

# Level 2 Diploma in Network Construction Operations (Water) - Repair and Maintenance (6028-27)



## Candidate logbook

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<b>Qualification title</b>	<b>Number</b>	<b>QAN</b>
Level 2 Diploma in Network Construction Operations (Water) – Repair and Maintenance	6028-27	600/2668/6

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# 1 About your logbook

## 1.1 Contact details

<b>Candidate name</b>	
<b>Candidate enrolment no</b>	
<b>Centre name</b>	
<b>Centre number</b>	

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.

<b>Your Assessor(s)</b>	
<b>Your Internal Verifier</b>	
<b>Quality Assurance Contact</b>	

# 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](http://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 2 Diploma in Network Construction Operations (Water) – Repair and maintenance**, learners must achieve the following combination of units.

- Level 2 Diploma in Network Construction Operations (Water) – Repair and maintenance
  - 43 credits from 201, 203 - 207, 209 - 210, 220, 223 - 224, 229

Units 208, 211, 221 – 222 and 226 – 228 are elective and may be taken by learners; however credits gained will not contribute to the overall achievement of the qualification.

Unit accreditation number	City & Guilds unit	Unit title	Credit value
R/503/0316	201	Create an efficient and effective environment in Utilities Network Construction	3
A/503/0665	203	Establish and maintain effective working relationships in utilities network construction	2
A/503/0682	204	Install equipment for safe working on the highway for utilities network construction	4
F/503/0683	205	Install equipment for safe working on sites for utilities network construction	3
J/503/0684	206	Locate and avoid supply apparatus for utilities network construction	4
L/503/0685	207	Excavate and maintain holes and trenches for utilities network construction	5
R/503/0686	208	Reinstate excavation and pavement surfaces after utility network construction operations	5
Y/503/0687	209	Operate powered tools and equipment for routine and predictable requirements on utilities network construction	4
F/503/0666	210	Join materials by electrofusion processes on utilities network construction	2
J/503/0667	211	Joint materials by butt fusion processes on Utilities Network Construction, up to 180 mm diameter	2
D/503/1159	220	Maintain a safe and secure working environment on Water Network Construction	3
R/503/1160	221	Joint materials by butt fusion processes above 315 mm for utilities network construction	3
Y/503/1161	222	Joint materials by butt fusion processes between 180 mm and 315 mm for utilities network construction	3
D/503/1162	223	Join materials by mechanical means on Water Network Construction	4
H/503/1163	224	Install water services up to 50 mm NB (63 mm PE)	4



<b>Unit accreditation number</b>	<b>City &amp; Guilds unit</b>	<b>Unit title</b>	<b>Credit value</b>
M/503/1165	226	Install water mains from 150 mm-300 mm nominal bore or 180 mm-315 mm polyethylene	5
T/503/1166	227	Install water mains above 300 mm nominal bore or 315 mm polyethylene	5
A/503/1167	228	Conduct pressure and soundness testing of water network engineering products or assets	4
F/503/1168	229	Restore water network components to operational condition by repair	5

## 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 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 internal verifier**

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

**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:



# Skill scan/Initial assessment

Qualification title:

Learner name:

Unit	Duties	Examples	Training Required
<b>(C&amp;G Unit No)</b>	<b>Insert unit title</b>		
201	Be able to work efficiently and effectively		
	Be able to organise their work and maintain standards to minimise hazards		
	Be able to use and communicate data and information		
	Be able to resolve problems that arise from work activities		
	Know Health and Safety guidance and legislation utilities network construction operations		
	Understand how to create an efficient and effective environment in utilities network construction		
203	Be able to establish and maintain productive working relationships		
	Be able to use and communicate data and information		
	Be able to resolve problems that could damage effective working relationships		
	Know Health and Safety guidance and legislation utilities network construction operations		
	Understand how to establish and maintain effective working relationships in utilities network construction		
204	Set out temporary signing, lighting and guarding traffic control equipment in line with industry Codes of Practice and current legislation		
	Prepare resources for highway works		

	Use and communicate data and information		
	Resolve problems which could arise from work on the highway		
	Demonstrate general knowledge and understanding for utilities network construction operations		
	Demonstrate knowledge and understanding of installing equipment for safe working on the highway		
205	Prepare, segregate and protect the work site		
	Prepare resources for site works		
	Use and communicate data and information		
	Resolve problems which could arise from preparing the site and resource requirements		
	Demonstrate knowledge and understanding for utilities network construction operations		
	Demonstrate knowledge and understanding of installing equipment for safe working on site		
206	Locate supply apparatus		
	Maintain the safety and integrity of supply apparatus		
	Use and communicate data and information		
	Resolve problems which could arise from work on the highway		
	Demonstrate general knowledge and understanding for utilities network construction operations		
	Demonstrate knowledge and understanding of the different types of utility apparatus		
	Demonstrate knowledge and understanding of equipment and techniques used for locating supply apparatus		
	Demonstrate knowledge and understanding of roles, responsibilities and communication requirements for locating utilities apparatus		
207	Excavate on site to requirements		
	Maintain the integrity of the excavation		
	Use and communicate data and		

	information		
	Resolve problems which could arise from excavation work		
	Demonstrate general knowledge and understanding for utilities network construction operation		
	Demonstrate knowledge and understanding of how excavation work must be carried out to comply with legal and industry requirements		
	Demonstrate knowledge and understanding of excavating in a variety of situations using different techniques and equipment		
	Demonstrate knowledge and understanding of the tools and equipment used in the course of excavation activities		
	Demonstrate knowledge and understanding of responsibilities to others during excavation work		
208	Prepare for reinstatement of excavation and pavement surface		
	Carry out reinstatement of excavation and pavement surface		
	Use and communicate data and information		
	Resolve problems which could arise from reinstatement work		
	Demonstrate general knowledge and understanding for utilities network construction operations		
	Demonstrate knowledge and understanding of plant and equipment used for reinstatement activities		
	Demonstrate knowledge and understanding of legislation and best practice for reinstatement operations		
	Demonstrate knowledge and understanding of reinstatement activities		
	Demonstrate knowledge and understanding of other agencies, utilities, their apparatus and communication requirements		
209	Prepare powered tools and equipment for routine and predictable use		
	Run and operate powered tools and equipment		
	Shut down and carry out post-stop		

	checks on powered tools and equipment		
	Use and communicate data and information		
	Resolve problems which arise from operating powered tools and equipment		
	Demonstrate general knowledge and understanding for utilities network construction operations		
	Demonstrate knowledge and understanding of working with powered tools and equipment		
210	Be able to make joints using electrofusion jointing techniques		
	Be able to use and communicate data and information		
	Be able to resolve problems that arise during jointing work		
	Know Health and Safety guidance and legislation in utilities network construction operations		
	Understand jointing materials by electrofusion processes on Utilities Network Construction		
211	Be able to make joints using butt fusion techniques		
	Be able to use and communicate data and information		
	Be able to resolve problems which arise from jointing materials		
	Know Health and Safety guidance and legislation in utilities network construction operations		
	Understand jointing materials by butt fusion processes on utilities network construction, up to 180mm diameter		
220	Maintain the health and safety of themselves and others		
	Maintain the safety and security of plant, equipment and the working environment		
	Respond to emergencies		
	Use and communicate data and information		
	Resolve problems which could affect health and safety		
	Demonstrate general knowledge and		

	understanding for utilities network construction operations		
	Demonstrate knowledge of legislation regulations, procedures and company policies relating to health and safety		
	Demonstrate knowledge and understanding of the principles and application of risk assessment		
	Demonstrate knowledge and understanding of maintaining the safety and security of plant, equipment and the working environment		
	Demonstrate knowledge and understanding of roles and responsibilities in maintaining safety		
	Demonstrate knowledge and understanding of the use and storage of information		
221	Make joints using butt fusion techniques on pipe with diameter over 315mm		
	Use and communicate data and information		
	Resolve problems which could arise from jointing materials		
	Demonstrate general knowledge and understanding for utilities network construction operations		
	Demonstrate knowledge and understanding of butt fusion jointing		
222	Make butt fusion joints on pipe with diameter between 180mm and 315mm		
	Use and communicate data and information		
	Resolve problems which could arise from jointing materials		
	Demonstrate general knowledge and understanding for utilities network construction operations		
	Demonstrate knowledge and understanding of butt fusion jointing		
223	Joint materials by assembling		
	Use and communicate data and information		
	Resolve problems which arise when performing jointing activities		
	Demonstrate knowledge and understanding for utilities network construction operations		

	Demonstrate knowledge understanding of jointing materials by mechanical means		
224	Interpret technical information for installing water services		
	Select water service components and resources for installation of the system		
	Install components of the systems		
	Use and communicate data and information		
	Resolve problems that arise from technical information and installation work		
	Demonstrate general knowledge and understanding for utilities network construction operations		
	Demonstrate knowledge and understanding of installing water services		
226	Interpret technical information for installing water mains		
	Select water main components and resources for installation of the system		
	Install components of the water main		
	Use and communicate data and information		
	Resolve problems that arise from technical information and installation work		
	Demonstrate general knowledge and understanding for utilities network construction operations		
	Demonstrate knowledge and understanding of installing water mains		
227	Interpret technical information for installing water mains		
	Select water main components and resources for installation of the system		
	Install components of the water main		
	Use and communicate data and information		
	Resolve problems that arise from technical information and installation work		
	Demonstrate general knowledge and understanding for utilities network construction operations		

	Demonstrate knowledge and understanding of installing water mains		
228	Perform pressure testing activities		
	Use and communicate data and information		
	Resolve problems which arise from performing test activities		
	Demonstrate general knowledge and understanding for utilities network construction operations		
	Demonstrate knowledge and understanding of conducting specified testing on water engineering products or assets		
229	Restore components to operational condition		
	Use and communicate data and information		
	Resolve problems which arise when restoring components to operational condition		
	Demonstrate general knowledge and understanding for utilities network construction operations		
	Demonstrate knowledge and understanding of restoring components to operational condition		

# Expert/Witness Status list

Learner name.....

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

**\* Status**

- 1 Occupational expert meeting specific requirements for role of expert witness
- 2 Occupational expert not familiar with the standards
- 3 Non expert 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: \_\_\_\_\_

# Summary of Achievement

City & Guilds suggests that you should enter the unit numbers, of the units you plan to achieve, in the table below. This will allow you to track your progress through the qualification at a glance.

### Declaration

**By signing this summary of unit achievement, I confirm that all learning outcomes for the unit have been completed and that the evidence is authentic and has been obtained under specified conditions for which certification is now requested.**

### Units achieved

Unit Number	Date achieved	Learner signature	Assessor signature	Countersigning Assessor signature*	Internal verifier signature	Countersigning IV signature*

# Observation report

Level 2 Diploma 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 201**

**Create an efficient and effective environment  
in Utilities Network Construction**

**Unit aim:**

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

Where job was done	Time taken (hours)	Date

Performance evidence required		Portfolio Reference Number (PRN)							
<b>1. Be able to work efficiently and effectively</b>									
1.1	Carry out a site-specific risk assessment and review in accordance with company procedures								
1.2	Select and wear the designated PPE								
1.3	Store, maintain and use tools, work materials and equipment in accordance with the work requirements, approved procedures and practices								
Type of evidence →									

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

Performance evidence required		Portfolio Reference Number (PRN)							
<b>2. Be able to organise their work and maintain standards to minimise hazards</b>									
2.1	Organise work to comply with instructions and the agreed schedules								
2.2	Coordinate own work with other personnel and related activities								
2.3	Carry out activities to <b>approved procedures and practices</b>								
2.4	Carry out and confirm all work is in accordance with <b>standards and approved codes of practice</b>								
2.5	Check own work and that of other personnel to ensure compliance with specified standards								
2.6	Confirm with a <b>designated person</b> on the steps to be taken throughout the <b>work process</b>								
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:** use of appropriate work methods; optimise the use of time; remove and dispose of waste and surplus materials

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

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

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

<b>Performance evidence required</b>	Portfolio Reference Number (PRN)							
<b>3. Be able to use and communicate data and information</b>								
3.1	Comply with operational and organisational procedures for communicating information to other people							
3.2	Confirm records are maintained and exchanged in accordance with operational and organisational requirements							
3.3	Confirm with designated personnel any circumstances where information appears incorrect							
3.4	Use organisational information systems to record and store, data and information							
Type of evidence →								

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

<b>Performance evidence required</b>	Portfolio Reference Number (PRN)							
<b>4. Be able to resolve problems that arise from work activities</b>								
4.1	Report to a designated person any situations which require additional intervention							
4.2	Communicate problems and conditions outside the responsibility of the job role using approved procedures							
Type of evidence →								

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

<b>5. Understand how to establish and maintain effective working relationships in utilities network construction guidance and legislation in utilities network construction operations</b>		<b>PRN</b>
5.1	State the main responsibilities of the employer and employee under the Health and Safety at Work Act	
5.2	Explain the health and safety guidance governing work in excavations	
5.3	Describe the safe procedures for handling hazardous materials	
5.4	Explain the organisational accident recording and reporting procedures	
5.5	State the legislative requirements relative to the work activity and the workplace environment, including <ul style="list-style-type: none"> <li>• any licensing, certification or inspection</li> <li>• organisational and operational standards</li> </ul>	

<b>6. Understand how to create an efficient and effective environment in utilities network construction</b>		<b>PRN</b>
6.1	Describe the industry practices and company requirements for the work activity within the remit of the occupation	
6.2	Apply <b>approved procedures and practices</b> in the context of the operations, the work activity and the workplace environment	
6.3	Describe the main physical properties of the range of materials used in work operations	
6.4	Describe how the range of materials may be affected by weather conditions	
6.5	Describe the <b>categories and uses</b> of materials used in the work activity	
6.6	Describe the characteristics of work materials relevant to the work activity, both hazardous and non-hazardous	
6.7	Identify materials used for the work which could pose a health hazard	
6.8	Explain how to identify hazardous materials	
6.9	Describe precautions to be taken when dealing with toxic fumes and dust	
6.10	Explain <b>safe methods of handling and storing the range of materials</b> being used for the work	
6.11	Identify types of <b>packaging</b> used for the range of materials	
6.12	Identify types of <b>tools and equipment</b> used with the operation and work activity	
6.13	Identify the range and use of personal protective equipment for the work activity	
6.14	Describe the methods of checking PPE for good condition	
6.15	State the operational and organisational requirements for storage	
6.16	Describe the <b>arrangements, designated places and working procedures</b> for storing tools and equipment	
6.17	Explain the safe lifting and handling techniques for tools, equipment and materials	
6.18	Explain the emergency procedures and actions to take in the event of emergency	
6.19	Describe <b>means of communication</b> used in utilities network construction	
6.20	Explain the procedures for reporting problems in accordance with <b>company policy</b>	
6.21	Outline the range of the <b>work activity and sequence of events</b> to achieve the intended job outcomes	

### Range

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

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

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

**Range of materials:** hazardous; non-hazardous

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

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

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

**Means of communication:** written; electronic; visual signals

**Company policy:** statutory; organisational; emergency

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

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

**Unit 203**

**Establish and maintain effective working relationships in utilities network construction**

**Unit aim:**

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

Where job was done	Time taken (hours)	Date

Performance evidence required		Portfolio Reference Number (PRN)						
<b>1. Be able to establish and maintain productive working relationships</b>								
1.1	Demonstrate how to deal with <b>working relationships</b> appropriately							
1.2	Demonstrate how to deal with requests positively and in a timely manner							
1.3	Support colleagues and associates that may be in work-related difficulties							
1.4	Communicate to the <b>designated person</b> all unresolved matters likely to result in a breakdown of working relationships							
1.5	Work with others to find effective ways to deal with work problems							
Type of evidence →								

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

**Range**

**Working relationships:** colleagues, associates, managers, supervisors, customers, outside bodies and members of the general public

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

Performance evidence required		Portfolio Reference Number (PRN)						
<b>2. Be able to use and communicate data and information</b>								
2.1	Comply with operational and organisational procedures for communicating information to other people							
2.2	Comply with operational and organisational procedures when maintaining records							
2.3	Confirm with designated personnel any circumstances where information appears to be incorrect							
2.4	Use organisational information systems to record and store, data and information							
Type of evidence →								

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

<b>Performance evidence required</b>	Portfolio Reference Number (PRN)						
<b>3. Be able to resolve problems that could damage effective working relationships</b>							
3.1	Handle problems within the responsibility of the job role						
3.2	Communicate problems and conditions outside the responsibility of the job role to the <b>designated person</b> using approved procedures						
Type of evidence →							

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

### Range

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

<b>4. Know Health and Safety guidance and legislation in utilities network construction operations</b>		<b>PRN</b>
4.1	State the main responsibilities of the employer and employee under the Health and Safety at Work Act	
4.2	Explain the health and safety guidance governing work in excavations	
4.3	Describe the safe procedures for handling hazardous materials	
4.4	Explain the organisational accident recording and reporting procedures	
4.5	Identify the range and use of personal protective equipment for the work	

<b>5. Understand how to establish and maintain effective working relationships in utilities network construction</b>		<b>PRN</b>
5.1	Describe how to create and maintain working relationships with different <b>types of personnel</b>	
5.2	Identify the range and roles of <b>other persons</b> involved in the work activities	
5.3	Explain how to deal with groups and individuals with diverse roles, responsibilities and business environments	
5.4	Describe how to recognise and deal with problems effecting working relationships	
5.5	State the lines of communications to be followed when communicating information to customers, clients and work colleagues	
5.6	Explain the <b>methods of communication</b> used to communicate with others	



5.7	Identify documentation to use when communicating information to individuals and groups	
5.8	Describe ways to resolve problems that are affecting productivity and the achievement of work goals	
5.9	State the legislative requirements including any licensing or certification for the work activities	
5.10	State actions to be taken in the event of an emergency	
5.11	State how to comply with the requirements of the Health and Safety at Work Act in respect of work activities.	

### **Range**

**Types of personnel:** work colleagues and associates, suppliers, contractors, other utilities, those working for statutory bodies, other organisations, other trades, representatives from statutory organisations

**Other persons:** other trades; representatives from statutory organisations

**Method of communication:** oral, written, electronic

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

# Unit 204

# Install equipment for safe working on the highway for utilities network construction

**Unit aim:**

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

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

Where job was done	Time taken (hours)	Date

Performance evidence required	Portfolio Reference Number (PRN)						
<b>1. Set out temporary signing, lighting and guarding traffic control equipment in line with Industry Codes of Practice and current legislation</b>							
1.1	Locate the area for highway works and determine the <b>characteristics and conditions of the carriageway</b> .						
1.2	Plan the works for minimum disruption and inconvenience to others in accordance with <b>approved procedures and practices</b> .						
1.3	Carry out a site-specific risk assessment to identify <b>hazards</b> and to determine the range of control signs and protection equipment necessary for the works.						
1.4	Select and wear the specified personal protective equipment (PPE), including high visibility vest or coat.						
1.5	Set out <b>control signs and protection equipment</b> in a safe manner, according to the risk assessment, industry <b>codes of practice</b> and current legislation						
1.6	Remove all control equipment on completion of the works.						
1.7	Store and maintain control equipment in accordance with operational and organisational requirements.						
1.8	Work to <b>approved procedures and practices</b> and in compliance with statutory requirements.						
1.9	Maintain the security of the site where work is not completed.						
Type of evidence →							

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

**Range**

**Characteristics and conditions of the carriageway:** speed and volume of traffic; volume of pedestrian traffic; number and directions of lanes; proximity of other features such as junctions, railway crossings, pedestrian crossings, roundabouts, traffic lights.

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

**Hazards:** traffic; weather; other activities

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

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

Performance evidence required		Portfolio Reference Number (PRN)						
<b>2. Prepare resources for highway works</b>								
2.1	Select the <b>materials and equipment</b> for the planned works in accordance with the work instructions and specifications.							
2.2	Confirm the <b>materials and equipment</b> supplies are correct for the work requirement and are of the quality and quantity required							
2.3	Maintain in accordance with operational and organisational requirements: <ul style="list-style-type: none"> <li>the <b>materials and equipment</b> in storage</li> <li>the security of <b>materials and equipment</b>.</li> </ul>							
Type of evidence →								

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

### Range

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

Performance evidence required		Portfolio Reference Number (PRN)						
<b>3. Use and communicate data and information</b>								
3.1	Use the work instructions and specifications: <ul style="list-style-type: none"> <li>to determine the safety and security requirements for the area of the highways works</li> <li>to ensure compliance with current legislation.</li> </ul>							
3.2	Use <b>approved procedures and practices</b> throughout the work activity to ensure the work complies with statutory requirements							
3.3	Check with <b>designated personnel</b> any circumstances where information appears incorrect							
3.4	Use organisational information systems to record and store data and information							
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:** environmental; statutory; regulatory; emergency; operational; health and safety; organisational and company procedures; risk assessments.

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

<b>Performance evidence required</b>	Portfolio Reference Number (PRN)						
<b>4. Resolve problems that could arise from work on the highway</b>							
4.1	Resolve <b>problems</b> which arise from work on the highway						
4.2	Record defects, replacements or additional equipment required and report them to the <b>designated person</b> .						
4.3	Refer <b>problems</b> and conditions outside their responsibility to the <b>designated person</b> using approved procedures.						
Type of evidence →							

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

### Range

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

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

<b>5. Demonstrate general knowledge and understanding for utilities network construction operations</b>		<b>PRN</b>
5.1	State the main responsibilities of the employer and employee under the Health and Safety at Work Act.	
5.2	State the health and safety guidance governing work in excavations	
5.3	Describe the safe procedures for handling hazardous materials.	
5.4	Explain their organisational accident recording and reporting procedures	

<b>6. Demonstrate knowledge and understanding of installing equipment for safe working on the highway</b>		<b>PRN</b>
6.1	State the main sources of information on statutory requirements for the control of highways works.	
6.2	Give examples of the different types of signs, lights and guarding equipment	
6.3	Give examples of the different types of traffic control equipment.	
6.4	Explain the importance of: <ul style="list-style-type: none"> <li>checking and reporting defects in signs, guards, lighting and traffic control systems</li> <li>ensuring that defective equipment is taken out of use.</li> </ul>	
6.5	State the implications of incorrect signing, lighting, guarding and traffic control.	
6.6	Describe the design and purpose of each of the signs used for protecting highways works.	

6.7	<p>Explain the statutory positioning requirements for protection equipment relative to different highways environments and conditions, to cover:</p> <ul style="list-style-type: none"> <li>• signs</li> <li>• lights</li> <li>• guards</li> <li>• traffic controls.</li> </ul>	
6.8	<p>Describe guarding arrangements for highways works, including:</p> <ul style="list-style-type: none"> <li>• the different types of guards used to protect highways works</li> <li>• their positioning requirements relative to the work.</li> </ul>	
6.9	<p>Give examples of the different types and positioning of lighting required for highways works.</p>	
6.10	<p>List the main road classifications, including single and dual carriageways.</p>	
6.11	<p>Outline the design, operation, and maintenance requirements for traffic controls including:</p> <ul style="list-style-type: none"> <li>• warning signs</li> <li>• priority signs</li> <li>• stop/go boards</li> <li>• portable traffic signals.</li> </ul>	
6.12	<p>Give examples of the different types of traffic control requirements for highways works in different road conditions.</p>	
6.13	<p>Explain the correct procedures and sequences for implementing traffic control equipment in different work locations.</p>	
6.14	<p>Explain the correct procedures for moving traffic controls as work progresses</p>	
6.15	<p>Explain the importance of ensuring that signing, lighting, guarding and traffic control arrangements are checked and updated regularly as work progresses.</p>	
6.16	<p>Explain the importance of regular maintenance and cleaning of signs and lights throughout highways works.</p>	
6.17	<p>Describe the statutory requirements and recommendations for signing, lighting and guarding highways works on single and dual carriageways.</p>	
6.18	<p>Give examples of the range and purpose of personal protective equipment used during highways works.</p>	
6.19	<p>Explain the importance of checking and reporting defects in personal protective equipment</p>	
6.20	<p>State the main <b>approved procedures and practices</b> for determining site and resource requirements, within their job role.</p>	
6.21	<p>List the steps that must be taken in the event of an accident or emergency on the highway.</p>	
6.22	<p>State the procedures for summoning the emergency services</p>	
6.23	<p>List the persons and organisations with whom it is necessary to liaise on highways operations</p>	

## Range

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

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

**Unit 205**

**Install equipment for safe working on sites for utilities network construction**

**Unit aim:**

This unit allows you to show that you have the skills and knowledge to install equipment for safe working on site during utilities construction operations. You must select appropriate safety equipment for the site, according to current Codes of Practice and legislation. You must prepare the appropriate types and quantities of materials and equipment for the works and maintain your safety and security. You must also show that you can communicate information to the relevant people and organisations throughout the operation and must resolve or refer problems that arise during site works in line with your job responsibility.

Where job was done	Time taken (hours)	Date

Performance evidence required		Portfolio Reference Number (PRN)					
<b>1. Prepare, segregate and protect the work site</b>							
1.1	Locate and confirm the area for works according to instructions and specified requirements						
1.2	Plan the work to minimise disruption and inconvenience to others in accordance with <b>approved procedures and practices</b>						
1.3	Carry out a site-specific risk assessment to identify <b>hazards</b> and to determine the range of <b>control signs and protection equipment</b> necessary for the works						
1.4	Review the risk assessment in accordance with company procedures						
1.5	Select and wear the specified Personal Protective Equipment (PPE), including high visibility vest or coat						
1.6	Set out the area for the works in line with the specified requirements						
1.7	Take steps to provide for the safety of the work area and the natural environment where hazards and risk are identified						
1.8	Maintain the security of the site where work is not completed						
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:** environmental; statutory; regulatory; emergency; operational; health and safety; organisational and company procedures; risk assessments

**Hazards:** traffic; weather; other activities

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

Performance evidence required		Portfolio Reference Number (PRN)					
<b>2. Prepare resources for site works</b>							
2.1	Select the <b>materials and equipment</b> for the planned works in accordance with the work instructions and specifications						



2.2	Confirm the <b>materials and equipment</b> supplies are correct for the work requirement and are of the quality and quantity required						
2.3	Maintain in accordance with operational and organisational requirements: <ul style="list-style-type: none"> <li>the <b>materials and equipment</b> in storage</li> <li>the security of <b>materials and equipment</b></li> </ul>						
Type of evidence →							

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

### Range

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

<b>Performance evidence required</b>	Portfolio Reference Number (PRN)						
<b>3. Use and communicate data and information</b>							
3.1	Use information in the work instructions and specified requirements to locate the work site						
3.2	Use <b>approved procedures and practices</b> throughout the work activity to ensure the work complies with statutory requirements						
3.3	Check with authorised personnel any circumstances where information appears incorrect						
3.4	Use organisational information systems to record and store data and information						
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:** environmental; statutory; regulatory; emergency; operational; health and safety; organisational and company procedures; risk assessments

<b>Performance evidence required</b>	Portfolio Reference Number (PRN)						
<b>4. Resolve problems which could arise from preparing the site and resource requirements</b>							
4.1	Record and report to the designated person any shortages and defects of <b>materials and equipment</b>						
4.2	Refer <b>problems</b> and conditions outside their responsibility to the designated person using approved procedures						
Type of evidence →							

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

### Range

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

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

<b>5. Demonstrate knowledge and understanding for utilities network construction operations</b>		<b>PRN</b>
5.1	State the main responsibilities of the employer and employee under the Health and Safety at Work Act	
5.2	State the health and safety guidance governing work in excavations	
5.3	Describe the safe procedures for handling hazardous materials	
5.4	Explain their organisational accident recording and reporting procedures	

<b>6. Demonstrate knowledge and understanding of installing equipment for safe working on site</b>		<b>PRN</b>
6.1	Describe the roles and responsibilities of people within the site operations team	
6.2	Describe the site management structures for operations on site	
6.3	Explain the importance of referring to designated persons problems that are outside their area of responsibility	
6.4	Describe the recording and reporting procedures for: <ul style="list-style-type: none"> <li>• job progress</li> <li>• problems</li> <li>• deviations to work programmes</li> </ul>	
6.5	Explain the importance of confirming that the work location has been identified correctly	
6.6	Describe the types of information contained in written instructions, specifications and drawings	
6.7	Outline the key requirements of an effective site layout	
6.8	Describe common hazards in site works, and fit-for-purpose safety precautions and hazard prevention methods that can be used	
6.9	Describe how to deal with emergencies	
6.10	Describe the range of safety equipment that is appropriate for site operations	
6.11	Outline the main requirements of safety legislation governing site works	
6.12	Describe the materials that may pose a health hazard on site, and how to handle them safely	
6.13	Describe the Personal Protective Equipment (PPE) that is used in site operations	
6.14	Describe the lifting and handling techniques that are appropriate to the materials, tools and equipment used in site works	

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

**Unit 206**

**Locate and avoid supply apparatus for utilities network construction**

**Unit aim:**

This unit allows you to show that you have the skills and knowledge to locate and avoid supply apparatus during utilities network construction operations.

You will be able to use appropriate search and detection methods to identify the supply apparatus for utilities and other agencies, and to mark them on the site prior to excavation. You must identify and avoid risks of damage to services and danger to personnel and must follow safe working practices throughout the operation. You must also show that you can communicate information to the relevant people and organisations throughout location and avoidance activities, and must resolve or refer problems that arise during the work in line with your job responsibility.

Where job was done	Time taken (hours)	Date

Performance evidence required		Portfolio Reference Number (PRN)					
<b>1. Locate supply apparatus</b>							
1.1	Use work instructions and interpret utility plans to determine the extent of the work site and to enable the <b>supply apparatus</b> to be marked						
1.2	Carry out site specific risk assessment, and review it in accordance with company procedures						
1.3	Use appropriate <b>search techniques</b> to enable the identification and marking of <b>supply apparatus</b> .						
1.4	Mark the position and type of <b>supply apparatus</b> and sub-structures on the work site in accordance with work instructions and statutory and regulatory <b>Codes of Practice</b> .						
1.5	Mark risks of damage to <b>supply apparatus</b> and sub-structures in accordance with statutory and regulatory <b>Codes of Practice</b> .						
1.6	Record positions and types of <b>supply apparatus</b> and sub-structures in accordance with instructions and organisational requirements.						
1.7	Communicate details of the position and type of <b>supply apparatus</b> and sub-structures to personnel in accordance with instruction and organisational requirements						
1.8	Report deviations in the position of equipment and identification of other structures in accordance with instruction and organisational requirements						
1.9	Carry out all work to <b>approved procedures and practices</b> and comply 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:** relevant for utilities and other agencies including cables, metal pipes and non-metallic pipes; above and below ground services; built structures (eg foundations); the natural environment (eg tree roots, natural watercourses).

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

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

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

Performance evidence required	Portfolio Reference Number (PRN)						
<b>2. Maintain the safety and integrity of supply apparatus</b>							
2.1	Maintain the position and condition of <b>supply apparatus</b> within the work site according to their specification and <b>Codes of Practice</b>						
2.2	Ensure working practices on the site avoid damage to <b>supply apparatus</b> .						
2.3	Ensure that exposed <b>supply apparatus</b> are supported correctly in line with their specification and <b>approved procedures and practices</b> .						
2.4	Take precautions to protect personnel and equipment from the effects of damage to <b>supply apparatus</b> according to <b>approved procedures and practices</b>						
2.5	Ensure that all work complies with: <ul style="list-style-type: none"> <li>• the latest specifications</li> <li>• statutory regulations</li> <li>• company <b>Codes of Practice</b></li> </ul>						
Type of evidence →							

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

### Range

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

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

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

Performance evidence required	Portfolio Reference Number (PRN)						
<b>3. Use and communicate data and information</b>							
3.1	Check any circumstances where information appears incorrect with the designated personnel.						
3.2	Use organisational information systems to record and store data and information						
3.3	Follow all required lone working procedures when working alone						
Type of evidence →							

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

Performance evidence required	Portfolio Reference Number (PRN)						
<b>4. Resolve problems which could arise from work on the highway</b>							
4.1	Report any damage to <b>supply apparatus</b> promptly to the designated person and make the area safe.						
4.2	Resolve day-to-day problems within their area of responsibility.						
4.3	Advise colleagues or managers where situations need them to intervene						
4.4	Refer matters outside their responsibility to the designated people using <b>approved procedures</b> .						
Type of evidence →							

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

### Range

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

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

<b>5. Demonstrate general knowledge and understanding for utilities network construction operations</b>		PRN
5.1	State the main responsibilities of the employer and employee under the Health and Safety at Work Act.	
5.2	State the health and safety guidance governing work in excavations	
5.3	Describe the safe procedures for handling hazardous materials.	
5.4	Explain their organisational accident recording and reporting procedures	
5.5	List the range and use of personal protective equipment for the work.	

<b>6. Demonstrate knowledge and understanding of the different types of utility apparatus</b>		PRN
6.1	Describe typical locations and depths of the usual range of underground <b>supply apparatus</b>	
6.2	State the key physical properties of the supply pipeline or components of <b>supply apparatus</b> , including: <ul style="list-style-type: none"> <li>• size (diameter)</li> <li>• colour</li> <li>• material and its resistance to impact from excavation activities</li> <li>• methods of identification</li> </ul>	

6.3	Describe the physical properties of the supply being carried by different types of <b>supply apparatus</b> , including where relevant: <ul style="list-style-type: none"> <li>• ignition characteristics</li> <li>• density relative to air</li> <li>• electrocution risk</li> <li>• risk of water damage.</li> </ul>	
6.4	Describe the risks that arise when the safety and integrity of <b>supply apparatus</b> is not maintained.	
6.5	Describe the methods of marking and warning of the presence of underground <b>supply apparatus</b> (e.g. identification tape).	
6.6	Describe the possible effects of damage to the <b>supply apparatus</b>	
6.7	Explain the implications of damage to the different types of <b>supply apparatus</b> , including where relevant: <ul style="list-style-type: none"> <li>• personal danger to the health or life of the operatives, or to others on site</li> <li>• damage to the environment</li> <li>• additional job costs in repair</li> <li>• delay to job progress.</li> </ul>	
6.8	Give examples of the types of hazards associated with different supplies and actions to take in the case of damage.	
6.9	Explain why it is important to provide adequate support and protection for <b>supply apparatus</b> .	
6.10	Describe the industry procedures and practices for confirming the location and marking of <b>supply apparatus</b> .	
6.11	Give examples of different methods used to provide temporary and permanent support to protect <b>supply apparatus</b> exposed during site excavations.	

### Range

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

<b>7. Demonstrate knowledge and understanding of equipment and techniques used for locating supply apparatus</b>		<b>PRN</b>
7.1	Describe the principles of operation and method of use of electronic detection equipment	
7.2	Describe the safe procedures for handling the range of equipment necessary to carry out the task in hand.	
7.3	Explain how to interpret the results of readings from electronic detection equipment	
7.4	Explain the possible effects of external influences on electronic detection equipment readings.	
7.5	Explain how to visually locate and identify underground <b>supply apparatus</b> , using: <ul style="list-style-type: none"> <li>• markers</li> <li>• signs and features</li> <li>• existing records</li> </ul>	

7.6	Describe the situations where trial holes can be used to locate underground supplies	
7.7	Describe how to mark the position of supply services on the surface to ensure accurate location of the excavation.	
7.8	Explain the consequences of marking out excavations incorrectly, including: <ul style="list-style-type: none"> <li>• costs</li> <li>• loss of time</li> <li>• material wastage</li> </ul>	
7.9	Explain the importance of protecting supply apparatus exposed during excavation work	
7.10	State the precautions to be taken when locating supply apparatus, including statutory and regulatory requirements.	

### Range

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

<b>8. Demonstrate knowledge and understanding of roles, responsibilities and communication requirements for locating utilities apparatus</b>		<b>PRN</b>
8.1	State the main sources of legislation relating to highways operations in the proximity of other <b>supply apparatus</b> .	
8.2	Name the persons or organisations who must be notified where there is damage to supply apparatus or other underground structures.	
8.3	List the regulations that govern the location of supply apparatus where this exposes other services.	
8.4	Outline the requirements of the legislation that applies to new roads and street works	
8.5	Explain why it is important to refer problems outside their area of job role responsibility to designated people.	
8.6	Describe the procedures for reporting and recording: job progress; problems; deviations to work programmes.	
8.7	Outline the roles and responsibilities of the various organisations involved location work and how to liaise with them effectively.	

### Range

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

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



# Unit 207

# Excavate and maintain holes and trenches for utilities network construction

**Unit aim:**

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

You will be able to confirm the requirements for excavation on site and select and use the most appropriate tools and equipment for the specified excavation activity. You must confirm the excavation requirements with the work specification and minimise damage to supply apparatus and the natural environment during the operation. You will be able to maintain the integrity of the excavation and maintain access and egress arrangements in line with safety requirements.

You must also show that you can communicate information to the relevant people and organisations throughout excavation activities, and must resolve or refer problems that arise during the work in line with your job responsibility. Throughout the operation, you must follow the work specification and Codes of Practice, and must maintain safe working procedures.

Where job was done	Time taken (hours)	Date

Performance evidence required		Portfolio Reference Number (PRN)					
<b>1. Excavate on site to requirements</b>							
1.1	Determine the suitable excavation method for the <b>surface and sub-surface</b> materials being removed, and which meets with statutory and regulatory Codes of Practice						
1.2	Carry out a site-specific risk assessment and review it according to company procedures.						
1.3	Select and wear the designated personal protective equipment (PPE).						
1.4	Select and use the most suitable tools and equipment for the excavation method to be used.						
1.5	Confirm the position and size of the excavation in accordance with instructions and the work specification.						
1.6	Excavate, identify, select, segregate and store materials in accordance with work instructions and Codes of Practice.						
1.7	Carry out the excavation in a manner that avoids damage to <b>supply apparatus</b> .						
1.8	Minimise damage to the natural environment according to technical guidance.						
1.9	Keep gullies and water courses clear at all times						
1.10	Support and protect exposed <b>supply apparatus</b> in line with work instructions and relevant Codes of Practice.						
1.11	Remove surplus materials according to work instructions and requirements						
1.12	Confirm the dimensions and condition of the excavation against the instructions and the work specification						
1.13	Ensure work is carried out to <b>approved procedures and practices</b> and complies 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:** environmental; statutory; regulatory; emergency; operational; health and safety; organisational and company procedures; risk assessments.

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

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

Performance evidence required	Portfolio Reference Number (PRN)						
<b>2. Maintain the integrity of the excavation</b>							
2.1	Confirm that the method used to support the excavation is fit for purpose to: <ul style="list-style-type: none"> <li>• the size of the excavation</li> <li>• the nature of the ground conditions and adjacent structures</li> </ul>						
2.2	Install and remove support mechanisms according to instructions and relevant Codes of Practice.						
2.3	Maintain the condition of the excavation by adjusting support mechanisms and removing ground water as required.						
2.4	Monitor and maintain the condition of support mechanisms safely in accordance with operational and organisational safe working procedures.						
2.5	Resolve situations that require measures to deal with dangerous atmospheres, according to relevant Codes of Practice and safe working procedures.						
2.6	Establish arrangements for access to and egress from the excavation in line with statutory requirements and <b>approved procedures and practices</b>						
2.7	Ensure that all relevant safety checks are undertaken before any entry into the excavation.						
2.8	Ensure that the site-specific risk assessment provides adequate safeguards in work practices to deal with the excavation becoming a confined space						
2.9	Confirm that the condition of the ground area adjacent to the excavation is safe, in line with relevant Codes of Practice.						
2.10	Work to <b>approved procedures and practices</b> and comply with statutory requirements throughout excavation operations.						
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:** environmental; statutory; regulatory; emergency; operational; health and safety; organisational and company procedures; risk assessments

Performance evidence required		Portfolio Reference Number (PRN)					
<b>3. Use and communicate data and information</b>							
3.1	Use the information in the work instructions and specification to determine the work site and the area to be excavated.						
3.2	Report detrimental conditions and defects in the excavation and support mechanisms that are outside their responsibility, according to relevant Codes of Practice.						
3.3	Use <b>approved procedures and practices</b> and statutory requirements to determine any requirements for excavation support						
3.4	Check any circumstances where information appears to be incorrect with the designated personnel.						
3.5	Use organisational information systems to record and store data and information relating to excavation work.						
3.6	Follow all required lone working procedures when working alone						
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: environmental; statutory; regulatory; emergency; operational; health and safety; organisational and company procedures; risk assessments

Performance evidence required		Portfolio Reference Number (PRN)					
<b>4. Resolve problems which could arise from excavation work</b>							
4.1	Report any damage to <b>supply apparatus</b> promptly to the designated person						
4.2	Resolve day-to-day problems within the responsibility of their own job role						
4.3	Advise colleagues or managers where situations need them to intervene.						
4.4	Refer matters that are outside their responsibility to the designated people using approved procedures.						
Type of evidence →							

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

### Range

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

<b>5. Demonstrate general knowledge and understanding for utilities network construction operation</b>		<b>PRN</b>
5.1	State the main responsibilities of the employer and employee under the Health and Safety at Work Act.	
5.2	State the health and safety guidance governing work in excavations	
5.3	Describe the safe procedures for handling hazardous materials	
5.4	Explain their organisational accident recording and reporting procedures	

<b>6. Demonstrate general knowledge and understanding of how excavation work must be carried out to comply with legal and industry requirements</b>		<b>PRN</b>
6.1	Outline how <b>activities in involved in excavation work</b> can be carried out in compliance with legislative requirements and good industry practice	
6.2	Outline the responsibilities of the employer and employee in relation to <b>activities in involved in excavation.</b>	

### Range

**Activities in involved in excavation:** assessment of risk; personal protection; excavation activities; the support of supply apparatus; the support of excavations; the competence of personnel; care for the environment; provision and use of equipment; reporting of accidents; dealing with hazardous materials and substances

<b>7. Demonstrate knowledge and understanding of excavating in a variety of situations using different techniques and equipment</b>		<b>PRN</b>
7.1	Describe the safe procedures for handling the range of excavation support equipment	
7.2	Describe the different <b>methods of excavation</b> , and how to decide which is appropriate	
7.3	Describe the different types of surfaces and sub-surfaces that may require to be excavated	
7.4	Explain why a competent banksman is needed when excavating by machine	
7.5	Describe the <b>consequences and implications</b> of using incorrect excavation and reinstatement practices.	
7.6	Describe the requirements for selecting, storing and using backfill and reinstatement materials.	
7.7	Describe the requirements for disposing of surplus materials.	
7.8	Explain how to recognise when an excavation is or could become a confined space, and how to deal effectively with this.	
7.9	Describe the methods and principles of <b>excavation support systems</b> , and where their use is most appropriate.	

## Range

**Methods of excavation:** by hand; by machine

**Consequences and implications:** other utilities; cost of operation; time; customers; members of the public; colleagues and other workers; scale of activity.

**Excavation support systems:** timber; steel; mechanical

<b>8. Demonstrate knowledge and understanding of the tools and equipment used in the course of excavation activities</b>		<b>PRN</b>
8.1	List the tools, equipment and machinery that are used for hand and machine excavation	
8.2	Describe the criteria used to select the most appropriate tools, equipment and machinery for excavation activities.	
8.3	Explain the importance of economy in using powered or motorised equipment for excavations.	

<b>9. Demonstrate knowledge and understanding of responsibilities to others during excavation work</b>		<b>PRN</b>
9.1	List the different utility organisations that may own apparatus that could be affected by excavation activities.	
9.2	Describe how the different buried apparatus could be identified	
9.3	Describe the potential environmental impact of excavation activities and the agencies responsible for environmental protection	
9.4	Describe the potential consequences of not providing the necessary protection to underground apparatus and features.	
9.5	Describe the roles and responsibilities of people within the site or highways operations team.	
9.6	Explain the importance of referring problems outside their responsibility to the designated persons.	
9.7	Describe the procedures used to report and record the <b>detail of excavation activities</b>	

## Range

**Detail of excavation activities:** job progress; problems; deviations from the programme of work

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

**Unit 208**

**Reinstate excavation and pavement surfaces after utility network construction operations**

**Unit aim:**

This unit allows you to show that you have the skills and knowledge to reinstate excavations and pavement surfaces following utilities network construction operations.

You will be able to confirm the requirements and prepare for reinstating excavations and select and use the most appropriate tools, equipment and materials for the required reinstatement activity. You must confirm that all materials and equipment are fit for purpose and complete the reinstatement, replacing ironwork, kerbs and edge restraints in line with requirements. You must also show that you can communicate information to the relevant people and organisations throughout reinstatement activities and must resolve or refer problems that arise during the work in line with your job responsibility. Throughout the operation, you must follow the work specification and Codes of Practice, and must maintain safe working procedures.

Where job was done	Time taken (hours)	Date

Performance evidence required	Portfolio Reference Number (PRN)						
<b>1. Prepare for reinstatement of excavation and pavement surface</b>							
1.1	Confirm the location of the excavation and the holes and trenches, according to instructions and work specifications						
1.2	Carry out a site-specific risk assessment, and review it according to company procedures						
1.3	Select and wear the designated personal protective equipment (PPE).						
1.4	Follow safe working practices for working in the vicinity of hazardous materials						
1.5	Confirm that the <b>area for reinstatement</b> is in accordance with statutory and regulatory Codes of Practice.						
1.6	Carry out preparation procedures for reinstatement of the excavation in accordance with statutory and regulatory Codes of Practice						
1.7	Protect <b>supply apparatus and sub-structures</b> in accordance with the relevant Codes of Practice.						
1.8	Select stored materials for reinstatement, according to the relevant Codes of Practice.						
1.9	Select hand tools, powered tools and equipment for reinstatement						
1.10	Confirm that tools and equipment are: <ul style="list-style-type: none"> <li>• appropriate for the materials to be used in reinstatement</li> <li>• in a suitable condition for use, according to manufacturer’s specifications and operational requirements.</li> </ul>						
1.11	Report remedial work and defects in the excavation that are outside their responsibility, according to organisational and operational procedures.						
1.12	Work according to <b>approved procedures and practices</b> and comply with statutory requirements						
Type of evidence →							

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

**Range**

**Area for reinstatement:** flexible pavement construction; composite pavement construction; rigid pavement construction; modular pavement construction; verge/natural ground



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

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

Performance evidence required		Portfolio Reference Number (PRN)						
<b>2. Carry out reinstatement of excavation and pavement surface</b>								
2.1	Confirm that materials to be used for reinstatement are fit for purpose and meet statutory and regulatory Codes of Practice, including: <ul style="list-style-type: none"> <li>new and reusable materials for backfill, sub-base, road-base and pavement surface</li> <li>cold-lay materials.</li> </ul>							
2.2	Confirm that the area and type of structure being reinstated meet statutory and regulatory Codes of Practice.							
2.3	Follow laying and compaction procedures for the material that meet statutory and regulatory Codes of Practice.							
2.4	Report defects and deficiencies in the laying and compaction of materials, that are outside their responsibility, in accordance with organisational and operational procedures.							
2.5	Maintain suitable conditions and the security of the excavation throughout reinstatement operations.							
2.6	Replace ironwork, kerbs and edge restraints in line with relevant Codes of Practice.							
2.7	Store and dispose of surplus materials in line with work instructions and statutory and regulatory Codes of Practice.							
2.8	Complete the work by checking and confirming that the quality and condition of the finished reinstatement and the work site conform to statutory and regulatory Codes of Practice							
Type of evidence →								

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

Performance evidence required		Portfolio Reference Number (PRN)						
<b>3. Use and communicate data and information</b>								
3.1	Use records to determine potential deep excavations, confined spaces and hazardous materials.							
3.2	Use information in the work instructions and specification to determine the work site and the area to be reinstated.							
3.3	Use approved procedures and practice and statutory requirements to determine the requirement for excavation support.							
3.4	Check any circumstances where information appears to be incorrect with the designated personnel.							

3.5	Use organisational information systems to record and store data and information relating to reinstatement work.						
3.6	Follow all required lone working procedures when working alone						
Type of evidence →							

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

<b>Performance evidence required</b>	Portfolio Reference Number (PRN)						
<b>4. Resolve problems which could arise from reinstatement work</b>							
4.1	Report any damage to <b>supply apparatus and sub-structures</b> promptly to the designated person.						
4.2	Resolve day-to-day problems within the responsibility of their own job role						
4.3	Advise colleagues or managers where situations need them to intervene						
4.4	Refer matters that are outside their responsibility to the designated people using approved procedures.						
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:** supply apparatus for utilities and other agencies; above and below ground services; built structures (eg foundations); the natural environment (eg tree roots, natural watercourses)

<b>5. Demonstrate general knowledge and understanding for utilities network construction operations</b>		<b>PRN</b>
5.1	State the main responsibilities of the employer and employee under the Health and Safety at Work Act in relation to reinstatement activities	
5.2	State the health and safety guidance governing work in excavations	
5.3	Describe the safe procedures for handling hazardous materials	
5.4	Explain their organisational accident recording and reporting procedures	
5.5	List the range and use of personal protective equipment for the work	

<b>6. Demonstrate knowledge and understanding of plant and equipment used for reinstatement activities</b>		<b>PRN</b>
6.1	List the hand tools, powered tools and motorised equipment that are used in reinstatement work.	
6.2	Describe safe procedures for handling reinstatement equipment	
6.3	Describe the maintenance requirements for hand tools, powered tools and equipment used for reinstatement work.	

6.4	Describe the types of equipment used to compact materials, including hand and power tools and motorised equipment.	
6.5	Describe the methods used to compact reinstatement materials	
6.6	Describe the maintenance requirements for compaction equipment used in reinstatement	

<b>7. Demonstrate knowledge and understanding of legislation and best practice for reinstatement operations</b>		<b>PRN</b>
7.1	Outline the legal and operational responsibilities of the employer and employee in relation to <b>reinstatement activities</b> .	
7.2	Outline the legislation controlling the use of hand tools, powered tools and equipment	
7.3	Outline the main industry <b>approved procedures and practices</b> for reinstatement work	
7.4	Describe the roles and responsibilities of people within the site or highways operations team.	
7.5	Explain the importance of referring problems outside their responsibility to the designated persons.	
7.6	Describe the procedures used to <b>report and record details</b> of reinstatement work	
7.7	Outline site management structures for site or highways operations.	

### Range

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

**Reinstatement activities:** personal protection; handling and operating equipment; provision and use of equipment; working with hazardous substances; excavation and reinstatement

**Report and record details:** job progress, problems, deviations to work programmes.

<b>8. Demonstrate knowledge and understanding of reinstatement activities</b>		<b>PRN</b>
8.1	Describe the different types of <b>reinstatement surfaces</b> .	
8.2	Describe the sub-surface requirements for each type of pavement surface.	
8.3	Describe the <b>preparation procedures</b> for reinstatement	
8.4	Describe the <b>types of materials</b> that can be excavated, and defects that can arise with them.	
8.5	State the remedial actions to be taken when defects are encountered	
8.6	Explain how to segregate the different <b>types of materials</b> used in reinstatement	
8.7	Describe how to check the condition of the reinstatement material that is to be used.	

8.8	Outline the specifications for <b>surface, sub-surface and general reinstatement materials</b> .	
8.9	Describe the methods used to store and protect excavated material to prevent deterioration.	
8.10	Describe the types of surface finishes used in reinstatement	
8.11	Describe the common defects in reinstatement, including settlement and surface damage, and the appropriate remedial action to take.	
8.12	State the specifications for materials in <b>reinstatement surface structures</b>	
8.13	Explain why it is important to ensure that reinstatement materials are stored in the correct conditions.	

### Range

**Reinstatement surfaces:** flexible; composite; rigid; modular; cold-lay bituminous material; verge/natural ground

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

**Types of materials:** backfill; sub-base; road-base; pavement surface

**Surface, sub-surface and general reinstatement materials:** fine fill materials; backfill materials; granular sub-bases; cement bound excavated material; road-base materials; bituminous road-based materials; surfacing materials; concrete footways; modular surfacing; cold lay

<b>9. Demonstrate knowledge and understanding of other agencies, utilities, their apparatus and communication requirements</b>		<b>PRN</b>
9.1	Describe the different types of <b>supply apparatus and sub-structures</b> for utilities and other agencies that may be encountered during reinstatement.	
9.2	Explain the methods used to protect each type of supply apparatus and sub-structure	
9.3	Explain why it is necessary to report any spillage from fuel and lubricants, and to safely prevent their spread, in line with company procedures.	

### Range

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

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

**Unit 209**

**Operate powered tools and equipment for routine and predictable requirements on utilities network construction**

**Unit aim:**

This unit allows you to show that you have the skills and knowledge to operate powered tools and equipment during utilities construction operations.

You must show that you can communicate information to the relevant people and organisations throughout reinstatement activities, and must resolve or refer problems that arise during the work in line with your job responsibility. Throughout the operation, you must follow the work specification and Codes of Practice, and must maintain safe working procedures.

Where job was done	Time taken (hours)	Date

## Unit 209

# Operate powered tools and equipment for routine and predictable requirements on utilities network construction

Performance evidence required	Portfolio Reference Number (PRN)						
<b>1. Prepare powered tools and equipment for routine and predictable use</b>							
1.1	Use work instructions and specifications to confirm the operations requiring the use of <b>powered tools and equipment</b>						
1.2	Carry out a site specific risk assessment, and review in accordance with company procedures						
1.3	Select and wear the designated <b>personal protective equipment (PPE)</b> .						
1.4	Carry out pre-start inspections on the <b>powered tools and equipment</b>						
1.5	Record and report any defects of the <b>powered tools and equipment</b> and take out of service until rectified.						
1.6	Confirm <b>powered tools and equipment</b> are safe, correct and ready for use in accordance with the work requirements.						
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:** power generation (including electric, pneumatic and hydraulic); cutting and grinding; pumping; compacting; pipe jointing

**Personal protective equipment (PPE):** head; eyes; ears; respiratory system; hands; feet; body.

Performance evidence required	Portfolio Reference Number (PRN)						
<b>2. Run and operate powered tools and equipment</b>							
2.1	Carry out start and stop procedures to confirm functions are in accordance with safe control and the manufacturers' operating instructions						
2.2	Operate tools and <b>equipment</b> safely in accordance with specifications						
Type of evidence →							

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

**Range**

**Equipment:** power generation (including electric, pneumatic and hydraulic); cutting and grinding; pumping; compacting; pipe jointing

Performance evidence required	Portfolio Reference Number (PRN)						
<b>3. Shut down and carry out post-stop checks on powered tools and equipment</b>							
3.1	Stop <b>powered tools and equipment</b> safely						
3.2	Carry out post-stop checks in accordance with organisational and operational procedures						
3.3	Leave <b>powered tools and equipment</b> safe and secure						
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:** power generation (including electric, pneumatic and hydraulic); cutting and grinding; pumping; compacting; pipe jointing

Performance evidence required	Portfolio Reference Number (PRN)						
<b>4. Use and communicate data and information</b>							
4.1	Carry out all work to approved procedures and practice and in compliance with statutory and regulatory requirements.						
4.2	Carry out site-specific risk assessment, and review in accordance with company procedures						
4.3	Record and report defects in tool and <b>equipment</b> performance to the designated person						
4.4	Record and report the need for replacement tools and <b>equipment</b> to the designated person						
4.5	Check any circumstances where information appears incorrect with the designated personnel						
4.6	Use organisational information systems to record and store data and information.						
Type of evidence →							

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

**Range**

**Equipment:** power generation (including electric, pneumatic and hydraulic); cutting and grinding; pumping; compacting; pipe jointing



<b>Performance evidence required</b>	Portfolio Reference Number (PRN)						
<b>5. Resolve problems which arise from operating powered tools and equipment</b>							
5.1	Report any damage to tools and <b>equipment</b> to the designated person						
5.2	Refer problems that are outside their responsibility to the designated person using approved procedures.						
Type of evidence →							

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

### Range

**Equipment:** power generation (including electric, pneumatic and hydraulic); cutting and grinding; pumping; compacting; pipe jointing

<b>6. Demonstrate general knowledge and understanding for utilities network construction operations</b>		<b>PRN</b>
6.1	State the main responsibilities of the employer and employee under the Health and Safety at Work Act.	
6.2	State the health and safety guidance governing work in excavations	
6.3	Describe the safe procedures for handling hazardous materials	
6.4	Explain their organisational accident recording and reporting procedures	

<b>7. Demonstrate knowledge and understanding of working with powered tools and equipment</b>		<b>PRN</b>
7.1	Describe the <b>hazards</b> posed by <b>powered tools and equipment</b> and explain how the associated risks must be illuminated or controlled	
7.2	Describe the full range of <b>personal protective equipment (PPE)</b> that must be worn when operating <b>powered tools and equipment</b> .	
7.3	Describe the key features and characteristics of <b>powered tools and equipment</b> , including the type of work for which they are suitable.	
7.4	Outline how <b>powered tools and equipment</b> should be operated, including: <ul style="list-style-type: none"> <li>starting and stopping routines</li> <li>operation to comply with all <b>approved procedures and practices</b>.</li> </ul>	
7.5	Describe the training certificates and license requirements for operating <b>powered tools and equipment</b> .	
7.6	Outline the industry recognised practices for their specific trade occupation and general construction work activities, including current statutory requirements	
7.7	Describe the manufacturer's recommendations for starting the <b>powered tools and equipment</b> .	

7.8	Describe the operational safety procedures that must be observed when starting and stopping <b>powered tools and equipment</b> .	
7.9	Describe the operational problems that can occur with the <b>powered tools and equipment</b> being used and how these might be resolved.	
7.10	Describe how to report problems with and damage to <b>powered tools and equipment</b> .	
7.11	Explain the importance of maintaining tools in good working order, including the sharpening of cutting tools.	
7.12	Describe the routine and emergency operational procedures for the <b>powered tools and equipment</b> being used, including manufacturer's recommendations.	
7.13	Describe the pre- and post-use maintenance checks that should be carried out on <b>powered tools and equipment</b> , including those recommended by manufacturers and in operational and organisational procedures.	
7.14	Explain why it is important to report and to prevent the spread of spilled fuels and lubricants, in line with company policies.	

### Range

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

**Powered tools and equipment:** power generation (including electric, pneumatic and hydraulic); cutting and grinding; pumping; compacting; pipe jointing

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

**Approved procedures and practices:** environmental; statutory; regulatory; emergency; operational; health and safety; organisational and company procedures; risk assessments; manufactures' instructions

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

**Unit 210**

**Join materials by electrofusion processes on Utilities Network Construction**

**Unit aim:**

The purpose of this unit is to assess the competence of individuals to recognised national occupational standards. This unit is designed to assess the competence of individuals required to joint materials by electrofusion processes on Utilities Network Construction. It includes using non-automatic and automatic techniques. The jointing process may be carried out in all weather conditions in accordance with industry standards and specifications.

Where job was done	Time taken (hours)	Date

## Unit 210

# Join materials by electrofusion processes on Utilities Network Construction

Performance evidence required		Portfolio Reference Number (PRN)					
<b>1. Be able to make joints using electrofusion jointing techniques</b>							
1.1	Carry out site specific risk assessment, and review in accordance to company procedures						
1.2	Select and wear the designated PPE						
1.3	Check that jointing related equipment and consumables are as specified and fit for purpose						
1.4	Use the correct electrofusion jointing technique to produce joints of the required quality and confirm compliance with the <ul style="list-style-type: none"> <li>• specified standard</li> <li>• specified dimensional accuracy</li> </ul>						
1.5	Confirm that on completion of jointing activities the equipment is shut down to a safe condition						
1.6	Confirm temporary attachments, excess and waste materials are dealt with promptly in line with approved and agreed procedures.						
Type of evidence →							

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

Performance evidence required		Portfolio Reference Number (PRN)					
<b>2. Be able to use and communicate data and information</b>							
2.1	Comply with approved procedures, practices, statutory and regulatory requirements involved in the work activity						
2.2	Check with <b>designated personnel</b> any circumstances where information appears incorrect						
2.3	Use organisational information systems to record and store data and information.						
Type of evidence →							

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

### Range

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

Performance evidence required		Portfolio Reference Number (PRN)					
<b>3. Be able to resolve problems that arise during jointing work</b>							
3.1	Report to the <b>designated person</b> damage to supply apparatus						
3.2	Report to the <b>designated person</b> damage to jointing equipment						
3.3	Report to the <b>designated person</b> matters outside the responsibility of the job role						
3.4	Demonstrate how to resolve day-to-day problems within the responsibility of the job role						
3.5	Handle emergency situations when they arise						
Type of evidence →							

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

### Range

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

<b>4. Know Health and Safety guidance and legislation in utilities network construction operations</b>		<b>PRN</b>
4.1	State the main responsibilities of the employer and employee under the Health and Safety at Work Act	
4.2	Explain the health and safety guidance governing work in excavations	
4.3	Describe the safe procedures for handling hazardous materials	
4.4	Explain the organisational accident recording and reporting procedures	
4.5	Identify the range and use of personal protective equipment for the work	

<b>5. Understand jointing materials by electrofusion processes on utilities network construction operations</b>		<b>PRN</b>
5.1	State the health, safety and environment legislation and environmental procedures relevant to the work activities	
5.2	Apply the correct manual handling procedures	
5.3	Explain the industry codes of practice and company procedures	
5.4	Interpret engineering specifications relevant to the engineering activity	
5.5	Describe the different stages that take place during the jointing process and the importance of allowing each phase to complete	
5.6	Explain the need for pipe restraint, pipe support and pipe alignment	
5.7	Explain the cause and effect of <b>defects</b>	
5.8	Interpret pipe specifications	
5.9	Explain pipe compatibility	
5.10	Identify different types of pipe materials	

5.11	Describe equipment maintenance procedures	
5.12	Describe equipment calibration	
5.13	State the consequences of poor equipment maintenance	
5.14	Identify quality assurance procedures that can be applied in recognising defects	
5.15	Explain the correct reporting procedures	

**Range**

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

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

## Unit 211

# Joint materials by butt fusion processes on Utilities Network Construction, up to 180mm diameter

### Unit aim:

The purpose of this unit is to assess the competence of individuals to recognised national occupational standards. This unit is designed to assess the competence of individuals required to joint materials by butt fusion processes using pipes with diameters up to and including 180mm diameter. It includes using non-automatic and automatic machines on parent materials with the same SDR rating and polymer type. The jointing process may be carried out in all weather conditions in accordance with industry standards and specifications.

Where job was done	Time taken (hours)	Date

## Unit 211

# Joint materials by butt fusion processes on Utilities Network Construction, up to 180mm diameter

Performance evidence required		Portfolio Reference Number (PRN)							
<b>1. Be able to make joints using butt fusion techniques</b>									
1.1	Carry out site specific risk assessment, and review in accordance with company procedures								
1.2	Select and wear the designated PPE								
1.3	Check that jointing and related equipment and consumables are as specified and fit for purpose								
1.4	Confirm there is adequate weather protection during the entire jointing cycle								
1.5	Carry out and monitor the machine operations to produce butt fusion joints of the required quality								
1.6	Confirm compliance with <ul style="list-style-type: none"> <li>• job instructions</li> <li>• correct preparation</li> <li>• specification</li> <li>• specified dimensional accuracy</li> </ul>								
1.7	Demonstrate how to de-bead and carry out approved quality assurance test on bead								
1.8	Confirm joint and bead are identifiable by marking in accordance with company procedures								
1.9	Confirm the equipment is in a safe condition on completion of jointing activities								
1.10	Handle excess and waste materials and temporary attachments, in line with approved and agreed procedures.								
Type of evidence →									

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



Performance evidence required	Portfolio Reference Number (PRN)						
<b>2. Be able to use and communicate data and information</b>							
2.1	Comply with approved procedures and practices involved in the work activity						
2.2	Confirm with <b>designated personnel</b> any circumstances where information appears incorrect						
2.3	Use organisational information systems to record and store jointing data and information						
Type of evidence →							

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

### Range

**Designated personnel:** Those people specified within work and health and safety procedures

Performance evidence required	Portfolio Reference Number (PRN)						
<b>3. Be able to resolve problems which arise from jointing materials</b>							
3.1	Report promptly to the <b>designated person</b> damage or defects to tools, equipment, materials						
3.2	Report promptly to the <b>designated person</b> matters outside the responsibility of the job role						
3.3	Resolve day to day problems within the responsibility of the job role						
3.4	Handle emergency situations as specified in approved procedures						
Type of evidence →							

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

### Range

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

<b>4. Know Health and Safety guidance and legislation in utilities network construction operations</b>		PRN
4.1	State the main responsibilities of the employer and employee under the Health and Safety at Work Act	
4.2	Explain the health and safety guidance governing work in excavations	
4.3	Describe the safe procedures for handling hazardous materials	
4.4	Explain the organisational accident recording and reporting procedures	
4.5	Identify the range and use of personal protective equipment for the work	
4.6	State the health, safety and environment legislation and environmental procedures relevant to the work activities	

<b>5. Understand jointing materials by butt fusion processes on utilities network construction, up to 180mm diameter</b>		<b>PRN</b>
5.1	Apply the correct manual handling procedures	
5.2	Explain the industry codes of practice and company procedures	
5.3	Explain why only pipes of similar specifications can be joined together	
5.4	Interpret engineering specifications relevant to the engineering activity	
5.5	Describe the different stages that take place during the jointing process and the importance of allowing each phase to complete	
5.6	Explain the need for pipe support, alignment and the consequences of poor support and mis-alignment	
5.7	Explain the cause and effect of <b>defects and contaminations</b>	
5.8	Describe maintenance procedures	
5.9	Describe equipment calibration	
5.10	Outline the consequences of poor maintenance	
5.11	Identify different <b>quality assurance procedures</b> that can be applied in recognising defects	
5.12	Explain the correct reporting procedures	

### **Range**

**Defects and contaminations:** Split defects, inadequate bead, excessive bead, pipe specifications, compatibility, different types of materials and consumables

**Quality assurance procedures:** non-destructive and destructive testing

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

**Unit 220**

**Maintain a safe and secure working environment in water network construction**

**Unit aim:**

This unit allows you to show that you have the skills and knowledge to maintain a safe and secure working environment in water network construction.

You will be able to ensure that the working environment is safe. It involves ongoing monitoring during routine work. You must take steps to make safe any situations or working practices that are within your responsibility, and must refer any problems to the designated people who are specified in work procedures. You must be alert to, and assess, risk or hazardous conditions, security breaches, and the need to wear safety clothing. You must show that you can follow the correct procedures when emergencies arise. You must follow the work specification and relevant Codes of Practice, and must maintain safe working and hygiene procedures.

Where job was done	Time taken (hours)	Date

Performance evidence required	Portfolio Reference Number (PRN)							
<b>1. Maintain the health and safety of themselves and others</b>								
1.1	Work in a way which ensures they do not endanger or risk themselves or other people							
1.2	Carry out site-specific assessments for their area of work and review them in accordance with company procedures							
1.3	Wear the personal protective equipment (PPE) that is identified in the site-specific risk assessment and in company procedures							
1.4	Change working practices and other aspects of the workplace that could harm themselves and other people							
1.5	Deal with hazards and make them safe in accordance with workplace policies and health and safety requirements							
1.6	Deal promptly with accidental breakages and spillages							
1.7	Monitor condition and make sure they remain safe and deal with situations that fall short of requirements							
1.8	Make sure that work activity is carried out to safe working practices and health, safety and hygiene requirements							
1.9	Monitor work activities and their potential to harm: <ul style="list-style-type: none"> <li>• people</li> <li>• the environment</li> </ul>							
1.10	Follow <b>emergency</b> procedures immediately in the event of an <b>emergency</b>							
Type of evidence →								

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

**Range**

**Emergency:** toxic fumes, accidents, major accidents, electrocutions, dangerous occurrences, flooding, environmental pollution, trench collapse

Performance evidence required	Portfolio Reference Number (PRN)							
<b>2. Maintain the safety and security of plant, equipment and the working environment</b>								
2.1	Maintain plant, equipment and hazardous locations in line with health and safety specifications and safe working and hygiene practices							
2.2	Maintain entrances to, and exits from, hazardous locations according to site specifications							

2.3	Maintain health and safety equipment – assembled for use in a safe area – free from defects and deficiencies								
2.4	Deal with unauthorised personnel seen in the workplace in accordance with organisational procedures								
2.5	Store and use safety clothing and Personal Protective Equipment (PPE) in accordance with safe working practices and organisational requirements								
2.6	Maintain site safety by routine health and safety checks								
Type of evidence →									

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

Performance evidence required		Portfolio Reference Number (PRN)							
<b>3. Respond to emergencies</b>									
3.1	In the event of an <b>emergency</b> implement the designated response procedures promptly and in accordance with recognised safe practices and organisational policy								
3.2	Respond to all accidents and emergencies that are within their capability and responsibility and report promptly to a designated person								
3.3	Use <b>emergency</b> appliances 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:** toxic fumes, accidents, major accidents, electrocutions, dangerous occurrences, flooding, environmental pollution, trench collapse

Performance evidence required		Portfolio Reference Number (PRN)							
<b>4. Use and communicate data and information</b>									
4.1	Follow all lone working procedures where they are working alone								
4.2	Report promptly, to the designated people, unsafe plant, equipment and hazardous locations outside their area of responsibility								
4.3	Report high risk hazards outside their responsibility to the designated people								
4.4	Report <b>emergencies</b> immediately to the designated people								
4.5	Report situations that emerge from visual inspections or monitoring data which have the potential to escalate and pose risk to people								
4.6	Report breaches of <b>security</b> immediately to a designated person								

4.7	Keep accurate and up-to-date records on routine matters and <b>emergencies</b> to confirm to health and safety specifications and safe working and hygiene practices						
4.8	Maintain audit trails of records for quality assurance purposes						
Type of evidence →							

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

## Range

**Emergency:** toxic fumes, accidents, major accidents, electrocutions, dangerous occurrences, flooding, environmental pollution, trench collapse

**Security:** Personnel, property, the surrounding environment, the operational area, plant and environment

Performance evidence required	Portfolio Reference Number (PRN)						
<b>5. Resolve problems which could affect health and safety</b>							
5.1	Make safe and restore plant, equipment and hazardous locations to health and safety specifications and safe working and hygiene practices						
5.2	Deal with unsafe behaviour in accordance with the responsibilities of the job role and workplace procedures						
5.3	Resolve day-to-day problems within their responsibility						
5.4	Refer matters outside their responsibility to the designated people						
Type of evidence →							

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

<b>6. Demonstrate general knowledge and understanding for utilities network construction operations</b>		PRN
6.1	State the main responsibilities of the employer and employee under the Health and Safety at Work Act	
6.2	State the health and safety guidance governing work in excavations	
6.3	Describe the safe procedures for handling hazardous materials	
6.4	Explain their organisational accident recording and reporting procedures	
6.5	List the range and use of personal protective equipment (PPE) for the work	

<b>7. Demonstrate knowledge of legislation, regulations, procedures and company policies relating to health and safety</b>		PRN
7.1	Outline their duties for health and safety as defined by: <ul style="list-style-type: none"> <li>any specific legislation covering the job role</li> <li>specific responsibilities and scope in their job description</li> </ul>	

7.2	Outline the workplace policies and health and safety requirements for dealing with <b>potential risks</b>	
7.3	Outline the procedures to be followed in the event of an <b>emergency</b>	
7.4	Outline the information that is provided to other people relating to health, safety and hygiene	
7.5	Outline the organisations confidentiality policies	
7.6	Outline the workplace policies and health and safety requirements for dealing with potential risks	

## Range

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

**Emergency:** toxic fumes, accidents, major accidents, electrocutions, dangerous occurrences, flooding, environmental pollution, trench collapse

<b>8. Demonstrate knowledge and understanding of the principles and application of risk assessment</b>		<b>PRN</b>
8.1	Explain when to carry out health and safety checks	
8.2	Describe how to carry out and review site-specific risk assessments	
8.3	Explain the importance of remaining alert to the presence of hazards in the whole workplace	
8.4	Describe the hazards that may exist in their own workplace and how to assess them	
8.5	Describe how work activities can turn a relatively safe excavation into a confined space, and the implications of this	
8.6	Describe those aspects of the workplace that could harm themselves or others	

<b>9. Demonstrate knowledge and understanding of maintaining the safety and security of plant, equipment and the working environment</b>		<b>PRN</b>
9.1	Outline the requirements of health and safety specifications and safe working and hygiene practices for plant, equipment and the working environment	
9.2	Explain how to restore plant, equipment and hazardous locations to conform to health and safety specifications and safe working and hygiene practices	
9.3	Outline the site specifications for entrances to, and exits from, hazardous locations	
9.4	Describe typical and unusual defects and deficiencies with health and safety equipment	
9.5	Explain the procedures to follow when dealing with confined spaces	
9.6	Describe the dangers associated with working in a confined space	
9.7	Outline the monitoring procedures for work that is carried out in a hazardous area	

9.8	Outline the workplace requirements and guidance on precautions to be taken	
9.9	Describe safe working practices	
9.10	Explain how to identify and deal with unsafe behaviour	
9.11	Describe the requirements of the organisation for the safe storage and use of safety clothing and equipment (PPE)	

<b>10. Demonstrate knowledge and understanding of roles and responsibilities in maintaining safety</b>		<b>PRN</b>
10.1	Describe the roles and responsibilities of those involved in maintaining safety	
10.2	Describe their responsibility for correcting risks within the scope of their job role	
10.3	Describe the procedures for dealing with risks that they cannot correct	
10.4	Explain the importance of dealing with, or promptly reporting risks	
10.5	Describe how to resolve misunderstandings	

<b>11. Demonstrate knowledge and understanding of the use and storage of information</b>		<b>PRN</b>
11.1	Explain the importance of checking information received for accuracy, validity and meaning	
11.2	Explain why it is important to interpret instructions accurately	
11.3	Explain how to recognise information that is inaccurate	
11.4	Describe how and when to record verbal, written and computerised information	
11.5	Describe how and when to produce data in text, tabular and graphical formats	
11.6	Describe how to interpret data from text, tabular and graphical formats	
11.7	Explain how to use the required data storage systems	
11.8	Explain why it is important to store information and documentation in the correct location	
11.9	Outline the organisational requirements for storing information and documentation	
11.10	Explain the use of information during water network construction, including: <ul style="list-style-type: none"> <li>• what types of information are used</li> <li>• the sources that they use in their role</li> <li>• how the information is used</li> <li>• the implications of its use</li> </ul>	
11.11	Explain the importance of providing accurate information in a fit-for-purpose format, within identified timescales	
11.12	Explain the purpose of data audit trails, and how to use and maintain them	

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



**Unit 221**

**Joint materials by butt fusion processes above 315mm for utilities network construction**

**Unit aim:**

This unit allows you to show that you have the skills and knowledge to carry out butt fusion jointing on polyethylene pipes with a diameter of more than 315 mm (300 mm nominal bore).

You must show that you can make butt fusion joints, using non-automatic and automatic machines, on parent materials with the same SDR rating and polymer type. You must be able to carry out butt fusion jointing in all weather conditions, according to industry standards and specifications.

You must show that you can communicate information to the relevant people and organisations throughout the operation, and must resolve or refer problems that arise during the work in line with your responsibility.

Where job was done	Time taken (hours)	Date

## Unit 221

## Joint materials by butt fusion processes above 315mm for utilities network construction

Performance evidence required	Portfolio Reference Number (PRN)								
<b>1. Make joints using butt fusion techniques on pipe with diameter over 315mm</b>									
1.1	Work safely and ensure compliance with health, safety, environment and other regulations and guidelines								
1.2	Carry out a site-specific risk assessment, and review it in accordance with company procedures								
1.3	Select and wear the designated personal protective equipment (PPE)								
1.4	Follow the job instructions and procedures accurately to prepare and make joints								
1.5	Check and confirm that joint preparation: <ul style="list-style-type: none"> <li>• complies with the specification</li> <li>• meets quality requirements</li> </ul>								
1.6	Check that the jointing and related equipment and consumables are as specified and fit for purpose								
1.7	Provide adequate weather protection during the entire jointing cycle								
1.8	Carry out and monitor the machine operations in line with specifications and job instructions								
1.9	Make butt joints of the required quality and specified dimensional accuracy								
1.10	De-bead and carry out the approved quality assurance test on the bead								
1.11	Mark the joint and bead in line with company procedures to ensure that they are identifiable								
1.12	Shut down the equipment to a safe condition on completion of jointing activities								
1.13	Deal promptly with excess and waste materials and temporary attachments, in line with approved and agreed procedures								
Type of evidence →									

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

Performance evidence required		Portfolio Reference Number (PRN)					
<b>2. Use and communicate data and information</b>							
2.1	Follow all <b>approved procedures and practices</b> and statutory and regulatory requirements involved in the work activity						
2.2	Check with designated personnel any circumstances where information appears incorrect						
2.3	Use organisational information systems to record and store data and information						
2.4	Follow all lone working procedures when working alone						
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:** environmental, statutory, regulatory, emergency, operational, health and safety, organisational and company procedures, risk assessments, lifting and handling

Performance evidence required		Portfolio Reference Number (PRN)					
<b>3. Resolve problems which could arise from jointing materials</b>							
3.1	Report damage to tools, equipment or materials promptly to the designated person						
3.2	Resolve day-to-day problems within their responsibility						
3.3	Refer matters that are outside their responsibility to the designated people using approved procedures						
3.4	Deal with emergency situations where they arise						
Type of evidence →							

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

4. Demonstrate general knowledge and understanding for utilities network construction operations		PRN
4.1	State the main responsibilities of the employer and employee under the Health and Safety at Work Act	
4.2	State the Health and Safety guidance governing work in excavations	
4.3	Describe the safe procedures for handling hazardous materials	
4.4	Explain their organisation accident recording and reporting procedures	
4.5	State the range and use of personal protective equipment required for the work	

<b>5. Demonstrate knowledge and understanding of butt fusion jointing</b>		<b>PRN</b>
5.1	State the health, safety and environment legislation and environmental procedures that relate to the work activities	
5.2	Describe the correct manual handling procedures to be used during butt fusion jointing	
5.3	Outline the industry codes of practice and company procedures relating to butt fusion jointing	
5.4	Explain why only pipes of similar specifications can be joined together	
5.5	Explain how to interpret engineering specifications that are relevant to the jointing activity	
5.6	Describe the different stages that take place during the butt fusion jointing process	
5.7	Explain the importance of allowing each stage of the butt fusion process to complete	
5.8	Explain why pipe support and alignment are needed	
5.9	Describe the consequences of poor pipe support and misalignment	
5.10	Explain the causes and effects of defects and contamination, including: <ul style="list-style-type: none"> <li>• misalignment split defects</li> <li>• inadequate bead</li> <li>• excessive bead</li> <li>• pipe specifications</li> <li>• compatibility</li> <li>• different types of materials and consumables</li> </ul>	
5.11	Describe the maintenance procedures that must be followed for butt fusion activities	
5.12	Describe how equipment must be calibrated for butt fusion activities	
5.13	Describe the consequences of poor maintenance	
5.14	Describe the different quality assurance procedures that can be applied to recognise jointing defects, including: <ul style="list-style-type: none"> <li>• destructive testing</li> <li>• non-destructive testing</li> </ul>	
5.15	Outline the correct reporting procedures used for butt fusion activities	

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

**Unit 222**

**Joint materials by butt fusion processes between 180mm and 315mm for utilities network construction**

**Unit aim:**

This unit allows you to show that you have the skills and knowledge to carry out butt fusion jointing on polyethylene pips with a diameter of between 180mm and 315 mm (150mm 300mm nominal bore).

You must show that you can make butt fusion joints, using non automatic and automatic machines, on parent materials with the same SDR rating and polymer type. You must be able to carry out butt fusion jointing in all weather conditions, according to industry standards and specifications. You must show that you can communicate information to the relevant people and organisations throughout the operation and must resolve or refer problems that arise during jointing in line with your job responsibilities.

Where job was done	Time taken (hours)	Date

## Unit 222

# Joint materials by butt fusion processes between 180mm and 315mm for utilities network construction

Performance evidence required	Portfolio Reference Number (PRN)						
<b>1. Make butt fusion joints on pipe with diameter between 180mm and 315mm</b>							
1.1	Work safely and ensure compliance with health, safety, environment and other regulations and guidelines						
1.2	Carry out a site-specific risk assessment, and review it in accordance with company procedures						
1.3	Select and wear the designated Personal Protective Equipment (PPE)						
1.4	Follow the job instructions and procedures accurately to prepare and make joints						
1.5	Check and confirm that joint preparation: <ul style="list-style-type: none"> <li>• complies with specification</li> <li>• meets quality requirements</li> </ul>						
1.6	Check that the jointing and related equipment and consumables are as specified and fit for purpose						
1.7	Provide adequate weather protection during the entire jointing cycle						
1.8	Carry out and monitor the machine operations in line with specifications and job instructions						
1.9	Make butt joints of the required quality and specified dimensional accuracy						
1.10	De-bead and carry out the approved quality assurance test on the bead						
1.11	Mark the joint and bead in line with company procedures to ensure that they are identifiable						
1.12	Shut down the equipment to a safe condition on completion of jointing activities						
1.13	Deal promptly with excess and waste materials and temporary attachments, in line with approved and agreed procedures						
Type of evidence →							

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

Performance evidence required		Portfolio Reference Number (PRN)					
<b>2. Use and communicate data and information</b>							
2.1	Follow all <b>approved procedures and practices</b> and statutory and regulatory requirements involved in the work activity						
2.2	Check with designated personnel any circumstances where information appears incorrect						
2.3	Use organisational information systems to record and store data and information						
2.4	Follow all lone working procedures when working alone						
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:** environmental, statutory, regulatory, emergency, operational, health and safety, organisational and company procedures, risk assessments, lifting and handling

Performance evidence required		Portfolio Reference Number (PRN)					
<b>3. Resolve problems which could arise from jointing materials</b>							
3.1	Report damage to tools, equipment or materials promptly to the designated person						
3.2	Resolve day-to-day problems within their responsibility						
3.3	Refer matters that are outside their responsibility to the designated people using approved procedures						
3.4	Deal with emergency situations where they arise						
Type of evidence →							

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

4. Demonstrate general knowledge and understanding for utilities network construction operations		PRN
4.1	State the main responsibilities of the employer and employee under the Health and Safety at Work Act	
4.2	State the health and safety guidance governing work in excavations	
4.3	Describe the safe procedures for handling hazardous materials	
4.4	Explain their organisational accident recording and reporting procedures	
4.5	State the range and use of personal protective equipment required for the work	

<b>5. Demonstrate knowledge and understanding of butt fusion jointing</b>		<b>PRN</b>
5.1	State the health, safety and environment legislation and environmental procedures that relate to the work activities	
5.2	Describe the correct manual handling procedures to be used during butt fusion jointing	
5.3	Outline the industry codes of practice and company procedures relating to butt fusion jointing	
5.4	Explain why only pipes of similar specifications can be joined together	
5.5	Explain how to interpret engineering specifications that are relevant to the jointing activity	
5.6	Describe the different stages that take place during the butt fusion jointing process	
5.7	Explain the importance of allowing each stage of the butt fusion process to complete	
5.8	Explain why pipe support and alignment are needed	
5.9	Describe the consequences of poor pipe support and misalignment	
5.10	Explain the causes and effects of defects and contamination: <ul style="list-style-type: none"> <li>• misalignment split defects</li> <li>• inadequate bead</li> <li>• excessive bead</li> <li>• pipe specifications</li> <li>• compatibility</li> <li>• different types of materials and consumables</li> </ul>	
5.11	Describe the maintenance procedures that must be followed for butt fusion activities	
5.12	Describe how equipment must be calibrated for butt fusion activities	
5.13	Describe the consequences of poor maintenance	
5.14	Describe the different quality assurance procedures that can be applied to recognise jointing defects, including: <ul style="list-style-type: none"> <li>• destructive testing</li> <li>• non-destructive testing</li> </ul>	
5.15	Outline the correct reporting procedures used for butt fusion activities	

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



# Unit 223

# Joint materials by mechanical means on water network construction

**Unit aim:**

This unit allows you to show that you have the skills and knowledge to assemble pipes and fittings for water network construction operations, using mechanical joints.

You will be able to use a variety of assembly methods and techniques, including cutting and mechanical jointing on metallic materials. You will also be able to cover transition jointing between metallic and polyethylene materials using mechanical fittings. You must also show that you can communicate information to the relevant people and organisations throughout mechanical joining activities, and must resolve or refer problems that arise during the work in line with your job responsibility. Throughout the operation, you must follow the work specification and Codes of Practice, and must maintain safe working and hygiene procedures.

Where job was done	Time taken (hours)	Date
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

## Unit 223

# Joint materials by mechanical means on water network construction

Performance evidence required		Portfolio Reference Number (PRN)						
<b>1. Joint materials by assembling</b>								
1.1	Work safely at all times in accordance with health, safety and environment requirements and legislation							
1.2	Carry out a site-specific risk assessment, and review in accordance with company procedures							
1.3	Select and wear the appropriate Personal Protective Equipment (PPE)							
1.4	Assemble and position the <b>joint</b> components using and following assembly drawing and work instructions							
1.5	Ensure that the <b>joint</b> components to be assembled meet the manufacturer's specifications and operating and performance standards							
1.6	Secure the <b>joint</b> components using connectors and securing devices in accordance with component specifications and work instructions							
1.7	Check to make sure that the finished <b>joint</b> assembly is complete and meets its operating requirements							
1.8	Carry out work in accordance with company procedures							
Type of evidence →								

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

### Range

**Joint:** flanged, flexible, metallic pipes, non-metallic pipes

Performance evidence required		Portfolio Reference Number (PRN)						
<b>2. Use and communicate data and information</b>								
2.1	Follow all approved procedures and practices involved in the work activity							
2.2	Check with designated personnel any circumstances where information appears correct							
2.3	Use organisational information systems to record and store data and information							
2.4	Follow all lone working procedures when working alone							
Type of evidence →								

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

<b>Performance evidence required</b>	Portfolio Reference Number (PRN)						
<b>3. Resolve problems which arise when performing jointing activities</b>							
3.1	Deal with problems within the limits of their responsibility						
3.2	Report problems that are outside the responsibility of their job role to the designated person						
Type of evidence →							

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

<b>4. Demonstrate general knowledge and understanding for utilities network construction operations</b>		<b>PRN</b>
4.1	State the main responsibilities of the employer and employee under the Health and Safety at Work Act	
4.2	State the health and safety guidance governing work in excavations	
4.3	Describe the safe procedures for handling hazardous materials	
4.4	Explain their organisational accident recording and reporting procedures	
4.5	List the range and use of personal protective equipment for the work	

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

## Range

**Specific work activities:** manual handling, the provision and use of equipment, hygiene and health checks, working with or near hazardous materials, personal protection, accident reporting, working in excavations

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

**Unit 224**

**Install water services up to 50mm nominal bore or 63mm polyethylene**

This unit allows you to show that you have the skills and knowledge to install water services up to 50mm nominal bore (63mm PE).

You will be able to interpret technical information and specifications and prepare the resources necessary to install the system, and must install the various components required in line with the specification and relevant company procedures. You must record and report information about the job to the relevant people, and must resolve or refer problems that arise during the work inline with your job responsibility. Throughout the operation, you must follow the work specification and Codes of Practice, and must maintain safe working and hygiene procedures.

<b>Where job was done</b>	<b>Time taken (hours)</b>	<b>Date</b>

## Unit 224

# Install water services up to 50mm nominal bore or 63mm polyethylene

Performance evidence required	Portfolio Reference Number (PRN)						
<b>1. Interpret technical information for installing water services</b>							
1.1	Use drawings, records, work documents, manuals and technical specifications to provide work details for <b>component</b> installation						
1.2	Use the <b>technical information</b> to confirm dimensions, lengths, widths and quantities required						
1.3	Use the <b>technical information</b> to determine the positions of utilities plant, services, buildings, kerbs and boundaries						
1.4	Where discrepancies occur, ensure that necessary corrections are made or communicated to those who need to know						
Type of evidence →							

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

### Range

**Component:** ferrule or tapping tee, pipe, joints, meter

**Technical information:** job progress, discrepancies or deficiencies, work instructions, problems outside own responsibility

Performance evidence required	Portfolio Reference Number (PRN)						
<b>2. Select water service components and resources for installation of the system</b>							
2.1	Select the <b>components</b> in accordance with work and quality specifications						
2.2	Ensure <b>components</b> are in good condition and are fit for purpose						
2.3	Follow procedures to ensure that defective, non-matching or sub-standard <b>components</b> are replaced						
2.4	Ensure that sufficient quantities of suitable tools, plant and equipment are available, checked and fit for purpose						
2.5	Ensure there is sufficient competent labour to carry out the work effectively and safely						
2.6	Deal promptly and effectively with actual and predicted changes to the planned use of the resources						
Type of evidence →							

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

## Range

**Component:** ferrule or tapping tee, pipe, joints, meter

Performance evidence required	Portfolio Reference Number (PRN)						
<b>3. Install components of the system</b>							
3.1	Determine the method to be used for installing <b>water services</b>						
3.2	Carry out a site-specific risk assessment and review in accordance with company policy						
3.3	Select and wear the designated personal protective equipment (PPE)						
3.4	Check and confirm the condition of the excavation conforms with instructions and specifications						
3.5	Select, prepare and operate installation equipment in accordance with the specification and manufacturer's instructions						
3.6	Position <b>components</b> in accordance with the specification						
3.7	Assemble <b>components</b> to industry standards using appropriate <b>jointing techniques</b>						
3.8	Take adequate precautions to prevent damage to <b>components</b> , tools and equipment during installation						
3.9	Protect installed assets and other utilities using appropriate <b>protective techniques</b>						
3.10	Make connect to the water main using appropriate drilling and tapping techniques and equipment						
3.11	Check the quality of the installation and confirm compliance with the specified standard						
3.12	Maintain the security and safety of the site, job and third parties at all times						
3.13	Ensure <b>safe working procedures</b> are followed throughout the work activities						
Type of evidence →							

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

## Range

**Water services:** polyethylene (PE), iron, UPVC

**Component:** ferrule or tapping tee, pipe, joints, meter

**Jointing techniques:** mechanical, fusion, push-fit

**Protective techniques:** using particular types of backfill materials, support, thrust protection, re-routing activities

**Safe working procedures:** risk assessment, site safety and security, lone working, personal protection, working in excavations, working at height, provision and use of tools and equipment, permit to work systems, hygiene procedures, hazardous materials, accident reporting, lifting and handling

Performance evidence required		Portfolio Reference Number (PRN)						
<b>4. Use and communicate data and information</b>								
4.1	Provide <b>technical information</b> using appropriate verbal and written <b>communication techniques</b>							
4.2	Ensure recipients have received and understood the information							
4.3	Report any inaccuracies in the <b>technical information</b> sources used to the designated person							
4.4	Complete work documentation accurately and record it in the specified place or pass to a designated person							
4.5	Follow the correct procedures if working on a 'Permit to Work' activity							
Type of evidence →								

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

### Range

**Technical information:** job progress, discrepancies or deficiencies, work instructions, problems outside own responsibility

**Communication techniques:** written, spoken face to face, spoken via telephone

Performance evidence required		Portfolio Reference Number (PRN)						
<b>5. Resolve problems that arise from technical information and installation work</b>								
5.1	Report any damage or defects to tools, equipment or materials to the designated person							
5.2	Report work which is incomplete and not to schedule to the designated person							
5.3	Refer problems and conditions outside their responsibility to the designated person							
Type of evidence →								

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

<b>6. Demonstrate general knowledge and understanding for utilities network construction operations</b>		<b>PRN</b>
6.1	State the main responsibilities of the employer and employee under the Health and Safety at Work Act	
6.2	State the health and safety guidance governing work in excavations	
6.3	Describe the safe procedures for handling hazardous materials	
6.4	Explain their organisational accident recording and reporting procedures	
6.5	List the range and use personal protective equipment for the work	

<b>7. Demonstrate knowledge and understanding of installing water services</b>		<b>PRN</b>
7.1	Explain the importance of carrying out on-site risk assessments and implementing safe systems of work and the need for constant review	
7.2	Explain the importance of understanding and implementing a Safe System Of Work (SSOW) document when working in excavations	
7.3	Outline the organisation's policy and procedure for meeting relevant statutory requirements, regulations and Codes of Practice	
7.4	Describe the factors that affects the suitability of excavations, and how to confirm that an excavation is suitable	
7.5	Describe situations where particular authorisations are required before undertaking work	
7.6	Explain the implications of not obtaining the required authorisations before undertaking work	
7.7	Explain the potential dangers of working in trenches and holes	
7.8	Outline the main responsibilities of employers and employees under the current working at height regulations	
7.9	Explain the dangers of taking actions that can create confined spaces risks in excavations	
7.10	Describe the implications of using incorrect plant, tools , materials and system <b>components</b>	
7.11	State the actions to be taken where plant, tools, materials and system <b>components</b> fail to meet required specification	
7.12	Describe situations where service pipe installation can go wrong and suitable actions available rectify them	
7.13	Describe how to access information from reference documents, Regulations and Codes of Practice	
7.14	Describe the range of actions to be taken if work cannot proceed to schedule	
7.15	Explain how to determine appropriate safe remedial action if work cannot proceed	
7.16	Describe the types and causes of disruption that can occur when installing <b>water service</b> pipes, and how to avoid them	
7.17	Describe the dangers of using inadequate handling and lifting procedures	
7.18	Describe the types and signs of defect likely to be encountered when installing <b>water services</b>	



7.19	Explain how to determine the correct, and safe, action to take to resolve defects encountered during installation of <b>water services</b>	
7.20	Explain the importance of compliance with current industry standards	

**Range**

**Component:** ferrule or tapping tee, pipe, joints, meter

**Water services:** polyethylene (PE), iron, UPVC

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

## Unit 226

# Install water mains from 150mm-300mm nominal bore or 180mm-315mm polyethylene

### Unit aim:

This unit allows you to show that you have the skills and knowledge to install water mains using pipes with diameters of 150-300mm nominal bore (180-315mm PE).

You will be able to interpret technical information and specifications and prepare the resources necessary to install the system, and must install the various components required in line with the specification and relevant company procedures. You must record and report information about the job to the relevant people, and must resolve or refer problems that arise during the work in line with your job responsibility. Throughout the operation, you must follow the work specification and Codes of Practice, and must maintain safe working and hygiene procedures.

Where job was done	Time taken (hours)	Date

## Unit 226

# Install water mains from 150mm-300mm nominal bore or 180mm-315mm polyethylene

Performance evidence required	Portfolio Reference Number (PRN)						
<b>1. Interpret technical information for installing water mains</b>							
1.1	Use drawings, records, work documents, manuals and technical specifications to provide work details for <b>component</b> installation						
1.2	Use the <b>technical information</b> to confirm dimensions, lengths. Widths and quantities required						
1.3	Use the <b>technical information</b> to determine the positions of utilities plant, services, buildings, kerbs and boundaries						
1.4	Where discrepancies occur, ensure that necessary corrections are made or communicated to those who need to know						
Type of evidence →							

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

### Range

**Component:** pipe, joints, valves and hydrants

**Technical information:** job progress, discrepancies or deficiencies, work instructions, problems outside own responsibilities, requirements for mains shut downs

Performance evidence required	Portfolio Reference Number (PRN)						
<b>2. Select water main components and resources for installation of the system</b>							
2.1	Select the <b>components</b> in accordance with work and quality specifications						
2.2	Ensure <b>components</b> are in good condition and are fit for purpose						
2.3	Follow procedures to ensure that defective, non-matching or sub-standard components are replaced						
2.4	Ensure that sufficient quantities of suitable <b>tools, plant and equipment</b> are available, checked and fit for purpose						
2.5	Ensure there is sufficient competent labour to carry out the work effectively and safely						
2.6	Deal promptly and effectively with actual and predicted changes to the planned use of the resources						
Type of evidence →							

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

## Range

**Component:** pipe, joints, valves and hydrants

**Tools, plant and equipment:** pipe cutting, pipe jointing, pumping, lifting, pipes and fittings

Performance evidence required	Portfolio Reference Number (PRN)							
<b>3. Install components of the water main</b>								
3.1	Determine the mains installation method to be used							
3.2	Carry out a site-specific risk assessment and review in accordance with company policy							
3.3	Select and wear the designated Personal Protective Equipment (PPE)							
3.4	Check and confirm the condition of the excavation conforms with instructions and specifications							
3.5	Where lifting machinery is involved, ensure a safe system of work is in place and communicated							
3.6	Select, prepare and operate installation equipment in accordance with the specification and manufacturer's instructions							
3.7	Position <b>components</b> in accordance with the specification							
3.8	Assemble <b>components</b> to industry standards using appropriate <b>jointing techniques</b>							
3.9	Take adequate precautions to prevent damage to <b>components</b> , tools and equipment during installation							
3.10	Protect installed assets and other utilities using appropriate <b>protective techniques</b>							
3.11	Make connection to the <b>existing water main</b> using appropriate connection techniques							
3.12	Complete the connection in the specified time frame							
3.13	Check the quality of the installation and confirm compliance with the specified standard							
3.14	Install all chambers covers and associated ancillary items in accordance with specifications							
3.15	Maintain the security and safety of the site, job and third parties at all times							
3.16	Ensure <b>safe working procedures</b> are followed throughout the work activities							
Type of evidence →								

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

## Range

**Component:** pipe, joints, valves and hydrants

**Jointing techniques:** mechanical flexible, mechanical flanged, butt fusion, electrofusion, push fit.

**Protective techniques:** using particular types of backfill materials, support, thrust protection, re-routing activities

**Existing water main:** iron, UPVC, asbestos cement

**Safe working procedures:** risk assessment, site safety and security, lone working, personal protection, working in excavations, working at height, provision and use of tools and equipment, permit to work systems, hygiene procedures, hazardous materials, accident reporting, lifting and handling

Performance evidence required		Portfolio Reference Number (PRN)					
<b>4. Use and communicate data and information</b>							
4.1	Provide <b>technical information</b> using appropriate verbal and written <b>communication techniques</b>						
4.2	Ensure recipients have received and understood the information						
4.3	Report any inaccuracies in the <b>technical information</b> sources used to the designated person						
4.4	Complete work documentation accurately and record it in the specified place or pass to a designated person						
4.5	Follow the correct procedures if working on a 'Permit to Work' activity						
Type of evidence →							

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

**Range**

**Technical information:** job progress, discrepancies or deficiencies, work instructions, problems outside own responsibilities, requirements for mains shut downs

**Communication techniques:** written, spoken face to face, spoken via telephone hand signals

Performance evidence required		Portfolio Reference Number (PRN)					
<b>5. Resolve problems that arise from technical information and installation</b>							
5.1	Report any damage or defects to tools, equipment and materials to the designated person						
5.2	Report work which is incomplete and not to schedule to the designated person						
5.3	Refer problems and conditions outside their responsibility to the designated person						
Type of evidence →							

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

<b>6. Demonstrate general knowledge and understanding for utilities network construction operations</b>		<b>PRN</b>
6.1	State the main responsibilities of the employer and employee under the Health and Safety at Work Act	
6.2	State the health and safety guidance governing work in excavations	
6.3	Describe the safe procedures for handling hazardous materials	
6.4	Explain their organisational accidents recording and reporting procedures	
6.5	List the range and use of personal protective equipment for the work	

<b>7. Demonstrate knowledge and understanding of installing water mains</b>		<b>PRN</b>
7.1	Explain the importance of carrying out on-site risk assessments and implementing safe systems of work and the need for constant review	
7.2	Explain the importance of understanding and implementing a Safe System Of Work (SSOW) document when working in excavations	
7.3	Outline the organisations policy and procedures for meeting relevant statutory requirements, regulations and Codes of Practice	
7.4	Describe the factors that affect the suitability of excavations, and how to confirm that and excavation is suitable	
7.5	Describe situations where particular authorisations are required before undertaking work	
7.6	Explain the implications of not obtaining the required authorisation before undertaking work	
7.7	Explain the potential dangers of working in trenches and holes	
7.8	Outline the main responsibilities of the employer and employees under the current working at height regulations	
7.9	Explain the dangers of taking actions that can create confined spaces risks in excavations	
7.10	Describe the implications of using incorrect plant, tools, materials and system components	
7.11	State the actions to be taken where plant, tools, materials and system components fail to meet required specifications	
7.12	Describe situations where mains installation can go wrong and suitable actions available to rectify them	
7.13	Describe how to access information from reference documents, Regulations and Codes of Practice	
7.14	Describe the range of actions to be taken if work cannot proceed to schedule	
7.15	Explain how to determine appropriate safe remedial action if work cannot proceed	
7.16	Describe the types and causes of disruption that can occur when installing water mains, and how to avoid them	
7.17	Describe the dangers of using inadequate handling and lifting procedures	
7.18	Describe the types and signs of defect likely to be encountered when installing water mains	

7.19	Explain how to determine the correct, and safe, action to take to resolve defects encountered during installation of water mains	
7.20	Explain the importance of compliance with current industry standards	

**Range**

**Component:** pipe, joints, valves and hydrants

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

**Unit 227**

**Install water mains above 300mm nominal bore or 315mm polyethylene**

**Unit aim:**

This unit allows you to show that you have the skills and knowledge to install water mains using pipes above 300mm nominal bore (315mm PE).

You will be able to interpret technical information and specifications and prepare the resources necessary to install the system, and must install the various components required in line with the specification and relevant company procedures. You must record and report information about the job to the relevant people, and must resolve or refer problems that arise during the work in line with your job responsibility. Throughout the operation, you must follow the work specification and Codes of Practice, and must maintain safe working and hygiene procedures.

Where job was done	Time taken (hours)	Date



## Unit 227

# Install water mains above 300mm nominal bore or 315mm polyethylene

Performance evidence required	Portfolio Reference Number (PRN)						
<b>1. Interpret technical information for installing water mains</b>							
1.1	Use drawings, records, work documents, manuals and technical specifications to provide work details for <b>component</b> installation						
1.2	Use the <b>technical information</b> to confirm dimensions, lengths. Widths and quantities required						
1.3	Use the <b>technical information</b> to determine the positions of utilities plant, services, buildings, kerbs and boundaries						
1.4	Where discrepancies occur, ensure that necessary corrections are made or communicated to those who need to know						
Type of evidence →							

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

### Range

**Component:** pipe, joints, valves and hydrants

**Technical information:** job progress, discrepancies or deficiencies, work instructions, problems outside own responsibilities, requirements for mains shut downs

Performance evidence required	Portfolio Reference Number (PRN)						
<b>2. Select water main components and resources for installation of the system</b>							
2.1	Select the <b>components</b> in accordance with work and quality specifications						
2.2	Ensure <b>components</b> are in good condition and are fit for purpose						
2.3	Follow procedures to ensure that defective, non-matching or sub-standard components are replaced						
2.4	Ensure that sufficient quantities of suitable <b>tools, plant and equipment</b> are available, checked and fit for purpose						
2.5	Ensure there is sufficient competent labour to carry out the work effectively and safely						
2.6	Deal promptly and effectively with actual and predicted changes to the planned use of the resources						
Type of evidence →							

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

**Range**

**Component:** pipe, joints, valves and hydrants

**Tools, plant and equipment:** pipe cutting, pipe jointing, pumping, lifting, pipes and fittings

Performance evidence required	Portfolio Reference Number (PRN)						
<b>3. Install components of the water main</b>							
3.1	Determine the mains installation method to be used						
3.2	Carry out a site-specific risk assessment and review in accordance with company policy						
3.3	Select and wear the designated Personal Protective Equipment (PPE)						
3.4	Check and confirm the condition of the excavation conforms with instructions and specifications						
3.5	Where lifting machinery is involved, ensure a safe system of work is in place and communicated						
3.6	Select, prepare and operate installation equipment in accordance with the specification and manufacturer's instructions						
3.7	Position <b>components</b> in accordance with the specification						
3.8	Assemble <b>components</b> to industry standards using appropriate <b>jointing techniques</b>						
3.9	Take adequate precautions to prevent damage to <b>components</b> , tools and equipment during installation						
3.10	Protect installed assets and other utilities using appropriate <b>protective techniques</b>						
3.11	Make connection to the <b>existing water main</b> using appropriate connection techniques						
3.12	Complete the connection in the specified time frame						
3.13	Check the quality of the installation and confirm compliance with the specified standard						
3.14	Install all chambers covers and associated ancillary items in accordance with specifications						
3.15	Maintain the security and safety of the site, job and third parties at all times						
3.16	Ensure <b>safe working procedures</b> are followed throughout the work activities						
Type of evidence →							

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

**Range**

**Component:** pipe, joints, valves and hydrants

**Jointing techniques:** mechanical flexible, mechanical flanged, butt fusion, electrofusion, push fit

**Protective techniques:** using particular types of backfill materials, support, thrust protection, re-routing activities

**Existing water main:** iron, UPVC, asbestos cement

**Safe working procedures:** risk assessment, site safety and security, lone working, personal protection, working in excavations, working at height, provision and use of tools and equipment, permit to work systems, hygiene procedures, hazardous materials, accident reporting, lifting and handling

Performance evidence required		Portfolio Reference Number (PRN)					
<b>4. Use and communicate data and information</b>							
4.1	Provide <b>technical information</b> using <b>communication techniques</b> that are appropriate to the type of information provided and the way it will be used						
4.2	Use appropriate <b>communication techniques</b> on site where noise and visibility may be compromised						
4.3	Ensure recipients have received and understood the <b>technical information</b>						
4.4	Report any inaccuracies in the <b>technical information</b> sources used to the designated person						
4.5	Complete work documentation accurately and record it in the specified place or pass to a designated person						
4.6	Follow the correct procedures if working on a 'Permit to Work' activity						
Type of evidence →							

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

**Range**

**Technical information:** job progress, discrepancies or deficiencies, work instructions, problems outside own responsibilities, requirements for mains shut downs

**Communication techniques:** written, spoken face to face, spoken via telephone hand signals.

Performance evidence required		Portfolio Reference Number (PRN)					
<b>5. Resolve problems that arise from technical information and installation work</b>							
5.1	Report any damage or defects to tools, equipment and materials to the designated person						
5.2	Report work which is incomplete and not to schedule to the designated person						
5.3	Refer problems and conditions outside their responsibility to the designated person						
Type of evidence →							

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

<b>6. Demonstrate general knowledge and understanding for utilities network construction operations</b>		<b>PRN</b>
6.1	State the main responsibilities of the employer and employee under the Health and Safety at Work Act	
6.2	State the health and safety guidance governing work in excavations	
6.3	Describe the safe procedures for handling hazardous materials	
6.4	Explain their organisational accidents recording and reporting procedures	
6.5	List the range and use of personal protective equipment for the work	

<b>7. Demonstrate knowledge and understanding of installing water mains</b>		<b>PRN</b>
7.1	Explain the importance of carrying out on-site risk assessments and implementing safe systems of work and the need for constant review	
7.2	Explain the importance of understanding and implementing a Safe System Of Work (SSOW) document when working in excavations	
7.3	Outline the organisations policy and procedures for meeting relevant statutory requirements, regulations and Codes of Practice	
7.4	Describe the factors that affect the suitability of excavations, and how to confirm that and excavation is suitable	
7.5	Describe situations where particular authorisations are required before undertaking work	
7.6	Explain the implications of not obtaining the required authorisation before undertaking work	
7.7	Explain the potential dangers of working in trenches and holes	
7.8	Outline the main responsibilities of the employer and employees under the current working at height regulations	
7.9	Explain the dangers of taking actions that can create confined spaces risks in excavations	
7.10	Describe the implications of using incorrect plant, tools, materials and system <b>components</b>	
7.11	State the actions to be taken where plant, tools, materials and system <b>components</b> fail to meet required specifications	
7.12	Describe situations where mains installation can go wrong and suitable actions available to rectify them	
7.13	Describe how to access information from reference documents, Regulations and Codes of Practice	
7.14	Describe the range of actions to be taken if work cannot proceed to schedule	
7.15	Explain how to determine appropriate safe remedial action if work cannot proceed	
7.16	Describe the types and causes of disruption that can occur when installing water mains, and how to avoid them	
7.17	Describe the dangers of using inadequate handling and lifting procedures	
7.18	Describe the types and signs of defect likely to be encountered when	

	installing water mains	
7.19	Explain how to determine the correct, and safe, action to take to resolve defects encountered during installation of water mains	
7.20	Explain the importance of compliance with current industry standards	

**Range**

**Component:** pipe, joints, valves and hydrants

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

**Unit 228**

**Conduct pressure and soundness testing of water network engineering products or assets**

**Unit aim:**

This unit allows you to show that you have the skills and knowledge to remove excess air from the system, pressure test and flush mains or services in line with industry standards and requirements.

You will be able to ensure that tests are conducted and recorded in line with the quality assurance requirements of the organisation. You must understand and apply the safety requirements needed to carry out test activities and procedures. You must record and report information about testing activities to the relevant people, and must resolve or refer problems that arise during the work in line with your job responsibility. Throughout the operation, you must follow the work specification, and must maintain safe working procedures.

Where job was done	Time taken (hours)	Date

Performance evidence required	Portfolio Reference Number (PRN)								
<b>1. Perform pressure testing activities</b>									
1.1	Work safely in accordance with health and safety and environment regulations and legislation								
1.2	Carry out a site-specific risk assessment, and review it in accordance with company procedures								
1.3	Select and wear the designated Personal Protective Equipment (PPE)								
1.4	Use all tools and equipment for pressure testing in accordance with work instructions and manufacturer's specifications								
1.5	Remove excess air from the system, and ensure that the system to be tested is isolated								
1.6	Set up the equipment and carry out pressure testing appropriate to the type of pipe material concerned								
1.7	Flush in line with work instructions								
1.8	Record and review test results to establish that the soundness of the system against the performance parameters								
1.9	Confirm that the equipment is functioning in line with system operating requirements and parameters								
1.10	Dispose of waste products in accordance with environmental standards								
1.11	Carry out all work to agreed timescales, and in line with company procedures and safe working and hygiene practices								
Type of evidence →									

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

Performance evidence required	Portfolio Reference Number (PRN)								
<b>2. Use and communicate data and information</b>									
2.1	Follow drawings, plans and specifications for the testing, pressure testing and flushing of engineering products and assets								
2.2	Follow all approved procedures and practices and statutory and regulatory requirements involved in test work activity								
2.3	Record the results of test activity using required reporting systems and documentation to meet company procedures and requirements								
Type of evidence →									

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

WT = Witness testimony

Performance evidence required		Portfolio Reference Number (PRN)					
<b>3. Resolve problems which arise when performing test activities</b>							
3.1	Report damage or defects to test equipment to the designated person						
3.2	Deal promptly and effectively with problems within their control and report those that cannot be solved						
3.3	Refer problems and conditions outside their responsibility to the designated person using approved procedures						
3.4	Deal with any emergencies that may arise						
Type of evidence →							

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

<b>4. Demonstrate general knowledge and understanding for utilities network construction operations</b>		PRN
4.1	State the main responsibilities of the employer and employee under the Health and Safety at Work Act	
4.2	State the health and safety guidance governing work in excavations	
4.3	Describe the main procedures for handling hazardous materials	
4.4	Explain the organisational accident recording and reporting procedures	
4.5	List the range and use of personal protective equipment for the work	

<b>5. Demonstrate knowledge and understanding of conducting specified testing of water engineering products or assets</b>		PRN
5.1	Describe how to carry out <b>testing activities</b> safely and in accordance with all legal and procedural requirements	
5.2	Explain how to interpret drawings, plans and specifications for different test activities and procedures	
5.3	Describe the lines and procedures for reporting problems associated with testing activities, including: <ul style="list-style-type: none"> <li>• standard industry documentation</li> <li>• relevant company procedures</li> </ul>	
5.4	Describe the different types of pressure tests and how they are carried out depending on the pipe materials concerned	
5.5	Describe how to carry out pre-use checks and set up pressure testing equipment	
5.6	Explain the actions required when faults or problems occur with pressure testing equipment or the test itself	
5.7	Explain how the results of the test are recorded and interpreted	
5.8	Explain how air can enter pipe systems and the methods of removing it	
5.9	Explain the calibration requirements for pressure testing equipment	
5.10	Explain the criteria for passing or failing a pressure test and the follow-up actions required in either case	



5.11	Explain the <b>consequence of test failure</b> and the likely remedial activities	
5.12	Explain the consequence of mechanical failures during testing due to the pressure ranges	
5.13	Describe the procedures to follow and documentation to be used to record test results	

### Range

**Testing activities:** personal protection, working in excavations, handling hazardous materials, provision and use of work equipment, accidental reporting

**Consequences of test failure:** the environment, operations, cost, time

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

**Unit 229**

**Restore water network components to operational condition by repair**

**Unit aim:**

This unit allows you to show that you have the skills and knowledge to carry out repairs to components, including the replacement of a short section of main, and fitting external mechanical fittings, both temporary and permanent, on water mains or services.

You must also show that you can communicate information to the relevant people and organisations throughout jointing operations, and that you can resolve or refer problems that arise during the work in line with your job responsibility. Appropriate hygiene procedures must be followed at all times, and the work must be undertaken in line with Codes of Practice, relevant legislation and regulations, and company procedures.

Where job was done	Time taken (hours)	Date

## Unit 229

# Restore water network components to operational condition by repair

Performance evidence required	Portfolio Reference Number (PRN)						
<b>1. Restore components to operational condition</b>							
1.1	Work in accordance with health, safety, environment and hygiene regulations and <b>legislation and procedures</b>						
1.2	Carry out a site specific risk assessment , and review it in accordance with company procedures						
1.3	Select and wear the designated Personal Protective Equipment (PPE)						
1.4	Prepare <b>components</b> for repair						
1.5	Repair <b>components</b> in line with relevant specifications and work instructions						
1.6	Carry out the repairs to agreed timescales using approved materials and <b>components</b>						
1.7	Ensure that repaired <b>components</b> meet the specified operating conditions and parameters						
1.8	Carry out all work in accordance with company procedures						
Type of evidence →							

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

### Range

**Legislation and procedures:** working in deep excavations, personal protection, working with or near hazardous substances, lifting and handling, water supply hygiene, recording and reporting accidents

**Components:** metallic, non-metallic, all ancillary pipes and fittings, taps and valves

Performance evidence required	Portfolio Reference Number (PRN)						
<b>2. Use and communicate data and information</b>							
2.1	Produce accurate and complete records of all repair work carried out						
2.2	Communicate information in a way that meets the requirements of the recipient						
Type of evidence →							

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

Performance evidence required	Portfolio Reference Number (PRN)						
<b>3. Resolve problems which arise when restoring components to operational condition</b>							
3.1	Deal promptly and effectively with problems within their control and report those that cannot be solved						
3.2	Refer problems and conditions outside the responsibility of the job to the designated person using approved procedures						
3.3	Deal with any emergencies that may arise when restoring <b>components</b> to operational condition						
Type of evidence →							

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

### Range

**Components:** metallic, non-metallic, all ancillary pipes and fittings, taps and valves

<b>4. Demonstrate general knowledge and understanding for utilities network construction operations</b>		PRN
4.1	State the main responsibilities of the employer and employee under the Health and Safety at Work Act	
4.2	State the health and safety guidance governing work in excavations	
4.3	Describe the safe procedures for handling hazardous materials	
4.4	Explain their organisational accident recording and reporting procedures	
4.5	List the range and use of personal protective equipment for the work	

<b>5. Demonstrate knowledge and understanding of restoring components to operational condition</b>		PRN
5.1	Outline the health, safety and environment legislation and environmental procedures that apply to restoring <b>components</b> to operational condition, including Codes of Practice and relevant company procedures	
5.2	Explain the importance of following all hygiene procedures	
5.3	Describe how to select the repair technique to use for the specification of the <b>component</b> to be repaired	
5.4	Describe the various <b>components</b> that are in use on the water network	
5.5	Describe the types of tools and equipment to be used when restoring <b>components</b> to operational condition by repair	
5.6	Describe the care and control procedures to be used to ensure compliance with hygiene regulations	
5.7	State the different types of records and documentation that are used to record maintenance activities	

### Range

**Components:** metallic, non-metallic, all ancillary pipes and fittings, taps and valves

**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](http://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](http://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](http://www.cityandguilds.com) or is available from the City & Guilds Customer Relations Team or your centre.

## Appendix 2 Useful contacts

**UK learners**  
**General qualification information**      **T: +44 (0)844 543 0033**  
**E: learnersupport@cityandguilds.com**

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**International learners**  
General qualification information      T: +44 (0)844 543 0033  
F: +44 (0)20 7294 2413  
E: **intcg@cityandguilds.com**

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**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**

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**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**

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**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**

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**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**

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**Employer**  
Employer solutions, Mapping, Accreditation, Development Skills, Consultancy      T: +44 (0)121 503 8993  
E: **business\_unit@cityandguilds.com**

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**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](mailto:feedbackandcomplaints@cityandguilds.com)**

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London  
EC1A 9DD  
T +44 (0)844 543 0033  
F +44 (0)20 7294 2413  
[www.cityandguilds.com](http://www.cityandguilds.com)**

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