ProQual Level 2 NVQ Diploma in Tunnelling Operations (Construction)

Qualification Specification

Contents

Introduction

The Level 2 NVQ Diploma in Tunnelling Operations (Construction) qualification provides a nationally recognised qualification for those working in the construction industry who want to specialise in Tunnelling.

There are 12 pathways available:

Pathway 1: Hand Mining
Pathway 2: Shaft Miner
Pathway 3: Tunnelling Machine Operator
Pathway 4: Machine Tunnelling Operative
Pathway 5: Spoil Removal Conveyor Operative
Pathway 6: Overground Spoil Removal Conveyor Operative
Pathway 7: Tunnelling Operative
Pathway 8: Tunnel Transport Operator
Pathway 9: Tunnel Fitter's or Tunnel Electrician's Mate
Pathway 10: Sprayed Concrete Lining – Tunnelling Nozzleman
Pathway 11: Pipe Jacking, Box Jacking, or Micro-Tunnelling Operative
Pathway 12: Separation Plant Operative

The awarding body for this qualification is ProQual Awarding Body (www.proqualab.com) and the regulatory body is the Office of Qualifications and Examinations Regulation (Ofqual); It is also endorsed by the sector body for construction - CITB.

The qualification has been accredited onto the Regulated Qualifications Framework (RQF) and is published on Ofqual's Register of Qualifications.

Qualification Profile
Level 2 NVQ Diploma in Tunnelling Operations (Construction)

Qualification title	**ProQual Level 2 NVQ Diploma in Tunnelling Operations (Construction)**
Ofqual qualification number	603/0339/6
Level	2
Total qualification time	180 - 1470 (Dependent on Pathway)
Guided learning hours	114 - 741 (Dependent on Pathway)
Assessment	Pass or fail Internally assessed and verified by centre staff External quality assurance by ProQual verifiers
Qualification start date	29/08/2016
Qualification end date	

Entry Requirements

There are no formal entry requirements for this qualification.

Centres should carry out an **initial assessment** of candidate skills and knowledge to identify any gaps and help plan the assessment.

Qualification Structure

Candidates must complete the Mandatory and Optional Unit requirements from one of the Pathways.

Pathway	Minimum TQT
Pathway 1: Hand Mining	1210
Pathway 2: Shaft Miner	710
Pathway 3: Tunnelling Machine Operator	1470
Pathway 4: Machine Tunnelling Operative	760
Pathway 5: Spoil Removal Conveyor Operative	370
Pathway 6: Overground Spoil Removal Conveyor Operative	180
Pathway 7: Tunnelling Operative	400
Pathway 8: Tunnel Transport Operator	450
Pathway 9: Tunnel Fitter's or Tunnel Electrician's Mate	300
Pathway 10: Sprayed Concrete Lining – Tunnelling Nozzleman	1210
Pathway 11: Pipe Jacking, Box Jacking, or Micro-Tunnelling Operative	670
Pathway 12: Separation Plant Operative	500

CITB references are provided in this document for information only.

Pathway 1: Hand Mining

Mandatory Units – candidates must complete all units in this group				
Unit Reference Number	**Unit Title**	**Unit Level**	**GLH**	***CITB Ref. No***
K/615/1945	Constructing temporary or permanent tunnel linings in the workplace *Unit Endorsements:* ***One** of the following endorsements required:* *Mechanised* *Non-mechanised*	2	210	175v3
M/615/1946	Excavating and profiling tunnels in the workplace *Unit Endorsements:* ***One** of the following endorsements required:* *Hand mining* *Drilling and blasting* *Mechanised tunnel excavation*	2	410	177v3
M/508/6537	Conforming to general health, safety and welfare in the workplace	1	7	641
T/508/6538	Conforming to productive working practices in the workplace	2	10	642
F/503/1171	Moving, handling and storing resources in the workplace	2	17	643
Additional Units – Not mandatory				
Unit Reference Number	**Unit Title**	**Unit Level**	**GLH**	***CITB Ref. No***
A/615/1948	Preparing and operating specialist tunnelling plant to form tunnels in the workplace *Unit Endorsements:* ***One** of the following endorsements required:* *Unshielded rock tunnel boring machine* *Shielded rock tunnel boring machine* *Shield mounted hydraulic excavating arm* *Road header above 50te* *Road header below 50te* *Road header bucket below 50te* *Pre vault method* *Drill rig (rail or gantry or truck mounted)* *Excavator* *Sprayed concrete plant and equipment* *Remote and/or pedestrian control operation* *Remote tunnel excavation machine or equipment*	2	247	390Tv4
H/615/1958	Carrying out structural waterproofing in the workplace	2	60	492v2

Pathway 2: Shaft Miner

Mandatory Units – candidates must complete all units in this group				
Unit Reference Number	**Unit Title**	**Unit Level**	**GLH**	***CITB Ref. No***
T/615/1947	Constructing shafts in the workplace *Unit Endorsements:* ***One** of the following endorsements required:* *Underpinning* *Caisson sinking* *Sheet piles and frames or concrete piles and frames* *Drilling and blasting*	2	*430*	*178v3*
M/508/6537	Conforming to general health, safety and welfare in the workplace	1	7	641
T/508/6538	Conforming to productive working practices in the workplace	2	10	642
F/503/1171	Moving, handling and storing resources in the workplace	2	17	643
Additional Units – Not mandatory				
Unit Reference Number	**Unit Title**	**Unit Level**	**GLH**	***CITB Ref. No***
A/615/1948	Preparing and operating specialist tunnelling plant to form tunnels in the workplace *Unit Endorsements:* ***One** of the following endorsements required:* *Unshielded rock tunnel boring machine* *Shielded rock tunnel boring machine* *Shield mounted hydraulic excavating arm* *Road header above 50te* *Road header below 50te* *Road header bucket below 50te* *Pre vault method* *Drill rig (rail or gantry or truck mounted)* *Excavator* *Sprayed concrete plant and equipment* *Remote and/or pedestrian control operation* *Remote tunnel excavation machine or equipment*	2	247	390Tv4
H/615/1958	Carrying out structural waterproofing in the workplace	2	60	492v2

Pathway 3: Tunnelling Machine Operator

Mandatory Units – candidates must complete all units in this group				
Unit Reference Number	**Unit Title**	**Unit Level**	**GLH**	***CITB Ref. No***
M/615/1946	Excavating and profiling tunnels in the workplace *Unit Endorsements:* ***One** of the following endorsements required:* *Hand mining* *Drilling and blasting* *Mechanised tunnel excavation*	2	410	177v3
A/615/1948	Preparing and operating specialist tunnelling plant to form tunnels in the workplace *Unit Endorsements:* ***One** of the following endorsements required:* *Unshielded rock tunnel boring machine* *Shielded rock tunnel boring machine* *Shield mounted hydraulic excavating arm* *Road header above 50te* *Road header below 50te* *Road header bucket below 50te* *Pre vault method* *Drill rig (rail or gantry or truck mounted)* *Excavator* *Sprayed concrete plant and equipment* *Remote and/or pedestrian control operation* *Remote tunnel excavation machine or equipment*	2	247	390Tv4
M/508/6537	Conforming to general health, safety and welfare in the workplace	1	7	641
T/508/6538	Conforming to productive working practices in the workplace	2	10	642
F/503/1171	Moving, handling and storing resources in the workplace	2	17	643
Additional Units – Not mandatory				
Unit Reference Number	**Unit Title**	**Unit Level**	**GLH**	***CITB Ref. No***
H/615/1958	Carrying out structural waterproofing in the workplace	2	60	492v2

Pathway 4: Machine Tunnelling Operative

Mandatory Units – candidates must complete all units in this group				
Unit Reference Number	**Unit Title**	**Unit Level**	**GLH**	***CITB Ref. No***
F/615/1949	Installing tunnelling services in the workplace *Unit Endorsements:* ***Three** of the following endorsements required:* *Ventilation systems* *Pressurised systems (slurry lines, or air and water supply systems)* *Walkways* *Cables and pipelines* *Materials handling systems (rail, or conveyor, or piped)* *Service brackets*	2	70	174v3
K/615/1945	Constructing temporary or permanent tunnel linings in the workplace *Unit Endorsements:* ***One** of the following endorsements required:* *Mechanised* *Non-mechanised*	2	210	175v3
D/651/0014	Preparing and operating powered units, tools or pedestrian plant, machinery or equipment in the workplace *Unit Endorsements:* ***One** of the following endorsements required:* *Generators* *Pumps* *Pedestrian operated plant or machines* *Mixers* *Compressors* *Self-powered tools*	2	23	400v2
M/508/6537	Conforming to general health, safety and welfare in the workplace	1	7	641
T/508/6538	Conforming to productive working practices in the workplace	2	10	642
F/503/1171	Moving, handling and storing resources in the workplace	2	17	643
Additional Units – Not mandatory				
Unit Reference Number	**Unit Title**	**Unit Level**	**GLH**	***CITB Ref. No***
H/615/1958	Carrying out structural waterproofing in the workplace	2	60	492v2

Pathway 5: Spoil Removal Conveyor Operative

Mandatory Units – candidates must complete all units in this group				
Unit Reference Number	**Unit Title**	**Unit Level**	**GLH**	***CITB Ref. No***
F/615/1949	Installing tunnelling services in the workplace *Unit Endorsements:* ***Three** of the following endorsements required:* *Ventilation systems* *Pressurised systems (slurry lines, or air and water supply systems)* *Walkways* *Cables and pipelines* *Materials handling systems (rail, or conveyor, or piped)* *Service brackets*	2	70	174v3
T/615/1950	Operating a spoil removal conveyor in the workplace	2	40	176v3
T/508/6524	Preparing to and directing and guiding the movement of vehicles, plant or machinery in the workplace *Unit Endorsements:* ***One** of the following endorsements required:* *Movement guide marshaller* *Loader/securer*	2	40	396Cv1
M/508/6537	Conforming to general health, safety and welfare in the workplace	1	7	641
T/508/6538	Conforming to productive working practices in the workplace	2	10	642
F/503/1171	Moving, handling and storing resources in the workplace	2	17	643
Additional Units – Not mandatory				
Unit Reference Number	**Unit Title**	**Unit Level**	**GLH**	***CITB Ref. No***
H/615/1958	Carrying out structural waterproofing in the workplace	2	60	492v2

Pathway 6: Overground Spoil Removal Conveyor Operative

Mandatory Units – candidates must complete all units in this group				
Unit Reference Number	**Unit Title**	**Unit Level**	**GLH**	***CITB Ref. No***
M/508/6537	Conforming to general health, safety and welfare in the workplace	1	7	641
T/508/6538	Conforming to productive working practices in the workplace	2	10	642
F/503/1171	Moving, handling and storing resources in the workplace	2	17	643
L/651/0217	Operating an overground spoil removal conveyor in the workplace	2	40	809v1

Pathway 7: Tunnelling Operative

Mandatory Units – candidates must complete all units in this group				
Unit Reference Number	**Unit Title**	**Unit Level**	**GLH**	***CITB Ref. No***
F/615/1949	Installing tunnelling services in the workplace *Unit Endorsements:* ***Three** of the following endorsements required:* *Ventilation systems* *Pressurised systems (slurry lines, or air and water supply systems)* *Walkways* *Cables and pipelines* *Materials handling systems (rail, or conveyor, or piped)* *Service brackets*	2	70	174v3
T/508/6524	Preparing to and directing and guiding the movement of vehicles, plant or machinery in the workplace *Unit Endorsements:* ***One** of the following endorsements required:* *Movement guide marshaller* *Loader/securer*	2	*40*	396Cv1
D/651/0014	Preparing and operating powered units, tools or pedestrian plant, machinery or equipment in the workplace *Unit Endorsements:* ***One** of the following endorsements required:* *Generators* *Pumps* *Pedestrian operated plant or machines* *Mixers* *Compressors* *Self-powered tools*	2	23	400v2
M/508/6537	Conforming to general health, safety and welfare in the workplace	1	7	641
T/508/6538	Conforming to productive working practices in the workplace	2	10	642
F/503/1171	Moving, handling and storing resources in the workplace	2	17	643
Additional Units – Not mandatory				
Unit Reference Number	**Unit Title**	**Unit Level**	**GLH**	***CITB Ref. No***
H/615/1958	Carrying out structural waterproofing in the workplace	2	60	492v2

Pathway 8: Tunnel Transport Operator

Mandatory Units – candidates must complete all units in this group				
Unit Reference Number	**Unit Title**	**Unit Level**	**GLH**	***CITB Ref. No***
D/615/1957	Preparing and operating specialist plant to receive, transport and discharge materials in a tunnelling environment *Unit Endorsements:* ***One** of the following endorsements required:* *Loco and rolling stock* *Underground bulk systems (explosives transportation)*	2	*117*	391Tv4
M/508/6537	Conforming to general health, safety and welfare in the workplace	1	7	641
T/508/6538	Conforming to productive working practices in the workplace	2	10	642
F/503/1171	Moving, handling and storing resources in the workplace	2	17	643
Additional Units – Not mandatory				
Unit Reference Number	**Unit Title**	**Unit Level**	**GLH**	***CITB Ref. No***
H/615/1958	Carrying out structural waterproofing in the workplace	2	60	492v2

Pathway 9: Tunnel Fitter's or Tunnel Electrician's Mate

Mandatory Units – candidates must complete all units in this group				
Unit Reference Number	**Unit Title**	**Unit Level**	**GLH**	***CITB Ref. No***
F/615/1949	Installing tunnelling services in the workplace *Unit Endorsements:* ***Three** of the following endorsements required:* *Ventilation systems* *Pressurised systems (slurry lines, or air and water supply systems)* *Walkways* *Cables and pipelines* *Materials handling systems (rail, or conveyor, or piped)* *Service brackets*	2	70	174v3
A/615/1951	Carrying out routine maintenance of tunnelling plant, machinery and equipment in the workplace *Unit Endorsements:* ***Three** of the following endorsements required:* *Cooling systems* *Oils and lubricants* *Fuels* *Pressurised system* *Ventilation or ducting systems* *Power cabling and equipment* *Electrical control systems* *Communication systems* *Lighting, or signalling, or monitoring, equipment*	2	70	768v2
M/508/6537	Conforming to general health, safety and welfare in the workplace	1	7	641
T/508/6538	Conforming to productive working practices in the workplace	2	10	642
F/503/1171	Moving, handling and storing resources in the workplace	2	17	643
Additional Units – Not mandatory				
Unit Reference Number	**Unit Title**	**Unit Level**	**GLH**	***CITB Ref. No***
H/615/1958	Carrying out structural waterproofing in the workplace	2	60	492v2

Pathway 10: Sprayed Concrete Lining – Tunnelling Nozzleman

Mandatory Units – candidates must complete all units in this group				
Unit Reference Number	**Unit Title**	**Unit Level**	**GLH**	***CITB Ref. No***
F/615/1952	Preparing substrate for sprayed concrete in the workplace *Unit Endorsements:* ***Seven** of the following endorsements required:* *Locate and protect services* *Break out loose and debonded materials* *Roughen smooth surfaces* *Clear and clean* *Surface profile levels* *Tie and secure reinforcement bar and/or mesh* *Fit guide wires* *Fit depth pins* *Erect formwork* *Record and report the work carried out*	2	90	123v3
J/615/1953	Applying sprayed concrete in the workplace *Unit Endorsements:* ***Five** of the following endorsements required:* *Pre-wet surfaces* *Spray concrete to profile* *Produce samples for testing* *Cure and protect concrete* *Record and report on test* *Record and report on spraying* *Operate spraying nozzle* *Operate pump* *Clean pump* *Clear lines*	2	90	124v4
A/615/1948	Preparing and operating specialist tunnelling plant to form tunnels in the workplace *Unit Endorsements:* ***One** of the following endorsements required:* *Unshielded rock tunnel boring machine* *Shielded rock tunnel boring machine* *Shield mounted hydraulic excavating arm* *Road header above 50te* *Road header below 50te* *Road header bucket below 50te* *Pre vault method* *Drill rig (rail or gantry or truck mounted)* *Excavator* *Sprayed concrete plant and equipment* *Remote and/or pedestrian control operation* *Remote tunnel excavation machine or equipment*	2	247	390Tv4
M/508/6537	Conforming to general health, safety and welfare in the workplace	1	7	641

T/508/6538	Conforming to productive working practices in the workplace	2	10	642
F/503/1171	Moving, handling and storing resources in the workplace	2	17	643
Additional Units – Not mandatory				
Unit Reference Number	**Unit Title**	**Unit Level**	**GLH**	***CITB Ref. No***
H/615/1958	Carrying out structural waterproofing in the workplace	2	60	492v2

Pathway 11: Pipe Jacking, Box Jacking, or Micro-Tunnelling Operative

Mandatory Units – candidates must complete all units in this group				
Unit Reference Number	**Unit Title**	**Unit Level**	**GLH**	***CITB Ref. No***
F/615/1949	Installing tunnelling services in the workplace *Unit Endorsements:* ***Three** of the following endorsements required:* *Ventilation systems* *Pressurised systems (slurry lines, or air and water supply systems)* *Walkways* *Cables and pipelines* *Materials handling systems (rail, or conveyor, or piped)* *Service brackets*	2	70	174v3
R/615/1955	Constructing tunnels by pipe jacking, box jacking, or micro-tunnelling operations in the workplace *Unit Endorsements:* ***One** of the following endorsements required:* *Pipe jacking* *Box jacking* *Micro-tunnelling*	2	330	569v3
M/508/6537	Conforming to general health, safety and welfare in the workplace	1	7	641
T/508/6538	Conforming to productive working practices in the workplace	2	10	642
F/503/1171	Moving, handling and storing resources in the workplace	2	17	643
Additional Units – Not mandatory				
Unit Reference Number	**Unit Title**	**Unit Level**	**GLH**	***CITB Ref. No***
H/615/1958	Carrying out structural waterproofing in the workplace	2	60	492v2

Pathway 12: Separation Plant Operative

Mandatory Units – candidates must complete all units in this group				
Unit Reference Number	**Unit Title**	**Unit Level**	**GLH**	***CITB Ref. No***
F/615/1949	Installing tunnelling services in the workplace *Unit Endorsements:* ***Three** of the following endorsements required:* *Ventilation systems* *Pressurised systems (slurry lines, or air and water supply systems)* *Walkways* *Cables and pipelines* *Materials handling systems (rail, or conveyor, or piped)* *Service brackets*	2	70	174v3
Y/615/1956	Preparing for and carrying out slurry, or fluid plant operations in the workplace *Unit Endorsements:* ***One** of the following endorsements required:* *Tunnelling* *Pipe jacking* *Shaft sinking*	2	150	233v3
D/651/0014	Preparing and operating powered units, tools or pedestrian plant, machinery or equipment in the workplace *Unit Endorsements:* ***One** of the following endorsements required:* *Generators* *Pumps* *Pedestrian operated plant or machines* *Mixers* *Compressors* *Self-powered tools*	2	23	400v2
M/508/6537	Conforming to general health, safety and welfare in the workplace	1	7	641
T/508/6538	Conforming to productive working practices in the workplace	2	10	642
F/503/1171	Moving, handling and storing resources in the workplace	2	17	643
Additional Units – Not mandatory				
Unit Reference Number	**Unit Title**	**Unit Level**	**GLH**	***CITB Ref. No***
H/615/1958	Carrying out structural waterproofing in the workplace	2	60	492v2

Centre Requirements

Centres must be approved to offer this qualification. If your centre is not approved please complete and submit form **ProQual Additional Qualification Approval Application**.

Staff
Staff delivering this qualification must be appropriately qualified and/or occupationally competent.

Assessors/Internal Quality Assurance
Assessors for each unit must have verifiable, current industry experience and a sufficient depth of relevant occupational expertise and knowledge, and must use a combination of assessment methods as defined in the Consolidated Assessment Strategy.

Assessors and internal quality assurance verifiers for competence-based units or qualifications will normally need to hold appropriate assessor or internal quality assurance qualifications.

Support for Candidates

Materials produced by centres to support candidates should:

- enable them to track their achievements as they progress through the learning outcomes and assessment criteria;
- provide information on where ProQual's policies and procedures can be viewed;
- provide a means of enabling Internal and External Quality Assurance staff to authenticate evidence

Links to National Standards / NOS mapping

National Occupational Standards (NOS) are owned by a Sector Skills Council or Standard Setting Body and they describe the skills, knowledge and understanding needed to undertake a particular task or job at different levels of competence.

The structure and units of this qualification are based on NOS for the construction sector developed by CITB.

Assessment

This qualification is competence-based, candidates must demonstrate the level of competence described in the units. Assessment is the process of measuring a candidate's skill, knowledge and understanding against the standards set in the qualification.

The qualifications must be assessed in accordance with the ConstructionSkills' Consolidated Assessment Strategy for Construction and the Built Environment.

Each candidate is required to produce a portfolio of evidence which demonstrates their achievement of all of the learning outcomes and assessment criteria for each unit.

Evidence can include:

- observation report by assessor
- assignments/projects/reports
- professional discussion
- witness testimony
- candidate product
- worksheets
- record of oral and written questioning
- Recognition of Prior Learning

Learning outcomes set out what a candidate is expected to know, understand or be able to do.

Assessment criteria specify the standard a candidate must meet to show the learning outcome has been achieved.

Learning outcomes and assessment criteria can be found from page 22.

Additional information for assessment and requirements for unit **endorsements** where relevant is included after all of the learning outcomes and assessment criteria for each unit.

Internal Quality Assurance

An internal quality assurance verifier confirms that assessment decisions made in centres are made by competent and qualified assessors, that they are the result of sound and fair assessment practice and that they are recorded accurately and appropriately.

Adjustments to Assessment

Adjustments to standard assessment arrangements are made on the individual needs of candidates. ProQual's Reasonable Adjustments Policy and Special Consideration Policy sets out the steps to follow when implementing reasonable adjustments and special considerations and the service that ProQual provides for some of these arrangements.

Centres should contact ProQual for further information or queries about the contents of the policy.

Results Enquiries and Appeals

All enquiries relating to assessment or other decisions should be dealt with by centres, with reference to ProQual's Enquiries and Appeals Procedures.

Certification

Candidates who achieve the requirements for this qualification will be awarded:

- A certificate listing all units achieved, and
- A certificate giving the full qualification title -

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Claiming certificates

Centres may claim certificates for candidates who have been registered with ProQual and who have successfully achieved the qualification. All certificates will be issued to the centre for successful candidates.

Unit certificates

If a candidate does not achieve all of the units required for a qualification, the centre may claim a unit certificate for the candidate which will list all of the units achieved.

Replacement certificates

If a replacement certificate is required a request must be made to ProQual in writing. Replacement certificates are labelled as such and are only provided when the claim has been authenticated. Refer to the Fee Schedule for details of charges for replacement certificates.

Learning Outcomes and Assessment Criteria

Title:	Conforming to general health, safety and welfare in the workplace
Unit Number:	M/508/6537

Learning outcomes *The learner will be able to:*		**Assessment criteria** *The learner can:*	
1	Comply with all workplace health, safety and welfare legislation requirements.	1.1	Comply with information from workplace inductions and any health, safety and welfare briefings attended relevant to the occupational area.
		1.2	Use health and safety control equipment safely to carry out the activity in accordance with legislation and organisational requirements.
		1.3	Comply with statutory requirements, safety notices and warning notices displayed within the workplace and/or on equipment.
		1.4	State why and when health and safety control equipment, identified by the principles of protection, should be used relating to types, purpose and limitations of each type, the work situation, occupational use and the general work environment, in relation to: - collective protective measures - personal protective equipment (PPE) - respiratory protective equipment (RPE) - local exhaust ventilation (LEV).
		1.5	State how the health and safety control equipment relevant to the work should be used in accordance with the given instructions.
		1.6	State which types of health, safety and welfare legislation, notices and warning signs are relevant to the occupational area and associated equipment.
		1.7	State why health, safety and welfare legislation, notices and warning signs are relevant to the occupational area.
		1.8	State how to comply with control measures that have been identified by risk assessments and safe systems of work.
2	Recognise hazards associated with the workplace that have not been previously controlled and report them in accordance with organisational procedures.	2.1	Report any hazards created by changing circumstances within the workplace in accordance with organisational procedures.
		2.2	List typical hazards associated with the work environment and occupational area in relation to resources, substances, asbestos, equipment, obstructions, storage, services and work activities.
		2.3	List the current Health and Safety Executive top ten safety risks.

2	continued	2.4	List the current Health and Safety Executive top five health risks.
		2.5	State how changing circumstances within the workplace could cause hazards.
		2.6	State the methods used for reporting changed circumstances, hazards and incidents in the workplace.
3	Comply with organisational policies and procedures to contribute to health, safety and welfare.	3.1	Interpret and comply with given instructions to maintain safe systems of work and quality working practices.
		3.2	Contribute to discussions by offering/providing feedback relating to health, safety and welfare.
		3.3	Contribute to the maintenance of workplace welfare facilities in accordance with workplace welfare procedures.
		3.4	Safely store health and safety control equipment in accordance with given instructions.
		3.5	Dispose of waste and/or consumable items in accordance with legislation.
		3.6	State the organisational policies and procedures for health, safety and welfare, in relation to: - dealing with accidents and emergencies associated with the work and environment - methods of receiving or sourcing information - reporting - stopping work - evacuation - fire risks and safe exit procedures - consultation and feedback.
		3.7	State the appropriate types of fire extinguishers relevant to the work.
		3.8	State how and when the different types of fire extinguishers are used in accordance with legislation and official guidance.
4	Work responsibly to contribute to workplace health, safety and welfare whilst carrying out work in the relevant occupational area.	4.1	Demonstrate behaviour which shows personal responsibility for general workplace health, safety and welfare.
		4.2	State how personal behaviour demonstrates responsibility for general workplace health, safety and welfare, in relation to: - recognising when to stop work in the face of serious and imminent danger to self and/or others - contributing to discussions and providing feedback - reporting changed circumstances and incidents in the workplace - complying with the environmental requirements of the workplace.

4	continued	4.3	Give examples of how the behaviour and actions of individuals could affect others within the workplace.
5	Comply with and support all organisational security arrangements and approved procedures.	5.1	Provide appropriate support for security arrangements in accordance with approved procedures: - during the working day - on completion of the day's work - for unauthorised personnel (other operatives and the general public) - for theft.
		5.2	State how security arrangements are implemented in relation to the workplace, the general public, site personnel and resources.

Title:	Conforming to general health, safety and welfare in the workplace
Additional information about this unit	
Assessment Guidance	This unit must be assessed in a work environment, in accordance with the ConstructionSkills' Consolidated Assessment Strategy for Construction and the Built Environment. Assessors for this unit must have verifiable, current industry experience and a sufficient depth of relevant occupational expertise and knowledge, and must use a combination of assessment methods as defined in the Consolidated Assessment Strategy. Workplace evidence of skills cannot be simulated.
Sector Subject Area	5.2 Building and Construction
Availability for use	Shared unit
Unit guided learning hours	7
Assessment hours	10

Title:	Conforming to productive working practices in the workplace
Unit Number:	T/508/6538

Learning outcomes *The learner will be able to:*		**Assessment criteria** *The learner can:*	
1	Communicate with others to establish productive work practices.	1.1	Communicate in an appropriate manner with line management, colleagues and/or customers to ensure that work is carried out productively.
		1.2	Describe the different methods of communicating with line management, colleagues and customers.
		1.3	Describe how to use different methods of communication to ensure that the work carried out is productive.
2	Follow organisational procedures to plan the sequence of work.	2.1	Interpret relevant information from organisational procedures in order to plan the sequence of work.
		2.2	Plan the sequence of work, using appropriate resources, in accordance with organisational procedures to ensure work is completed productively.
		2.3	Describe how organisational procedures are applied to ensure work is planned and carried out productively, in relation to: - using resources for own and other's work requirements - allocating appropriate work to employees - organising the work sequence - reducing carbon emissions.
		2.4	Describe how to contribute to zero/low carbon work outcomes within the built environment.
3	Maintain relevant records in accordance with the organisational procedures.	3.1	Complete relevant documentation according to the occupation as required by the organisation.
		3.2	Describe how to complete and maintain documentation in accordance with organisational procedures, in relation to: - job cards - worksheets - material/resource lists - time sheets.
		3.3	Explain the reasons for ensuring documentation is completed clearly and within given timescales.
4	Maintain good working relationships when conforming to productive working practices.	4.1	Carry out work productively, to the agreed specification, in conjunction with line management, colleagues, customers and/or other relevant people involved in the work to maintain good working relationships.

4 continued

4.2 Apply the principles of equality and diversity and respect the needs of individuals when communicating and working with others.

4.3 Describe how to maintain good working relationships, in relation to:

- individuals
- customer and operative
- operative and line management
- own and other occupations.

4.4 Describe why it is important to work effectively with line management, colleagues and customers.

4.5 Describe how working relationships could have an effect on productive working.

4.6 Describe how to apply principles of equality and diversity when communicating and working with others.

Title:	Conforming to productive working practices in the workplace
Additional information about this unit	
Assessment Guidance	This unit must be assessed in a work environment, in accordance with the ConstructionSkills' Consolidated Assessment Strategy for Construction and the Built Environment. Assessors for this unit must have verifiable, current industry experience and a sufficient depth of relevant occupational expertise and knowledge, and must use a combination of assessment methods as defined in the Consolidated Assessment Strategy. Workplace evidence of skills cannot be simulated.
Sector Subject Area	05.2 Building and Construction
Availability for use	Shared unit
Unit guided learning hours	10
Assessment hours	10

Title:	Moving, handling and storing resources in the workplace
Unit Number:	F/503/1171

Learning outcomes *The learner will be able to:*		**Assessment criteria** *The learner can:*	
1	Comply with given information when moving, handling and/or storing resources.	1.1	Interpret the given information relating to moving, handling and/or storing resources, relevant to the given occupation.
		1.2	Interpret the given information relating to the use and storage of lifting aids and equipment.
		1.3	Describe the different types of technical, product and regulatory information, their source and how they are interpreted.
		1.4	State the organisational procedures developed to report and rectify inappropriate information and unsuitable resources and how they are implemented.
		1.5	Describe how to obtain information relating to using and storing lifting aids and equipment.
2	Know how to comply with relevant legislation and official guidance when moving, handling and/or storing resources.	2.1	Describe their responsibilities under current legislation and official guidance whilst working: - in the workplace, in confined spaces, below ground level, at height, with tools and equipment, with materials and substances, with movement/storage of materials and by manual handling and mechanical lifting.
		2.2	Describe the organisational security procedures for tools, equipment and personal belongings in relation to site, workplace, company and operative.
		2.3	Explain what the accident reporting procedures are and who is responsible for making the reports.
		2.4	State the appropriate types of fire extinguishers relevant to the work.
		2.5	Describe how and when the different types of fire extinguishers, relevant to the given occupation, are used in accordance with legislation and official guidance.
3	Maintain safe working practices when moving, handling and/or storing resources.	3.1	Use health and safety control equipment safely to carry out the activity in accordance with legislation and organisational requirements when moving, handling and/or storing resources.
		3.2	Use lifting aids safely as appropriate to the work.
		3.3	Protect the environment in accordance with safe working practices as appropriate to the work.

3	continued	3.4	Explain why and when health and safety control equipment, identified by the principles of protection, should be used, relating to moving, handling **and/or** storing resources, and the types, purpose and limitations of each type, the work situation, occupational use and the general work environment, in relation to: - collective protective measures - personal protective equipment (PPE) - respiratory protective equipment (RPE) - local exhaust ventilation (LEV).
		3.5	Describe how the health and safety control equipment relevant to the work should be used in accordance with the given instructions.
		3.6	State how emergencies should be responded to in accordance with organisational authorisation and personal skills when involved with fires, spillages, injuries and other task-related hazards.
4	Select the required quantity and quality of resources for the methods of work to move, handle and/or store occupational resources.	4.1	Select the relevant resources to be moved, handled and/or stored, associated with own work.
		4.2	Describe the characteristics, quality, uses, sustainability, limitations and defects associated with the occupational resources in relation to: - lifting and handling aids - container(s) - fixing, holding and securing systems.
		4.3	Describe how the resources should be handled and how any problems associated with the resources are reported.
		4.4	Explain why the organisational procedures have been developed and how they are used for the selection of required resources.
		4.5	Describe any potential hazards associated with the resources and methods of work.
5	Prevent the risk of damage to occupational resources and surrounding environment when moving, handling and/or storing resources.	5.1	Protect occupational resources and their surrounding area from damage in accordance with safe working practices and organisational procedures.
		5.2	Dispose of waste and packaging in accordance with legislation.
		5.3	Maintain a clean work space when moving, handling or storing resources.
		5.4	Describe how to protect work from damage and the purpose of protection in relation to general workplace activities, other occupations and adverse weather conditions.

5	continued	5.5	Explain why the disposal of waste should be carried safely in accordance with environmental responsibilities, organisational procedures, manufacturers' information, statutory regulations and official guidance.
6	Complete the work within the allocated time when moving, handling and/or storing resources.	6.1	Demonstrate completion of the work within the allocated time.
		6.2	State the purpose of the work programme and explain why deadlines should be kept in relation to: - progress charts, timetables and estimated times - organisational procedures for reporting circumstances which will affect the work programme.
7	Comply with the given occupational resource information to move, handle and/or store resources to the required guidance.	7.1	Demonstrate the following work skills when moving, handling and/or storing occupational resources: - moving, positioning, storing, securing and/or using lifting aids and kinetic lifting techniques.
		7.2	Move, handle and/or store occupational resources to meet product information and organisational requirements relating to three of the following: - sheet material - loose material - bagged or wrapped material - fragile material - tools and equipment - components - liquids.
		7.3	Describe how to apply safe work practices, follow procedures, report problems and establish the authority needed to rectify them when moving, handling and/or storing occupational resources.
		7.4	Describe the needs of other occupations when moving, handling and/or storing resources.

Title:	Moving, handling and storing resources in the workplace
Additional information about this unit	
Assessment Guidance	This unit must be assessed in a work environment, in accordance with the ConstructionSkills' Consolidated Assessment Strategy for Construction and the Built Environment. Assessors for this unit must have verifiable, current industry experience and a sufficient depth of relevant occupational expertise and knowledge, and must use a combination of assessment methods as defined in the Consolidated Assessment Strategy. Workplace evidence of skills cannot be simulated.
Sector Subject Areas	05.2 Building and Construction
Availability for use	Shared unit
Unit guided learning hours	17
Assessment hours	10

Title:	Constructing temporary or permanent tunnel linings in the workplace
Unit Number:	K/615/1945

Learning outcomes *The learner will be able to:*		**Assessment criteria** *The learner can:*	
1	Interpret the information relating to the work and resources when constructing temporary or permanent tunnel linings.	1.1	Interpret and extract relevant information from: - drawings - task briefings - risk assessments - method statements - manufacturer's information.
		1.2	Comply with information and/or instructions derived from risk assessments and method statements.
		1.3	Describe why the organisational procedures have been developed and how they are implemented.
		1.4	Describe different types of information, their source and how they are interpreted in relation to: - drawings - task briefings - risk assessments - method statements - manufacturer's information - standards - organisational procedures - current legislation.
		1.5	Describe the range of relevant digital services and how they are used including: - digital tools - digital systems.
		1.6	Describe the importance of reporting and rectifying inappropriate information.

2	Know how to comply with environmentally responsible work practices to meet current legislation, organisational procedures, and standards when constructing temporary or permanent tunnel linings.	2.1	Describe their responsibilities regarding potential incidents, safety hazards, health hazards, and the environment whilst working: - in the workplace - below ground level - in confined spaces - at height - with temporary works - in a compressed air environment - with plant, tools, and equipment - with materials and substances - with the movement and lifting of materials and equipment by mechanical and manual means - with the safe handling and storing of materials, including explosives.
		2.2	Describe the organisational procedures relating to security of plant, tools, equipment, and personal belongings, in relation to: - workforce - site - workplace - company - vehicles - the general public.
		2.3	Explain the incident reporting procedures and who is responsible for making reports.
		2.4	Describe the different types of fire safety equipment.
		2.5	Describe how to comply with environmentally responsible work practices to meet current legislation and standards.
3	Maintain safe systems of work when constructing temporary or permanent tunnel linings.	3.1	Outline information for current legislation and standards and how it is applied.
		3.2	Use health and safety control equipment safely and comply with the methods of work to carry out the work in accordance with current legislation, standards, and organisational requirements.
		3.3	Demonstrate compliance with current legislation and standards, relating to the following: - safe use of access equipment or systems - safe use of tunnel access and egress systems - safe use, storage and handling of materials, plant, tools, and equipment - specific risks to occupational health and wellbeing, including mental health.
		3.4	Describe the importance of occupational health and wellbeing, including mental health.

3	continued	3.5	Explain the importance of applying Fairness, Inclusion, and Respect (FIR), when dealing with others and the organisational procedures with respect to site behaviours, and how to challenge inappropriate site behaviours.
		3.6	Explain why, when, and how health and safety control equipment identified by the principles of prevention should be used in relation to: - collective protective measures - personal protective equipment (PPE) - respiratory protective equipment (RPE) - ventilation.
		3.7	Describe how the relevant health and safety control equipment should be used in accordance with the work instructions.
		3.8	Describe how emergencies should be responded to in accordance with organisational authorisation and personal skills including but not limited to the following: - fires, spillages, injuries - gases and ventilation - emergencies relating to occupational activities - identification and reporting of hazardous substances.
		3.9	Describe how to report risks and hazards relating to the following: - methods of work - risk assessment - personal risk assessment - dealing with unsafe situations - manufacturer's technical information - task and toolbox talks - statutory regulations - standards.
4	Select the correct quantity and quality of resources for the methods of work to construct temporary or permanent tunnel linings.	4.1	Select resources associated with own work in relation to: - materials, components, and fixings - plant, tools, and equipment.
		4.2	Describe why the limitations, quality, and sustainability, of resources is important and how defects should be rectified.
		4.3	Describe how to confirm that the resources conform with the specified task.
		4.4	Describe how the resources should be used and how any problems associated with the resources are reported.
		4.5	Explain why the resources have been selected and how they are used.

		4.6	Describe how to identify any potential hazards associated with the resources and methods of work and how they are controlled.
		4.7	Describe how to calculate the quantity, length, area, and wastage, associated with the method and procedure to construct temporary or permanent tunnel linings.
5	Minimise the risk of damage to the work and environment when constructing temporary or permanent tunnel linings.	5.1	Comply with organisational procedures to protect the work and the environment by: - protecting the work - maintaining a safe, clear, and tidy, workspace - disposing of waste in accordance with current legislation.
		5.2	Explain why it is important to maintain a safe, clear, and tidy, workspace.
		5.3	Describe how to protect work, and the environment from damage and the purpose of protection from general workplace activities, and other occupations.
		5.4	Explain why and how, the safe disposal of waste must be carried out in accordance with the following: - environmental responsibilities - organisational procedures - manufacturer's information - statutory regulations - standards.
6	Complete the work within the allocated time when constructing temporary or permanent tunnel linings.	6.1	Demonstrate completion of the work within the estimated and allocated time, in accordance with organisational procedures, the programme of work, and to meet the needs of other occupations and the client.
		6.2	Describe the programme of work to be carried out including the estimated and allocated time and explain why deadlines should be kept.
7	Comply with the method statement to construct temporary or permanent tunnel linings.	7.1	Demonstrate the following work skills: - measuring - marking out - fitting - positioning - securing.
		7.2	Use and maintain: - plant - tools - equipment.

7 continued

7.3 Construct temporary or permanent tunnel linings to work instructions using one of the following methods:

- mechanised
- non-mechanised.

7.4 Describe how to comply with the method statements in relation to the following:

- how to position and construct temporary and permanent tunnel linings, by mechanised and non-mechanised methods, incorporating gaskets and fittings
- how to:
  - measure
  - mark out
  - fit
  - position
  - secure
- the importance of ground stability and support systems
- how to use support systems
- how to identify grouting methodology for the type of shaft being constructed
- how to remove, clean, and store, temporary tunnel linings
- how to deal with hazardous energy sources including but not limited to:
  - electricity
  - compressed air
  - hydraulics
  - pressurised liquids
  - equipment under tension
- why it is important to recognise and determine when specialist skills and knowledge are required and report accordingly
- the limits of your own authority
- why it is important to identify and follow the installation quality requirements
- how to work with, around and in close proximity to plant and machinery
- what the requirements are for working in a confined space
- how to work at height
- how to use access equipment and systems
- how to use plant, tools, and equipment
- how and why operative care and maintenance of plant, tools, and equipment is carried out.

7.5 Describe the needs of other occupations and how to communicate effectively within a team when constructing temporary or permanent tunnel linings.

7	continued	7.6	Explain the importance of teamwork and communication and using communication systems.

Title:	Constructing temporary or permanent tunnel linings in the workplace
Additional information about this unit	
Assessment Guidance	This unit must be assessed in a work environment, in accordance with the ConstructionSkills' Consolidated Assessment Strategy for Construction and the Built Environment. Assessors for this unit must have verifiable, current industry experience and a sufficient depth of relevant occupational expertise and knowledge, and must use a combination of assessment methods as defined in the Consolidated Assessment Strategy. Workplace evidence of skills cannot be simulated. This unit must be assessed against the endorsements detailed within the relevant NVQ structure. Please refer to the NVQ structure applicable to the qualification/occupational area in which the candidate is being assessed.
Sector Subject areas	5.2 Building and Construction
Availability for use	Shared unit
Unit guided learning hours	210
Assessment hours	10

Title:	Excavating and profiling tunnels in the workplace
Unit Number:	M/615/1946

Learning outcomes *The learner will be able to:*		**Assessment criteria** *The learner can:*	
1	Interpret the information relating to the work and resources when excavating and profiling tunnels.	1.1	Interpret and extract relevant information from: drawings (required excavation support sheet [RESS]) - task briefings - risk assessments - method statements - manufacturer's information.
		1.2	Comply with information and/or instructions derived from risk assessments and method statements.
		1.3	Describe why the organisational procedures have been developed and how they are implemented.
		1.4	Describe different types of information, their source and how they are interpreted in relation to: - drawings (required excavation support sheet [RESS]) - task briefings - risk assessments - method statements - manufacturer's information - standards - organisational procedures - current legislation.
		1.5	Describe the range of relevant digital services and how they are used including: - digital tools - digital systems.
		1.6	Describe the importance of reporting and rectifying inappropriate information.

2	Know how to comply with environmentally responsible work practices to meet current legislation, organisational procedures, and standards when excavating and profiling tunnels.	2.1	Describe their responsibilities regarding potential incidents, safety hazards, health hazards, and the environmental impact, whilst working: - in the workplace - below ground level - in confined spaces - at height - with temporary works - in a compressed air environment - with plant, tools, and equipment - with materials and substances - with the movement and lifting of materials and equipment by mechanical or manual means - with the safe handling and storing of materials, including explosives.
		2.2	Describe the organisational procedures relating to security of plant, tools, equipment, and personal belongings, in relation to: - workforce - site - workplace - company - vehicles - the general public.
		2.3	Explain the incident reporting procedures and who is responsible for making reports.
		2.4	Describe the different types of fire safety equipment.
		2.5	Describe how to comply with environmentally responsible work practices to meet current legislation and standards.
3	Maintain safe systems of work when excavating and profiling tunnels.	3.1	Outline information for current legislation and standards and how it is applied.
		3.2	Use health and safety control equipment safely and comply with the methods of work to carry out the work in accordance with current legislation, standards, and organisational requirements.
		3.3	Demonstrate compliance with the current legislation and standards relating to the following: - safe use of access equipment or systems - safe use of tunnel access and egress systems - safe use, storage, and handling of materials, plant, tools, and equipment - specific risks to occupational health and wellbeing, including mental health.
		3.4	Describe the importance of occupational health and wellbeing, including mental health.

3	continued	3.5	Explain the importance of applying Fairness, Inclusion, and Respect (FIR), when dealing with others and the organisational procedures with respect to site behaviours, and how to challenge inappropriate site behaviours.
		3.6	Explain why, when, and how health and safety control equipment, identified by the principles of prevention should be used, in relation to: - collective protective measures - personal protective equipment (PPE) - respiratory protective equipment (RPE) - ventilation.
		3.7	Describe how the relevant health and safety control equipment should be used in accordance with the work instructions.
		3.8	Describe how emergencies should be responded to in accordance with organisational authorisation, and personal skills, including but not limited to the following: - fires, spillages, injuries - gases and ventilation - emergencies relating to occupational activities - identification and reporting of hazardous substances.
		3.9	Describe how to report risks and hazards relating to the following: - methods of work - risk assessment - personal risk assessment - dealing with unsafe situations - task and toolbox talks - manufacturer's technical information - statutory regulations - standards.
4	Select the correct quantity and quality of resources for the methods of work to excavate and profile tunnels.	4.1	Select resources associated with own work in relation to: - materials and components - plant, tools, and equipment.
		4.2	Describe why the limitations, quality, and sustainability, of resources is important and how defects should be rectified.
		4.3	Describe how to confirm that the resources conform with the specified task.
		4.4	Describe how the resources should be used and how any problems associated with the resources are reported in relation to: - hand mining equipment - drill and blast equipment - mechanised tunnel excavation equipment.

4	continued	4.5	Explain why the resources have been selected and how they are used.
		4.6	Describe how to identify any potential hazards associated with the resources, and methods of work, and how they are controlled.
5	Minimise the risk of damage to the work and environment when excavating and profiling tunnels.	5.1	Comply with organisational procedures to protect the work and environment by: - protecting the work - maintaining a safe, clear, and tidy, workspace - disposing of wate in accordance with current legislation.
		5.2	Explain why it is important to maintain a safe, clear, and tidy, workspace.
		5.3	Describe how to protect the work and the environment from damage, and the purpose of protection from general workplace activities, and other occupations.
		5.4	Explain why and how, the safe disposal of waste must be carried out in accordance with the following: - environmental responsibilities - organisational procedures - manufacturer's information - statutory regulations - standards.
6	Complete the work within the allocated time when excavating and profiling tunnels.	6.1	Demonstrate completion of the work within the estimated and allocated time, in accordance with organisational procedures, the programme of work, and to meet the needs of other occupations and the client.
		6.2	Describe the programme of work to be carried out including the estimated and allocated time and explain why deadlines should be kept.
7	Comply with the method statement to excavate and profile tunnels.	7.1	Demonstrate the following work skills: - excavating and profiling.
		7.2	Use and maintain: - plant, tools, and equipment.
		7.3	Excavate and profile tunnels to working instructions and engineering controls for one of the following operations: - hand mining - drilling and blasting - mechanised tunnel excavation.

7 continued

7.4 Describe how to comply with the method statement in relation to the following:

- how to follow engineering controls to excavate and profile tunnels for the following operations:
  - hand mining
  - drilling and blasting
  - mechanised tunnel excavation
- how to use excavation equipment
- how to deal with equipment failure
- how to report issues in association with ground conditions
- why it is important to be aware of the potential for buried structures and items (including unexploded ordnance and burial grounds)
- how to use gas monitoring and ventilation systems, and follow relevant emergency procedures
- how to identify grouting methodology for the type of shaft being constructed
- how to deal with hazardous energy sources, including but not limited to:
  - electricity
  - compressed air
  - hydraulics
  - pressurised liquids
  - equipment under tension
- why it is important to recognise and determine when specialist skills and knowledge are required and report accordingly
- the limits of your own authority
- how to work with, around, and in close proximity to plant and machinery
- what the requirements are for working in a confined space
- how to work at height
- how to use access equipment and systems
- how to use plant, tools, and equipment
- how and why operative care and maintenance of plant, tools, and equipment is carried out.

7.5 Describe the needs of other occupations and how to communicate effectively within a team when excavating and profiling tunnels.

7.6 Explain the importance of teamwork and communication and using communication systems.

Title:	Excavating and profiling tunnels in the workplace
Additional information about this unit	
Assessment Guidance	This unit must be assessed in a work environment, in accordance with the ConstructionSkills' Consolidated Assessment Strategy for Construction and the Built Environment. Assessors for this unit must have verifiable, current industry experience and a sufficient depth of relevant occupational expertise and knowledge, and must use a combination of assessment methods as defined in the Consolidated Assessment Strategy. Workplace evidence of skills cannot be simulated. This unit must be assessed against the endorsements detailed within the relevant NVQ structure. Please refer to the NVQ structure applicable to the qualification/occupational area in which the candidate is being assessed.
Sector Subject areas	5.2 Building and Construction
Availability for use	Shared unit
Unit guided learning hours	410
Assessment hours	10

Title:	Preparing and operating specialist tunnelling plant to form tunnels in the workplace
Unit Number:	A/615/1948

Learning outcomes *The learner will be able to:*		**Assessment criteria** *The learner can:*	
1	Interpret the given information relating to the preparation and use of specialist tunnelling plant to form tunnels.	1.1	Interpret and extract relevant information from drawings, specifications, schedules, risk assessments and manufacturers' information.
		1.2	Comply with information and/or instructions derived from risk assessments and method statements.
		1.3	Describe the organisational procedures developed to report and rectify inappropriate information and unsuitable resources and how they are implemented.
		1.4	Describe different types of information, their source and how they are interpreted in relation to: - drawings, specifications, schedules, method statements, risk assessments, manufacturers' information and current regulations governing the operation of tunnelling plant for forming tunnels.
2	Organise with others the sequence and operation in which forming tunnels using specialist tunnelling plant are to be carried out.	2.1	Organise the work according to given information or instructions.
		2.2	Describe how to communicate ideas between team members.
		2.3	Organise and communicate with team members and other associated occupations.
		2.4	Describe how to organise resources prior to and during tunnelling operations using specialist tunnelling plant.
3	Know how to comply with relevant legislation and official guidance when preparing to and forming tunnels using specialist tunnelling plant.	3.1	Describe their responsibilities regarding potential accidents, health hazards and the environment whilst working: - in the workplace, below ground level, in confined spaces, at height, with tools and equipment, with materials and substances, with movement/storage of materials and by manual handling and mechanical lifting.
		3.2	Describe the organisational security procedures for tools, equipment and personal belongings in relation to site, workplace, company and operative.
		3.3	Explain what the accident reporting procedures are and who is responsible for making reports.

4	Maintain safe and healthy working practices when preparing for and forming tunnels using specialist tunnelling plant.	4.1	Use health and safety control equipment safely and comply with the methods of work to carry out the activity in accordance with legislation and organisational requirements during tunnelling operations.
		4.2	Demonstrate compliance with given information and relevant legislation when forming tunnels using specialist tunnelling plant in relation to two or more of the following: - safe use and storage of plant or machinery - safe use and storage of tools and equipment - specific risks to health.
		4.3	Explain why and when health and safety control equipment, identified by the principles of prevention, should be used, relating to tunnelling plant use, and the types, purpose and limitations of each type, the work situation and general work environment, in relation to: - collective protective measures - personal protective equipment (PPE) - respiratory protective equipment (RPE) - local exhaust ventilation (LEV).
		4.4	Describe how the relevant health and safety control equipment should be used in accordance with the given working instructions.
		4.5	Describe how emergencies should be responded to in accordance with organisational authorisation and personal skills when involved with fires, spillages, injuries and other task-related activities.
5	Request and select the required quantity and quality of resources to prepare for and form tunnels using specialist tunnelling plant.	5.1	Request and select resources associated with specialist tunnelling plant in relation to consumables, materials, tools, ancillary equipment and/or accessories.
		5.2	Describe the characteristics, quality, uses, sustainability, limitations and defects associated with the resources, and how they should be used correctly, relating to: - consumables, lubricants and fuels - attachments and forming aids - hand tools, ancillary equipment and/or accessories.
		5.3	Describe how the resources should be used correctly and how problems associated with the resources are reported.
		5.4	Explain why the organisational procedures have been developed and how they are used for the selection of required resources.
		5.5	Describe any potential hazards associated with the resources and methods of work.
		5.6	Describe how to identify weight, quantity, length and area associated with the method/procedures to form tunnels using specialist tunnelling plant.

6	Minimise the risk of damage to the work and surrounding area when preparing to and operating specialist tunnelling plant to form tunnels.	6.1	Protect the work and its surrounding area from damage in accordance with safe working practices and organisational procedures.
		6.2	Prevent damage and maintain a clean work space.
		6.3	Dispose of waste in accordance with current legislation.
		6.4	Describe how to protect work from damage and the purpose of protection in relation to general workplace activities, other occupations and adverse weather conditions.
		6.5	Explain why the disposal of waste should be carried out safely in accordance with environmental responsibilities, organisational procedures, manufacturers' information, statutory regulations and official guidance.
7	Complete the work within the allocated time when preparing to and forming tunnels.	7.1	Demonstrate completion of the work within the allocated time.
		7.2	Describe the purpose of the work programme and describe why deadlines should be kept in relation to: - types of progress charts, timetables and estimated times - organisational procedures for reporting circumstances which will affect the work programme.
8	Comply with the given contract information to prepare and operate specialist tunnelling plant to form tunnels to the required specification.	8.1	Demonstrate the following work skills when preparing for and forming tunnels using specialist tunnelling plant: - checking, adjusting, communicating, manoeuvring, positioning, constructing and forming.
		8.2	Use and maintain hand tools, ancillary equipment and/or accessories.
		8.3	Prepare, set up, position and operate specialist tunnelling plant to form tunnels to given working instructions.
		8.4	Shut down and secure tunnelling plant.

8 continued

8.5 Describe how to apply safe and healthy work practices, follow procedures, report problems and establish authority needed to rectify, to:

- identify the characteristics of the specialist tunnelling plant used for tunnelling operations
- carry out function checks for the tunnelling operation
- identify the area of the tunnelling work
- identify geological, environmental and material changes and report
- prepare, set up and adjust for operational requirements
- carry out pre-operational checks for obstructions, stability, safety and security of the work and surrounding area

8.6

- check to avoid damage to structures and utilities service apparatus
- form tunnels safely and securely
- recognise and determine when specific skills and knowledge are required and report accordingly
- complete construction and formation work
- be on the public highway
- shut down and secure the tunnelling plant and equipment
- use hand tools, ancillary equipment and accessories.

8.7 Describe the needs of other occupations and how to effectively communicate within a team when preparing for and operating specialist tunnelling plant to form tunnels.

8.8 Describe how to maintain the plant and machinery, hand tools, ancillary equipment and/or accessories used to form tunnels with specialist tunnelling plant.

Title:	Preparing and operating specialist tunnelling plant to form tunnels in the workplace
Additional information about this unit	
Assessment Guidance	This unit must be assessed in a work environment, in accordance with the ConstructionSkills' Consolidated Assessment Strategy for Construction and the Built Environment. Assessors for this unit must have verifiable, current industry experience and a sufficient depth of relevant occupational expertise and knowledge and must use a combination of assessment methods as defined in the Consolidated Assessment Strategy. Workplace evidence of skills cannot be simulated. This unit must be assessed against the endorsements detailed within the relevant NVQ structure. Please refer to the NVQ structure applicable to the qualification/occupational area in which the candidate is being assessed.
Sector subject area	5.2 Building and Construction
Availability for use	Shared unit
Unit guided learning hours	247
Assessment hours	10

Title:	Carrying out structural waterproofing in the workplace
Unit Number:	H/615/1958

Learning outcomes *The learner will be able to:*		**Assessment criteria** *The learner can:*	
1	Interpret the given information relating to the work and resources when carrying out structural waterproofing.	1.1	Interpret and extract relevant information from drawings, design criteria, specifications, schedules method statements, risk assessments and manufacturers' information.
		1.2	Comply with information and/or instructions derived from risk assessments and method statements.
		1.3	Describe the organisational procedures developed to report and rectify inappropriate information and unsuitable resources and how they are implemented.
		1.4	Describe different types of information, their source and how they are interpreted in relation to: - drawings, specifications, schedules, method statement, risk assessments, manufacturers' information , current regulations governing buildings and official guidance associated with structural waterproofing.
2	Know how to comply with relevant legislation and official guidance when carrying out structural waterproofing.	2.1	Describe their responsibilities regarding potential accidents, health hazards and the environment whilst working: - in the workplace, below ground level, in confined spaces, at height, with tools and equipment, with materials and substances, with movement and storage of materials and by manual handling and mechanical lifting.
		2.2	Describe the organisational security procedures for tools, equipment and personal belongings in relation to site, workplace, company and operative.
		2.3	Explain what the accident reporting procedures are and who is responsible for making reports.
3	Maintain safe and healthy working practices when carrying out structural waterproofing.	3.1	Use health and safety control equipment safely and comply with the methods of work to carry out the activity in accordance with current legislation and organisational requirements when carrying out structural waterproofing.

3	continued	3.2	Demonstrate compliance with given information and relevant legislation when carrying out structural waterproofing in relation to the following: - safe use of access equipment - safe use, storage and handling of materials, tools and equipment - specific risks to health.
		3.3	Explain why and when health and safety control equipment, identified by the principles of prevention, should be used, relating to carrying out structural waterproofing, and the types, purpose and limitations of each type, the work situation and general work environment, in relation to: - collective protective measures - personal protective equipment (PPE) - respiratory protective equipment (RPE) - local exhaust ventilation (LEV).
		3.4	Describe how the relevant health and safety control equipment should be used in accordance with the given working instructions.
		3.5	Describe how emergencies should be responded to in accordance with organisational authorisation and personal skills when involved with fires, spillages, injuries and other task-related activities.
4	Select the required quantity and quality of resources for the methods of work to carry out structural waterproofing.	4.1	Select resources associated with own work in relation to materials, components, fixings, tools and equipment.
		4.2	Describe the characteristics, quality, uses, sustainability, limitations and defects associated with the resources in relation to: - setting out equipment - fixings, fittings, primers - waterproofing liquids, sheets, cavity drain membrane or cementitious concretes, screeds and renders - mixers, pumps, drainage, sumps and pumping ancillaries - testing equipment - finishing and protection materials - hand tools, portable power tools and equipment.
		4.3	Describe how the resources should be used correctly and how problems associated with the resources are reported.
		4.4	Explain why the organisational procedures have been developed and how they are used for the selection of required resources.
		4.5	Describe any potential hazards associated with the resources and methods of work.

4	continued	4.6	Describe the methods of calculating quantity, length, area and wastage associated with the method and procedure to carry out structural waterproofing.
5	Minimise the risk of damage to the work and surrounding area when carrying out structural waterproofing.	5.1	Protect the work and its surrounding area from damage in accordance with safe working practices and organisational procedures.
		5.2	Maintain a clean work space.
		5.3	Dispose of waste in accordance with current legislation.
		5.4	Describe how to protect work from damage and the purpose of protection in relation to general workplace activities, other occupations and adverse weather conditions.
		5.5	Explain why the disposal of waste should be carried out safely in accordance with environmental responsibilities, organisational procedures, manufacturers' information, statutory regulations and official guidance.
6	Complete the work within the allocated time when carrying out structural waterproofing.	6.1	Demonstrate completion of the work within the allocated time.
		6.2	Describe the purpose of the work programme and explain why deadlines should be kept in relation to: - types of progress charts, timetables and estimated times - organisational procedures for reporting circumstances which will affect the work programme.
7	Comply with the given contract information to carry out structural waterproofing to the required specification.	7.1	Demonstrate the following work skills when carrying out structural waterproofing: - measuring, setting out, preparing, applying, securing, finishing, protecting and testing.
		7.2	Use and maintain hand tools, portable power tools and ancillary equipment.
		7.3	Carry out structural waterproofing to surfaces using liquid membrane (by spray, brush or roller), including resins or sheet membrane or drained cavity, concrete, screed or render to given working instructions, including: - joints - penetration points - service entries - terminations.

7 continued

7.4 Describe how to apply safe and healthy work practices, follow procedures, report problems and establish the authority needed to rectify them, to:

- identify installation quality requirements
- conform to agreed specification
- confirm detail requirements
- locate and check the preparation of surfaces and joints including movement, expansion, induced, toe-in, transition and floor-to-wall
- prepare materials and equipment
- mix multi pack systems
- prime surfaces and apply liquid waterproofing
- install sheet membranes
- locate and fix sheets, ensuring overlaps, secure and seal joints including protrusions and penetrations
- mix, handle and apply concretes, screeds and renders
- install drained cavity systems
- install drains, sumps, pumping ancillaries
- recognise and apply curing and protection criteria for primers and liquid waterproofs, including resins, sheet joints, screeds and renders
- visually inspect for defects
- conduct flood and integrity tests
- finish and protect waterproofing
- repair structural waterproofing systems
- recognise and determine when specialist skills and knowledge are required and report accordingly
- use hand tools, portable power tools and equipment
- work at height
- use access equipment.

7.5 Describe the needs of other occupations and how to effectively communicate within a team when carrying out structural waterproofing.

7.6 Describe how to maintain the tools and equipment used when carrying out structural waterproofing.

Title:	Carrying out structural waterproofing in the workplace
Additional information about this unit	
Assessment Guidance	This unit must be assessed in a work environment and in accordance with the ConstructionSkills 'Consolidated Assessment Strategy for Construction and the Built Environment. Assessors for this unit must have verifiable, current industry experience and a sufficient depth of relevant occupational expertise and knowledge, and must use a combination of assessment methods as defined in the Consolidated Assessment Strategy. Workplace evidence of skills cannot be simulated.
Sector Subject Area	5.2 Building and Construction
Availability for use	Shared unit
Unit guided learning hours	60
Assessment hours	10

Title:	Constructing shafts in the workplace
Unit Number:	T/615/1947

Learning outcomes *The learner will be able to:*		**Assessment criteria** *The learner can:*	
1	Interpret the information relating to the work and resources when constructing shafts.	1.1	Interpret and extract relevant information from: - drawings - task briefings - risk assessments - method statements - manufacturer's information.
		1.2	Comply with information and/or instructions derived from risk assessments and method statements.
		1.3	Describe why the organisational procedures have been developed and how they are implemented.
		1.4	Describe different types of information, their source and how they are interpreted in relation to: - drawings - task briefings - risk assessments - method statements - manufacturer's information - standards - organisational procedures - current legislation.
		1.5	Describe the range of relevant digital services and how they are used including: - digital tools - digital systems.
		1.6	Describe the importance of reporting and rectifying inappropriate information.

2	Know how to comply with environmentally responsible work practices to meet current legislation, organisational procedures, and standards, when constructing shafts.	2.1	Describe their responsibilities regarding potential incidents, safety hazards, health hazards, and the environmental impact, whilst working: - in the workplace - below ground level - in confined spaces - at height - with temporary works - in a compressed air environment - with plant, tools, and equipment - with materials and substances - with the movement and lifting of materials and equipment by mechanical and manual means - with the safe handling and storing of materials, including explosives.
		2.2	Describe the organisational procedures relating to security of plant, tools, equipment, and personal belongings, in relation to: - workforce - site - workplace - company - vehicles - the general public.
		2.3	Explain the incident reporting procedures and who is responsible for making reports.
		2.4	Describe the different types of fire safety equipment.
		2.5	Describe how to comply with environmentally responsible work practices to meet current legislation and standards.
3	Maintain safe systems of work when constructing shafts.	3.1	Outline information for current legislation and standards and how it is applied.
		3.2	Use health and safety control equipment safely and comply with the methods of work to carry out the work in accordance with current legislation, standards, and organisational requirements.
		3.3	Demonstrate compliance with current legislation and standards relating to the following: - safe use of access equipment or systems - safe use of tunnel access and egress systems - safe use, storage and handling of materials, plant, tools, and equipment - specific risks to occupational health and wellbeing, including mental health.
		3.4	Describe the importance of occupational health and wellbeing, including mental health.

3	continued	3.5	Explain the importance of applying Fairness, Inclusion, and Respect (FIR), when dealing with others and the organisational procedures with respect to site behaviours, and how to challenge inappropriate site behaviours.
		3.6	Explain why, when, and how health and safety control equipment, identified by the principles of prevention should be used, in relation to: - collective protective measures - personal protective equipment (PPE) - respiratory protective equipment (RPE) - ventilation.
		3.7	Describe how the relevant health and safety control equipment should be used in accordance with the work instructions.
		3.8	Describe how emergencies should be responded to in accordance with organisational authorisation and personal skills including but not limited to the following: - fires, spillages, injuries - gases and ventilation - emergencies relating to occupational activities - identification and reporting of hazardous substances.
		3.9	Describe how to report risks and hazards relating to the following: - methods of work - risk assessment - personal risk assessment - dealing with unsafe situations - manufacturer's technical information - task and tool box talks - statutory regulations - standards.
4	Select the correct quantity and quality of resources for the methods of work to construct shafts.	4.1	Select resources associated with own work in relation to: - materials, components, and fixings - plant, tools, and equipment.
		4.2	Describe why the limitations, quality, and sustainability, of resources is important and how defects should be rectified.
		4.3	Describe how to confirm that the resources conform with the specified task.

4	continued	4.4	Describe how the resources should be used and how any problems associated with the resources are reported in relation to:
			- ground support systems
			  o sheet and concrete piles
			  o frames
			  o segments
			  o timber
			  o sprayed concrete
			- grout
			- lining materials
			- working at height controls
			- plant, tools, and equipment
			- excavation equipment.

		4.5	Explain why the resources have been selected and how they are used.
		4.6	Describe how to identify any potential hazards associated with the resources, and methods of work, and how they are controlled.
		4.7	Describe methods of calculating the quantity, length, area and wastage, associated with the method and procedure to construct shafts for tunnelling operations.
5	Minimise the risk of damage to the work and environment when constructing shafts.	5.1	Comply with organisational procedures to protect the work and environment by: - protecting the work - maintaining a safe, clear, and tidy workspace - disposing of wate in accordance with current legislation.
		5.2	Explain why it is important to maintain a safe, clear, and tidy workspace.
		5.3	Describe how to protect work, and the environment from damage, and the purpose of protection from general workplace activities, and other occupations.
		5.4	Explain why and how, the safe disposal of waste must be carried out in accordance with the following: - environmental responsibilities - organisational procedures - manufacturer's information - statutory regulations - standards.
6	Complete the work within the allocated time when constructing shafts.	6.1	Demonstrate completion of the work within the estimated and allocated time, in accordance with organisational procedures, the programme of work, and to meet the needs of other occupations and the client.
		6.2	Describe the programme of work to be carried out including the estimated and allocated time and explain why deadlines should be kept.

7	Comply with the method statement to construct shafts.	7.1	Use and maintain: - plant - tools - equipment.
		7.2	Construct shafts for one of the following methods to working instructions: - underpinning - caisson sinking - sheet piles and frames, or concrete piles and frames - drilling and blasting.
		7.3	Describe how to comply with the method statement in relation to the following: - how to identify types of shaft construction for ground conditions - how to construct shafts by: o underpinning o caisson sinking o sheet and concrete piles and frames o drilling and blasting - how to excavate spoil - how to manage ground water - how to locate, protect, and divert underground utilities - why it is important to be aware of the potential for buried structures and items (including unexploded ordnance and burial grounds) - how to identify grouting methodology for the type of shaft being constructed - how to use gas monitoring and ventilation systems, and follow emergency procedures - how to deal with hazardous energy sources including but not limited to: o electricity o compressed air o hydraulics o pressurised liquids o equipment under tension - why it is important to recognise and determine when specialist skills and knowledge are required and report accordingly

7	continued	7.3 cont.	- the limits of your own authority - why it is important to identify and follow the installation quality requirements - how to work with, around, and in close proximity to plant and machinery - what the requirements are for working in a confined space - how to work at height - how to use working at height controls - how to use access equipment and systems - how to use plant, tools, and equipment - how and why operative care and maintenance of plant, tools, and equipment is carried out.
		7.4	Describe the needs of other occupations and how to communicate effectively within a team when constructing shafts.
		7.5	Explain the importance of teamwork and communication and using communication systems.

Title:	Constructing shafts in the workplace
Additional information about this unit	
Assessment Guidance	This unit must be assessed in a work environment, in accordance with the ConstructionSkills' Consolidated Assessment Strategy for Construction and the Built Environment. Assessors for this unit must have verifiable, current industry experience and a sufficient depth of relevant occupational expertise and knowledge, and must use a combination of assessment methods as defined in the Consolidated Assessment Strategy. Workplace evidence of skills cannot be simulated. This unit must be assessed against the endorsements detailed within the relevant NVQ structure. Please refer to the NVQ structure applicable to the qualification/occupational area in which the candidate is being assessed.
Sector Subject areas	5.2 Building and Construction
Availability for use	Shared unit
Unit guided learning hours	430
Assessment hours	10

Title:	Installing tunnelling services in the workplace
Unit Number:	F/615/1949

Learning outcomes *The learner will be able to:*		**Assessment criteria** *The learner can:*	
1	Interpret the information relating to the work and resources when installing tunnelling services.	1.1	Interpret and extract relevant information from: - drawings - task briefings - risk assessments - method statements - manufacturer's information.
		1.2	Comply with information and/or instructions derived from risk assessments and method statements.
		1.3	Describe why the organisational procedures have been developed and how they are implemented.
		1.4	Describe different types of information, their source and how they are interpreted in relation to: - drawings - task briefings - risk assessments - method statements - manufacturer's information - standards - organisational procedures - current legislation.
		1.5	Describe the range of relevant digital services and how they are used including: - digital tools - digital systems.
		1.6	Describe the importance of reporting and rectifying inappropriate information.
2	Know how to comply with environmentally responsible work practices to meet current legislation, organisational procedures, and standards when installing tunnelling services.	2.1	Describe their responsibilities regarding potential incidents, safety hazards, health hazards, and the environmental impact whilst working: - in the workplace - below ground level - in confined spaces - at height - with temporary works - in a compressed air environment - with plant, tools, and equipment - with materials and substances - with the movement and lifting of materials and equipment by mechanical and manual means - with the safe handling and storing of materials, including explosives.

2	continued	2.2	Describe the organisational procedures relating to security of plant, tools, equipment, and personal belongings, in relation to: - workforce - site - workplace - company - vehicles - the general public.
		2.3	Explain the incident reporting procedures and who is responsible for making reports.
		2.4	Describe the different types of fire safety equipment.
		2.5	Describe how to comply with environmentally responsible work practices to meet current legislation and standards.
3	Maintain safe systems of work when installing tunnelling services.	3.1	Outline information for current legislation and standards and how it is applied.
		3.2	Use health and safety control equipment safely and comply with the methods of work to carry out the activity in accordance with current legislation, standards, and organisational requirements.
		3.3	Demonstrate compliance with current legislation, and standards relating to the following: - safe use of access equipment or systems - safe use of tunnel access and egress systems - safe use, storage and handling of materials, plant, tools, and equipment - specific risks to occupational health and wellbeing, including mental health.
		3.4	Describe the importance of occupational health and wellbeing, including mental health.
		3.5	Explain the importance of applying Fairness, Inclusion, and Respect (FIR), when dealing with others and the organisational procedures with respect to site behaviours, and how to challenge inappropriate site behaviours.
		3.6	Explain why, when, and how health and safety control equipment, identified by the principles of prevention should be used, in relation to: - collective protective measures - personal protective equipment (PPE) - respiratory protective equipment (RPE) - ventilation.
		3.7	Describe how the relevant health and safety control equipment should be used in accordance with the work instructions.

3	continued	3.8	Describe how emergencies should be responded to in accordance with organisational authorisation, and personal skills, including but not limited to the following: - fires, spillages, injuries - gases and ventilation - emergencies relating to occupational activities - identification and reporting of hazardous substances.
		3.9	Describe how to report risks and hazards relating to the following: - methods of work - risk assessment - personal risk assessment - dealing with unsafe situations - manufacturer's technical information - task and toolbox talks - statutory regulations - standards.
4	Select the correct quantity and quality of resources for the methods of work to install tunnelling services.	4.1	Select resources associated with own work in relation to: - materials, components, and fixings - plant, tools, and equipment.
		4.2	Describe why the limitations, quality, and sustainability, of resources is important and how defects should be rectified.
		4.3	Describe how to confirm that the resources conform with the specified task.
		4.4	Describe how the resources should be used and how any problems associated with the resources are reported in relation to: - ventilation systems - pressurised systems (slurry lines, and air and water supply systems) - walkways - cables and pipelines - material handling systems (rail, conveyor, and piped) - service brackets - plant, tools, and equipment.
		4.5	Explain why the resources have been selected and how they are used.
		4.6	Describe how to identify any potential hazards associated with the resources, and methods of work, and how they are controlled.
		4.7	Describe how to calculate the quantity, length, area, and wastage, associated with the method and procedure to install tunnelling services.

5	Minimise the risk of damage to the work and environment when installing tunnelling services.	5.1	Comply with organisational procedures to protect the work and environment by: - protecting the work - maintaining a safe, clear, and tidy workspace - disposing of waste in accordance with current legislation.
		5.2	Explain why it is important to maintain a safe, clear, and tidy, workspace.
		5.3	Describe how to protect work and the environment from damage, and the purpose of protection from general workplace activities, and other occupations.
		5.4	Explain why and how, the safe disposal of waste must be carried out in accordance with the following: - environmental responsibilities - organisational procedures - manufacturer's information - statutory regulations - standards.
6	Complete the work within the allocated time when installing tunnelling services.	6.1	Demonstrate completion of the work within the estimated and allocated time, in accordance with organisational procedures, the programme of work, and to meet the needs of other occupations and the client.
		6.2	Describe the programme of work to be carried out, including the estimated and allocated time and explain why deadlines should be kept.
7	Comply with the method statement to install tunnelling services.	7.1	Demonstrate the following work skills: - measuring - fitting - positioning - connecting - checking - securing.
		7.2	Use and maintain: - plant - tools - equipment.
		7.3	Install three of the following tunnelling services to working instructions: - ventilation systems - pressurised systems (slurry lines, or air and water supply systems) - walkways - cables and pipelines - material handling systems (rail, or conveyor, or piped) - service brackets.

7	continued	7.4	Describe how to comply with the method statement in relation to the following:
			- how to position and install:
			  o ventilation systems
			  o pressurised systems (slurry lines, and air and water supply systems)
			  o walkways
			  o cables and pipelines
			  o material handling systems (rail, conveyor, and piped)
			  o service brackets
			- how to check connection systems are ready for commissioning
			- how to remove and dismantle:
			  o ventilation systems
			  o pressurised systems (slurry lines, and air and water supply systems)
			  o walkways
			  o cables and pipelines
			  o material handling systems (rail, conveyor, and piped)
			  o service brackets
			- how to check connection systems are ready for de-commissioning
			- how to extend services as per safe systems of work
			- how to deal with hazardous energy sources including but not limited to:
			  o electricity
			  o compressed air
			  o hydraulics
			  o pressurised liquids
			  o equipment under tension
			- why it is important to recognise and determine when specialist skills and knowledge are required and report accordingly
			- the limits of your own authority
			- why it is important to identify and follow the installation quality requirements
			- how to work with, around, and in close proximity to plant and machinery
			- what the requirements are for working in a confined space
			- how to work at height
			- how to use access equipment and systems
			- how to use plant, tools, and equipment
			- how and why operative care and maintenance of plant, tools, and equipment is carried out.

		7.5	Describe the needs of other occupations and how to communicate effectively when installing tunnelling services.

7	continued	7.6	Explain the importance of teamwork and communication and using communication systems.

Title:	Installing tunnelling services in the workplace
Additional information about this unit	
Assessment Guidance	This unit must be assessed in a work environment, in accordance with the ConstructionSkills' Consolidated Assessment Strategy for Construction and the Built Environment. Assessors for this unit must have verifiable, current industry experience and a sufficient depth of relevant occupational expertise and knowledge and must use a combination of assessment methods as defined in the Consolidated Assessment Strategy. Workplace evidence of skills cannot be simulated. This unit must be assessed against the endorsements detailed within the relevant NVQ structure. Please refer to the NVQ structure applicable to the qualification/occupational area in which the candidate is being assessed.
Sector Subject areas	5.2 Building and Construction
Availability for use	Shared unit
Unit guided learning hours	70
Assessment hours	10

Title:	Preparing and operating powered units, tools or pedestrian plant, machinery or equipment in the workplace
Unit Number:	D/651/0014

Learning outcomes *The learner will be able to:*		**Assessment criteria** *The learner can:*	
1	Interpret the given information relating to the preparation and use of powered units, tools or pedestrian plant, machinery or equipment.	1.1	Interpret and extract relevant information from drawings, specifications, schedules, risk assessments, operating instructions and manufacturers' information.
		1.2	Comply with information and/or instructions derived from risk assessments and method statements.
		1.3	Describe the organisational procedures developed to report and rectify inappropriate information and unsuitable resources and how they are implemented.
		1.4	Describe different types of information, their source and how they are interpreted in relation to: - drawings, specifications, schedules, method statements, risk assessments, legislation, Codes of Practice, manufacturers' information and operating instructions.
2	Know how to comply with relevant legislation and official guidance to prepare and use powered units, tools or pedestrian plant, machinery or equipment.	2.1	Describe their responsibilities regarding potential accidents, health hazards and the environment whilst working: - in the workplace, below ground level, in confined spaces, at height, with tools and equipment, with materials and substances, with movement/storage of materials and by manual handling and mechanical lifting.
		2.2	Describe the organisational security procedures for tools, equipment and personal belongings in relation to site, workplace, company and operative.
		2.3	Explain what the accident reporting procedures are and who is responsible for making reports.
3	Maintain safe and healthy working practices when preparing for and using powered units, tools or pedestrian plant, machinery or equipment.	3.1	Use health and safety control equipment safely and comply with the methods of work to carry out the activity in accordance with legislation and organisational requirements when using powered units, tools or pedestrian plant, machinery or equipment.

3	continued	3.2	Demonstrate compliance with given information and relevant legislation when using powered units, tools or pedestrian plant, machinery or equipment in relation to two or more of the following: - safe use of access equipment - safe handling of materials - safe use and storage of materials, tools and equipment - specific risks to health.
		3.3	Explain why and when health and safety control equipment, identified by the principles of protection, should be used, relating to powered units, tools or pedestrian plant, machinery or equipment use, and the types, purpose and limitations of each type, the work situation and general work environment, in relation to: - collective protective measures - personal protective equipment (PPE) - respiratory protective equipment (RPE) - local exhaust ventilation (LEV).
		3.4	Describe how the relevant health and safety control equipment should be used in accordance with the given working instructions.
		3.5	Describe how emergencies should be responded to in accordance with organisational authorisation and personal skills when involved with fires, spillages, injuries and other task-related activities.
4	Select the required quantity and quality of resources to prepare for and sustain powered units, tools or pedestrian plant, machinery or equipment.	4.1	Select resources associated with the type of work in relation to fuel/power source, lubricants and consumables.
		4.2	Describe the characteristics, quality, uses, sustainability, limitations and defects associated with the resources, and how they should be used correctly, relating to: - power source/fuels - consumables, lubricants.
		4.3	Describe how the resources should be used correctly and how problems associated with the resources are reported.
		4.4	Explain why the organisational procedures have been developed and how they are used for the selection of required resources.
		4.5	Describe any potential hazards associated with the resources and methods of work.
		4.6	Describe how to identify quantity, length, area and wastage associated with the method/procedures to operate powered units, tools or pedestrian plant, machinery or equipment.

5	Minimise the risk of damage to the work and surrounding area when preparing to and using powered units, tools or pedestrian plant, machinery or equipment.	5.1	Protect the work and its surrounding area from damage. in accordance with safe working practices and organisational procedures.
		5.2	Prevent damage and maintain a clean work space.
		5.3	Dispose of waste in accordance with current legislation.
		5.4	Describe how to protect work from damage and the purpose of protection in relation to general workplace activities, other occupations and adverse weather conditions.
		5.5	Explain why the disposal of waste should be carried out safely in accordance with environmental responsibilities, organisational procedures, manufacturers' information, statutory regulations and official guidance.
6	Complete the work within the allocated time when preparing to and using powered units, tools or pedestrian plant, machinery or equipment.	6.1	Demonstrate completion of the work within the allocated time.
		6.2	Describe the purpose of the work programme and describe why deadlines should be kept in relation to: - types of progress charts, timetables and estimated times - organisational procedures for reporting circumstances which will affect the work programme.
7	Comply with the given contract information to operate powered units, tools or pedestrian plant, machinery or equipment to the required specification.	7.1	Demonstrate the following work skills when using powered units, tools or pedestrian plant, machinery or equipment: - starting, stopping, replenishing, controlling and cleaning.
		7.2	Use and maintain powered units, tools and ancillary equipment.
		7.3	Operate and monitor powered units and tools or pedestrian plant, machinery or associated equipment to given working instructions relating to: - continual running - closing down - cleaning.
		7.4	Return powered unit, tools or pedestrian plant, machinery or equipment to a safe operational condition on completion of work.
		7.5	Disassemble and/or clean powered unit, tools or pedestrian plant, machinery or equipment.

7	continued	7.6	Describe how to apply safe and healthy work practices, follow procedures, report problems and establish authority needed to rectify, to: - prepare, position and set up for work - secure accessories and tool attachments - carry out pre-use and function checks to manufacturers' and suppliers' information~~/~~ and procedures - complete pre-start and post stop checks - recognise the characteristics of the plant, machinery and equipment - identify specific operating and safety requirements for the task and work - recognise and determine when specific skills and knowledge are required and report accordingly
		7.7	- operate, use and control - monitor and maintain - replenish consumables - close down and secure - disassemble and clean - use access equipment - transport and store.
		7.8	Describe the needs of other occupations and how to effectively communicate within a team when preparing for and using powered units, tools or pedestrian plant, machinery or equipment.
		7.9	Describe how to maintain the hand tools, portable power tools, powered units, pedestrian plant, machinery and ancillary equipment used for the work.

Title:	Preparing and operating powered units, tools or pedestrian plant, machinery or equipment in the workplace
Additional information about this unit	
Assessment Guidance	This unit must be assessed in a work environment and in accordance with the ConstructionSkills' Consolidated Assessment Strategy for Construction and the Built Environment. Assessors for this unit must have verifiable, current industry experience and a sufficient depth of relevant occupational expertise and knowledge and must use a combination of assessment methods as defined in the Consolidated Assessment Strategy. Workplace evidence of skills cannot be simulated. This unit must be assessed against the endorsements detailed within the relevant NVQ Structure. Please refer to the NVQ Structure applicable to the qualification/occupational area in which the candidate is being assessed.
Sector subject area	5.2 Building and Construction
Availability for use	Shared unit
Unit guided learning hours	23
Assessment hours	5

Title:	Operating a spoil removal conveyor in the workplace
Unit Number:	T/615/1950

Learning outcomes *The learner will be able to:*		**Assessment criteria** *The learner can:*	
1	Interpret the information relating to the work and resources when operating a spoil removal conveyor.	1.1	Interpret and extract relevant information from: - drawings - task briefings - risk assessments - method statements - manufacturer's information.
		1.2	Comply with information and/or instructions derived from risk assessments and method statements.
		1.3	Describe why the organisational procedures have been developed and how they are implemented.
		1.4	Describe different types of information, their source and how they are interpreted in relation to: - drawings - task briefings - risk assessments - method statements - manufacturer's information - standards - organisational procedures - current legislation.
		1.5	Describe the range of relevant digital services and how they are used including: - digital tools - digital systems.
		1.6	Describe the importance of reporting and rectifying inappropriate information.
2	Know how to comply with environmentally responsible work practices to meet current legislation, organisational procedures, and standards, when operating a spoil removal conveyor.	2.1	Describe their responsibilities regarding potential incidents, safety hazards, health hazards, and the environmental impact, whilst working: - in the workplace - below ground level - in confined spaces - at height - with temporary works - in a compressed air environment - with plant, tools, and equipment - with materials and substances - with the movement and lifting of materials and equipment by mechanical and manual means - with the safe handling and storing of materials, including explosives.

2	continued	2.2	Describe the organisational procedures relating to security of plant, tools, equipment, and personal belongings in relation to: - workforce - site - workplace - company - vehicles - the general public.
		2.3	Explain the incident reporting procedures and who is responsible for making reports.
		2.4	Describe the different types of fire safety equipment.
		2.5	Describe how to comply with environmentally responsible work practices to meet current legislation and standards.
		2.6	Describe the risks and causes of fires, in and around spoil removal conveyor equipment.
		2.7	Describe how to raise the alarm in the event of fire or smoke being seen around spoil removal conveyor equipment.
3	Maintain safe systems of work when operating a spoil removal conveyor.	3.1	Outline information for current legislation and standards and how it is applied.
		3.2	Use health and safety control equipment safely and comply with the methods of work to carry out the work in accordance with current legislation, standards, and organisational requirements.
		3.3	Demonstrate compliance with the current legislation and standards relating to the following: - safe use of access equipment or systems - safe use of tunnel access and egress systems - safe use, storage, and handling of materials, plant, tools, equipment - specific risks to occupational health and wellbeing, including mental health.
		3.4	Describe the importance of occupational health and wellbeing, including mental health.
		3.5	Explain the importance of applying Fairness, Inclusion, and Respect (FIR), when dealing with others and the organisational procedures with respect to site behaviours, and how to challenge inappropriate site behaviours.

3	continued	3.6	Explain why, when, and how health and safety control equipment, identified by the principles of prevention should be used in relation to: - collective protective measures - personal protective equipment (PPE) - respiratory protective equipment (RPE) - ventilation.
		3.7	Describe how the relevant health and safety control equipment should be used in accordance with the work instructions.
		3.8	Describe how emergencies should be responded to in accordance with organisational authorisation and personal skills, including but not limited to the following: - fires, spillages, injuries - gases and ventilation - emergencies relating to occupational activities - identification and reporting of hazardous substances.
		3.9	Describe how to report risks and hazards relating to the following: - methods of work - risk assessment - personal risk assessment - dealing with unsafe situations - manufacturer's technical information - task and toolbox talks - statutory regulations - standards.
4	Select the correct quantity and quality of resources for the methods of work to operate a spoil removal conveyor.	4.1	Select resources associated with own work in relation to: - materials, components, and fixings - plant, tools, and equipment.
		4.2	Describe why the limitations, quality, and sustainability, of resources is important and how defects should be rectified.
		4.3	Describe how to confirm that the resources conform with the specified task.
		4.4	Describe how the resources should be used and how any problems associated with the resources are reported in relation to: - spoil removal systems (including belts, rollers, and scrapers) - audible and visual safety devices - weighing systems - fittings and fixings - plant, tools, and equipment.
		4.5	Explain why the resources have been selected and how they are used.

4	continued	4.6	Describe how to identify any potential hazards associated with the resources, and methods of work, and how they are controlled.
5	Minimise the risk of damage to the work and environment when operating a spoil removal conveyor.	5.1	Comply with organisational procedures to protect the work and environment by: - protecting the work - maintaining a safe, clear, and tidy workspace - disposing of waste in accordance with current legislation.
		5.2	Explain why it is important to maintain a safe, clear, and tidy workspace.
		5.3	Describe how to protect work, and the environment from damage, and the purpose of protection from general workplace activities and other occupations.
		5.4	Explain why and how, the safe disposal of waste must be carried out in accordance with the following: - environmental responsibilities - organisational procedures - manufacturer's information - statutory regulations - standards.
6	Complete the work within the allocated time when operating a spoil removal conveyor.	6.1	Demonstrate completion of the work within the estimated and allocated time, in accordance with organisational procedures, the programme of work, and to meet the needs of other occupations and the client.
		6.2	Describe the programme of work to be carried out, including the estimated and allocated time and explain why deadlines should be kept.
7	Comply with the method statement to operate a spoil removal conveyor.	7.1	Demonstrate the following work skills: - measuring - inspecting - installing - adjusting - operating - monitoring - maintaining - starting up - shutting down - safe isolation - dismantling - cleaning.
		7.2	Use and maintain: - plant - tools - equipment.
		7.3	Operate and monitor a spoil removal conveyor to working instructions.

7 continued

7.4 Describe how to comply with the method statement in relation to the following:

- how to inspect and identify defects
- how to operate, monitor, and maintain a spoil removal conveyor
- how to isolate spoil removal conveyor systems
- why it is important to report issues with spoil removal conveyor safety systems
- how to carry out start up and shut down procedures
- how to carry out emergency shut down and restart procedures
- how to change rollers, belts, and scrapers
- how to clean the spoil removal conveyor and equipment to maintain working order
- how to tension, adjust, and track, belt systems
- how to monitor and report issues with mechanical and vulcanised joints
- how to remove, clean, and store, spoil removal equipment
- how to deal with hazardous energy sources including but not limited to:
    - electricity
    - compressed air
    - hydraulics
    - pressurised liquids
    - equipment under tension
- why it is important to recognise and determine when specialist skills and knowledge are required and report accordingly
- the limits of your own authority
- how to work with, around, and in close proximity to plant and machinery
- what the requirements are for working in a confined space
- how to work at height
- how to use access equipment and systems
- how to use plant, tools, and equipment
- how and why operative care and maintenance of plant, tools, and equipment is carried out.

7.5 Describe the needs of other occupations and how to communicate effectively within a team when operating a spoil removal conveyor.

7.6 Explain the importance of teamwork and communication and using communication systems.

Title:	Operating a spoil removal conveyor in the workplace
Additional information about this unit	
Assessment Guidance	This unit must be assessed in a work environment, in accordance with the ConstructionSkills' Consolidated Assessment Strategy for Construction and the Built Environment. Assessors for this unit must have verifiable, current industry experience and a sufficient depth of relevant occupational expertise and knowledge, and must use a combination of assessment methods as defined in the Consolidated Assessment Strategy. Workplace evidence of skills cannot be simulated.
Sector Subject areas	5.2 Building and Construction
Availability for use	Shared unit
Unit guided learning hours	40
Assessment hours	10

Title:	Preparing to and directing and guiding the movement of vehicles, plant or machinery in the workplace
Unit Number:	T/508/6524

Learning outcomes *The learner will be able to:*		**Assessment criteria** *The learner can:*	
1	Interpret the given information relating to preparing to, and directing and guiding the movement of vehicles, plant or machinery.	1.1	Interpret and extract relevant information from drawings, specifications, schedules, risk assessments, plant and vehicle movement plans and manufacturers' information.
		1.2	Comply with information and/or instructions derived from risk assessments and method statements.
		1.3	Describe the organisational procedures developed to report and rectify inappropriate information and unsuitable resources and how they are implemented.
		1.4	Describe different types of information, their source and how they are interpreted in relation to: - drawings, specifications, schedules, method statements, risk assessments, plant and vehicle movement plans, manufacturers' information and Codes of Practice for the direction and guidance of vehicles, plant and machinery.
2	Organise with others the sequence and operation in which directing and guiding the movement of vehicles, plant or machinery is to be carried out.	2.1	Organise the work according to given information or instructions.
		2.2	Describe how to communicate ideas between team members.
		2.3	Organise and communicate with team members and other associated occupations.
		2.4	Describe how to organise resources prior to and during directing and guiding vehicles, plant or machinery.
3	Know how to comply with relevant legislation and official guidance when directing and guiding the movement of vehicles, plant or machinery.	3.1	Describe their responsibilities regarding potential accidents, health hazards and the environment whilst working: - in the workplace, below ground level, in confined spaces, at height, with tools and equipment, with materials and substances, with movement/storage of materials and by manual handling and mechanical lifting.
		3.2	Describe the organisational security procedures for tools, equipment and personal belongings in relation to site, workplace, company and operative.
		3.3	Explain what the accident reporting procedures are and who is responsible for making reports.

4	Maintain safe and healthy working practices when preparing to, directing and guiding the movement of vehicles, plant or machinery.	4.1	Use health and safety control equipment safely and comply with the methods of work to carry out the activity in accordance with legislation and organisational requirements when directing and guiding vehicles, plant or machinery.
		4.2	Demonstrate compliance with given information and relevant legislation when directing and guiding the movement of vehicles, plant or machinery in relation to two or more of the following: - safe use and storage of tools - safe use and storage of equipment - specific risks to health.
		4.3	Explain why and when health and safety control equipment, identified by the principles of protection, should be used, relating to directing and guiding vehicles, plant or machinery, and the types, purpose and limitations of each type, the work situation and general work environment, in relation to: - collective protective measures - personal protective equipment (PPE) - respiratory protective equipment (RPE) - local exhaust ventilation (LEV).
		4.4	Describe how the relevant health and safety control equipment should be used in accordance with the given working instructions.
		4.5	Describe how emergencies should be responded to in accordance with organisational authorisation and personal skills when involved with fires, spillages, injuries and other task-related activities.
5	Select the required quantity and quality of resources to prepare to, and direct and guide the movement of vehicles, plant or machinery.	5.1	Select resources associated with directing and guiding vehicles, plant or machinery in relation to hand tools, ancillary equipment and signalling and communication equipment.
		5.2	Describe the characteristics, quality, uses, sustainability, limitations and defects associated with the resources, and how they should be used correctly, relating to: - signalling and communication equipment - barriers, cones, signs - lighting equipment - hand tools and ancillary equipment.
		5.3	Describe how the resources should be used correctly and how problems associated with the resources are reported.
		5.4	Explain why the organisational procedures have been developed and how they are used for the selection of required resources.

5	continued	5.5	Describe any potential hazards associated with the resources and methods of work.
		5.6	Describe how to identify weight/bearing pressures, quantity, length and area associated with the method/procedures for directing and guiding the movement of vehicles, plant and machinery.
6	Minimise the risk of damage to the work and surrounding area when preparing to and directing and guiding the movement of vehicles, plant or machinery.	6.1	Protect the work and its surrounding area from damage in accordance with safe working practices and organisational procedures.
		6.2	Prevent damage and maintain a clean work space.
		6.3	Dispose of waste in accordance with current legislation.
		6.4	Describe how to protect work from damage and the purpose of protection in relation to general workplace activities, other occupations and adverse weather conditions.
		6.5	Explain why the disposal of waste should be carried out safely in accordance with environmental responsibilities, organisational procedures, manufacturers' information, statutory regulations and official guidance.
7	Complete the work within the allocated time when preparing to, and directing and guiding the movement of vehicles, plant or machinery.	7.1	Demonstrate completion of the work within the allocated time.
		7.2	Describe the purpose of the work programme and describe why deadlines should be kept in relation to: - types of progress charts, timetables and estimated times - organisational procedures for reporting circumstances which will affect the work programme.
8	Comply with the given contract information to prepare to, and direct and guide the movement of vehicles, plant or machinery to the required specification.	8.1	Demonstrate the following work skills when preparing to, and directing and guiding vehicles, plant or machinery: - measuring, gauging, estimating, interpreting, judging, explaining, preparing, commanding, directing, guiding, indicating, informing, instructing, signing, positioning, moving, securing, signalling and relaying.
		8.2	Use and maintain hand tools, ancillary equipment and signalling equipment.
		8.3	Prepare to, and direct and guide the movement of loaded and unloaded vehicles, including articulated vehicles and plant or machinery (wheeled or tracked) to given working instructions, relating to the following: - hand signals - hand signalling equipment - verbal/electronic communication equipment.

8	continued	8.4	Describe how to apply safe and healthy work practices, follow procedures, report problems and establish authority needed to rectify, to: - identify the differences between directing and guiding movement, directing and guiding operations and slinging and signalling - interpret a work management plan and vehicle movement plan - identify the hierarchy of traffic control measures and pedestrian separation - organise and ensure the maintenance of holding areas, routes, exclusion zones, markers and signs - assess and determine the movement of vehicles, plant and machinery, to include own position of safety, visibility, ground conditions and features, proximity hazards and weight limits
		8.5	- recognise and react to changing conditions, ground, environment, weather, light, numbers and types of vehicles, plant and machinery - liaise with, convey and collect information from and to, drivers and operators - recognise and utilise movement aids (camera's, mirrors, audio and visual warnings, etc.) - recognise blind-spots, potential crush zones and other limitations to driver visibility - recognise the requirements of directing and guiding the movement of vehicles, plant and machinery onto and from public highways - recognise the requirements of working on public highways
		8.6	- direct and guide different vehicle types and size e.g. height, weight length, width, tracked, wheeled and articulated - assess and determine the movement of loads, including unloading, discharging and loading requirements - direct and guide vehicles, plant and machinery across rough or uneven terrain - check the integrity of load securing equipment and stability of loads, prior to commencement of movements and on arrival, prior to release - signal and communicate following recognised and agreed operational procedures - recognise and determine when specific skills and knowledge are required and report accordingly - use hand tools and ancillary equipment.
		8.7	Describe the needs of other occupations and how to effectively communicate within a team when preparing to and directing and guiding vehicles, plant or machinery.

8	continued	8.8	Describe how to maintain the hand tools, ancillary equipment, and signalling and communication equipment used to direct and guide vehicles, plant or machinery.

Title:	Preparing to and directing and guiding the movement of vehicles, plant or machinery in the workplace
Additional information about this unit	
Assessment Guidance	This unit must be assessed in a work environment, in accordance with the ConstructionSkills' Consolidated Assessment Strategy for Construction and the Built Environment. Assessors for this unit must have verifiable, current industry experience and a sufficient depth of relevant occupational expertise and knowledge and must use a combination of assessment methods as defined in the Consolidated Assessment Strategy. Workplace evidence of skills cannot be simulated. This unit must be assessed against the endorsements detailed within the relevant NVQ structure. Please refer to the NVQ structure applicable to the qualification/occupational area in which the candidate is being assessed.
Sector subject areas	5.2 Building and Construction
Availability for use	Shared unit
Unit guided learning hours	40
Assessment hours	10

Title:	Operating an overground spoil removal conveyor in the workplace
Unit Number:	L/651/0217

Learning outcomes *The learner will be able to:*		**Assessment criteria** *The learner can:*	
1	Interpret the information relating to the work and resources when operating an overground spoil removal conveyor.	1.1	Interpret and extract relevant information from: - drawings - task briefings - risk assessments - method statements - manufacturer's information.
		1.2	Comply with information and/or instructions derived from risk assessments and method statements.
		1.3	Describe why the organisational procedures have been developed and how they are implemented.
		1.4	Describe different types of information, their source and how they are interpreted in relation to: - task briefings - risk assessments - method statements - manufacturer's information - standards - organisational procedures.
		1.5	The importance of reporting and rectifying inappropriate information.
2	Know how to comply with environmentally responsible work practices to meet current legislation and official guidance when operating an overground spoil removal conveyor.	2.1	Describe their responsibilities regarding potential incidents, safety hazards, health hazards, and the environmental impact, whilst working: - in the workplace - in confined spaces - at height - with temporary works - with plant, tools, and equipment - materials and substances - with the movement and lifting of materials and equipment by mechanical and manual means - with the safe handling and storing of materials.
		2.2	Describe the organisational procedures relating to security of tools, equipment, and personal belongings, in relation to: - workforce - site - workplace - company - vehicles - the general public.

2	continued	2.3	Explain the incident reporting procedures and who is responsible for making reports.
		2.4	Describe the different types of fire safety equipment.
		2.5	Describe the risks and causes of fires, in and around spoil removal conveyor equipment.
		2.6	Describe how to raise the alarm in the event of fire or smoke being seen around spoil removal conveyor equipment.
		2.7	Describe how to comply with environmentally responsible work practices to meet current legislation and standards.
3	Maintain safe and healthy work practices when operating an overground spoil removal conveyor.	3.1	Outline information for current legislation and standards and how it is applied.
		3.2	Use health and safety control equipment safely and comply with the methods of work to carry out the work in accordance with relevant legislation and official guidance.
		3.3	Demonstrate compliance with current legislation, standards and organisational procedures relating to the following: - safe use of access equipment or systems - safe use, storage, and handling of materials, plant, tools, and equipment - specific risks to occupational health and wellbeing, including mental health.
		3.4	Describe the importance of occupational health and wellbeing, including mental health.
		3.5	Explain the importance of applying Fairness, Inclusion, and Respect (FIR), when dealing with others and the organisational procedures with respect to site behaviours, and how to challenge inappropriate site behaviours.
		3.6	Explain why, when, and how health and safety control equipment, identified by the principles of prevention should be used, in relation to: - collective protective measures - personal protective equipment (PPE) - respiratory protective equipment (RPE).
		3.7	Describe how the relevant health and safety control equipment should be used in accordance with the work instructions.

3	continued	3.8	Describe how emergencies should be responded to in accordance with organisational authorisation, and personal skills, including but not limited to: - fires, spillages, injuries - emergencies relating to occupational activities - identification and reporting of hazardous substances.
		3.9	Describe how to report risks and hazards identified by the following: - methods of work - risk assessment - personal risk assessment - dealing with unsafe situations - manufacturer's technical information - task and tool box talks - statutory regulations - standards.
4	Select the correct quantity and quality of resources for the methods of work to operate an overground spoil removal conveyor.	4.1	Select resources associated with own work in relation to: materials, components, and fixings - plant, tools, and equipment.
		4.2	Describe why the limitations, quality and sustainability, of resources is important and how defects should be rectified.
		4.3	Describe how to confirm that the resources conform with the specified task.
		4.4	Describe how the resources should be used and how any problems associated with the resources are reported in relation to: - spoil removal systems - audible and visual safety devices - weighing systems - fittings - fixings - plant, tools, and equipment.
		4.5	Explain why the resources have been selected and how they are used.
		4.6	Describe how to identify any potential hazards associated with the resources, and methods of work, and how they are controlled.
5	Minimise the risk of damage to the work and environment when operating an overground spoil removal conveyor.	5.1	Comply with organisational procedures to protect the work and environment from damage by: - protecting the work - maintaining a safe, clear, and tidy, work space - disposing of wate in accordance with current legislation - using dust suppression methods - using noise reduction methods.

5	continued	5.2	Explain why it is important to maintain a safe, clear, and tidy, work space.
		5.3	Describe how to protect work and the environment from damage, and the purpose of protection from general workplace activities, and other occupations.
		5.4	Explain why and how, the safe disposal of waste must be carried out in accordance with the following: - environmental responsibilities - organisational procedures - manufacturer's information - statutory regulations - standards.
		5.5	The importance of managing noise from conveyor equipment, including but not limited to the following: - risks to operators - causes of excessive noise being produced by conveyor equipment - noise nuisance to those who may live or work in close proximity to the conveyor equipment - mitigating the risk of noise - recording and reporting noise issues.
		5.6	The importance of managing dust risks around conveyor equipment, including but not limited to the following: - risks to operators - causes of excessive dust being produced by conveyor equipment - dust nuisance to those who may live or work in close proximity to the conveyor equipment - mitigating the dust produced by the conveyor equipment - recording and reporting dust issues.
6	Complete the work within the estimated and allocated time when operating an overground spoil removal conveyor.	6.1	Demonstrate completion of the work within the estimated and allocated time, in accordance with organisational procedures, the programme of work, and to meet the needs of other occupations and the client.
		6.2	Describe the programme of work to be carried out including the estimated and allocated time, and explain why deadlines should be kept.

7	Comply with the method statement to operate an overground spoil removal conveyor.	7.1	Demonstrate the following work skills: - measuring - inspecting - installing - adjusting - operating - monitoring - starting up - shutting down - safe mechanical isolation - dismantling - cleaning.
		7.2	Use and maintain: - tools - plant - equipment.
		7.3	Carry out pre-start checks.
		7.4	Carry out daily routine visual checks and report potential issues or defects.
		7.5	Carry out daily routine maintenance activities (cleaning, clearing, lubricating, tensioning).
		7.6	Operate and monitor a spoil removal conveyor to working instructions.
		7.7	Close down at the end of the working day.

7 continued

7.8 Describe how to comply with the method statement in relation to the following:

- how to inspect and identify defects
- how to operate and monitor a spoil removal conveyor
- how to carry out planned preventative maintenance (PPM)
- how to mechanically isolate spoil removal conveyor systems
- why it is important to report issues with spoil removal conveyor safety systems
- how to carry out start up and shut down procedures
- how to carry out emergency shut down and restart procedures
- how to clean the spoil removal conveyor and equipment to maintain working order
- how to monitor and report issues with mechanical and vulcanised joints
- how to deal with hazardous energy sources including but not limited to:
  - electricity
  - compressed air
  - hydraulics
  - pressurised liquids
  - equipment under tension
- why it is important to recognise and determine when specialist skills and knowledge are required and report accordingly
- the limits of your own authority
- how to work with, around, and in close proximity to plant and machinery
- the risks of working at height and how they are managed
- how to use plant, tools, and equipment
- how and why operative care and maintenance of plant, tools, and equipment is carried out.

7.9 Explain the importance of team work and communication, and using communication systems.

Title:	Operating an overground spoil removal conveyor in the workplace
Additional information about this unit	
Assessment Guidance	This unit must be assessed in a work environment, in accordance with the ConstructionSkills' Consolidated Assessment Strategy for Construction and the Built Environment. Assessors for this unit must have verifiable, current industry experience and a sufficient depth of relevant occupational expertise and knowledge, and must use a combination of assessment methods as defined in the Consolidated Assessment Strategy. Workplace evidence of skills cannot be simulated.
Sector subject areas	5.2 Building and Construction
Availability for use	Shared unit
Unit guided learning hours	40
Assessment hours	10

Title:	Preparing and operating specialist plant to receive, transport and discharge materials in a tunnelling environment
Unit Number:	D/615/1957

Learning outcomes *The learner will be able to:*		**Assessment criteria** *The learner can:*	
1	Interpret the given information relating to the preparation and use of specialist plant to receive, transport and discharge materials.	1.1	Interpret and extract relevant information from drawings, specifications, schedules, risk assessments and manufacturers' information.
		1.2	Comply with information and/or instructions derived from risk assessments and method statements.
		1.3	Describe the organisational procedures developed to report and rectify inappropriate information and unsuitable resources and how they are implemented.
		1.4	Describe different types of information, their source and how they are interpreted in relation to: - drawings, specifications, schedules, method statements, risk assessments, manufacturers' information, and current regulations and guidance governing the operation of tunnel-based specialist plant.
2	Organise with others the sequence and operation in which tunnel-based transporting and discharging operations using specialist plant are to be carried out.	2.1	Organise the work according to given information or instructions.
		2.2	Describe how to communicate ideas between team members.
		2.3	Organise and communicate with team members and other associated occupations.
		2.4	Describe how to organise resources prior to and during tunnel-based transporting and discharging operations.
3	Know how to comply with relevant legislation and official guidance when preparing for and carrying out receiving, transporting and discharging operations with specialist plant.	3.1	Describe their responsibilities regarding potential accidents, health hazards and the environment whilst working: - in the workplace, below ground level, in confined spaces, at height, with tools and equipment, with materials and substances, with movement/storage of materials and by manual handling and mechanical lifting.
		3.2	Describe the organisational security procedures for tools, equipment and personal belongings in relation to site, workplace, company and operative.
		3.3	Explain what the accident reporting procedures are and who is responsible for making reports.

4	Maintain safe and healthy working practices when preparing for and carrying out receiving, transporting and discharging operations using specialist plant.	4.1	Use health and safety control equipment safely and comply with the methods of work to carry out the activity in accordance with legislation and organisational requirements during receiving, transporting and discharging operations with specialist plant.
		4.2	Demonstrate compliance with given information and relevant legislation when carrying out receiving, transporting and discharging operations using specialist plant in relation to two or more of the following: - safe use and storage of plant or machinery - safe use and storage of tools and equipment - specific risks to health.
		4.3	Explain why and when health and safety control equipment, identified by the principles of prevention, should be used, relating to specialist plant use, and the types, purpose and limitations of each type, the work situation and general work environment, in relation to: - collective protective measures - personal protective equipment (PPE) - respiratory protective equipment (RPE) - local exhaust ventilation (LEV).
		4.4	Describe how the relevant health and safety control equipment should be used in accordance with the given working instructions.
		4.5	Describe how emergencies should be responded to in accordance with organisational authorisation and personal skills when involved with fires, spillages, injuries and other task-related activities.
5	Request and select the required quantity and quality of resources to prepare for and carry out receiving, transporting and discharging operations using specialist plant.	5.1	Request and select resources associated with specialist plant in relation to consumables, materials, tools, ancillary equipment and/or accessories.
		5.2	Describe the characteristics, quality, uses, sustainability, limitations and defects associated with the resources, and how they should be used correctly, relating to: - consumables, lubricants and fuels - attachments and transporting and discharging aids - hand tools, ancillary equipment and accessories.
		5.3	Describe how the resources should be used correctly and how problems associated with the resources are reported.
		5.4	Explain why the organisational procedures have been developed and how they are used for the selection of required resources.
		5.5	Describe any potential hazards associated with the resources and methods of work.

5	continued	5.6	Describe how to identify weight, quantity, length and area associated with the method/procedures to prepare and operate specialist plant to receive, transport and discharge materials.
6	Minimise the risk of damage to the work and surrounding area when preparing to and receiving, transporting and discharging materials.	6.1	Protect the work and its surrounding area from damage in accordance with safe working practices and organisational procedures.
		6.2	Prevent damage and maintain a clean work space.
		6.3	Dispose of waste in accordance with current legislation.
		6.4	Describe how to protect work from damage and the purpose of protection in relation to general workplace activities, other occupations and adverse weather conditions.
		6.5	Explain why the disposal of waste should be carried out safely in accordance with environmental responsibilities, organisational procedures, manufacturers' information, statutory regulations and official guidance.
7	Complete the work within the allocated time when preparing to and receiving, transporting and discharging materials using specialist plant.	7.1	Demonstrate completion of the work within the allocated time.
		7.2	Describe the purpose of the work programme and describe why deadlines should be kept in relation to: - types of progress charts, timetables and estimated times - organisational procedures for reporting circumstances which will affect the work programme.
8	Comply with the given contract information to prepare and operate specialist plant to receive, transport and discharge materials to the required specification.	8.1	Demonstrate the following work skills when preparing for and receiving, transporting and discharging materials using specialist plant in a tunnelling environment: - checking, adjusting, communicating, manoeuvring, positioning (where applicable), receiving, transporting, discharging and cleaning.
		8.2	Use and maintain hand tools, ancillary equipment and/or accessories.
		8.3	Prepare to, set up and operate specialist plant to receive, transport and discharge materials within a tunnelling environment to given working instructions.
		8.4	Shut down and secure tunnel-based specialist plant.

8	continued	8.5	Describe how to apply safe and healthy work practices, follow procedures, report problems and establish authority needed to rectify, to: - identify the characteristics of the specialist plant used for tunnel-based transporting and discharging work - carry out function checks to receive, transport and discharge loads - identify characteristics, type and volume of loads to receive, transport and discharge - prepare, set up and adjust for operational requirements - carry out pre-operational checks for obstructions, stability, safety and security of the work and surrounding area - recognise and determine when specific skills and knowledge are required and report accordingly - identify the area for discharging
		8.6	- check to avoid damage to structures and utilities service apparatus - receive, secure and balance loads for transport - transport and deposit loads - shut down and secure the specialist plant - use hand tools, ancillary equipment and accessories.
		8.7	Describe the needs of other occupations and how to effectively communicate within a team when preparing to and operating specialist plant to receive, transport and discharge materials.
		8.8	Describe how to maintain the plant and machinery, hand tools and ancillary equipment used for receiving, transporting and discharging operations.

Title:	Preparing and operating specialist plant to receive, transport and discharge materials in a tunnelling environment
Additional information about this unit	
Assessment Guidance	This unit must be assessed in a work environment, in accordance with the ConstructionSkills' Consolidated Assessment Strategy for Construction and the Built Environment. Assessors for this unit must have verifiable, current industry experience and a sufficient depth of relevant occupational expertise and knowledge and must use a combination of assessment methods as defined in the Consolidated Assessment Strategy. Workplace evidence of skills cannot be simulated. This unit must be assessed against the endorsements detailed within the relevant NVQ structure. Please refer to the NVQ structure applicable to the qualification/occupational area in which the candidate is being assessed.
Sector subject areas	5.2 Building and Construction
Availability for use	Shared unit
Unit guided learning hours	117
Assessment hours	10

Title:	Carrying out routine maintenance of tunnelling plant, machinery and equipment in the workplace
Unit Number:	A/615/1951

Learning outcomes *The learner will be able to:*		**Assessment criteria** *The learner can:*	
1	Interpret the information relating to the work and resources when carrying out routine maintenance of tunnelling plant, machinery, and equipment.	1.1	Interpret and extract relevant information from: - drawings - task briefings - risk assessments - method statements - manufacturer's information.
		1.2	Comply with information and/or instructions derived from risk assessments and method statements.
		1.3	Describe why the organisational procedures have been developed and how they are implemented.
		1.4	Describe different types of information, their source and how they are interpreted in relation to: - drawings - task briefings - risk assessments - method statements - manufacturer's technical information - standards - organisational procedures - current legislation and maintenance authorisation procedures.
		1.5	Describe the importance of reporting and rectifying inappropriate information.
		1.6	Describe the range of relevant digital services and how they are used including: - digital tools - digital systems.

2	Know how to comply with environmentally responsible work practices to meet current legislation, organisational procedures, and standards, when carrying out routine maintenance of tunnelling plant, machinery, and equipment.	2.1	Describe their responsibilities regarding potential incidents, safety hazards, health hazards, and the environmental impact, whilst working: - in the workplace - below ground level - in confined spaces - at height - with temporary works - in a compressed air environment - with plant, tools, and equipment - with materials and substances - with the movement and lifting of materials by mechanical and manual means - with the safe handling and storing of materials, including explosives.
		2.2	Describe the organisational procedures relating to security of tools, equipment, and personal belongings in relation to: - workforce - site - workplace - vehicles - company - the general public.
		2.3	Explain the incident reporting procedures and who is responsible for making reports.
		2.4	Describe the different types of fire safety equipment.
		2.5	Describe how to comply with environmentally responsible work practices to meet current legislation and standards.
3	Maintain safe systems of work when carrying out routine maintenance of tunnelling plant, machinery, and equipment.	3.1	Outline information for current legislation and standards and how it is applied.
		3.2	Use health and safety control equipment safely and comply with the methods of work to carry out the activity in accordance with current legislation, standards, and organisational requirements.
		3.3	Demonstrate compliance with current legislation and standards relating to the following: - safe use of access equipment or systems - safe use of tunnel access and egress systems - safe use, storage, and handling of materials, plant, tools, and equipment - specific risks to occupational health and wellbeing, including mental health.
		3.4	The importance of occupational health and wellbeing, including mental health.

3	continued	3.5	Explain the importance of applying Fairness, Inclusion, and Respect (FIR), when dealing with others and the organisational procedures with respect to site behaviours, and how to challenge inappropriate site behaviours.
		3.6	Explain why, when, and how health and safety control equipment, identified by the principles of prevention should be used, in relation to: - collective protective measures - personal protective equipment (PPE) - respiratory protective equipment (RPE) - ventilation.
		3.7	Describe how the relevant health and safety control equipment should be used in accordance with the work instructions.
		3.8	Describe how emergencies should be responded to in accordance with organisational authorisation, and personal skills, including but not limited to the following: - fires, spillages, injuries - gases and ventilation - emergencies relating to occupational activities - identification and reporting of hazardous substances.
		3.9	Describe how to report risks and hazards relating to the following: - methods of work - risk assessment - personal risk assessment - dealing with unsafe situations - manufacturer's technical information - task and toolbox talks - statutory regulations - standards.
4	Select the correct quantity and quality of resources for the methods of work to carry out routine maintenance of tunnelling plant, machinery, and equipment.	4.1	Select resources associated with own work in relation to: - consumables, components, and fixings - plant, tools, and equipment.
		4.2	Describe why the limitations, quality, and sustainability, of resources is important and how defects should be rectified.
		4.3	Describe how to confirm that the resources conform with the specified task.

4	continued	4.4	Describe how the resources should be used and how any problems associated with the resources are reported in relation to: - fixings - components - consumables - plant - tools - equipment.
		4.5	Explain why the resources have been selected and how they are used.
		4.6	Describe how to identify any potential hazards associated with the resources, and methods of work, and how they are controlled.
5	Minimise the risk of damage to the work and environment when carrying out routine maintenance of tunnelling plant, machinery, and equipment.	5.1	Comply with organisational procedures to protect the work and the environment from damage by: - protecting the work - maintaining a safe, clear, and tidy, workspace - disposing of wate in accordance with current legislation.
		5.2	Explain why it is important to maintain a safe, clear, and tidy, workspace.
		5.3	Describe how to protect work, and the environment from damage, and the purpose of protection from general workplace activities and other occupations.
		5.4	Explain why and how, the safe disposal of waste must be carried out in accordance with the following: - environmental responsibilities - organisational procedures - manufacturer's information - statutory regulations - standards.
6	Complete the work within the allocated time when carrying out routine maintenance of tunnelling plant, machinery, and equipment.	6.1	Demonstrate completion of the work within the estimated and allocated time, in accordance with organisational procedures, the programme of work, and to meet the needs of other occupations and the client.
		6.2	Describe the programme of work to be carried out including the estimated and allocated time and explain why deadlines should be kept.

7	Comply with the periodic plant maintenance schedule and method statement to carry out routine maintenance of tunnelling plant, machinery, and equipment.	7.1	Demonstrate the following work skills: - checking - measuring - replacing - adjusting - cleaning - securing.
		7.2	Use and maintain: - plant - tools - equipment.
		7.3	Check and complete routine maintenance tasks on tunnelling plant, machinery, or equipment to working instructions to include at least three of the following: - cooling systems - oils and lubricants - fuels - pressurised systems - ventilation or ducting systems - power cabling and equipment - electrical control systems - communication systems - lighting or signalling or monitoring equipment.
		7.4	Record and report information.

7	continued	7.5	Describe how to comply with the method statement in relation to the following:
			- how to identify maintenance criteria
			- how to check tunnelling plant, machinery, and equipment for operational serviceability
			- how to clean and prepare areas and components for maintenance
			- how to select appropriate materials, tools, and consumables
			- how to carry out routine maintenance of tunnelling plant, machinery and equipment, to manufacturer's guidelines and organisational procedures
			- why it is important to complete functional checks in accordance with operating, and care and control procedures
			- why it is important to recognise and report where maintenance activities cannot be fully met, due to:
			  o information
			  o resources
			  o maintenance methods
			  o procedures
			- why it is important to identify and report defects outside of the planned maintenance schedule or area of responsibility
			- why it is important to recognise and determine when specialist skills and knowledge are required and report accordingly
			- how to provide accurate information for the completion of records and reports
			- how to deal with hazardous energy sources including but not limited to:
			  o electricity
			  o compressed air
			  o hydraulics
			  o pressurised liquids
			  o equipment under tension
			- why it is important to identify and follow the installation quality requirements
			- how to work with, around, and in close proximity to plant and machinery
			- the limits of your own authority
			- what the requirements are for working in a confined space
			- how to work at height
			- how to use access equipment and systems
			- how to use plant, tools, and equipment
			- how and why operative care and maintenance of plant, tools, and equipment is carried out.

7	continued	7.6	Describe the needs of other occupations and how to communicate effectively within a team when carrying out routine maintenance of tunnelling plant, machinery, and equipment.
		7.7	Explain the importance of teamwork and communication and using communication systems.

Title:	Carrying out routine maintenance of tunnelling plant, machinery and equipment in the workplace
Additional information about this unit	
Assessment Guidance	This unit must be assessed in a work environment, in accordance with the ConstructionSkills' Consolidated Assessment Strategy for Construction and the Built Environment. Assessors for this unit must have verifiable, current industry experience and a sufficient depth of relevant occupational expertise and knowledge and must use a combination of assessment methods as defined in the Consolidated Assessment Strategy. Workplace evidence of skills cannot be simulated. This unit must be assessed against the endorsements detailed within the relevant NVQ structure. Please refer to the NVQ structure applicable to the qualification/occupational area in which the candidate is being assessed.
Sector Subject areas	5.2 Building and Construction
Availability for use	Shared unit
Unit guided learning hours	70
Assessment hours	10

Title:	Preparing substrate for sprayed concrete in the workplace
Unit Number:	F/615/1952

Learning outcomes *The learner will be able to:*		**Assessment criteria** *The learner can:*	
1	Interpret the given information relating to the work and resources when preparing substrate for sprayed concrete.	1.1	Interpret and extract relevant information from drawings, specifications, schedules, method statements, risk assessments and manufacturers' information.
		1.2	Comply with information and/or instructions derived from risk assessments and method statements.
		1.3	Describe the organisational procedures developed to report and rectify inappropriate information, unsafe work practices, unsafe environment, unsuitable resources and how they are implemented.
		1.4	Describe different types of information, their source and how they are interpreted in relation to: - drawings, specifications, current legislation, schedules, method statements, risk assessments, work instructions, electronic data, manufacturers' information, official guidance and current regulations associated with preparing substrate for sprayed concrete.
2	Know how to comply with relevant legislation and official guidance when preparing substrate for sprayed concrete.	2.1	Describe their responsibilities regarding duty of care legislation, potential accidents, health hazards and the environment, whilst working: - in the workplace, below ground level, in confined spaces, at height, with tools and equipment, with materials and substances, with movement and storage of materials by manual handling and mechanical lifting.
		2.2	Describe the organisational security procedures for tools, equipment and personal belongings in relation to site, workplace, company, vehicles and operative.
		2.3	Explain what the accident reporting procedures are and who is responsible for making reports.
		2.4	Describe the types of fire extinguishers available when preparing substrate for sprayed concrete and describe how and when they are used.
3	Maintain safe and healthy working practices when preparing substrate for sprayed concrete.	3.1	Use health and safety control equipment safely and comply with the methods of work to carry out the activity in accordance with current legislation and organisational requirements when preparing substrate for sprayed concrete.

3	continued	3.2	Demonstrate compliance with given information and relevant legislation when preparing substrate for sprayed concrete in relation to the following: - safe use of access equipment - safe use, storage and handling of materials, tools and equipment - specific risks to health relating to operatives and other personnel.
		3.3	Explain why and when health and safety control equipment, identified by the principles of prevention, should be used, relating to preparing substrate for sprayed concrete, and the types, purpose and limitations of each type, the work situation and general work environment, in relation to: - collective protective measures - personal protective equipment (PPE) - respiratory protective equipment (RPE) - local exhaust ventilation (LEV).
		3.4	Describe how the relevant health and safety control equipment should be used in accordance with the given instructions.
		3.5	Describe how emergencies should be responded to in accordance with organisational authorisation and personal skills when involved with fires, spillages, injuries and other task-related activities.
4	Select the required quantity and quality of resources for the methods of work to prepare substrate for sprayed concrete.	4.1	Select resources associated with own work in relation to materials, components, fixings, tools and equipment.
		4.2	Describe the characteristics, quality, uses, sustainability, limitations and defects associated with the resources in relation to: - temporary supports, screens, barriers, reinforcement, tying wire, pins, formwork - hand tools, portable power or pneumatic tools and equipment - jet washing equipment.
		4.3	Describe how to confirm that the resources and materials conform to the specification.
		4.4	Describe how the resources should be used correctly and how problems associated with the resources are reported.
		4.5	Explain why the organisational procedures have been developed and how they are used for the selection of required resources.

4	continued	4.6	Describe any potential hazards, including those identified by Control of Substances Hazardous to Health (COSHH), associated with the resources and methods of work.
		4.7	Describe how to calculate quantity, length, area and wastage of materials associated with the method and procedure to prepare substrate for sprayed concrete.
5	Minimise the risk of damage to the work and surrounding area when preparing substrate for sprayed concrete.	5.1	Protect the work and its surrounding area from damage in accordance with safe working practices and organisational procedures.
		5.2	Maintain a clear and tidy work space.
		5.3	Dispose of waste in accordance with current legislation.
		5.4	Describe how to protect work from damage and the purpose of protection in relation to general workplace activities, other occupations and adverse weather conditions.
		5.5	Explain why the disposal of waste should be carried out safely in accordance with environmental responsibilities, organisational procedures, manufacturers' information, statutory regulations and official guidance.
6	Complete the work within the allocated time when preparing substrate for sprayed concrete.	6.1	Demonstrate safe completion of the work within the allocated time.
		6.2	Describe the purpose of the work programme and explain why deadlines should be kept in relation to: - types of progress charts, timetables and estimated times - organisational procedures for reporting circumstances which will affect the work programme.
7	Comply with the given contract information to prepare substrate for sprayed concrete to the required specification.	7.1	Demonstrate the following work skills when preparing substrate for sprayed concrete: - measuring, marking out, locating, protecting, supporting, breaking out, cleaning, profiling, tying, erecting, recording and reporting.
		7.2	Use and maintain hand tools, portable power tools and ancillary equipment.

7 continued

7.3 Prepare substrates prior to receiving sprayed concrete to given working instructions relating to seven of the following:

- locate and protect services
- break out loose and de-bonded materials using mechanical means
- roughen smooth surfaces using mechanical means
- clear and clean
- surface profile levels
- tie and secure reinforcement bar and/or mesh
- fit guide wires
- fit depth pins
- erect formwork
- record and report work carried out.

7.4 Describe how to apply safe and healthy work practices, follow procedures, report problems and establish the authority needed to rectify them, to:

- identify and follow the preparation quality requirements
- locate and protect services (water, gas, electric and waste)
- break out, profile, square cut, clean and prepare using mechanical means
- prepare substrates using ultra high pressure water jetting and abrasive blasting
- confirm substrate is ready to receive sprayed concrete
- position and secure reinforcement
- erect and dismantle formwork
- install guide wires and depth pins
- record and report
- recognise and determine when specific skills and knowledge are required and report accordingly
- understand the specific requirements for structures of special interest, traditional build (pre 1919) and historical significance
- work with, around and in close proximity to plant and machinery
- use hand tools, portable power tools and equipment
- work at height
- use access equipment.

7.5 Describe the needs of other occupations and how to effectively communicate within a team when preparing substrate for sprayed concrete.

7.6 Describe how to maintain the tools and equipment used when preparing substrate for sprayed concrete.

Title:	Preparing substrate for sprayed concrete in the workplace
Additional information about this unit	
Assessment Guidance	This unit must be assessed in a work environment, in accordance with ConstructionSkills' Consolidated Assessment Strategy for Construction and the Built Environment Assessors for this unit must have verifiable, current industry experience and a sufficient depth of relevant occupational expertise and knowledge, and must use a combination of assessment methods as defined in the Consolidated Assessment Strategy. Workplace evidence of skills cannot be simulated. This unit must be assessed against the endorsements detailed within the relevant NVQ structure. Please refer to the NVQ structure applicable to the qualification/occupational area in which the candidate is being assessed.
Sector Subject Area	5.2 Building and Construction
Availability for use	Shared unit
Unit guided learning hours	90
Assessment hours	10

Title:	Applying sprayed concrete in the workplace
Unit Number:	J/615/1953

Learning outcomes *The learner will be able to:*		**Assessment criteria** *The learner can:*	
1	Interpret the given information relating to the work and resources when applying sprayed concrete.	1.1	Interpret and extract relevant information from drawings, specifications, schedules, method statements, risk assessments and manufacturers' information.
		1.2	Comply with information and/or instructions derived from risk assessments and method statements.
		1.3	Describe the organisational procedures developed to report and rectify inappropriate information, unsafe work practices, unsafe environment, unsuitable resources and how they are implemented.
		1.4	Describe different types of information, their source and how they are interpreted in relation to: - drawings, specifications, current legislation, schedules, method statements, risk assessments, work instructions, electronic data, manufacturers' information, official guidance and current regulations associated with applying sprayed concrete.
2	Know how to comply with relevant legislation and official guidance when applying sprayed concrete.	2.1	Describe their responsibilities regarding duty of care legislation, potential accidents, health hazards and the environment, whilst working: - in the workplace, below ground level, in confined spaces, at height, with tools and equipment, with materials and substances, with movement and storage of materials by manual handling and mechanical lifting.
		2.2	Describe the organisational security procedures for tools, equipment and personal belongings in relation to site, workplace, company, vehicles and operative.
		2.3	Explain what the accident reporting procedures are and who is responsible for making reports.
		2.4	Describe the types of fire extinguishers available when applying sprayed concrete and describe how and when they are used.

3	Maintain safe and healthy working practices when applying sprayed concrete.	3.1	Use health and safety control equipment safely and comply with the methods of work to carry out the activity in accordance with current legislation and organisational requirements when applying sprayed concrete.
		3.2	Demonstrate compliance with given information and relevant legislation when applying sprayed concrete in relation to the following: - safe use of access equipment - safe use, storage and handling of materials, tools and equipment - specific risks to health relating to operatives and other personnel.
		3.3	Explain why and when health and safety control equipment, identified by the principles of prevention, should be used, relating to applying sprayed concrete, and the types, purpose and limitations of each type, the work situation and general work environment, in relation to: - collective protective measures - personal protective equipment (PPE) - respiratory protective equipment (RPE) - local exhaust ventilation (LEV).
		3.4	Describe how the relevant health and safety control equipment should be used in accordance with the given instructions.
		3.5	Describe how emergencies should be responded to in accordance with organisational authorisation and personal skills when involved with fires, spillages, injuries and other task-related activities.
4	Select the required quantity and quality of resources for the methods of work to apply sprayed concrete.	4.1	Select resources associated with own work in relation to materials, components, fixings, tools and equipment.
		4.2	Describe the characteristics, quality, uses, sustainability, limitations and defects associated with the resources in relation to: - pre-blended bagged materials, sand, aggregate, cements, water, additives, admixtures, structural concrete, curing membranes - working platforms - hand tools, portable power or pneumatic tools, spraying and testing equipment and ancillaries.
		4.3	Describe how to confirm that the resources and materials conform to the specification.
		4.4	Describe how the resources should be used correctly and how problems associated with the resources are reported.

4	continued	4.5	Explain why the organisational procedures have been developed and how they are used for the selection of required resources.
		4.6	Describe any potential hazards, including those identified by Control of Substances Hazardous to Health (COSHH), associated with the resources and methods of work.
		4.7	Describe how to calculate quantity, length, area, volume and wastage of materials associated with the method and procedure to apply sprayed concrete.
5	Minimise the risk of damage to the work and surrounding area when applying sprayed concrete.	5.1	Protect the work and its surrounding area from damage in accordance with safe working practices and organisational procedures.
		5.2	Maintain a clear and tidy work space.
		5.3	Dispose of waste in accordance with current legislation.
		5.4	Describe how to protect work from damage and the purpose of protection in relation to general workplace activities, other occupations and adverse weather conditions.
		5.5	Explain why the disposal of waste should be carried out safely in accordance with environmental responsibilities, organisational procedures, manufacturers' information, statutory regulations and official guidance.
6	Complete the work within the allocated time when applying sprayed concrete.	6.1	Demonstrate safe completion of the work within the allocated time.
		6.2	Describe the purpose of the work programme and explain why deadlines should be kept in relation to: - types of progress charts, timetables and estimated times - organisational procedures for reporting circumstances which will affect the work programme.
7	Comply with the given contract information to apply sprayed concrete to the required specification.	7.1	Demonstrate the following work skills when applying sprayed concrete: - measuring, marking out, assembling, checking, preparing, finishing, curing, protecting, testing, recording and reporting.
		7.2	Use and maintain concrete spraying machinery and compressor, hand tools, portable power tools and ancillary equipment.

7	continued	7.3	Apply sprayed concrete by wet and/or dry methods to given working instructions for five of the following: - pre-wet surfaces for spraying - spray concrete to profile - produce samples for testing - cure and protect concrete - record and report on test - record and report on spraying - operate spraying nozzle - operate pump - clean pump - clear lines.
		7.4	Describe how to apply safe and healthy work practices, follow procedures, report problems and establish the authority needed to rectify them, to: - identify and follow the application quality requirements - assemble and check spray equipment (wet and/or dry application) - prepare substrates including wetting, depth guides and protection measures - include and accommodate cathodic protection materials - maintain protection against overspray and rebounding materials - set up spray and pumping equipment - operate robotic spraying equipment - operate hand-held spraying equipment - spray in layers to agreed profile and depth - apply specified finish - cure and protect concrete - provide samples for testing concrete (compression, tension, consistency and workability) - record and report - recognise and determine when specific skills and knowledge are required and report accordingly - operate spraying machines, compressors and pumps - maintain spraying machines, nozzles, hoses, compressors and pumps during operations - understand the specific requirements for structures of special interest, traditional build (pre 1919) and historical significance - work with, around and in close proximity to plant and machinery - use hand tools, portable power and pneumatic tools and equipment - work at height - use access equipment.

7	continued	7.5	Describe the needs of other occupations and how to effectively communicate within a team when applying sprayed concrete.
		7.6	Describe how to maintain the tools and equipment used when applying sprayed concrete.

Title:	Applying sprayed concrete in the workplace
Additional information about this unit	
Assessment Guidance	This unit must be assessed in a work environment, in accordance with the ConstructionSkills' Consolidated Assessment Strategy for Construction and the Built Environment. Assessors for this unit must have verifiable, current industry experience and a sufficient depth of relevant occupational expertise and knowledge, and must use a combination of assessment methods as defined in the Consolidated Assessment Strategy. Workplace evidence of skills cannot be simulated. This unit must be assessed against the endorsements detailed within the relevant NVQ structure. Please refer to the NVQ structure applicable to the qualification/occupational area in which the candidate is being assessed.
Sector Subject Area	5.2 Building and Construction
Availability for use	Shared unit
Unit guided learning hours	90
Assessment hours	10

Title:	Constructing tunnels by pipe jacking, box jacking, or micro-tunnelling operations in the workplace
Unit Number:	R/615/1955

Learning outcomes *The learner will be able to:*		**Assessment criteria** *The learner can:*	
1	Interpret the information relating to the work and resources when constructing tunnels by pipe jacking, box jacking, or micro-tunnelling operations.	1.1	Interpret and extract relevant information from: - drawings - task briefings - risk assessments - method statements - manufacturer's information.
		1.2	Comply with information and/or instructions derived from risk assessments and method statements.
		1.3	Describe why the organisational procedures have been developed and how they are implemented.
		1.4	Describe different types of information, their source and how they are interpreted in relation to: - drawings - task briefings - risk assessments - method statements - manufacturer's information - standards - organisational procedures - current legislation.
		1.5	Describe the range of relevant digital services and how they are used including: - digital tools - digital systems.
		1.6	Describe the importance of reporting and rectifying inappropriate information. and unsuitable resources and how they are implemented.

2	Know how to comply with environmentally responsible work practices to meet current legislation, organisational procedures and standards when constructing tunnels by pipe-jacking, box jacking, or micro-tunnelling operations.	2.1	Describe their responsibilities regarding potential incidents, safety hazards, health hazards, and the environmental impact, whilst working: - in the workplace - below ground level - in confined spaces - at height - with temporary works - in a compressed air environment - with plant, tools, and equipment - with materials and substances - with the movement and lifting of materials and equipment by mechanical and manual means - with the safe handling and storing of materials, including explosives.
		2.2	Describe the organisational procedures relating to security of plant, tools, equipment, and personal belongings, in relation to: - workforce - site - workplace - company - vehicles - the general public.
		2.3	Explain the incident reporting procedures and who is responsible for making reports.
		2.4	Describe the different types of fire safety equipment.
		2.5	Describe how to comply with environmentally responsible work practices to meet current legislation and standards.
3	Maintain safe systems of work when constructing tunnels by pipe-jacking, box jacking, or micro-tunnelling operations.	3.1	Outline information for current legislation and standards and how it is applied.
		3.2	Use health and safety control equipment safely and comply with the methods of work to carry out the work in accordance with current legislation, standards, and organisational requirements.
		3.3	Demonstrate compliance with current legislation and standards relating to the following: - safe use of access equipment or systems - safe use of tunnel access and egress systems - safe use, storage, and handling of materials, plant, tools, and equipment - specific risks to occupational health and wellbeing, including mental health.
		3.4	Describe the importance of occupational health and wellbeing, including mental health.

3	continued	3.5	Explain the importance of applying Fairness, Inclusion, and Respect (FIR), when dealing with others and the organisational procedures with respect to site behaviours, and how to challenge inappropriate site behaviours.
		3.6	Explain why, when, and how health and safety control equipment, identified by the principles of prevention should be used, in relation to: - collective protective measures - personal protective equipment (PPE) - respiratory protective equipment (RPE) - ventilation.
		3.7	Describe how the relevant health and safety control equipment should be used in accordance with the work instructions.
		3.8	Describe how emergencies should be responded to in accordance with organisational authorisation and personal skills including but not limited to the following: - fires, spillages, injuries - gases and ventilation - emergencies relating to occupational activities - identification and reporting of hazardous substances.
		3.9	Describe how to report risks and hazards relating to the following: - methods of work - risk assessment - personal risk assessment - dealing with unsafe situations - manufacturer's technical information - task and toolbox talks - statutory regulations - standards.
4	Select the correct quantity and quality of resources for the methods of work to construct tunnels by pipe-jacking, box jacking, or micro-tunnelling operations.	4.1	Select resources associated with own work in relation to: - materials, components, and fixings - plant, tools, and equipment.
		4.2	Describe why the limitations, quality, and sustainability, of resources is important and how defects should be rectified.
		4.3	Describe how to confirm that the resources conform with the specified task.
		4.4	Describe how the resources should be used and how any problems associated with the resources are reported in relation to: - pipe jacking, box jacking, or micro-tunnelling systems - plant, tools, and equipment.

4	continued	4.5	Explain why the resources have been selected and how they are used.
		4.6	Describe how to identify any potential hazards associated with the resources, and methods of work, and how they are controlled.
5	Minimise the risk of damage to the work and environment when constructing tunnels by pipe-jacking, box jacking, or micro-tunnelling operations.	5.1	Comply with organisational procedures to protect the work and the environment by: - protecting the work - maintaining a safe, clear, and tidy, workspace - disposing of wate in accordance with current legislation.
		5.2	Explain why it is important to maintain a safe, clear, and tidy, workspace.
		5.3	Describe how to protect work, and the environment from damage, and the purpose of protection from general workplace activities, and other occupations.
		5.4	Explain why and how, the safe disposal of waste must be carried out in accordance with the following: - environmental responsibilities - organisational procedures - manufacturer's information - statutory regulations - standards.
6	Complete the work within the allocated time when constructing tunnels by pipe-jacking, box jacking, or micro-tunnelling operations.	6.1	Demonstrate completion of the work within the estimated and allocated time in accordance with organisational procedures, the programme of work, and to meet the needs of other occupations and the client.
		6.2	Describe the programme of work to be carried out including the estimated and allocated time and explain why deadlines should be kept.
7	Comply with the method statement to construct tunnels by pipe-jacking, box jacking, or micro-tunnelling operations.	7.1	Demonstrate the following work skills: - measuring - positioning - levelling - aligning - connecting - disconnecting - cleaning - checking - securing.
		7.2	Use and maintain: - plant - tools - equipment.

7 continued

7.3 Construct tunnels to working instructions using one of the following methods:
- pipe jacking
- box jacking
- micro-tunnelling.

7.4 Communicate work operations with others.

7.5 Describe how to comply with the method statement in relation to the following:
- how to install, position and monitor pipes and associated pipe jacking, box jacking, and micro-tunnelling equipment, including inter-jack systems
- how to construct tunnels by pipe jacking, box jacking and micro-tunnelling
- how to launch and recover pipe jacking, box jacking and micro-tunnelling plant
- how to connect and disconnect systems using safe isolation procedures for stored energy hazards
- why it is important to ensure work operations are communicated to all operatives involved with, and around the operation
- how to deal with hazardous energy sources including but not limited to:
  - electricity
  - compressed air
  - hydraulics
  - pressurised liquids
  - equipment under tension
- why it is important to recognise and determine when specialist skills and knowledge are required and report accordingly
- the limits of your own authority
- why it is important to identify and follow the installation quality requirements
- how to work with, around, and in close proximity to plant and machinery
- what the requirements are for working in a confined space
- how to work at height
- how to use access equipment and systems
- how to use plant, tools, and equipment
- how and why operative care and maintenance of plant, tools, and equipment is carried out.

7.6 Describe the needs of other occupations and how to communicate effectively within a team when constructing tunnels by pipe jacking, box jacking, and micro-tunnelling operations.

7.7 Explain the importance of teamwork and communication and using communication systems.

Title:	Constructing tunnels by pipe jacking, box jacking, or micro-tunnelling operations in the workplace
Additional information about this unit	
Assessment Guidance	This unit must be assessed in a work environment, in accordance with the ConstructionSkills' Consolidated Assessment Strategy for Construction and the Built Environment. Assessors for this unit must have verifiable, current industry experience and a sufficient depth of relevant occupational expertise and knowledge, and must use a combination of assessment methods as defined in the Consolidated Assessment Strategy. Workplace evidence of skills cannot be simulated. This unit must be assessed against the endorsements detailed within the relevant NVQ structure. Please refer to the NVQ structure applicable to the qualification/occupational area in which the candidate is being assessed.
Sector Subject areas	5.2 Building and Construction
Availability for use	Shared unit
Unit guided learning hours	330
Assessment hours	10

Title:	Preparing for and carrying out slurry, or fluid plant operations in the workplace
Unit Number:	Y/615/1956

Learning outcomes *The learner will be able to:*		**Assessment criteria** *The learner can:*	
1	Interpret the information relating to the work and resources when preparing for and carrying out slurry or fluid plant operations.	1.1	Interpret and extract relevant information from: - drawings - task briefings - risk assessments - method statements - manufacturer's information.
		1.2	Comply with information and/or instructions derived from risk assessments and method statements.
		1.3	Describe why the organisational procedures have been developed and how they are implemented.
		1.4	Describe different types of information, their source and how they are interpreted in relation to: - drawings - task briefings - risk assessments - method statements - manufacturer's information - standards - organisational procedures - current legislation.
		1.5	Describe the range of relevant digital services and how they are used including: - digital tools - digital systems.
		1.6	Describe the importance of reporting and rectifying inappropriate information.

2	Know how to comply with environmentally responsible work practices to meet current legislation, organisational procedures, and standards, when preparing for and carrying out slurry or fluid plant operations.	2.1	Describe their responsibilities regarding potential incidents, safety hazards, health hazards, and the environmental impact, whilst working: - in the workplace - below ground level - in confined spaces - at height - with temporary works - in a compressed air environment - with plant, tools, and equipment - with materials and substances - with the movement and lifting of materials and equipment by mechanical and manual means - with the safe handling and storing of materials, including explosives.
		2.2	Describe the organisational procedures relating to security of plant, tools, equipment, and personal belongings, in relation to: - workforce - site - workplace - company - vehicles - the general public.
		2.3	Explain the incident reporting procedures and who is responsible for making reports.
		2.4	Describe the different types of fire safety equipment.
		2.5	Describe how to comply with environmentally responsible work practices to meet current legislation and standards.
3	Maintain safe systems of work when preparing for and carrying out slurry or fluid plant operations.	3.1	Outline information for current legislation and standards and how it is applied.
		3.2	Use health and safety control equipment safely and comply with the methods of work to carry out the work in accordance with current legislation, standards, and organisational requirements.
		3.3	Demonstrate compliance with current legislation and standards relating to the following: - safe use of access equipment or systems - safe use of tunnel access and egress systems - safe use, storage, and handling of materials, plant, tools, and equipment - specific risks to occupational health and wellbeing, including mental health.
		3.4	Describe the importance of occupational health and wellbeing, including mental health.

3	continued	3.5	Explain the importance of applying Fairness, Inclusion, and Respect (FIR), when dealing with others and the organisational procedures with respect to site behaviours, and how to challenge inappropriate site behaviours.
		3.6	Explain why, when, and how health and safety control equipment, identified by the principles of prevention should be used, in relation to: - collective protective measures - personal protective equipment (PPE) - respiratory protective equipment (RPE) - ventilation.
		3.7	Describe how the relevant health and safety control equipment should be used in accordance with the work instructions.
		3.8	Describe how emergencies should be responded to in accordance with organisational authorisation and personal skills including but not limited to the following: - fires, spillages, injuries - gases and ventilation - emergencies relating to occupational activities - identification and reporting of hazardous substances.
		3.9	Describe how to report risks and hazards relating to the following: - methods of work - risk assessment - personal risk assessment - dealing with unsafe situations - manufacturer's technical information - statutory regulations - standards.
4	Select the correct quantity and quality of resources for the methods of work to prepare for and carry out slurry or fluid plant operations.	4.1	Select resources associated with own work in relation to: - materials, components, and fixings - plant, tools, and equipment.
		4.2	Describe why the limitations, quality, and sustainability, of resources is important and how defects should be rectified.
		4.3	Describe how to confirm that the resources conform with the specified task.

4	continued	4.4	Describe how the resources should be used and how any problems associated with the resources are reported in relation to: - additives, slurry, and fluid - plant and equipment - spill response - tools.
		4.5	Explain why the resources have been selected and how they are used.
		4.6	Describe how to identify any potential hazards associated with the resources, and methods of work, and how they are controlled.
		4.7	Describe how to calculate quantity, density, and viscosity associated with the method and procedure to prepare for and carry out slurry or fluid plant operations.
5	Minimise the risk of damage to the work and environment when preparing for and carrying out slurry or fluid plant operations.	5.1	Comply with organisational procedures to protect the work and environment by: - protecting the work - maintaining a safe, clear, and tidy, workspace - disposing of wate in accordance with current legislation.
		5.2	Explain why it is important to maintain a safe, clear, and tidy, workspace.
		5.3	Describe how to protect work, and the environment from damage, and the purpose of protection from general workplace activities, and other occupations.
		5.4	Explain why and how, the safe disposal of waste must be carried out in accordance with the following: - environmental responsibilities - organisational procedures - manufacturer's information - statutory regulations - standards.
6	Complete the work within the allocated time when preparing for and carrying out slurry or fluid plant operations.	6.1	Demonstrate completion of the work within the estimated and allocated time in accordance with organisational procedures, the programme of work, and to meet the needs of other occupations and the client.
		6.2	Describe the programme of work to be carried out including the estimated and allocated time and explain why deadlines should be kept.

7	Comply with the method statement to prepare for and carry out slurry or fluid plant operations.	7.1	Demonstrate the following work skills: - preparing - setting up - connecting - disconnecting - checking - mixing - monitoring - testing - pumping - cleaning - adjusting - maintaining - recording.
		7.2	Use and maintain: - plant - tools - equipment.
		7.3	Prepare for and install, operate, and maintain slurry or fluid plant to working instructions for one of the following operations: - tunnelling - pipe jacking - shaft sinking.
		7.4	Identify methods of isolation for servicing or blockages.

7 continued

7.5 Describe how to comply with the method statement in relation to the following:

- how to prepare the area allocated for the plant, tools, and equipment
- how to set up, assemble, and check the integrity of plant, tools, and equipment, including the connection of:
  - hoses
  - valves
  - items of plant for delivery, extraction, recycling, and disposal of slurry and fluids
- how to mix slurry and fluids in accordance with manufacturer's recommendations
- how to monitor the pumping process and make appropriate adjustments to maintain operational efficiency
- how to test the viscosity and density of the slurry and fluid
- why it is important to complete records of the process
- how to clean equipment ready for reuse
- how to deal with hazardous energy sources including but not limited to:
  - electricity
  - compressed air
  - hydraulics
  - pressurised liquids
  - equipment under tension
- why it is important to recognise and determine when specialist skills and knowledge are required and report accordingly
- the limits of your own authority
- why it is important to identify and follow the installation quality requirements
- how to work with, around, and in close proximity to plant and machinery
- what the requirements are for working in a confined space
- how to work at height
- how to use access equipment and systems
- how to use plant, tools, and equipment
- how and why operative care and maintenance of plant, tools, and equipment is carried out.

7.6 Describe the needs of other occupations and how to communicate effectively within a team when preparing for and carrying out slurry or fluid plant operations.

7.7 Explain the importance of teamwork and communication and using communication systems.

Title:	Preparing for and carrying out slurry, or fluid plant operations in the workplace
Additional information about this unit	
Assessment Guidance	This unit must be assessed in a work environment, in accordance with the ConstructionSkills' Consolidated Assessment Strategy for Construction and the Built Environment. Assessors for this unit must have verifiable, current industry experience and a sufficient depth of relevant occupational expertise and knowledge and must use a combination of assessment methods as defined in the Consolidated Assessment Strategy. Workplace evidence of skills cannot be simulated. This unit must be assessed against the endorsements detailed within the relevant NVQ structure. Please refer to the NVQ structure applicable to the qualification/occupational area in which the candidate is being assessed.
Sector Subject areas	5.2 Building and Construction
Availability for use	Shared unit
Unit guided learning hours	150
Assessment hours	10

Tel: 01430 423822

www.proqualab.com

enquiries@proqualab.com

ProQual AB Limited, ProQual House, Unit 1, Innovation Drive, Newport HU15 2HG
Company Registration Number: 07464445