 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 and store appropriately in accordance with organisational procedures.
	5.5	Demonstrate how to comply with procedures if working on a 'permit to work' designated activity.
6. Be able to resolve problems that arise from technical information and decommissioning work	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.
7. Know how to decommission gas engineering products or assets	7.1	Explain the importance of obtaining necessary permissions for isolation of any part of utilities network.
	7.2	Explain the risks associated with using incorrect system components, plant, tools, materials and authorisations.
	7.3	Describe the range of isolation methods available and the rationale for their selection.
	7.4	Explain the procedure for obtaining authorisation to proceed with decommissioning.
	7.5	Identify the range of actions to be taken if work cannot proceed to schedule.
	7.6	Explain how to determine appropriate safe remedial action if for any reason work cannot proceed.
	7.7	Identify methods of accessing information from different sources.
	7.8	Identify types and causes of likely **disruption** and how to avoid disruption.

Range Statements:

This unit covers:

- Abandonment of metallic or PE pipes.
- Abandonment of pipes >2” / 63mm.
- Suggest that for this unit the abandonment is for pipes <=6” / 180mm.

Learning Outcome 4:

Method: The purge to air may be either direct or indirect.

Flowstopping method to include bagging off or squeeze-off.

Learning Outcome 8:

Disruption: equipment failure, weather conditions, system load, ground conditions, lack of available resources, communication breakdown.

Evidence Guidance:

The ***EUIAS Assessment Strategy for Level 2 Network Construction Operations (Water) and Level 2 Network Construction Operations (Gas)*** includes a list of suitable evidence types for use within the learner's Portfolio of Evidence. This list is not exhaustive but is designed to provide an indication of what may be used as acceptable sources of evidence. Some sources of evidence will be more relevant to the unit content and the assessment of the learner's skills and/or knowledge than others.

It is a requirement that workplace evidence is used where possible.

For this unit, EUIAS also allows assessment:-

✓ In a Realistic Work Environment

Unit Ref:	1098
Ofqual Unit Ref:	R/651/0381
Unit Title:	Conduct specified testing of Gas services
Level:	3
Credit value:	4
GLH:	30
Unit aim(s):	The purpose of the Unit is to assess the competence of individuals to carry out the pressure testing of gas services up to 63mm. It includes making sure the tests are conducted in accordance with safety requirements and the outcomes are appropriately recorded.
Assessment Requirements:	Portfolio of evidence
Relationship to NOS:	EUSGNC4

Learning Outcome: The learner will:	Assessment Criteria: The learner can:	
1. Be able to perform test activities	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	Take measures to 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	Take measures to confirm equipment is functioning in accordance with system operating requirements and parameters
2. Be able to use and communicate data and information within test activities	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
	2.4	Use documentation in accordance with company procedures and statutory requirements.
3. Be able to resolve problems which arise when performing test activities	3.1	Resolve 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**
4. Know and understand specified testing of gas services	4.1	Outline the health, safety and environmental requirements relevant to this activity
	4.2	Explain the importance of adequate anchorage during the testing procedure
	4.3	Explain how to use various types of test, purging and commissioning specifications for gas services
	4.4	Describe how to use various types of test, purging and commissioning equipment
	4.5	Explain how to calibrate the relevant pressure gauges
	4.6	Describe why pressure gauges need calibrating
	4.7	Explain how to interpret test results against specifications and codes of practice
	4.8	Describe the effect of atmospheric pressure and temperature on test results on services
	4.9	Outline the potential consequences of test failure to the environment.

Range Statements:

Learning Outcome 1:

Legislative and regulatory requirements: Health and safety and environment regulations, legislation, company procedures, statutory procedures

Learning Outcome 2:

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
Record: hard copy records, computerised records

Learning Outcome 3:

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

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.

Evidence Guidance:

The ***EUIAS Assessment Strategy for Level 2 Network Construction Operations (Water) and Level 2 Network Construction Operations (Gas)*** includes a list of suitable evidence types for use within the learner's Portfolio of Evidence. This list is not exhaustive but is designed to provide an indication of what may be used as acceptable sources of evidence. Some sources of evidence will be more relevant to the unit content and the assessment of the learner's skills and/or knowledge than others.

It is a requirement that workplace evidence is used where possible.

For this unit, EUIAS also allows assessment:-

✓ In a Realistic Work Environment (RWE)

As stated in the Evidence Requirements section 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 Ref:	1099
Ofqual Unit Ref:	T/651/0382
Unit Title:	Install Gas services up to 63mm
Level:	3
Credit value:	5
GLH:	40
Unit aim(s):	The purpose of this unit is to develop the learner's skills and knowledge so that they are able to install gas services up to 63mm diameter. Each individual will need to follow operational procedures and 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.
Assessment Requirements:	Portfolio of evidence
Relationship to NOS:	EUSGNC3, EUSGNC5 and EUSGNC7

Learning Outcome: The learner will:	Assessment Criteria: The learner can:	
1. Be able to interpret technical information for installing components of the system	1.1	Produce **work details** for **component** installation use.
	1.2	From the technical information determine • dimensions • lengths • widths • depth • pressure • quantities • utilities plant • services • sewers and drains • buildings • kerbs • boundaries
	1.3	Demonstrate how to make corrections to drawings, records and work documents.
2. Be able to select components and resources for installation of the system	2.1	Select the necessary **components** in compliance with the work and quality specifications.
	2.1	Identify and replace defective components in line with key procedures.
	2.2	Confirm the availability of sufficient **resources.**
	2.3	Respond to changes to the planned use of the **resource.**
	2.4	Confirm **components** and installation equipment are fit for purpose.
3. Be able to install components of the system	3.1	Determine the **method** to be used for installing components.
	3.2	Carry out a site-specific risk assessment and review it 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 damage to equipment.
	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, 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.
4. Be able to use and communicate data and information during installation	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	Demonstrate how to comply with procedures if working on a 'Permit to Work' designated activity.
5. Be able to resolve problems that arise from technical information and installation work	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.
6. Know how to install gas services up to 63mm	6.1	Explain the importance of obtaining necessary permissions for isolation of any part of the utility network.
	6.2	Explain the importance of complying with current industry standards and codes of practice and regulatory and statutory requirements for servicelaying.
	6.3	State the organisation's policy and procedures for servicelaying for meeting the relevant: • statutory requirement • regulations • codes of practice
	6.4	Explain the potential implications of not obtaining the correct authorisation.
	6.5	Explain the potential implications of using incorrect plant, tools and materials.

6.6	Explain the potential implications of using incorrect system components.
6.7	Explain the actions to be taken where plant, tools, materials and system **components** fail to meet required specification.
6.8	Describe potential faults associated with the use of inappropriate installation methods and tools.
6.9	Describe the factors affecting, and means of confirming, the suitability of excavations.
6.10	Describe the range of isolation methods available and the rationale for their selection.
6.11	Explain the procedure for obtaining authorisation to proceed with connections.
6.12	Identify the range of actions to be taken if work cannot proceed to schedule.
6.13	Explain how to determine appropriate safe remedial action if for any reason work cannot proceed.
6.14	Identify methods of accessing information from different **sources.**
6.15	Explain how to avoid disruption when working on site.

Range Statements:

Learning Outcome 1:

Work details: Drawings, records, work documents, manuals, technical specifications, Company policies and procedures
Components: Metallic and non-metallic and all ancillary pipes and fittings

Learning Outcome 2:

Components: Metallic and non-metallic and all ancillary pipes and fittings
Resources: Labour, plant, equipment, materials, consumables

Learning Outcome 3:

The following statements cover the different types of service construction which need to be covered in this unit. They indicate the installation method to be adopted.
Method: Dead insertion, live insertion, soil displacement, open cut
Method: New or replacement services
Method: Connection to PE or metallic mains
Method: Termination: internal meter position, meter box, semi-concealed meter box
Equipment: Components, tools, equipment

Components: Metallic and non-metallic and all ancillary pipes and fittings

Learning Outcome 4:
Instructions: Oral, written

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

Learning Outcome 5:
Resources: Equipment, materials and tools

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

Learning Outcome 7:

Components: metallic and non-metallic and all ancillary pipes and fittings
Sources: Reference documents, regulations, codes of practice

Evidence Requirements:

Learning outcome 3 **must** be evidenced through workplace observation by an Assessor. Competence in pressure testing **must** be evidenced through the appropriate unit. on pressure ranges

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.

Evidence Guidance:

The ***EUIAS Assessment Strategy for Level 2 Network Construction Operations (Water) and Level 2 Network Construction Operations (Gas)*** includes a list of suitable evidence types for use within the learner's Portfolio of Evidence. This list is not exhaustive but is designed to provide an indication of what may be used as acceptable sources of evidence. Some sources of evidence will be more relevant to the unit content and the assessment of the learner's skills and/or knowledge than others.

It is a requirement that workplace evidence is used where possible.

For this unit, EUIAS also allows assessment:-

✓ In a Realistic Work Environment

EUIAS Unit Ref:	1100
Ofqual Unit Ref:	7/651/0383
Unit Title:	Disconnection of gas meters and regulators
Level:	2
Credit value:	2
GLH:	10
Unit aim(s):	The purpose of this unit is to develop the learner's skills and knowledge in disconnecting gas meters and regulators. For the purpose of this unit meters can: • Be on domestic installations • Be credit, prepayment diaphragm or ultrasonic • Have a capacity of up to 16.0m^3/hr • Be low pressure up to 75mbar or medium pressure from 75mbar to 2bar (4bar in Northern Ireland) Completion of this unit will permit qualified Servicelayers to undertake limited scope work downstream of the emergency control valve which would otherwise be covered under the Gas safety (Installation & Use) Regulations, as agreed by the HSE and the Gas Safe Register. This does NOT include any new work on the internal installation, nor the reconnection of meters or testing and recommissioning of the installation.
Assessment Requirements:	Portfolio of evidence
Relationship to NOS:	EUSGNC8

Learning Outcome: The learner will:	Assessment Criteria: The learner can:	
1. Be able to prepare for disconnecting gas meters and regulators	1.1	Take steps to make sure all required pre-work checks have been carried out prior to starting disconnection activities.
	1.2	Check that conditions within gas and earthing systems will permit safe disconnection.
	1.3	Select and wear designated PPE.
	1.4	Carry out site specific risk assessment.
	1.5	Select and use the correct tools, test equipment and other equipment for all aspects of the work.
2. Be able to disconnect gas meters	2.1	Use designated safe isolation methods, tests, fittings and procedures to disconnect gas systems and components.
	2.2	Take precautionary actions to ensure that temporarily disconnected meters do not present a safety hazard, including use of temporary continuity bonds.
	2.3	Minimise damage to customer property and building features throughout all stages of work.
	2.4	Demonstrate how to disconnect and remove any decommissioned regulators, gas systems and components in line with disconnection plans.
	2.5	Complete all relevant documentation and paperwork in line with industry standards.
	2.6	Resolve problems within own area of responsibility and competence in accordance with approved procedures.
3. Know and understand health and safety requirements underpinning the disconnection	3.1	Outline key legislation, regulations and guidance covering your responsibilities for

of gas meters and regulators		your own safety and that of others when disconnecting gas meters and regulators, including lone working.
	3.2	Outline key legislation, regulations and guidance covering environmental protection and the use of risk assessments.
	3.3	Identify potential hazards that could arise from all disconnection activities and checks to be carried out before work takes place.
	3.4	Explain how to safely collect and dispose of system contents that may be hazardous to health or the environment.
	3.5	Describe the safe use of a standard voltage stick and the limitations of use.
4. Know and understand how to disconnect gas meters and regulators	4.1	Identify disconnection plans and explain how to interpret them.
	4.2	Describe industry standard practices for removing existing gas meters and regulators.
	4.3	Outline safe isolation methods, tests and procedures for temporary and permanent disconnection of gas meters, regulators, gas systems and all components.
	4.4	Identify **measures** to prevent disconnected gas meters and regulators being brought back into operation.
	4.5	Describe methods of working which protect: • Building décor • Customer property • Existing systems and components
	4.6	Describe the tools, test equipment, other equipment,

	materials and components required for the gas meter and regulator system disconnection.
4.7	Explain how to secure and store tools, test equipment, other equipment and components.
4.8	Describe labelling protocols for temporarily disconnected systems, components or live gas pipes.
4.9	Describe job management structures.
4.10	Describe methods of reporting and recording job progress including any problems which may delay progress.
4.11	Identify different types of meter
4.12	Explain how to correctly handle different **types** of meters.
4.13	Explain the principles of Equipotential Bonding.
4.14	Identify situations where it is necessary to leave temporary continuity bonding in place on completion of the work.

Range Statements:

Please note that this unit only relates to natural gas.

Learning Outcome 4:

AC4.3 To include use of temporary continuity bonds and volt sticks

Measures: including capping and securing emergency control valve (ECV)

Types: U6; E6; Quantum

Evidence Guidance:

The ***EUIAS Assessment Strategy for Level 2 Network Construction Operations (Water) and Level 2 Network Construction Operations (Gas)*** includes a list of suitable evidence types for use within the learner's Portfolio of Evidence. This list is not exhaustive but is designed to provide an indication of what may be used as acceptable sources of evidence. Some sources of evidence will be more relevant to the unit content and the assessment of the learner's skills and/or knowledge than others.

It is a requirement that workplace evidence is used where possible.

For this unit, EUIAS also allows assessment:-

✓ In a Realistic Work Environment (RWE)

EUIAS Unit Ref:	1101
Ofqual Unit Ref:	A/651/0384
Unit Title:	Conduct specified testing of gas networks associated with leakage location
Level:	2
Credit value:	3
GLH:	20
Unit aim(s):	The purpose of the unit is to enable the learner to develop skills and knowledge in investigating and identifying the location of gas escapes. It requires all work to be carried out safely in accordance with industry standards and standards set by the company.
Assessment Requirements:	Portfolio of evidence
Relationship to NOS:	EUSGNC6

Learning Outcome: The learner will:	Assessment Criteria: The learner can:	
1. Be able to conduct specified testing of gas networks associated with leakage location	1.1	Perform work activities safely at all times in accordance with **legislation, regulations** and **company 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	Carry out a plant detection survey prior to barholing.
	1.5	Use barhole equipment safely.
	1.6	Demonstrate how to calibrate gas detection equipment prior to use.
	1.7	Select and use the specified equipment for undertaking gas detection.
	1.8	Use **testing** equipment in accordance with **industry standards and codes of practice.**
	1.9	Determine the **testing** methods to be employed and procedure to be followed to locate the escape of gas into ducts and underground apparatus.
	1.10	Carry out leakage detection tests within agreed timescales.
2. Be able to use and communicate data and information relevant to testing activities	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 establish the precise location of the leak.
	2.4	Record the results of testing activities using company

		reporting systems and documentation.
3. Be able to resolve problems that arise when testing gas networks for leaks	3.1	Resolve 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.**
4. Know and understand specified testing of gas networks associated with leakage location	4.1	State the reporting lines and procedures to be used for gas escapes.
	4.2	Identify types of test procedures that can be used to locate leaks.
	4.3	Identify the correct and appropriate test procedure for a given situation.
	4.4	Interpret and follow test procedures and documentation.
	4.5	Explain how to calibrate the relevant gas detection equipment prior to use.
	4.6	Explain why the relevant gas detection equipment should be calibrated.
	4.7	Demonstrate bar holing, sampling and escape surveying techniques used on services and mains.
	4.8	Interpret test results against specifications.
	4.9	Describe the potential consequences of test failures to the public, property and the environment.
	4.10	Determine actions required following analysis of test results.
	4.11	Identify the various test records that are required.
	4.12	Describe the consequences of incorrectly recording and reporting test results in line with industry requirements.

General Unit Information:

The following terms provide an indicator of the scope of gas escapes that might be encountered by the learner. They do not relate to specific words in the unit but should be considered as part of the delivery of the unit as a whole.

Gas: natural gas, liquid petroleum gas (LPG)

Pressure: low pressure and medium pressure

Types of escape: controlled and uncontrolled, external, gas in properties

Escapes from mains and services

Escapes in the public highway and private property

Escapes identified by a public report or by survey

Range Statements:

Learning Outcome 1:

Legislation, regulation and company requirements: Health, safety and environment requirements, legislation, industry standards, statutory requirements, company procedures, work instructions

Testing: Bar hole and other leakage surveys, gas detection equipment

Industry standards and codes of practice: work instructions; health and safety regulations; codes of practice; equipment specifications

Learning Outcome 3:

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

Evidence Guidance:

The ***EUIAS Assessment Strategy for Level 2 Network Construction Operations (Water) and Level 2 Network Construction Operations (Gas)*** includes a list of suitable evidence types for use within the learner's Portfolio of Evidence. This list is not exhaustive but is designed to provide an indication of what may be used as acceptable sources of evidence. Some sources of evidence will be more relevant to the unit content and the assessment of the learner's skills and/or knowledge than others.

It is a requirement that workplace evidence is used where possible.

For this unit, EUIAS also allows assessment:-

✓ In a Realistic Work Environment

✓ Simulation

It is recommended that one piece of evidence is either through simulation or realistic work environment plus one piece of evidence from site.

EUIAS Unit Ref:	1102
Ofqual Unit Ref:	D/651/0385
Unit Title:	Minimise risks to life, property and the environment during gas escapes
Level:	3
Credit value:	3
GLH:	20
Unit aim(s):	The purpose of this unit is to minimise risks when attending a gas escape It includes the need to work safely to industry standards and to follow safe working practices and engineering specifications.
Assessment Requirements:	Portfolio of evidence
Relationship to NOS:	MUNC020

Learning Outcome: The learner will:	Assessment Criteria: The learner can:	
1. Be able to assess risks to life, property and the environment during gas emergencies	1.1	Perform work activities in accordance with **legislation, regulations and company procedures.**
	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 risks and identify the actions required to control risks.
	1.5	Record the findings of the risk assessment.
2. Be able to minimise and prioritise risks to life, property and the environment during gas emergencies	2.1	Prioritise hazards and take action to minimise the risk to safeguard life, property and the environment, including evacuation and forced entry.
	2.2	Take action to make the site safe, including control of hazards.
	2.3	Take action to make safe sources and potential sources of ignition
	2.4	Monitor the effectiveness of the risk control measures and take prompt additional action
	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 safe.
3. Be able to use approved gas detection and safety equipment	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 properties and voids for gas ingress.
4. Be able to use and communicate data and information	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.
5. Be able to resolve problems that arise when testing for escapes of gas	5.1	Resolve 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.**
6. Understand how to minimise risks to life, property and the environment during gas escapes	6.1	State the order of priority to safeguard life, property and the environment.
	6.2	Explain the difference between controlled and uncontrolled gas escapes.

6.3	State immediate action criteria for gas escapes.
6.4	Explain the increased risk of gas from a medium pressure network.
6.5	State the **reporting lines and procedures** to be used when dealing with gas emergencies.
6.6	Identify different types of hazards and risks that could occur during a gas emergency.
6.7	State the properties of liquified petroleum gas (LPG) and explain how they differ from natural gas.
6.8	Explain how actions required for LPG differ from those for escapes of natural gas.
6.9	Explain why it is important to reduce the risk quickly in a gas emergency.
6.10	Describe the potential consequences of failure to control the risks to the public, property and the environment.

General Unit Information:

Gas: natural gas, liquid petroleum gas (LPG).

Pressure: low pressure and medium pressure.

Types of escape: controlled and uncontrolled, external, gas in properties.

Escapes from mains and services.

Escapes in the public highway and private property.

Escapes identified by a public report or by survey.

Range Statements:

Learning Outcome 1:

Legislation, regulations and company procedures: Health, safety and environment regulations, legislation, statutory and regulatory requirements, company procedures, safe working practices, risk assessments.

Learning Outcome 3:

Standards: Approved, in date, correctly calibrated.

Learning Outcome 5:

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

Learning Outcome 6:

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.

Evidence Guidance:

The ***EUIAS Assessment Strategy for Level 2 Network Construction Operations (Water) and Level 2 Network Construction Operations (Gas)*** includes a list of suitable evidence types for use within the learner's Portfolio of Evidence. This list is not exhaustive but is designed to provide an indication of what may be used as acceptable sources of evidence. Some sources of evidence will be more relevant to the unit content and the assessment of the learner's skills and/or knowledge than others.

It is a requirement that workplace evidence is used where possible.

For this unit, EUIAS also allows assessment:-

✓ In a Realistic Work Environment

✓ Simulation

It is recommended that one piece of evidence is either through simulation or realistic work environment plus one piece of evidence from site.

EUIAS Unit Ref:	1103
Ofqual Unit Ref:	F/651/0386
Unit Title:	Analyse and interpret the results of gas leakage surveys to determine the location of gas escapes
Level:	3
Credit value:	3
GLH:	20
Unit aim(s):	The purpose of this unit is to develop the learner's skills and knowledge 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 engineering specifications.
Assessment Requirements:	Portfolio of evidence
Relationship to NOS:	EUSGNC4

Learning Outcome: The learner will:	Assessment Criteria: The learner can:	
1. Be able to analyse and interpret the results of surveys to determine the location of escapes	1.1	Perform work activities safely in accordance with **legislation, regulations and company 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	Identify faults and variations from specification.
	1.6	Perform necessary actions based on the findings of the analysis activity.
2. Be able to use and communicate data and information	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.
3. Be able to resolve problems that arise when analysing and interpreting the results of surveys	3.1	Resolve inconsistencies in the **test data** in accordance with company procedures.
	3.2	Resolve 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 .**
4. Understand how to analyse and interpret the results of gas leakage surveys to determine the location of gas escapes	4.1	Explain the health, safety and environment regulatory requirements for protecting self and others during gas escapes.
	4.2	Describe how to use analysis methods and techniques, including comparison of **data.**

4.3	Explain the use of the various types of test documentation for gas escape.

General Information:

The following terms provide an indicator of the scope of gas escapes that might be encountered by the learner, where analysis and interpretation may be required. They do not relate to specific words in the unit but should be considered as part of the delivery of the unit as a whole.

Gas: natural gas, liquid petroleum gas (LPG)
Pressure: low pressure and medium pressure
Types of escape: controlled and uncontrolled, external, gas in properties
Escapes from mains and services
Escapes in the public highway and private property
Escapes identified by a public report or by survey

Range:

Learning Outcome 1:

Legislation, regulatory and company 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.

Learning Outcome 3:

Test data: Results obtained from bar hole and other leakage surveys.
Designated person: Those people specified within work and health and safety procedures.

Learning Outcome 4:

Data: Results obtained from bar hole and other leakage surveys.

Evidence Guidance:

The ***EUIAS Assessment Strategy for Level 2 Network Construction Operations (Water) and Level 2 Network Construction Operations (Gas)*** includes a list of suitable evidence types for use within the learner's Portfolio of Evidence. This list is not exhaustive but is designed to provide an indication of what may be used as acceptable sources of evidence. Some sources of evidence will be more relevant to the unit content and the assessment of the learner's skills and/or knowledge than others.

It is a requirement that workplace evidence is used where possible.

For this unit, EUIAS also allows assessment:-

✓ In a Realistic Work Environment

✓ Simulation

It is recommended that one piece of evidence is either through simulation or realistic work environment plus one piece of evidence from site.

EUIAS Unit Ref:	1104
Ofqual Unit Ref:	H/651/0387
Unit Title:	Restore gas network components to operational condition
Level:	2
Credit value:	3
GLH:	20
Unit aim(s):	The purpose of this unit is to develop the learner's knowledge and skills in being able to repair and replace short sections of mains and services and fitting temporary or permanent external mechanical fittings. This unit can apply to any type of fuel gas or combinations of fuel gas including, but not restricted to, natural gas, LPG, blended or 100% hydrogen. This unit involves live gas working, restoring components and carrying out repair or replacement in accordance with organisational procedures.
Assessment Requirements:	Portfolio of evidence
Relationship to NOS:	EUSGNC7

Learning Outcome: The learner will:	Assessment Criteria: The learner can:	
1. Be able to restore components to operational condition	1.1	Perform work activities in accordance with health and safety and environmental protection **regulations**, **legislation** and organisational procedures.
	1.2	Carry out and review site-specific risk assessments in accordance with company procedures.
	1.3	Select and wear the designated PPE.
	1.4	Show how to check, deploy and use breathing apparatus when working on a live gas repair.
	1.5	Monitor and maintain a safe environment and gas system when undertaking live gas operations.
	1.6	Check and position a minimum of two fire extinguishers in suitable locations for the work activity.
	1.7	Prepare **components** for repair or replacement in line with organisational procedures.
	1.8	Carry out **repairs** or replacements of assets in accordance with technical specifications and work instructions, to agreed timescale using approved materials and components.
	1.9	Use jointing methods that are suitable for materials and components.
	1.10	Confirm that the **gas escape** has been completely resolved and the site is safe.
	1.11	Confirm the repaired component meets the specified operating conditions and parameters.

	1.12	Produce accurate and complete records of all **repair** work carried out.
2. Be able to resolve problems that arise when restoring components to operational condition	2.1	Resolve problems within the limits of own responsibility in line with organisational procedures.
	2.2	Communicate problems outside job responsibilities or which cannot be resolved to **designated person.**
	2.3	Demonstrate how to deal with any emergencies that may arise in line with approved procedures.
3. Know and understand the health and safety requirements specific to restoring gas network components	3.1	State the health, safety and environment **legislation**, procedures and codes of practice relevant to work activities including: • work in excavations • hazardous materials • PPE • breathing apparatus • accidents
	3.2	Describe the requirements for fire extinguishers to be deployed on gas escapes and how to check and position them.
4. Know and understand the restoration of gas network components to operational condition by repair	4.1	Describe the requirements for monitoring **gas** concentrations in atmospheres and actions to be taken at certain levels
	4.2	Outline the different methods of accessing technical specifications from reference documents, manuals, regulations, codes of practice, risk assessments and method statements
	4.3	Explain how to interpret technical specifications and **work instructions**
	4.4	Describe how to select the appropriate **repair technique,** jointing method and-flow-stopping technique to be used for the

	specification of the **component** to be repaired.
4.5	Identify the various **components** in use on the gas network.
4.6	Describe how to repair joints, horizontal and circumferential cracks and breaks, corrosion and interference damage and when replacement is necessary.
4.7	Explain how to identify the **types of pipe**, materials, their characteristics and how to work with them.
4.8	Identify types of tools and equipment to be used when restoring **components** to operating condition by repair.
4.9	Describe component replacement methods for mains and services.
4.10	Define the care and control procedures to be used to ensure compliance with live gas working.
4.11	Explain the types of records and documentation used to record maintenance activities.

Range Statements:

Learning Outcome 1:

Regulations, legislation: 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.
Gas escape: controlled and uncontrolled, external, gas in properties. Escapes in the public highway and private property. Escapes identified by a public report or by survey.

Learning Outcome 2:

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

Learning Outcome 3:

Legislation: Health and safety and environment regulations, legislation, statutory and regulatory requirements, company procedures, safe working practices.

Learning Outcome 4:

Work instructions: including drawings, records, work authorisations and other project specific information.

Types of pipe: metric and imperial polyethylene, cast iron, ductile iron, steel.

Components: Metallic and non-metallic gas mains and services and all ancillary pipes and fittings, including service connections, mechanical and bolted joints, lead yarn joints
Repair techniques: mains and services; pressure ranges to include up to and including 75mb (ie low pressure) and above 75mb (ie medium pressure)
Gas: natural gas, liquid petroleum gas (LPG), hydrogen.

Evidence Guidance:

The ***EUIAS Assessment Strategy for Level 2 Network Construction Operations (Water) and Level 2 Network Construction Operations (Gas)*** includes a list of suitable evidence types for use within the learner's Portfolio of Evidence. This list is not exhaustive but is designed to provide an indication of what may be used as acceptable sources of evidence. Some sources of evidence will be more relevant to the unit content and the assessment of the learner's skills and/or knowledge than others.

It is a requirement that workplace evidence is used where possible.

For this unit, EUIAS also allows assessment:-

✓ In a Realistic Work Environment

✓ Simulation

It is recommended that one piece of evidence is either through simulation or realistic work environment plus one piece of evidence from site.

Unit Ref:	1105
Ofqual Unit Ref:	J651/0388
Unit Title:	Install or replace external gas service risers
Level:	2
Credit value:	7
GLH:	40
Unit aim(s):	The purpose of this unit is to develop the knowledge and skills of learners to be able to interpret technical specifications and to design, install or replace external gas service risers in accordance with operational procedures. 'Service risers' are pipes running up the outside of buildings, usually supplying multiple properties. Therefore, the focus of this unit is on above-ground pipework rather than buried pipework.
Assessment Requirements:	Portfolio of evidence
Relationship to NOS:	EUSGNC3

Learning Outcome: The learner will:	Assessment Criteria: The learner can:	
1. Be able to interpret technical information for installing components of the system	1.1	Produce **work details** for **component** installation use.
	1.2	Interpret the following from technical information: • dimensions • length • height • diameters • pressure • width • storeys • properties • quantities • utilities plant • services • buildings • kerbs • valve requirements • boundaries • termination points
	1.3	Demonstrate how to make corrections through drawings, records and work documents.
2. Be able to select components and resources for installation of the system	2.1	Select the type of **components** in compliance with the work and quality specifications.
	2.2	Replace defective components in line with key procedures.
	2.3	Confirm the availability of sufficient **resources.**
	2.4	Respond to changes to the planned use of the **resource.**
	2.5	Confirm **components** and installation equipment are operational.
3. Be able to install components of the system	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	Connect to the existing system in accordance with codes of practice.
3.10	Support and anchor installed assets in accordance with codes of practice.
3.11	Confirm that the quality of the installation complies with the specified standard.
3.12	Maintain the security and safety of the system and third parties where work is not complete or not to schedule.
3.13	Ensure work practices conform to safe working procedures throughout the work activity.
3.14	Demonstrate safe working practices for working at height.
3.15	Demonstrate how to comply with procedures if working on a ‘Permit to Work’ designated activity.

4. Be able to use and communicate data and information	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	Identify methods of accessing information from different **sources.**
5. Be able to resolve problems that arise from technical information and installation work	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.
6. Know how to install or replace gas service risers	6.1	Explain the importance of obtaining necessary permissions for isolation of any part of utilities network.
	6.2	Explain the risks associated with using incorrect system components, plant, tools, materials and authorisations.
	6.3	Explain the actions to be taken where plant, tools, materials and system **components** fail to meet required specification.
	6.4	Describe faults associated with the use of inappropriate installation methods and tools.
	6.5	Describe the factors affecting, and means of confirming, the suitability of excavations.

6.6	Describe the range of isolation methods available and the rationale for their selection.
6.7	Explain the procedure for obtaining authorisation to proceed with connections.
6.8	Identify the range of actions to be taken if work cannot proceed to schedule.
6.9	Explain how to determine appropriate safe remedial action if for any reason work cannot proceed.
6.10	Identify types and causes of likely disruptions and how to avoid them.
6.11	Describe the types and signs of defect likely to be present on sub-system and means of determining the appropriate safe action.
6.12	Explain the requirements for the protection of the work site and area.

General Unit Information:

Pipe size: <=2” or 63mm diameter.

Construction may include use of scaffolding, scaffold towers, ladders, mobile elevated work platforms (MEWPs) but these are outside the scope of this unit.

Risers should be on properties of 2 or more storeys, ‘High rise’ properties would normally be out of scope.

Risers would need to be pressure tested to appropriate standards.

Please note that EUIAS recommends that learners undertake the ***Level 2 Diploma in Network Construction Operations (Gas) - Service-layer*** qualification prior to undertaking this unit.

Range Statements:

Learning Outcome 1:

Work details: drawings, records, work documents, manuals, technical specification and design and restriction.
Component: metallic and non-metallic and all ancillary pipes and fittings.

Learning Outcome 2:

Components: metallic and non-metallic and all ancillary pipes and fittings.
Resources: labour, plant, equipment, materials, consumables.

Learning Outcome 3:

Method: Dead insertion, live insertion, new installation
Equipment: Components, tools.
Components: Metallic and non-metallic and all ancillary pipes and fittings, proprietary systems.

Learning Outcome 4:

Instructions: Oral, written.

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

Sources: Reference documents, regulations, code of practice, company procedures.

Learning Outcome 5:

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

Resources: Materials, tools.

Learning Outcome 6:

Components: Metallic and non-metallic and all ancillary pipes and fittings

Evidence Guidance:

The ***EUIAS Assessment Strategy for Level 2 Network Construction Operations (Water) and Level 2 Network Construction Operations (Gas)*** includes a list of suitable evidence types for use within the learner's Portfolio of Evidence. This list is not exhaustive but is designed to provide an indication of what may be used as acceptable sources of evidence. Some sources of evidence will be more relevant to the unit content and the assessment of the learner's skills and/or knowledge than others.

It is a requirement that workplace evidence is used where possible.

For this unit, EUIAS also allows assessment:-

✓ In a Realistic Work Environment

Due to the subject matter one piece of evidence is sufficient for this unit.

Unit Ref:	1106
Ofqual Unit Ref:	K/651/0389
Unit Title:	Install gas engineering products or assets above 355mm
Level:	3
Credit value:	9
GLH:	80
Unit aim(s):	The aim of this unit enables the learner to develop the knowledge, understanding and skills to install gas engineering products or assets above 355mm diameter.
Assessment Requirements:	Portfolio of evidence
Relationship to NOS:	EUSGNC3

Learning Outcome: The learner will:	Assessment Criteria: The learner can:	
1. Be able to interpret technical information for installing components of the system	1.1	Produce **work details** for **component** installation.
	1.2	Interpret the following from technical information: • dimensions (length, width, depth) • diameter • weight • pressure • quantities • utilities plant • services • buildings • kerbs • boundaries
	1.3	Demonstrate how to make corrections through drawings, records and work documents.
2. Be able to select components and resources for installation of the system	2.1	Select the **components** in compliance with the work and quality specifications.
	2.2	Replace defective components in line with key procedures.
	2.3	Confirm the availability of sufficient **resources.**
	2.4	Respond to changes to the planned use of the resource.
	2.5	Confirm **components** and installation equipment are operational.
3. Be able to install components of the system	3.1	Determine the **method** of installation to be used for 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 in line with company procedure.
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	Ensure continuity of supply during flowstopping operations
3.14	Support and anchor installed assets in accordance with codes of practice.

	3.15	Confirm that the quality of the installation complies with the specified standard.
	3.16	Maintain the security and safety of the system and third parties where work is not complete or not to schedule.
	3.17	Demonstrate how to ensure work practices conform to safe working procedures throughout the work activity.
	3.18	Demonstrate how to ensure all on-site personnel comply with relevant work specifications and complete tasks safely.
4. Be able to use and communicate data and information	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.
5. Be able to resolve problems that arise from technical information and installation work	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.
6. Know how to install gas engineering products or assets above 355mm	6.1	Explain the importance of obtaining necessary permissions for isolation of any part of utilities network.
	6.2	Explain the risks associated with using incorrect system components, plant, tools, materials and authorisations.

	6.3	Explain the actions to be taken where plant, tools, materials and system components fail to meet required specification.
	6.4	Describe faults associated with the use of inappropriate installation methods and tools
	6.5	Describe the factors affecting, and means of confirming, the suitability of excavations
	6.6	Explain the dangers of taking actions that can create confined space risks in excavations
	6.7	Explain the dangers of lifting operations and inadequate handling and lifting procedures to on-site personnel on site
	6.8	Describe the types and signs of defect likely to be present, and means of determining the appropriate safe action.
7. Understand isolation and connection methods	7.1	Describe the range of isolation methods available and the rationale for their selection.
	7.2	Explain the procedure for obtaining authorisation to proceed with connections.
	7.3	Identify the range of actions to be taken if work cannot proceed to schedule.
	7.4	Explain how to determine appropriate safe remedial action if for any reason work cannot proceed.
	7.5	Identify methods of accessing information from different sources.
	7.6	Identify types and causes of likely **disruption** and how to avoid disruption.

General Unit Information:

Each individual organisation will determine which standards, policies and procedures apply to operational activities. It is not appropriate to list these individually, however, it is expected

that they include policies and procedures associated with operational emergencies and that the learner is trained accordingly. Consideration should also be given to ensuring appropriate procedures are covered when learners are trained.

This unit applies to:

PE and metallic pipe and fittings

Pipe >355mm

Please note that EUIAS recommends that learners undertake the *"Install gas engineering products or assets between 180-355mm"* unit prior to undertaking this unit.

Range Statements:

Learning Outcome 1:

Work details: to include project file including installation method.

Learning Outcome 2:

Components: pipes, fittings, pipe support, anchorage.

Resources: Gas networks engineering staff, contractors.

Learning Outcome 3:

AC 3.1: To cover PE and metallic; assessment on metallic can be covered under RWE.

Equipment: Jointing equipment, flowstopping equipment.
Components: pipe, fittings.

Learning Outcome 4:

Instructions: Verbal, written.
Designated Persons: Managers, supervisors, team leaders.

Learning Outcome 5:

Resources: Pipe, fittings, equipment.
Designated Persons: Managers, supervisors, team leaders.

Learning Outcome 7:

AC 7.1: Learners need to demonstrate a background knowledge of all isolation methods, i.e. valves, stopple, iris stop, in-line flowstopping, PE bagstop.
AC 7.2: Obtaining authorisation will fall under the remit of Safe Control of Operations (SCO); learners may not have an SCO qualification, but would be expected to comply with the procedures within the Permit to Work.
Disruption: equipment failure, weather conditions, system load, ground conditions, lack of available resources, communication breakdown, traffic, public.

Evidence Guidance:

The ***EUIAS Assessment Strategy for Level 2 Network Construction Operations (Water) and Level 2 Network Construction Operations (Gas)*** includes a list of suitable evidence types for use within the learner's Portfolio of Evidence. This list is not exhaustive but is designed to provide an indication of what may be used as acceptable sources of evidence. Some sources of evidence will be more relevant to the unit content and the assessment of the learner's skills and/or knowledge than others.

It is a requirement that workplace evidence is used where possible.

For this unit, EUIAS also allows assessment:-

✓ In a Realistic Work Environment

EUIAS Unit Ref:	1107
Ofqual Unit Ref:	R/651/0390
Unit Title:	Install gas engineering products or assets above 180mm, up to and including 355mm
Level:	3
Credit value:	6
GLH:	50
Unit aim(s):	The aim of this unit is for the learner to develop the knowledge, understanding and skills to install gas engineering products or assets above 180mm up to and including 355mm. This unit applies to Polyethylene (PE) and metallic pipes and fittings.
Assessment Requirements:	Portfolio of evidence
Relationship to NOS:	EUSGNC3

Learning Outcome: The learner will:	Assessment Criteria: The learner can:	
1. Be able to interpret technical information for installing components of the system	1.1	Produce **work details** for component installation use
	1.2	Interpret the following from technical information: • dimensions (length, width, depth) • diameter • weight • pressure • quantities • utilities plant • services • buildings • kerbs • boundaries
	1.3	Demonstrate how to make corrections through drawings, records and work documents.
2. Be able to select components and resources for installation of the system	2.1	Select the **components** in compliance with the work and quality specifications.
	2.2	Replace defective components in line with key procedures.
	2.3	Confirm the availability of sufficient **resources.**
	2.4	Confirm relevant authorisations and notices are in place to undertake the work.
	2.5	Respond to changes to the planned use of the resource.
	2.6	Confirm **components** and installation equipment are operational.
3. Be able to install components of the system	3.1	Determine the method of installation for 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	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	Ensure security of supply during flowstopping operations.
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	Demonstrate how to ensure work practices conform to safe working procedures throughout the work activity.
	3.17	Demonstrate how to ensure all on-site personnel comply with relevant work specifications and complete tasks safely.
4. Be able to use and communicate data and information	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 and store appropriately.
	4.5	Comply with procedures if working on a 'Permit to Work' designated activity.
5. Be able to resolve problems that arise from technical information and installation work	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.
6. Know how to install gas engineering products or assets above 355mm	6.1	Explain the importance of obtaining necessary permissions for isolation of any part of utilities network.

6.2	State the organisation's policy and procedures for meeting the relevant: • statutory requirements • regulations • codes of practice
6.3	Explain the implications of not obtaining the correct authorisation.
6.4	Explain the implications of using incorrect plant, tools and materials.
6.5	Explain the implications of using incorrect system components.
6.6	Explain the actions to be taken where plant, tools, materials and system components fail to meet required specification.
6.7	Describe faults associated with the use of inappropriate installation methods and tools.
6.8	Identify potential dangers in excavations.
6.9	Describe the factors affecting, and means of confirming, the suitability of excavations.
6.10	Describe the range of isolation methods available and the rationale for their selection.
6.11	Explain the procedure for obtaining authorisation to proceed with connections.
6.12	Identify the range of actions to be taken if work cannot proceed to schedule.
6.13	Explain how to determine appropriate safe remedial action if for any reason work cannot proceed.
6.14	Identify methods of accessing information from different sources.
6.15	Identify types and causes of likely **disruption** and how to avoid disruption.

6.16	Explain the dangers of lifting operations and inadequate handling and lifting procedures to on-site personnel on site.
6.17	Describe the types and signs of defect likely to be present, and means of determining the appropriate safe action.

Range Statements:

Learning Outcome 1:

Work details: to include project file including installation method.

Learning Outcome 2:

Components: pipes, fittings, pipe support, anchorage.

Resources: Gas networks engineering staff, contractors.

Learning Outcome 3:

Flowstopping: iris stop, PE bagstop, stopple, squeeze off.

Learning Outcome 6:

Disruption: equipment failure, weather conditions, system load, ground conditions, lack of available resources, communication breakdown, traffic, public.

Evidence Guidance:

The ***EUIAS Assessment Strategy for Level 2 Network Construction Operations (Water) and Level 2 Network Construction Operations (Gas)*** includes a list of suitable evidence types for use within the learner's Portfolio of Evidence. This list is not exhaustive but is designed to provide an indication of what may be used as acceptable sources of evidence. Some sources of evidence will be more relevant to the unit content and the assessment of the learner's skills and/or knowledge than others.

It is a requirement that workplace evidence is used where possible.

For this unit, EUIAS also allows assessment:-

✓ In a Realistic Work Environment

EUIAS Unit Ref:	1108
Ofqual Unit Ref:	T/651/0391
Unit Title:	Operate within the Gas intermediate pressure range
Level:	3
Credit value:	4
GLH:	35
Unit aim(s):	The aim of this unit is to provide the learner with the knowledge and understanding to operate in compliance with legislation, regulation, policies, procedures, instructions and guidance specifically for work within the gas intermediate pressure range.
Assessment Requirements:	Portfolio of evidence
Relationship to NOS:	EUSGNC2, EUSGNC3, EUSGNC5

Learning Outcome: The learner will:	Assessment Criteria: The learner can:	
1. Understand key documents that apply to working in the gas intermediate pressure range.	1.1	List the **key legislation, regulations** and **industry standards** in relation to work in the gas intermediate pressure range.
	1.2	State the **consequences** of not complying with key legislation, regulations and industry standards.
2. Understand how to comply with key legislation, organisational policies and procedures that apply to work instructions in the gas intermediate pressure range	2.1	Describe the content of a detailed **method statement** for work in the intermediate pressure range.
	2.2	Describe how to comply with legislation and regulations according to information contained within a work instruction.
	2.3	Describe how to comply with organisational policy and procedural information contained within a work instruction.
3. Know how to evaluate hazards and risks associated with the gas intermediate pressure range	3.1	Identify risks and **hazards and risks** associated with work in the gas intermediate pressure range.
	3.2	Identify **control measures** associated with work in the gas intermediate pressure range.
4. Know the correct personal protective equipment (PPE) used within the gas intermediate pressure range	4.1	List **personal protective equipment** (PPE) typically used for work in the gas intermediate pressure range.
	4.2	List **safety equipment** typically used for work in the gas intermediate pressure range.
5. Know how to identify and install pressure reduction equipment within the gas intermediate pressure range on services up to and including 63 mm or 2” diameter	5.1	Identify suitable locations for pressure regulating equipment.

	5.2	Identify suitable 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.
6. Understand how to comply with organisational procedures within the gas intermediate pressure range	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.
	6.3	Describe the installation and commissioning of pressure reduction equipment for services in the intermediate pressure range.
7. Know how to use cathodic protection within the gas intermediate pressure range	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 methods of protecting exposed metallic pipework.
	7.5	Explain how to select appropriate components used for cathodic protection, where appropriate.
	7.6	Describe the installation of cathodic protection on metallic pipework within the gas intermediate pressure range.
8. Know how to identify and install pressure reduction equipment within the gas intermediate pressure range to assets above 63 mm or 2” diameter.	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.

General Unit Information:

Each individual organisation will determine which standards, policies and procedural to apply for operational activities. It is not appropriate to list these individually, however, it is expected that they include policies and procedures associated with operational emergencies and that the learner is trained accordingly. Consideration should also be given to ensuring appropriate procedures are covered when learners are trained.

Range:

Learning Outcome 1:

Key legislation and regulations:

(a) Health & Safety at Work Act,
(b) Control of Substances Hazardous to Health (COSHH),
(c) Construction (Design and Management) Regulations,
(d) Dangerous Substances & Explosive Atmosphere Regulations,
(e) Gas Safety (Management) Regulations,
(f) Management of Health & Safety at Work Regulations,
(g) Pipeline Safety Regulations,
(h) Pressure Systems Safety Regulations,
(i) The Lifting Operations & Lifting Regulations Equipment Regulations (LOLER),
(j) Provision & Use of Work Equipment Regulations (PUWER),
(k) Reporting on Injuries, Diseases and Dangerous Occurrences (RIDDOR).

Industry standard documents:

- Health & Safety Executive Approved Codes of Practice,
- Health & Safety Executive Guidance notes,
- Institution of Gas Engineers and Managers (IGEM) suite of documents applicable to work in the gas intermediate pressure range (IGEM/TD/1)
- 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, loss of supply.

Learning Outcome 2:

Method statement: compliance with Safe Control of Operations **(**SCO), safe system of

work, site specific risk assessment, environmental risk assessment, generic risk assessment, industry standard documents.

Learning Outcome 3:

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, noise, airborne pollution, water pollution 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).

Learning Outcome 4:

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.

Learning Outcome 5:

Jointing techniques: fillet weld joints for steel services, mechanical jointing – flanged, electrofusion joints, branch saddles for intermediate pressure services.

Learning Outcome 8:

Installation techniques: trenchless technology, 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.

Materials: steel, HDPE

Evidence Guidance:

This unit is knowledge only and therefore the evidence type should provide an assessment of the learner's knowledge and understanding, e.g. professional discussion, Centre-devised knowledge test, written case study etc. This list is not exhaustive.

Unit Ref:	1109
Ofqual Unit Ref:	Y/651/0392
Unit Title:	Principles of operating safely in emergency situations within the gas intermediate pressure range
Level:	3
Credit value:	3
GLH:	20
Unit aim(s):	The aim of this unit is to provide the learner with the knowledge and understanding to operate in compliance with legislation, regulations, policies, procedures, instructions and guidance specifically for emergency work within the gas intermediate pressure range.
Assessment Requirements:	Portfolio of evidence
Relationship to NOS:	EUSGNC6, EUSGNC7

Learning Outcome: The learner will:	Assessment Criteria: The learner can:	
1. Know and understand key documents that apply to emergency situations when working in the intermediate pressure range.	1.1	List the **key legislation**, **regulations** and **industry standards** in relation to emergency situations when working in the intermediate pressure range.
	1.2	State the **consequences** of not complying with key legislation, regulations and industry standards.
	1.3	Describe company procedures for working in emergency situations in the intermediate pressure range.
2. Know how to evaluate hazards and risks, including environmental, that apply to emergency situations in the intermediate pressure range	2.1	Identify **environmental** and **general risks** and **hazards** that apply to work in emergency situations in the intermediate pressure range.
	2.2	Evaluate **increased risks,** including those to the environment that apply to work in emergency situations in the intermediate pressure range.
	2.3	Describe **control measures** associated with emergency situations when working in the intermediate pressure range.
	2.4	Explain how to produce a site specific and environmental risk assessment associated with emergency situations in the intermediate pressure range.
	2.5	Explain risks to other team members that apply to work in emergency situations in the gas intermediate pressure range.
	2.6	Explain the requirements and benefits of liaising with others during an escape from an intermediate pressure system.

3. Know the importance of using the correct personal protective equipment and safety equipment when working in emergency situations in the intermediate pressure range	3.1	List **personal protective equipment** (PPE) required when working in emergency situations in the intermediate pressure range.
	3.2	List **safety equipment** required when working in emergency situations in the intermediate pressure range.
4. Know how to set up a safety exclusion zone at the location of a gas escape within the intermediate pressure range sector for emergency working.	4.1	Explain the requirements for safety exclusion zones.
	4.2	State exclusion distances applicable for emergencies in the intermediate pressure range.
5. Know how to identify and use repair methods and materials within emergency situations in the intermediate pressure range	5.1	Explain the characteristics of differing valve types found in intermediate pressure systems.
	5.2	Explain the effects of strategic valve closure on a Gas Distribution Network in an emergency situation.
	5.3	State the operational controls and authorisations required for valve operation.
	5.4	Explain the potential impact of valve operation on security of supply.
	5.5	Explain how to comply with manufacturers' instructions for valve operation and repair.
	5.6	Identify and select approved materials to Gas Industry standards for emergency work in the intermediate pressure range.
	5.7	Explain how to comply with organisational procedures when incorrect materials are encountered in the intermediate pressure range.
	5.8	Explain the importance of compliance with approved methods of repair.

5.9	Describe **repair methods suitable for use** in an emergency situation on an intermediate pressure system.

General Unit Information:

Each individual organisation will determine which standards, policies and procedures apply to operational activities. It is not appropriate to list these individually, however, it is expected that they include policies and procedures associated with operational emergencies and that the learner is trained accordingly. Consideration should also be given to ensuring appropriate procedures are covered when learners are trained.

Range:

Learning Outcome 1:

Key legislation and regulations:

- 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,
- 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:

- Health & Safety Executive Approved Codes of Practice,
- Health & Safety Executive Guidance notes,
- Institution 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.

Learning Outcome 2:

General 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.

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.

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, concern for security of 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).

Learning Outcome 3:

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.

Learning Outcome 5:

Repair methods suitable for use: are dependent on what is leaking and what has caused it. The following must therefore also be considered; *source of leakage***:** pipe barrel, joints, valve, fittings and *cause of escape***:** interference damage, corrosion, joints.

Evidence Guidance:

This unit is knowledge only and therefore the evidence type should provide an assessment of the learner's knowledge and understanding, e.g. professional discussion, Centre-devised knowledge test, written case study etc. This list is not exhaustive.

6 Awarding

Grading

In order to achieve the Level 2 Diploma in Network Construction Operations (Water) or the Level 2 Diploma in Network Construction Operations (Gas) learners must be graded as “competent” by the Assessor in the Portfolio of Evidence. Assessment decisions will be subject to internal and external quality assurance.

Certification

EUIAS issues a qualification certificate of achievement for each Level 2 Diploma in Network Construction Operations (Water) or Level 2 Diploma in Network Construction Operations (Gas) which has been achieved by the learner. EUIAS offers learners an electronic certificate available to the Centre following the processing of a successful claim, or a physical certificate by exception and at an additional cost, which will be sent directly to the registered Centre. Learners who do not achieve the full qualification, but who have successfully achieved individual unit(s) will be able to receive an electronic unit certificate.

7 EUIAS Policies

EUIAS has published comprehensive policies, which are made available to approved Centres and learners on the EUIAS Qualifications website at:
https://www.euias.co.uk/end-point-assessment/policies-and-fees/

Contact Us

Please do not hesitate to contact the EUIAS Qualifications team for any query relating to the delivery, assessment, quality assurance or certification of these qualifications.

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