

Level 1 Certificate in Network Construction Operations (Water) (6028-15)

Candidate logbook



www.cityandguilds.com
December 2011
Version 1.0

Qualification title	Number	QAN
Level 1 Certificate in Network Construction Operations (Water)	6028-15	600/1533/0

This page is intentionally blank

Contents

1	About your logbook	5
1.1	Contact details	5
1.2	Introduction to the logbook	6
2	About the qualification	7
3	Qualification structures	8
4	About your approved centre	9
5	About candidates	11
6	The assessment process	12
6.1	Before you start your qualification	12
6.2	Qualification assessment	13
7	Using your logbook	14
Unit 101	Assist in locating and avoiding supply apparatus and sub structures	26
Unit 102	Working under supervision, excavate holes and trenches in ground and pavement structures	31
Unit 103	Assist in preparing for reinstatement of excavation and pavement surfaces	36
Unit 106	Working under supervision, operate powered tools and equipment for network construction operations	40
Unit 107	Working under supervision, join polyethylene pipe by electrofusion welding	45
Unit 109	Assist in preparing resources and signing, lighting and guarding the area for highway works	48
Unit 110	Assist in preparing resources and signing and guarding the area for site works	53
Unit 111	Working under supervision, join polyethylene pipe by butt fusion welding	57
Unit 112	Working under supervision, contribute to an efficient and effective work environment	60
Unit 113	Working under supervision, contribute to health, safety and environment in the workplace including hygiene	65
Unit 114	Working under supervision, assemble components to meet specifications for water network construction operations	71
Appendix 1	Summary of City & Guilds assessment policies	74

This page is intentionally blank

1 About your logbook

1.1 Contact details

Candidate name	
Candidate enrolment no	
Centre name	
Centre number	

Keep a record of relevant contact details in the space provided below. You may find it helpful to make a note of phone numbers and e-mail addresses here.

Your Assessor(s)	
Your Internal Verifier	
Quality Assurance Contact	

1 About your logbook

1.2 Introduction to the logbook

This logbook will help you complete your qualification. It contains

- the units you need to achieve to complete your qualification
- information about your responsibilities as a candidate
- forms you can use to record and organise your evidence.

It will also tell you:

- about your qualification
- what you need to do to complete your qualification
- who will help you.

About City & Guilds

City & Guilds is your awarding body for this qualification. City & Guilds is the UK's leading awarding body for vocational qualifications.

Information about City & Guilds and our qualifications is available on our website **www.cityandguilds.com**.

2 About the qualification

The Water Network Construction Operation qualifications are nationally recognised qualifications gained in the workplace. They are based on National Occupational Standards, which are standards written by employers and experts in your industry.

When you achieve your qualification it will prove that you can work to the standards expected by employers in your industry. Your qualification will show you are competent to do a job and have the skills, knowledge and understanding needed to do it well.

This qualification is mainly assessed in the workplace. You should be carrying out the type of work involved in this qualification, or expect to carry out in the future. If you are not in work, your centre will need to arrange a work placement for your assessment.

3 Qualification structures

To achieve the **Level 1 Certificate in Network Construction Operations (Water)**, learners must achieve **15 credits** in total. **11** credits must be taken from the mandatory units, a minimum of **2** credits from Optional Unit Group 1 and a minimum of **2** credits from Optional Group 2.

Unit accreditation number	City & Guilds	Unit title	Mandatory/ optional for full qualification	Credit value
F/502/9663	101	Assist in locating and avoiding supply apparatus and sub structures	Mandatory	2
L/502/9665	102	Working under supervision, excavate holes and trenches in ground and pavement structures	Mandatory	2
Y/502/9670	106	Working under supervision, operate powered tools and equipment for network construction operations	Mandatory	2
Y/502/9667	112	Working under supervision, contribute to an efficient and effective work environment	Mandatory	2
D/502/9668	113	Working under supervision, contribute to health, safety and environment in the workplace including hygiene	Mandatory	2
D/502/9671	114	Working under supervision, assemble components to meet specifications for water network construction operations	Mandatory	1
Optional Group 1				
K/502/9673	109	Assist in preparing resources and signing, lighting and guarding the area for highway works	Optional	2
M/502/9674	110	Assist in preparing resources and signing and guarding the area for site works	Optional	2
Optional Group 2				
H/502/9672	107	Working under supervision, join polyethylene pipe by electrofusion welding	Optional	2
T/502/9675	111	Working under supervision, join polyethylene pipe by butt fusion welding	Optional	2

Unit 103 is elective and may be taken by learners; however credits gained will not contribute to the overall achievement of the qualification.

4 About your approved centre

Types of approved centres

Assessment for your qualification will be carried out at your centre. Your centre may be your place of work, a college, training provider or a combination of these.

City & Guilds approves centres to offer their qualifications and regularly monitors them to make sure they meet our quality standards and follow our assessment policies.

Centre responsibilities

Your centre is responsible for the administration of your qualification. Centre staff will

- register you with City & Guilds
- give you your City & Guilds enrolment number
- apply for your certificate(s) when you have completed your qualification or units.

Centres are also responsible for supporting you as you work towards your NVQ. Centres will

- carry out an initial assessment with you
- tell you about any learning or training (and resources) you will need to help you complete your qualification
- provide an induction programme to explain how the assessment process works
- produce an assessment plan for you.

Assessment roles

The following people at your centre will help you achieve your qualification.

The assessor

The assessor is the person you will have the most contact with as you work towards your qualification. Your assessor will

- help you identify any training you need
- agree an assessment plan with you
- help you plan and organise your workload and evidence
- observe you carrying out your job in the workplace over a period of time
- ask you questions about the work you do
- make decisions about your evidence
- judge when you are competent and meet the national standards
- give you feedback about your evidence and competence.

You may have more than one assessor depending on which units of the qualification you take.

The internal verifier

The internal verifier maintains the quality of assessment within the centre.

The external verifier

The external verifier works for City & Guilds and helps to ensure that your centre meets the required standards for quality and assessment.

The mentor

A mentor is someone in your workplace who can help and support you as you are working towards your qualification but does not carry out assessments. They may be able to provide you with witness testimony for your qualification.

Witness

Witnesses do not judge your overall competence but may provide you with statements about your performance which can be used as evidence of your work.

5 About candidates

Candidate role and responsibilities

Your responsibilities as a City & Guilds candidate are to

- provide your centre with your personal details so you can be registered with City & Guilds
- participate in an initial assessment and induction
- agree a personal assessment plan with your assessor
- collect and organise your evidence as agreed in your assessment plan
- attend regular meetings with your assessor to discuss your progress and to amend your plan when required
- meet with other centre and City & Guilds staff to talk about your qualification and evidence
- make sure you understand and comply with Health and Safety law and regulations.

Your centre **may** ask you to agree and sign a learning contract with them to show how you will be assessed for your qualification.

Candidate enrolment number

Make sure you keep a note of your unique City & Guilds enrolment number on the front page of this logbook.

You will need this number again if you take any other City & Guilds qualifications. Using the same enrolment number helps City & Guilds keep a record of every unit and qualification you complete.

Moving to a new centre

If you change jobs or move to a new centre before you complete your qualification, you may be able to complete it at a new centre. Ask your centre to apply for any certificates of unit credit for you before you leave, and add them to your records.

A new centre will need your candidate enrolment number, your assessment records and evidence to help you complete your qualification.

6 The assessment process

6.1 Before you start your qualification

Initial assessment

Before you start work on your qualification you will meet with your assessor to discuss what you need to do to complete your qualification. This can include

- checking you are taking the right qualification level
- checking you have chosen suitable units
- identifying any training or learning you will need to help you gain your qualification
- agreeing an assessment plan
- signing a learning contract.

Skill scan

As part of this meeting, you will discuss the skills and knowledge you may already have, and decide how this can be used towards your qualification. This process is sometimes called a Skill scan. There is a skill scan form in this logbook you can use to record the skills you may already have.

6 The assessment process

6.2 Qualification assessment

The assessment process

Once you have chosen your units you will make and agree an assessment plan with your assessor. This will show

- the units the plan covers
- when you will be assessed
- where the assessment will take place
- what you will be doing
- what evidence you will produce
- who will assess you.

The plan should also indicate the methods of assessment to be used to collect your evidence.

Evidence can include

- direct observation in the workplace by a qualified assessor
- witness testimony of work carried out by you in the workplace written by an expert witness
- questioning – this could be verbal, written or computer based
- other evidence which can include photographs or personal accounts.

Your centre will explain the different types of evidence to you in more detail. There is an assessment plan form you can use in this logbook.

7 Using your logbook

Recording forms

This logbook contains all of the forms you and your assessor will need to plan, review and organise your evidence. Your assessor will be able to help you decide which forms you need to complete and help you fill them in.

Candidate job profile

You can use this form to record your personal details if you don't already have a Candidate résumé/ CV.

Skill scan/Initial assessment

This can be used to record the skills and knowledge you may already have. This may be part of your initial assessment.

Expert/witness status list

This is used to record the details of staff that will provide you with witness testimony.

Assessment plan

You and your assessor will use this form to feedback after each session. It will also enable you and your assessor to plan what actions need to be done before the next session.

Units

These record where the evidence you produce meets the requirements of the unit. You should give each piece of evidence a portfolio reference number (PRN).

Summary of achievement

This form is used to show which units you have chosen and how many units you have completed. When you have completed all of the units and are ready to ask for your certificate, you and your assessor will sign this.

Observation report

Your assessor will complete during observation. You will both sign this as a true record.

Witness testimony

This form will be used as a witness testimony. It can be used to form part of your portfolio and used as evidence towards your portfolio.

Diary sheet

This form can be used to feedback to your assessor what tasks you completed at the job site.

Please photocopy these forms as required.

Candidate job profile

If you already have your own CV you can use that instead of this form.

Name:

Place of Work:

Assessor:.....

Outline of job role

Previous roles & responsibilities relevant to the qualification:

Previous qualification and training relevant to the qualification:

Expert/Witness Status list

Learner name.....

Name and Witness Signature	Status *	Professional relationship to learner **	Outcomes witnessed
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

*** Status**

- | | |
|--|--|
| 1 Occupational expert meeting specific requirements for role of expert witness | 3 Non expert familiar with the standards |
| 2 Occupational expert not familiar with the standards | 4 Non expert not familiar with the standards |

**** Professional relationship to candidate**

Manager = M Supervisor = S Colleague = Coll Customer = Cus Other (please specify)

Assessment/Action Planning

Learner Name _____ Assessor Name _____ Date _____

Review of previous plan

Record of session

Feedback on session

Actions to be reviewed at next session	Date
--	------

Units/Outcomes completed

--	--	--	--	--	--

Signature of learner

Signature of assessor.....

Summary of Achievement

Learner name: _____

Learner enrolment number: _____

Unique Learner number: _____

Centre number: _____

Assessor(s) and Internal Verifier(s) must print their name and provide a sample signature in the table below. This is necessary for validating the signature provided by the Assessor/Internal Verifier to confirm that the learner has met all of the necessary requirements to complete the specified unit.

Please see unit achievement list on the next page.

Assessor(s)

Assessor(s) Name (print)	1. _____	2. _____	3. _____
--------------------------	----------	----------	----------

Signature:	_____	_____	_____
------------	-------	-------	-------

Countersigning Assessor(s) Name (print)	1. _____	2. _____	3. _____
---	----------	----------	----------

Signature:	_____	_____	_____
------------	-------	-------	-------

Internal Verifier(s)

Internal Verifier(s) Name (print)	1. _____	2. _____	3. _____
-----------------------------------	----------	----------	----------

Signature:	_____	_____	_____
------------	-------	-------	-------

Countersigning Internal Verifier(s) (print)	1. _____	2. _____	3. _____
---	----------	----------	----------

Signature:	_____	_____	_____
------------	-------	-------	-------

Observation report

Level 1 Certificate in Water Network Construction Operations (6028)

Candidate:

Assessor:

PRN:

Applicable units

Report

Learning outcome ref.

Report continued

Learning outcome ref:

Questions asked with answers:

Learning Outcome ref:

Assessor feedback –

Learner signature Date

Assessor Date

Diary sheet

Learner name:

Team leader:

Location:

Job type:

Job reference number:

Date:

Details of work completed:

Team Leaders comments:

Learners signature:

Team leaders signature:

IV signature:

EV signature:

Witness Testimony

Learner name:

Team leader:

Location:

Job type:

Job reference number:

Date:

Details of work completed:

Additional comments:

Learners signature:

Witness signature:

IV signature:

EV signature:

Photographic Supplementary Evidence

Portfolio Reference Number:

Candidate Name:

Candidate Signature:

Unit Number:

Learning Outcome Number:

Assessment Criteria Number:

Brief description of task being carried out in the photograph:

(Attach Photo in this Box)

Assessor / Workplace Recorder Name:		
Assessor / Workplace Recorder Signature:		Date:
IV Name:	IV Signature:	Date:

Unit 101

Assist in locating and avoiding supply apparatus and sub structures

This unit allows you to demonstrate competence in assisting with location and avoidance of supply apparatus and sub-structures on site.

Working under supervision at all times, and reporting to a team leader, you must use appropriate search techniques to locate underground apparatus, identify and avoid risks of damage to services and danger to personnel.

You must contribute to keeping records updated, and must work according to industry standards and specifications, following safe working practices.

Where job was done	Time taken (hours)	Date

Unit 101

Assist in locating and avoiding supply apparatus and sub structures

Performance evidence required	Portfolio Reference Number (PRN)						
1. Identify, mark and confirm the location of supply apparatus and sub-structures							
1.1	Identify the extent of the work site from the work instructions and plans						
1.2	Check that the position and type of supply apparatus and sub-structures are: <ul style="list-style-type: none"> accurately identified from records, surface evidence and search techniques marked on the work site in line with work instructions and relevant Codes of Practice recorded in line with instructions and organisational requirements 						
1.3	Report deviations in the position of equipment and identification of other structures according to instruction and organisational requirements						
1.4	Communicate the details of position and type of supply apparatus and sub-structures to relevant personnel in line with instruction and organisational requirements						
1.5	Refer problems and conditions outside their responsibility according to approved procedures and practices						
1.6	Carry out work to approved procedures and practices and in line with statutory requirements						
Type of evidence →							

**O = Observation Q = Oral Question (OQ) or Written Question & answer (WQ) S = Simulation/RWE
WT = Witness testimony**

Range

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

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

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

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

Performance evidence required	Portfolio Reference Number (PRN)						
2. Maintain the safety and integrity of supply apparatus and sub-structures							
2.1	Ensure that working practices on site avoid damage to supply apparatus and sub-structures						
2.2	Ensure that exposed supply apparatus and sub-structures are supported correctly, safely and securely, relevant to their specification and in accordance with approved procedures						
2.3	Ensure appropriate precautions are taken to protect personnel and equipment from the consequent effects of damage to supply apparatus and sub-structures in accordance with approved procedures and practices						
2.4	Promptly report damage to supply apparatus and sub-structures to the appropriate authority and make the area safe, in accordance with approved procedures and practices						
2.5	Refer problems and conditions outside their responsibility in accordance with approved procedures and practices						
2.6	Ensure work is carried out to approved procedures and practices and in compliance with statutory requirements						
Type of evidence →							

**O = Observation Q = Oral Question (OQ) or Written Question & answer (WQ) S = Simulation/RWE
WT = Witness testimony**

Range

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

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

3. Demonstrate knowledge and understanding of location and avoidance of supply apparatus and sub-structures		PRN
3.1	Describe the different types of supply apparatus and sub-structures that may be encountered and exposed in excavation work	
3.2	Outline the key features of the medium being carried by the different types of supply apparatus (e.g. ignition characteristics, density relative to air, electrocution)	
3.3	Describe the different types of natural and man-made features that may be encountered during excavation work, and the hazards associated with them	
3.4	Describe the different methods and markers, signs and features used to identify underground utilities and other agency apparatus and sub-structures	
3.5	Describe the basic search techniques for supply apparatus and sub-structures , including the use of: <ul style="list-style-type: none"> • electronic location equipment 	

	<ul style="list-style-type: none"> • trial holes • visual examination • drawings and records 	
3.6	Describe how to ensure the accurate location of the required excavation by marking out	
3.7	Explain the possible outcomes of incorrect marking out of excavations, including: <ul style="list-style-type: none"> • costs • loss of time • material wastage 	
3.8	Describe the precautions to be taken during excavation work to avoid damage to concealed supply apparatus or sub-structures	
3.9	Outline the risks associated with maintaining the safety and integrity of supply apparatus and sub-structures	
3.10	Describe the possible effects of damage to the supply apparatus	
3.11	Explain the implications of damaging supply apparatus, including: <ul style="list-style-type: none"> • personal danger to the personnel on site • risks to the environment • delays to job progress • additional costs in repair 	
3.12	Explain the importance of protecting and supporting supply apparatus and sub-structures services exposed during excavation work	
3.13	Give examples of how to provide appropriate temporary and permanent support for supply apparatus and sub-structures exposed during site excavations	
3.14	Describe the possible outcomes of leaving exposed supply apparatus and sub-structures unsupported	
3.15	Explain the basic requirements of Codes of Practice and guidance notes for locating and avoiding supply apparatus and sub-structures	
3.16	Outline the approved procedures and practices for the locating, marking and maintaining the integrity of supply apparatus and sub-structures	
3.17	State the roles and responsibilities of people involved in locating and avoiding supply apparatus and sub-structures	
3.18	Describe the importance of referring problems outside their responsibility or experience to the team leaders	
3.19	State the procedures for reporting to team leaders and others	
3.20	Outline the procedures for recording and reporting job progress, problems and deviations to work programmes	
3.21	Outline the main responsibilities of the employer and employee under the Health and Safety at Work Act	
3.22	State the safe procedures for: <ul style="list-style-type: none"> • working in excavations • handling the range of location equipment • handling hazardous materials 	
3.23	Describe the legislative requirements and company procedures for recording and reporting accidents	
3.24	List the different types of personal protective equipment used when locating and avoiding underground supply apparatus and sub-structures	

Range

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

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

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

Confirm completion of this Unit on the Summary of Achievement Form on page.

Unit 102

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

This unit allows you to demonstrate your competence in preparing and carrying out the excavation of holes and trenches in ground and pavement structures.

Working under supervision at all times, and reporting to a team leader, you must show that you can follow instructions to excavate on site. You must follow safe working practices and protect utility supply apparatus and sub-structures.

Where job was done	Time taken (hours)	Date

Unit 102

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

Performance evidence required		Portfolio Reference Number (PRN)					
1. Carry out excavations on site							
1.1	Identify the work site and area to be excavated from the work instructions and plans						
1.2	Determine which excavation method is suitable for the surface and sub-surface materials being removed and ensure it meets with relevant Codes of Practice						
1.3	Select tools and equipment and confirm they are suitable to the excavation method						
1.4	Confirm the position and size of excavation meets the requirements of instructions and the work specification						
1.5	Identify and select excavated materials, and segregate and store them in accordance with work instructions and relevant Codes of Practice						
1.6	Ensure the excavation is carried out in a manner that avoids damage to supply apparatus and sub-structures						
1.7	Ensure damage to the natural environment is minimised in line with the relevant technical guidance						
1.8	Identify, support and protect exposed supply apparatus and sub-structures in accordance with work instructions and relevant Codes of Practice						
1.9	Identify and report any damage to supply apparatus and sub-structures in accordance with work instructions and organisational procedures						
1.10	Ensure that surplus materials are removed in accordance with work instructions and requirements						
1.11	Confirm that the dimensions and condition of base of the excavation are in line with instructions and the works specification						
1.12	Ensure the work is carried out to approved procedures and practices						
1.13	Refer any problems and conditions outside their responsibility in line with approved procedures and practices						
Type of evidence →							

**O = Observation Q = Oral Question (OQ) or Written Question & answer (WQ) S = Simulation/RWE
WT = Witness testimony**

Range

Excavation method: hand dig; machine dig

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

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

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

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

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

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

2. Demonstrate knowledge and understanding of excavation on site		PRN
2.1	Outline the circumstances where ground support would be needed	
2.2	State the causes of instability in excavated areas	
2.3	Describe the circumstances where excavation supports must be installed	
2.4	Describe how to identify the different types of pavement surface	
2.5	List the types of sub-surface materials used for the different pavement surfaces	
2.6	Describe the main excavation methods , including hand and machine methods	
2.7	List the different types and range of tools and equipment used for hand and machine excavation, including: <ul style="list-style-type: none">• hand tools• power tools• motorised equipment	
2.8	Describe the hazards associated with working in excavations without natural or assisted ventilation	
2.9	State when operator training or certification would be needed for the use of motorised excavation machinery	
2.10	Describe how to select, use and take care of hand and power tools	
2.11	State the essential maintenance required for hand and power tools	
2.12	List the types and function of the different supply apparatus and sub-structures that may be encountered during excavation work	
2.13	Describe how to identify the different types of supplies encountered during excavation work	
2.14	Identify the hazards associated with: <ul style="list-style-type: none">• leaks or damaged supply apparatus	

	<ul style="list-style-type: none"> • damage to electrical supply apparatus 	
2.15	<p>Explain how failure to adequately support and protect supply apparatus and sub-structures can lead to:</p> <ul style="list-style-type: none"> • damage to supply apparatus and sub-structures • the need for work to be re-done, with serious cost and operational implications • major safety hazards 	
2.16	<p>State the implications of using incorrect excavation practices, including:</p> <ul style="list-style-type: none"> • types of damage to supply apparatus and sub-structures • possible risks to safety • possible cost implications 	
2.17	<p>Explain the implications of exceeding the minimum size for excavations, as determined by site requirements, including:</p> <ul style="list-style-type: none"> • safety implications • costs of additional labour and materials for the job • inconvenience to the general public or customer 	
2.18	<p>Explain how the use of incorrect materials could lead to:</p> <ul style="list-style-type: none"> • damage to the supply apparatus or sub-structure • costs of re-doing work • delays in the job programme • costs of materials 	
2.19	<p>Explain why the incorrect storage of materials could make them unfit for use, and the related cost implications</p>	
2.20	<p>Explain the importance of economy when using powered or motorised equipment for excavation works</p>	
2.21	<p>Describe safe methods of storage or disposal of materials with a potential environmental hazard</p>	
2.22	<p>State the main requirements of Codes of Practice and guidance notes for excavation work in terms of:</p> <ul style="list-style-type: none"> • personal protection • excavation activities • the support of supply apparatus • the support of excavations 	
2.23	<p>State how site and resource requirements are determined in accordance with approved procedures and practices</p>	
2.24	<p>State the roles and responsibilities of people involved in carrying out and supervising excavation operations</p>	
2.25	<p>Explain the importance of referring problems outside their responsibility to appropriate people</p>	
2.26	<p>Describe the procedures for recording and reporting to team leaders and others regarding:</p> <ul style="list-style-type: none"> • work progress • problems • deviations to work programmes 	
2.27	<p>Outline the main responsibilities of the employer and employee under the Health and Safety at Work Act for work in excavations</p>	
2.28	<p>State the legislation that governs work in excavations</p>	
2.29	<p>Describe safe procedures for:</p>	

	<ul style="list-style-type: none"> handling the range of tools and equipment for excavation, including hand and power tools handling hazardous materials encountered during excavation work 	
2.30	Outline the legislative requirements and company procedures for recording and reporting accidents	
2.31	List the Personal Protective Equipment (PPE) used for excavation work	

Range

Excavation method: hand dig; machine dig

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

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

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

Confirm completion of this Unit on the Summary of Achievement Form on page.

Unit 103

Assist in preparing for reinstatement of excavation and pavement surfaces

This unit allows you to demonstrate your competence in assisting in preparing for the reinstatement of excavations and the surfaces of highway and footway pavements.

Working under supervision at all times, and reporting to a team leader, you must show that you can interpret and follow instructions to plan and organise reinstatement activities.

You must ensure that the appropriate fine fill sub-grade, sub-base and road-base materials are used and that suitable surface materials are selected. Safe working practices must be followed at all times.

Where job was done	Time taken (hours)	Date

Unit 103

Assist in preparing for reinstatement of excavation and pavement surfaces

Performance evidence required	Portfolio Reference Number (PRN)						
1. Assist in preparing for reinstatement of excavation and pavement surfaces							
1.1	Carry out the work to approved procedures and practices and in compliance with statutory requirements						
1.2	Identify and confirm the location of the excavation and the extent of reinstatement in accordance with instructions and work specifications						
1.3	Identify the area and type of structure for reinstatement in accordance with the relevant Codes of Practice						
1.4	Carry out preparation procedures for the reinstatement of excavation in accordance with the relevant Codes of Practice						
1.5	Report remedial work and defects in the excavation which are outside their level of responsibility, in accordance with organisational and operational procedures						
1.6	Identify and protect supply apparatus and sub-structures in accordance with the relevant Codes of Practice						
1.7	Identify, select, handle and store materials for reinstatement in accordance with relevant Codes of Practice						
1.8	Select and confirm that tools and equipment are appropriate for the materials to be used for reinstatement						
1.9	Identify that tools and equipment are in a condition suitable for use in accordance with the manufacturer's specifications and operational requirements						
1.10	Refer problems and conditions outside their responsibility in accordance with approved procedures and practices						
Type of evidence →							

**O = Observation Q = Oral Question (OQ) or Written Question & answer (WQ) S = Simulation/RWE
WT = Witness testimony**

Range

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

Extent of reinstatement: excavations appropriate to the work activity

Area and type of structure: appropriate to the work activity

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

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

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

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

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

2. Demonstrate knowledge and understanding of reinstatement of excavation and pavement surfaces		PRN
2.1	Name the different types of pavement structure including flexible, composite, rigid and modular pavement construction, verge and natural ground	
2.2	State preparation procedures including edge trimming, formation surface removal, removal of loose debris, repair formation	
2.3	List the sub-surface requirements for each type of pavement surface	
2.4	Name the various types of excavation	
2.5	List the materials in excavations and possible defects	
2.6	State the remedial actions to take when defects are encountered including advising the team leader	
2.7	State the importance of complying with team leader's safety and procedural instructions	
2.8	List the types of supply apparatus and sub-structures that may be encountered including utilities and other agencies	
2.9	List the methods of protecting the different types of supply apparatus and sub-structures	
2.10	State the methods of segregating the different materials including new and re-usable materials for fine fill, backfill, sub-base, road base, and pavement surface	
2.11	Describe the methods of checking the condition of material that is to be reused	
2.12	State the main characteristics of surface, sub-surface and general reinstatement materials including: <ul style="list-style-type: none"> • suitable fine fill materials • suitable back-fill materials • granular sub-bases • road base materials • bituminous road base materials • surfacing materials • concrete • modular surfacing 	

Range

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

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

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

Confirm completion of this Unit on the Summary of Achievement Form on page.

Unit 106

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

This unit allows you to demonstrate your competence in operating powered tools and equipment for network construction operations for routine activities.

Working at all times under supervision, and reporting to a team leader, you must follow regular safe working practices and procedures.

Whether dealing with powered static equipment, hand-operated powered tools or designated small mobile plant, you must show that you can operate safely and in line with manufacturers' instructions and specifications.

Where job was done	Time taken (hours)	Date

Unit 106

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

Performance evidence required		Portfolio Reference Number (PRN)					
1. Prepare powered tools and equipment for use							
1.1	Ensure that operations requiring powered tools and equipment are identified and confirmed in accordance with the specifications and work instructions						
1.2	Carry out pre-start inspections on the powered tools and equipment in line with approved procedures and practices						
1.3	Ensure any defects of the powered tools and equipment are identified, recorded and appropriate action taken to correct them						
1.4	Confirm the powered tools and equipment are safe, correct and ready for use to meet the work requirements and approved procedures and practices						
1.5	Refer any problems and conditions outside their responsibility in line with approved procedures and practices						
1.6	Carry out work to meet statutory requirements and approved procedures and practices						
Type of evidence →							

**O = Observation Q = Oral Question (OQ) or Written Question & answer (WQ) S = Simulation/RWE
WT = Witness testimony**

Range

Operations: routine; predictable

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

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

Performance evidence required	Portfolio Reference Number (PRN)						
2. Run and operate powered tools and equipment							
2.1	Carry out start and stop procedures to confirm functions are in accordance with safe control and the manufacturers' operating instructions						
2.2	Run and operate powered tools and equipment to meet the work requirement						
2.3	Carry out operations safely in line with specifications and approved procedures and practices						
2.4	Ensure that defects in performance are identified, recorded and reported to the appropriate person(s)						
2.5	Ensure the work is carried out to meet statutory requirements and approved procedures and practices						
2.6	Refer any problems and conditions outside their responsibility in line with approved procedures and practices						
Type of evidence →							

**O = Observation Q = Oral Question (OQ) or Written Question & answer (WQ) S = Simulation/RWE
WT = Witness testimony**

Range

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

Operations: routine; predictable

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

Performance evidence required	Portfolio Reference Number (PRN)						
3. Shut down and carry out post-stop checks on powered tools and equipment							
3.1	Safely stop powered tools and equipment in line with approved procedures and practices						
3.2	Carry out post-stop checks in accordance with organisational and operational procedures						
3.3	Ensure any defects and replacement needs identified after use are recorded and reported to the appropriate person(s)						
3.4	Ensure the powered tools and equipment are left safe and secure in accordance with approved procedures and practices						

3.5	Carry out the work to meet statutory requirements and approved procedures and practices						
3.6	Refer any problems and conditions outside their responsibility in line with approved procedures and practices						
Type of evidence →							

**O = Observation Q = Oral Question (OQ) or Written Question & answer (WQ) S = Simulation/RWE
WT = Witness testimony**

Range

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

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

4. Demonstrate knowledge and understanding of operating powered tools and equipment		PRN
4.1	Describe the purpose of the power tools and how they are to be used with the specified work requirement (e.g. compaction, excavation, cutting, finishing surfaces and removing materials)	
4.2	List the types of powered tools and equipment used within their job role and work activities	
4.3	Describe the work to be done and how the equipment will be used in accordance with manufacturers' specifications	
4.4	Outline the operational and safety procedures associated with using the tools and equipment and how to ensure the safety of the operations and the surrounding environment	
4.5	State the manufacturers' recommendations and relevant organisational and operational procedures for: <ul style="list-style-type: none"> • routine checks • pre-start checks • requirements for the safety of the work and the surrounding environment • handling powered tools and equipment • starting and stopping the equipment • post-stop checks on equipment after use • routine and emergency shut down of equipment • storing equipment after use 	
4.6	Outline the main approved procedures and practices to follow when operating powered tools and equipment	
4.7	List the training and certification requirements for operating tools and equipment	
4.8	State their responsibilities under the Health and Safety at Work Act	

4.9	Outline the recommended safety precautions before, during, and after operations for: <ul style="list-style-type: none"> • use of hats, ear protectors, eye protection, footwear, gloves and masks • recognising the implications of toxic fumes, dust and hazardous materials to other personnel, adjacent activities and surrounding environment • applying correct lifting and handling techniques 	
4.10	Describe the operational safety procedures to observe when starting and stopping powered tools and equipment	
4.11	Outline the manufacturers' recommendations and relevant company procedures when handling powered tools and equipment	
4.12	Give examples of the different types of defects related to the types of tools and equipment being used	
4.13	Outline the adjustments that can be made and how problems and damage are reported for operational problems with equipment, including: <ul style="list-style-type: none"> • broken or missing protective guards • worn securing pins • damaged hoses • incorrectly fitted blades • damaged power leads • fuel leaks 	
4.14	State your responsibilities under the Health, Safety and Environment at work for: <ul style="list-style-type: none"> • lifting and handling techniques • use of personal protective equipment • handling hazardous substances • approved reporting procedures 	
4.15	Give examples of the typical types of damage and replacement needs for the powered tools and equipment	

Range

Operations: routine; predictable

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

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

Confirm completion of this Unit on the Summary of Achievement Form on page.

Unit 107

Working under supervision, join polyethylene pipe by electrofusion welding

This unit allows you to demonstrate your competence in jointing polyethylene pipes by electrofusion welding.

Working under supervision at all times, and reporting to a team leader, you must show that you can follow instructions to make socket and saddle joints using appropriate materials and SDR rating, in vertical and horizontal planes, both in and out of excavations, and working in all weather conditions.

You must work according to industry standards and specifications and follow safe working practices at all times.

Where job was done	Time taken (hours)	Date

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

**O = Observation Q = Oral Question (OQ) or Written Question & answer (WQ) S = Simulation/RWE
WT = Witness testimony**

Range

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

Jointing and related equipment: manual; automatic machines

Joints: socket; saddle

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

2. Demonstrate knowledge and understanding of electrofusion jointing		PRN
2.1	Outline the basic safety requirements for <ul style="list-style-type: none"> • lifting and handling • working in excavations • working beside excavations • working with electricity • working alongside other plant • working in gaseous atmospheres • hazards arising from jointing operations 	
2.2	Describe the joint preparation techniques and the importance of preparation complying with specifications	
2.3	Outline the electrofusion jointing process and procedures	
2.4	Describe how to select the correct materials for the joints	
2.5	Describe how to inspect the completed joints for defects	
2.6	Explain how to connect, shut down and disconnect equipment	
2.7	Explain what to do if a problem occurs and to whom it should be reported	

Range

Joints: socket; saddle

Confirm completion of this Unit on the Summary of Achievement Form on page.

Unit 109

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

This unit is designed to allow you to demonstrate your competence in assisting with preparing resources and segregating the area for highways works.

Working at all times under supervision, and reporting to a team leader, you must show that you can interpret instructions, prepare materials, tools and equipment and install signs, lights and guards to segregate the work area in advance of site operations.

You must follow safe working practices at all times and contribute to the protection of personnel, property and the working area.

Where job was done	Time taken (hours)	Date

Unit 109

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

Performance evidence required		Portfolio Reference Number (PRN)						
1. Determine site and resource requirements for highway works								
1.1	Confirm the location and extent of the work site according to instructions and specified requirements							
1.2	Report any shortages and defects of materials, tools and equipment in accordance with operational and organisational procedures							
1.3	Set out the work area in accordance with the specified requirements							
1.4	Identify any hazards and risks and take appropriate action to provide for the safety of the work area and the natural environment							
1.5	Confirm that materials supplies and tools and equipment are correct for the work requirement, in accordance with instructions and organisational procedures							
1.6	Maintain the security of materials, tools and equipment in line with instruction and organisational requirements							
1.7	Report any problems and conditions outside their responsibility in accordance with approved procedures and practices							
1.8	Carry out the work to approved procedures and practices and in compliance with statutory requirements							
Type of evidence →								

**O = Observation Q = Oral Question (OQ) or Written Question & answer (WQ) S = Simulation/RWE
WT = Witness testimony**

Range

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

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

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

Performance evidence required		Portfolio Reference Number (PRN)					
2. Install signs, lights and guarding requirements for work on the highway							
2.1	Identify the safety and security requirements for the highways work site from the work instructions and specifications and in accordance with relevant Codes of Practice						
2.2	Set out and erect protection equipment in line with relevant Codes of Practice						
2.3	Confirm the positioning and condition of the protection equipment are satisfactory to the work requirement and meet the relevant Codes of Practice						
2.4	Ensure that the traffic control equipment is positioned, adjusted, maintained and controlled appropriate to the progress and changes of the work activity and in line with the work requirement and relevant Codes of Practice						
2.5	Report defective and damaged equipment to the appropriate person						
2.6	Remove protection equipment and traffic control equipment in accordance with relevant Codes of Practice						
2.7	Refer problems and conditions outside their responsibility in accordance with approved procedures and practices						
2.8	Carry out work to approved procedures and practices and in compliance with statutory requirements						
Type of evidence →							

**O = Observation Q = Oral Question (OQ) or Written Question & answer (WQ) S = Simulation/RWE
WT = Witness testimony**

Range

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

Protection equipment: signs; lights; guards

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

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

3. Demonstrate knowledge and understanding of signing, lighting and guarding the work site		PRN
3.1	Describe the main materials encountered in excavation work including: <ul style="list-style-type: none"> • paving • sub-surface • general fill materials 	
3.2	List the range of hand and powered tools used for excavations and reinstatement	
3.3	Describe the maintenance requirements for the range of hand and power tools used for excavation and reinstatement	
3.4	Explain the importance of confirming that the work location has been correctly identified from verbal instructions	
3.5	Describe the key requirements of an effective and safe work area	
3.6	Identify common hazards in excavation and reinstatement work and appropriate safety precautions	
3.7	Explain the methods of dealing with emergencies in excavations	
3.8	Identify the range of safety equipment required for highways operations	
3.9	Identify materials posing a health hazard and the appropriate methods of handling them safely	
3.10	List the personal protective equipment for use in highways operations	
3.11	Outline the main industry approved procedures and practices for preparing resources and signing, lighting and guarding the work site	
3.12	List the roles and responsibilities of persons within the highways operations team	
3.13	State the roles and responsibilities of the different people on site	
3.14	State the importance of referring to team leaders problems that are outside their area of responsibility	
3.15	Explain the importance of checking and reporting defects in signs, guards, lighting, and traffic control systems to the team leader	
3.16	State the importance of complying with team leader's safety and procedural instructions	
3.17	State the main responsibilities of the employer and employee under the Health and Safety at Work Act	
3.18	Outline the main Health, Safety and Environment responsibilities of employer and employee engaged in highways operations	
3.19	Outline the employer's responsibilities for providing a safe place of work, including appropriate safety equipment	
3.20	Explain the employee's responsibility for safety of themselves and others	
3.21	Outline the safe procedures for handling the range of signing, guarding, and lighting equipment used for highways works	
3.22	Outline safe procedures for handling hazardous materials	
3.23	Describe the accident recording and reporting procedures	
3.24	State the procedure for reporting and recording job progress, problems and deviations to work programmes to the immediate team leader	
3.25	Explain the actions to take in the event of an accident or emergency during operations on the highway	
3.26	Outline the procedure for summoning the emergency services	

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

Range

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

Protection equipment: signs, lights, guards

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

Confirm completion of this Unit on the Summary of Achievement Form on page.

Unit 110

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

This unit is designed to allow you to demonstrate your competence in assisting with preparing resources and segregating the area for site works.

Working at all times under supervision, and reporting to a team leader, you must show that you can interpret instructions and prepare materials, tools and equipment for site operations. You must check that the correct resources are available for site operations, and check that equipment and materials are stored safely and securely. You must follow safe working practise at all times and contribute to the protection of personnel, property and the working area.

Where job was done	Time taken (hours)	Date

Unit 110

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

Performance evidence required		Portfolio Reference Number (PRN)					
1. Determine the site and resource requirements for site works							
1.1	Locate and confirm the area for site works according to instructions and specified requirements						
1.2	Report any shortages and defects of materials and tools and equipment in accordance with operational and organisational procedures						
1.3	Set out the area for the site works in accordance with the specified requirement						
1.4	Identify any hazards and risks and take appropriate action to provide for the safety of the work area and the natural environment						
1.5	Confirm that the supplies of materials, tools and equipment are correct for the work requirement, in line with instructions and organisational requirements						
1.6	Maintain the security of materials and equipment in accordance with instruction and organisational requirements						
1.7	Ensure any problems and conditions outside their responsibility are referred in accordance with approved procedures and practices						
1.8	Carry out work to approved procedures and practices and in compliance with statutory requirements						
Type of evidence →							

**O = Observation Q = Oral Question (OQ) or Written Question & answer (WQ) S = Simulation/RWE
WT = Witness testimony**

Range

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

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

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

2. Demonstrate knowledge and understanding of signing and guarding the area for site works		PRN
2.1	Explain the importance of confirming that the work location is identified correctly from verbal instructions	
2.2	Describe the key requirements of an effective and safe work area	
2.3	List the main materials encountered in excavation work including paving, sub-surface and general fill materials	
2.4	List the different types and range of tools and equipment used for hand and machine excavation, including: <ul style="list-style-type: none"> • hand tools • power tools • motorised equipment • protection equipment for excavations 	
2.5	State the essential maintenance required for hand and power tools	
2.6	Identify common hazards in excavation and reinstatement work and the appropriate safety precautions	
2.7	Describe how to deal with emergencies in excavations	
2.8	Identify the safety equipment required for site operations	
2.9	Give examples of materials which pose a health hazard and explain safe handling methods	
2.10	List the personal protective equipment (PPE) that would be required for site operations	
2.11	Explain the appropriate lifting and handling techniques for the materials, tools and equipment used	
2.12	Outline the approved procedures and practices for determining site and resource requirements	
2.13	List the people involved in site operations and their roles and responsibilities	
2.14	Outline the job control structures for site operations	
2.15	Describe the importance of referring problems outside their responsibility to team leaders	
2.16	Describe the procedures for recording and reporting to team leaders and others regarding: <ul style="list-style-type: none"> • work progress • problems • deviations to work programmes 	
2.17	Outline the Health, Safety and Environment responsibilities of the employer and employees engaged in site operations	
2.18	Outline the employer's responsibilities for providing a safe place of work, including appropriate safety equipment	
2.19	Describe the employee's responsibility for their own safety and the safety of others	
2.20	Outline the legislative requirements and company procedures for recording and reporting accidents	

Range

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

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

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

Confirm completion of this Unit on the Summary of Achievement Form on page.

Unit 111

Working under supervision, join polyethylene pipe by butt fusion welding

This unit allows you to demonstrate your competence in jointing polyethylene pipe by butt fusion welding.

Working under supervision at all times, and reporting to a team leader, you must show that you can follow instructions to make butt fusion joints in different positions, both in-line and level, and working in all weather conditions.

You must work according to industry standards and specifications and follow safe working practices at all times.

Where job was done	Time taken (hours)	Date

Unit 111

Working under supervision, join polyethylene pipe by butt fusion welding

Performance evidence required	Portfolio Reference Number (PRN)						
1. Working under supervision, join polyethylene pipe by butt fusion welding							
1.1	Work safely at all times, complying with Health, Safety and Environment and other relevant regulations and guidelines						
1.2	Follow the relevant jointing procedure and work instructions						
1.3	Confirm that the machine is set up and operating correctly, ready for the jointing process to be carried out						
1.4	Check that the polyethylene pipe, components, consumables and joint preparation comply with specifications						
1.5	Carry out and monitor the machine operations in accordance with specifications and job instructions						
1.6	Achieve joints of the required quality and specified dimensional accuracy						
1.7	Deal promptly and effectively with problems within your control and report those that you cannot solve						
1.8	Shut down the equipment to a safe condition on conclusion of the jointing activities						
Type of evidence →							

**O = Observation Q = Oral Question (OQ) or Written Question & answer (WQ) S = Simulation/RWE
WT = Witness testimony**

Range

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

Joint: butt

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

2. Demonstrate knowledge and understanding of butt fusion welding		PRN
2.1	Explain the Health, Safety and Environment legislation and environmental procedures relevant to the work activities, manual handling, and company procedures including standard checklists and Codes of Practice	
2.2	State the basic safety requirements for <ul style="list-style-type: none"> • lifting and handling • working in excavations • working beside excavations • working with electricity • working alongside other plant • working in gaseous atmospheres • hazards arising from jointing operations 	
2.3	Outline joint preparation techniques and the importance of preparation according to the specification	
2.4	Explain why only pipes of similar specifications (SDR) can be joined together	
2.5	Outline the jointing process and procedures	
2.6	Explain the cause and effect of defects and contamination, including: <ul style="list-style-type: none"> • misalignment split defects • inadequate bead • excessive bead 	
2.7	Outline why pipe support, alignment and protection is needed and the consequences of not providing this	
2.8	Describe how to select the correct materials for the joints	
2.9	Describe how to inspect completed joints for defects	
2.10	Explain how to connect, shut down and disconnect equipment	
2.11	Explain what to do if a problem occurs and who to report it to	

Range

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

Joint: butt

Confirm completion of this Unit on the Summary of Achievement Form on page.

Unit 112

Working under supervision, contribute to an efficient and effective work environment

This unit allows you to demonstrate your competence in contributing to an efficient and effective work environment, to support network construction operations.

You will need to show that you can exchange information and develop and maintain productive working relationships with colleagues, associates and visitors to the work site.

Working at all times under supervision, and reporting to a team leader, you will also need to organise your own work, operating efficiently and effectively, to maintain work standards and to work as part of a team. Safe working practices must be followed at all times.

Where job was done	Time taken (hours)	Date

Unit 112

Working under supervision, contribute to an efficient and effective work environment

Performance evidence required	Portfolio Reference Number (PRN)						
1. Contribute to efficiency in the workplace							
1.1	Organise the work and operational area in an orderly way to minimise hazards						
1.2	Ensure the work materials are used and stored in accordance with the work activity and to approved procedures and practices						
1.3	Ensure the tools and equipment are maintained ready for use and stored in designated places when not required						
1.4	Ensure any restrictions to progress of work are communicated to the appropriate person(s) for appropriate action						
1.5	Carry out clear communications in accordance with operational and organisational procedures						
1.6	Refer any problems and conditions outside the responsibility of the job holder, in accordance with approved procedures and practices						
1.7	Ensure work is carried out to approved procedures and practices and in compliance with statutory requirements						
Type of evidence →							

**O = Observation Q = Oral Question (OQ) or Written Question & answer (WQ) S = Simulation/RWE
WT = Witness testimony**

Range

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

Tools and equipment: Hand tools and equipment

Communications: Oral, written, visual

Performance evidence required	Portfolio Reference Number (PRN)						
2. Develop and maintain effective working relationships							
2.1	Treat work colleagues and associates in a manner that promotes goodwill and maintains good working practices						
2.2	Respond to reasonable working requests are responded to positively and willingly						

2.3	Support colleagues and associates who appear to be in work related difficulties						
2.4	Communicate effectively and respond to colleagues and associates: <ul style="list-style-type: none"> • courteously • in a manner appropriate to the situation • in line with approved procedures and practices 						
2.5	Refer any problems and conditions outside their responsibility in line with approved procedures and practices						
Type of evidence →							

**O = Observation Q = Oral Question (OQ) or Written Question & answer (WQ) S = Simulation/RWE
WT = Witness testimony**

Range

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

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

Performance evidence required	Portfolio Reference Number (PRN)						
3. Organise their work and maintain standards							
3.1	Ensure the work is organised to comply with instructions and the agreed schedules						
3.2	Carry out the work methods in accordance with approved procedures and practices and optimise the use of time						
3.3	Co-ordinate their own work with other relevant personnel and related activities as required						
3.4	Ensure any suggestions for improvements to work methods are referred in accordance with approved procedures and practices for confirmation and agreement on the action to be taken						
3.5	Carry out the work to the agreed standards and in accordance with specification and the organisational policy						
3.6	Refer to the team leader to: <ul style="list-style-type: none"> • confirm any deviations in standards or specifications • refer any work which may be detrimental to safety or the environment to the appropriate person(s) in accordance with organisational and operational procedures 						
Type of evidence →							

**O = Observation Q = Oral Question (OQ) or Written Question & answer (WQ) S = Simulation/RWE
WT = Witness testimony**

Range

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

Standards: organisational, work specified, quality and quantity

4. Demonstrate knowledge and understanding of how to contribute to an efficient and effective work environment		PRN
4.1	State the approved procedures and practices for the work activity as directed by the team leader	
4.2	Outline how to comply with the requirements of the Health and Safety at Work Act	
4.3	Describe how to safely lift and handle the range of tools, equipment and material	
4.4	Give examples of hazardous materials and the precautions to take to deal with them	
4.5	List the protective equipment appropriate to the range of work operations	
4.6	Outline approved procedures and practices for reporting	
4.7	Describe the different types of hand tools and equipment used for their work activities	
4.8	Describe how to store tools and equipment , including: <ul style="list-style-type: none"> • storage arrangements and procedures, with and without external security arrangements • the importance of locking up stores 	
4.9	Describe the storage of materials, including: <ul style="list-style-type: none"> • appropriate storage methods for the nature and characteristics of materials • methods of checking materials into and out of storage 	
4.10	List the different materials used for the work processes	
4.11	Describe the main physical properties of the range of materials used in work operations	
4.12	Give examples of different types of packaging for the usual range of materials – loose, bagged, containerised – volume/weight of standard packages e.g. cement bags	
4.13	Explain how the range of materials may be affected by weather conditions	
4.14	Give examples of materials that pose a health hazard	
4.15	Describe the residual and waste materials that can arise from work operations	
4.16	List the different ways of communicating during work activities	
4.17	State the procedures for exchanging and recording information with and reporting problems to the team leader	

4.18	Give examples of the range and roles of others involved in the work activities, including: <ul style="list-style-type: none"> • other trades • management representatives • inspectorate 	
4.19	Outline the responsibilities and authority of others who may visit or pass through the site	
4.20	State how to organise work within the instructions advised by the team leader	
4.21	List the different techniques used in work activities	
4.22	Outline industry best practice for the work activities	
4.23	Describe the type of preparatory work that is required, including ensuring safety provisions	
4.24	Describe the condition in which a finished work site should be left	
4.25	State the organisational and operational standards that apply to the work activity and environment, including: <ul style="list-style-type: none"> • national water hygiene • National Joint Utilities Group (NJUG) • New Road and Street Works Act (NRSWA) • Environmental Act 1990 • Health and Safety at Work Act (HASAWA) 	

Range

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

Tools and equipment: Hand tools and equipment

Communications: Oral, written, visual

Standards: organisational, work specified, quality and quantity

Confirm completion of this Unit on the Summary of Achievement Form on page.

Unit 113

Working under supervision, contribute to health, safety and environment in the workplace including hygiene

This unit allows you to demonstrate your competence in contributing to health, safety, the environment and hygiene in the workplace during water network construction operations. Working at all times under supervision, and reporting to a team leader, you must be able to identify hazards in the workplace, and deal with them appropriately, ensuring they are reported to the team leader or other relevant persons.

You must be aware of your own responsibilities for health, safety and the environment in the workplace and must follow safe working and hygiene practices throughout your work activities. You must show that you have a basic understanding of emergency services and procedures and that you can respond appropriately to workplace emergencies. You must also contribute to workplace security procedures, and respond correctly to breaches of security involving damage or theft of plant, equipment materials and property.

Where job was done	Time taken (hours)	Date

Unit 113

Working under supervision, contribute to health, safety and environment in the workplace including hygiene

Performance evidence required	Portfolio Reference Number (PRN)						
1. Operate safely in the workplace							
1.1	Ensure the work activities are carried out safely to avoid creating hazardous situations that may endanger workers and other personnel						
1.2	Identify and ensure that hazards and potential hazards in the workplace are dealt with appropriately within the responsibility and capability of the operator and reported promptly to the appropriate person(s)						
1.3	Ensure that communications are clear and information or instructions are confirmed as understood						
1.4	Ensure that all tools and equipment are used safely in accordance with organisational procedures, manufacturers' instructions and relevant statutory regulations						
1.5	Ensure that work materials and components are handled and stored in accordance with approved procedures and practices						
1.6	Ensure that manual handling is carried out safely using appropriate handling techniques						
1.7	Report accidents and incidents promptly in accordance with approved procedures and practices						
1.8	Ensure that appropriate personal protective equipment is used in compliance with safe working practices						
1.9	Ensure that work is carried out to approved procedures and practices and in compliance with statutory requirements						
Type of evidence →							

**O = Observation Q = Oral Question (OQ) or Written Question & answer (WQ) S = Simulation/RWE
WT = Witness testimony**

Range

Hazards: restrictions to access and egress, mis-use of tools and equipment, faulty equipment, hazardous substances, interference with and from adjacent activities, obstructions, exposed apparatus, structures and services, flooding, wet or uneven surfaces, biological (infection), toxic, oxygen deficient and explosive atmospheres, working on pressurised water, risks from general public

Communications: oral, written, visual

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

Approved procedures and practices: Health, Safety and Environment Compliance, including hygiene, regulatory (including Construction Management regulations, PUWER, LOLER, NRSWA, Control of Substances Hazardous to Health – COSHH), emergency, operational, organisational, relevant company procedures, within the remit of learners responsibility, Construction Management Regulations, PUWER, LOLER

Performance evidence required	Portfolio Reference Number (PRN)						
2. Respond to emergencies							
2.1	In the event of an emergency implement procedures promptly and correctly in accordance with recognised safe practice and organisational policy						
2.2	Promptly report and respond to accident(s) and incident(s) within the responsibility and capability of the work operator in accordance with approved procedures and practices						
2.3	Use emergency appliances in accordance with approved procedures and practices						
2.4	Ensure details of accident(s) and incident(s) are reported in accordance with approved procedures and practices						
2.5	Ensure that problems and conditions outside their responsibility are referred in accordance with approved procedures and practices						
Type of evidence →							

**O = Observation Q = Oral Question (OQ) or Written Question & answer (WQ) S = Simulation/RWE
WT = Witness testimony**

Range

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

Approved procedures and practices: Health, Safety and Environment Compliance, including hygiene, regulatory (including Construction Management regulations, PUWER, LOLER, NRSWA, Control of Substances Hazardous to Health – COSHH), emergency, operational, organisational, relevant company procedures, within the remit of learners responsibility, Construction Management Regulations, PUWER, LOLER

Performance evidence required	Portfolio Reference Number (PRN)						
3. Assist in maintaining the security of the workplace							
3.1	Ensure that unauthorised personnel seen in the workplace are dealt with in accordance with organisational procedures and the appropriate person(s) advised						
3.2	Ensure that arrangements for security are observed and maintained in accordance with approved procedures and						

	practices						
3.3	Ensure that potential risks to security are reported promptly to the appropriate person(s) and remedial action taken as necessary in accordance with organisational procedures						
3.4	Ensure that breaches of security are reported immediately in accordance with approved procedures and practices						
3.5	Ensure that problems and conditions outside their responsibility are referred in accordance with approved procedures and practices						
Type of evidence →							

**O = Observation Q = Oral Question (OQ) or Written Question & answer (WQ) S = Simulation/RWE
WT = Witness testimony**

Range

Security: personnel, property, the surrounding environment, operational area, plant and equipment

Approved procedures and practices: Health, Safety and Environment Compliance, including hygiene, regulatory (including Construction Management regulations, PUWER, LOLER, NRSWA, Control of Substances Hazardous to Health – COSHH), emergency, operational, organisational, relevant company procedures, within the remit of learners responsibility, Construction Management Regulations, PUWER, LOLER

4. Demonstrate knowledge and understanding of health, safety and environment in the workplace, including hygiene		PRN
4.1	List the hazards arising from the work activity and environment including: <ul style="list-style-type: none"> • traffic • activities or other trades • other services • working in confined spaces 	
4.2	State the definitions of a hazard and a risk	
4.3	List the organisational and operational procedures for reporting hazards and reporting to the team leader	
4.4	List the tools and equipment including safety equipment required for work activities in hazardous areas and pipe coil trailers	
4.5	Give examples of tools and equipment used in their work activity, including: <ul style="list-style-type: none"> • hand tools • powered tools and equipment • safety equipment for working in hazardous areas • safety equipment for working with pipe coil trailers 	
4.6	Give examples of the types of materials used in the work operations, including: <ul style="list-style-type: none"> • disinfectant • fuel and chemicals • cement • bitumen • lubricants 	

4.7	Give examples of the approved procedures and practices in their workplace relating to: <ul style="list-style-type: none"> • hygiene • health and safety (risk assessments, method statements) • environmental policy • company procedures 	
4.8	List the training and certification requirements for: <ul style="list-style-type: none"> • working on a water network • operating plant and equipment 	
4.9	State their responsibilities under the Health and Safety at Work Act	
4.10	List the recommended safety precautions and checks before, during and after work operations	
4.11	Describe safe lifting and handling techniques for the range of tools, equipment and materials	
4.12	State the appropriate protective equipment for the range of work operations	
4.13	Describe how to check personal protective equipment (PPE) for safe condition	
4.14	Describe how to identify hazardous materials including toxic fumes and dust, and the appropriate action to take	
4.15	Outline fire and emergency procedures, including those actions required to safeguard life and property	
4.16	Name the different classifications of fires and the appropriate extinguishers used for dealing with them in the workplace	
4.17	State the procedures for reporting accidents and incidents	
4.18	List the common types of personal accidents and health emergencies associated with the type of work to be carried out and the actions to take if they occur	
4.19	Describe the company security policy and procedures and how, where and when they should be applied	
4.20	Describe the actions to take in case of breaches of security , acts of vandalism and theft, including: <ul style="list-style-type: none"> • how to deal with them • who to inform 	
4.21	List the potential security risks to themselves, colleagues, personnel, materials, equipment and the environment , including risks of contamination	
4.22	Explain how to deal with unauthorised personnel and who should be informed	
4.23	State their responsibilities under Health, Safety and Environment Act as it relates to their job role, including the importance of security of pipes and fittings	

Range

Hazards: restrictions to access and egress, mis-use of tools and equipment, faulty equipment, hazardous substances, interference with and from adjacent activities, obstructions, exposed apparatus, structures and services, flooding, wet or uneven surfaces, biological (infection), toxic, oxygen deficient and explosive atmospheres, working on pressurised water, risks from general public

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

Approved procedures and practices: Health, Safety and Environment Compliance, including hygiene, regulatory (including Construction Management regulations, PUWER, LOLER, NRSWA, Control of Substances Hazardous to Health – COSHH), emergency, operational, organisational, relevant company procedures, within the remit of learners responsibility, Construction Management Regulations, PUWER, LOLER

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

Security: personnel, property, the surrounding environment, operational area, plant and equipment

Confirm completion of this Unit on the Summary of Achievement Form on page.

Unit 114

Working under supervision, assemble components to meet specifications for water network construction operations

This unit is designed to allow you to demonstrate your competence in assembling pipes and fittings according to work instructions. Working at all times under supervision, and reporting to a team leader, you will show that you can use various assembly methods and techniques, including cutting, electrofusion welding, drilling and tapping and mechanical jointing on metallic and polyethylene materials.

You will also show that you can produce assemblies using bolt, screwed, compression and flanged joints, to industry standards and specifications. Safe working practices must be followed at all times.

Where job was done	Time taken (hours)	Date

Unit 114

Working under supervision, assemble components to meet specifications for water network construction operations

Performance evidence required	Portfolio Reference Number (PRN)						
1. Assemble components to meet specifications whilst working under supervision							
1.1	Work safely at all times, complying with Health, Safety and Environment requirements, technical guidance notes and other relevant regulations and guidelines						
1.2	Follow the relevant instructions, assembly drawings and any other specifications						
1.3	Ensure that the specified components are available and that they are in a useable condition						
1.4	Use the appropriate methods and techniques to assemble the components in their correct positions						
1.5	Secure the components using the specified connectors and securing devices						
1.6	Check the completed assembly to ensure that all operations have been completed and the finished assembly meets the required specification						
1.7	Deal promptly and effectively with problems within your control and report those that cannot be solved						
Type of evidence →							

**O = Observation Q = Oral Question (OQ) or Written Question & answer (WQ) S = Simulation/RWE
WT = Witness testimony**

Range

Components: pipes, fittings

Assembly: bolt, compression, flanged

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

2. Demonstrate knowledge and understanding of assembling components to meet specifications		PRN
2.1	State the Health, Safety and Environment legislation and environmental procedures, Codes of Practice and company procedures relevant to specific work activities, including: <ul style="list-style-type: none"> • hygiene • Manual handling • use of equipment 	
2.2	Explain and follow basic drawings and related specifications as explained by the team leader	
2.3	Describe basic methods and techniques associated with assembling components	
2.4	Explain the need for quality control procedures	
2.5	Describe the various types of handling equipment and procedures associated with the work activity	
2.6	Describe the correct preparation techniques for simple joints	
2.7	Outline the tools and equipment required to carry out specific work activities and the importance of looking after tools and equipment	
2.8	Explain what to do in the event of a problem occurring, how to report it and to whom	

Range

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

Components: pipes, fittings

Joints: in line and level, under all weather conditions, in accordance with specifications

Confirm completion of this Unit on the Summary of Achievement Form on page.

Appendix 1 Summary of City & Guilds assessment policies

Health and Safety

All City & Guilds centres have to make sure that they provide a safe and healthy environment for training, including induction and assessment. City & Guilds external verifiers check this when they visit assessment centres.

You are responsible for making sure that you understand, and comply with, the Health and Safety practice and policies in the workplace where you will be assessed. Your assessment may be stopped if you do not comply, and your assessor will explain the problem to you. You may need to retake your assessment at a later date.

Equal Opportunities

Your centre will have an equal opportunities policy. Your centre will explain this to you during your induction, and may give you a copy of the policy.

City & Guilds equal opportunities policy is available from our website www.cityandguilds.com, City & Guilds Customer Relations Team or your centre.

Access to assessment

City & Guilds NVQs are open to all candidates, whatever their gender, race, creed, age or special needs. Some candidates may need extra help with their assessment, for example, a person with a visual impairment may need a reader.

If you think you will need alternative assessment arrangements because you have special needs, you should discuss this with your centre during your induction, and record this on your assessment plan. City & Guilds will allow centres to make alternative arrangements for you if you are eligible and if the NVQ allows for this. This must be agreed before you start your NVQ.

City & Guilds guidance and regulations document *Access to assessment and qualifications* is available on the City & Guilds website www.cityandguilds.com, from the City & Guilds Customer Relations Team or your centre.

Complaints and appeals

Centres must have a policy and procedure to deal with any complaints you may have. You may feel you have not been assessed fairly, or may want to appeal against an assessment decision if you do not agree with your assessor.

These procedures will be explained during induction and you will be provided with information about the Quality Assurance Co-ordinator within your centre who is responsible for this.

Most complaints and appeals can be resolved within the centre, but if you follow the centre procedure and are still not satisfied you can complain to City & Guilds.

Our complaints policy is on our website www.cityandguilds.com or is available from the City & Guilds Customer Relations Team or your centre.

Useful contacts

UK learners

General qualification information

T: +44 (0)844 543 0033

E: learnersupport@cityandguilds.com

International learners

General qualification information

T: +44 (0)844 543 0033

F: +44 (0)20 7294 2413

E: intcg@cityandguilds.com

Centres

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

T: +44 (0)844 543 0000

F: +44 (0)20 7294 2413

E: centresupport@cityandguilds.com

Single subject qualifications

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

T: +44 (0)844 543 0000

F: +44 (0)20 7294 2413

F: +44 (0)20 7294 2404 (BB forms)

E: singlesubjects@cityandguilds.com

International awards

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

T: +44 (0)844 543 0000

F: +44 (0)20 7294 2413

E: intops@cityandguilds.com

Walled Garden

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

T: +44 (0)844 543 0000

F: +44 (0)20 7294 2413

E: walledgarden@cityandguilds.com

Employer

Employer solutions, Mapping, Accreditation, Development Skills, Consultancy

T: +44 (0)121 503 8993

E: business_unit@cityandguilds.com

Publications

Logbooks, Centre documents, Forms, Free literature

T: +44 (0)844 543 0000

F: +44 (0)20 7294 2413

If you have a complaint, or any suggestions for improvement about any of the services that City & Guilds provides, email: feedbackandcomplaints@cityandguilds.com

**Published by City & Guilds
1 Giltspur Street
London
EC1A 9DD
T +44 (0)844 543 0033
F +44 (0)20 7294 2413
www.cityandguilds.com**

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