Draft
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Foundation in Construction and the Built Environment (Level 2)

Qualification Handbook

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Qualification Purpose

Who is the qualification for?	The Foundation in Construction and the Built Environment (Level 2) provides a broad introduction to construction and the built environment. It has been developed for individuals working in or intending to work, in these sectors. It is aimed at learners in work-based learning, further education and school 6th forms. This qualification will enable learners to go on to study a range of other Level 2 or 3 Construction and Building Services Engineering (BSE) courses relevant to their trade interest area. It may be taken either as a full-time programme of learning that is usually delivered over one year; as a part-time programme of learning within an Apprenticeship framework; or for site operatives who want to widen their knowledge, understanding and skills in the sector more generally. It is suitable for: • learners aged 16+ currently working in or intending to work in the construction and built environment sector • site operatives who want to widen their knowledge, understanding and skills in the sector more generally
What does the qualification cover?	It offers learners a broad introduction to, and develops their knowledge and understanding of, the construction and built environment sectors. All learners will complete six mandatory core units which holistically cover an introduction to the construction and built environment sectors, employment and employability skills and health and safety. In addition to the mandatory core units, learners will choose two trade areas to spend additional time learning, which will include planning, performing and evaluating common tasks. The qualification equips learners with a broad, cross-cutting understanding of the sector, enabling them to make informed decisions about their own development.

What opportunities for progression are there?	On completion, the qualification will provide a broad foundational knowledge across the construction and built environment sector as well as introductory knowledge and skills in two chosen trade areas. The qualification provides the knowledge, understanding and skills for learners to progress onto further study. This includes progression to the following qualifications: • Progression in Construction Level 2 – City & Guilds • Progression in Building Services Engineering Level 2 - EAL • Construction Level 3 Two-year (trade area) - City & Guilds • Construction Level 3 Three-year (trade area) - City & Guilds • Building Services Engineering Level 3 Three-year (trade area) - EAL • Building Services Engineering Level 3 Four-year (trade area) - EAL
Who did we develop the qualification with?	The content has been developed by the consortium[1] in conjunction with stakeholders, tutors, training providers and employers from across the sector.

Qualification Aims and Objectives

The Foundation in Construction and the Built Environment (Level 2) qualification enables learners to begin to develop their:

- understanding of the buildings and structures that constitute the built environment and how they change, and have changed, over time;
- understanding of the trades, roles and careers in the construction and built environment sector;
- understanding of the life cycle of buildings and structures in the built environment and the associated principles and processes at each stage;
- understanding of social, economic and environmental sustainability as appropriate to construction and the built environment;
- knowledge of emerging technologies in the construction and built environment sector;
- employability skills and their understanding of how these are relevant to, and important in, the workplace in the construction and built environment sector;
- knowledge of and ability to apply the principles of working in ways which protect health, safety, well-being and the environment;
- knowledge, skills and understanding required in planning, performing and evaluating common practical tasks in at least two trades within the construction and built environment sector.

[1] The consortium consists of the City & Guilds of London Institute and EAL who worked jointly to develop and deliver all of the qualifications in the Construction and BSE suite

Qualification Structure

Rules of Combination

To achieve the **Foundation in Construction and the Built Environment (Level 2)** learners must successfully achieve:

- **6 mandatory core units (101-106)** and
- **2 optional trade specific units (107-116)**

achieving a Pass grade or higher in the three assessment methods, totalling 540 GLH.

Unit	Unit title	GLH
	Mandatory Core units ***All units to be achieved from this group***	
101	Introduction to the Built Environment	15
102	Introduction to the Trades in the Construction and Built Environment Sector	30
103	Introduction to the Built Environment Life Cycle	55
104	Employability in Construction and the Built Environment Sector	30
105	Protecting Health, Safety and the Environment when working in the Construction and Built Environment Sector	48
106	Introduction to emerging technologies in Construction and the Built Environment Sector	20
	Trade specific units ***2 units to be achieved from this group***	
107	Working with brick, block and stone	140
108	Wood Occupations	140
109	Plastering and interior systems	140
110	Decorative finishing and industrial painting occupations	140

111	Roofing occupations	140
112	Construction operations and civil engineering operations	140
113	Plumbing, heating and ventilation	140
114	Electrotechnical systems and equipment	140
115	Plant operations	140
116	Wall and floor tiling	140
	Mandatory assessment across all units	
	Assessment	*62*
Total GLH		**540**

Guided learning hour (GLH) and Total qualification time (TQT)

Guided Learning Hours (GLH) gives an indication to centres of the amount of supervised learning and assessment that is required to deliver a unit and can be used for planning purposes.

Total Qualification Time (TQT) is the total amount of time, in hours, expected to be spent by a learner to achieve a qualification. It includes both guided learning hours (which are listed separately) and hours spent in preparation, study and undertaking some formative assessment activities.

Credit is calculated using a formula that equates to the TQT value divided by 10.

The TQT for this qualification is specified below.

Qualification	TQT	Credits
Foundation in Construction and the Built Environment (Level 2)	600	60

Centre requirements

This qualification will require centre and qualification approval. This will include desk-based assessment.

Centre approval is based upon an organisation's ability to meet the centre approval criteria. The approval for this qualification can be found detailed in the following documents:

- City & Guilds Centre Manual
- City & Guilds Our Quality Assurance Requirements
- Quality Assurance Model

Prospective centres will be advised to seek centre and qualification approval, as appropriate, prior to starting to deliver the qualification.
The Consortium aims to provide the centre and qualification approval decision within 30 working days of the submission of the completed application, with four possible outcomes:

- Centre approval and qualification approval granted
- Centre approval and qualification approval granted subject to action plan
- Centre approval and qualification approval withheld subject to action plan
- Centre approval and qualification approval denied.

Centre and qualification approval are deemed to have been granted when City & Guilds confirms the status in writing to the centre, and not before.

Centres will be required to apply for approval for this qualification and to meet the specific centre requirements outlined in this document related to delivery staff and assessor competence. These requirements will be checked and monitored as part of the qualification approval process and on-going monitoring of this qualification.

Registration, Results Issuing and Certification

Please consult the Consortium website for details on qualification registration and certification processes, timelines and procedures.

*During submission process please see Consortium Process Document for this information.

Centre staffing

Assessor requirements

Assessors of this qualification must:

- be occupationally competent; this means that each assessor must be capable of carrying out the full requirements of the area they are assessing to at least the same level. Occupational competence means that they are also occupationally knowledgeable. This could be verified by a combination of:
    - Curriculum vitae and employer endorsements or references.
    - Possession of a relevant NVQ/SVQ, or vocationally related qualification.
    - Membership of, or recognition by, a relevant professional body
- maintain their occupational competence through relevant and clearly demonstrable continuing learning and professional development
- hold or be working towards the current Assessor qualifications, i.e.
    - Level 3 Award in Assessing Competence in the Work Environment or
    - hold the A1 Assessors Award or D32/33 units

Where assessors have legacy assessor qualifications, they must demonstrate that they are assessing in line with current assessment standards or another suitable qualification equivalent/alternative in the assessment of work-based performance. This must be agreed in advance with the centre's External Quality Assurer (EQA).

The consortium also accepts alternative nationally accredited assessor qualifications. A comprehensive list of these are available on the qualification webpage (https://www.skillsforwales.wales/).

Where working towards assessor qualifications there must be a countersigning arrangement in place from a qualified assessor from the same or related occupational area.

Quality Assurance

Internal Quality Assurance

The focus of internal quality assurance for this qualification is:

- the quality assurance of assessment procedures, including standardisation of assessment practice across different assessors within the centre
- internal standardisation of learner marks awarded for the Practical Project and Guided Discussion.

All centres approved to deliver this qualification must have robust internal quality assurance (IQA) processes in place. This will help ensure that Internal Quality Assurance procedures:

- provide accuracy and consistency between Assessors in the use and interpretation of the guidance in the qualification and/or assessment documentation
- are efficient and cost effective.

IQA evidence will be scrutinised as part of consortium external quality assurance activities. Centres will be expected to retain evidence in-line with the requirements of City & Guilds centre manual, and should be retained for a minimum of three years.

Internal Quality Assurers

The centre must provide the Consortium with the details of personnel who they plan to undertake Internal Quality Assurance, so that they can be approved prior to them carrying out this role. Prior to the first assessments taking place; Internal Quality Assurer's (IQAs) must also complete the Consortium training. This is to ensure the reliability of assessment at centres over time.

IQAs must

- prepare for and participate in relevant Consortium meetings and events, such as induction, Continuing Professional Development (CPD)/training and standardisation

events, and ensure any personal action/ improvement plans are achieved, within agreed timescales and to the required standards.

- have a minimum level of occupational experience evidenced by having a building services engineering/construction related qualification or proven sector competence/experience at least equivalent to the level of the qualification, to enable them to conduct their role as an IQA. This evidence is quality assured by the Consortium.
- be working towards, or have achieved, a relevant recognised Internal Quality Assurance qualification such as the Level 4 Award in the Internal Quality Assurance of Assessment Processes and Practice and continue to practice to that standard. IQA's who hold earlier qualifications (V1 or D34ust demonstrate CPD evidence to the most current industry standards.
- be able to demonstrate evidence of being up to date with the relevant trade/industry. This can be evidenced for example by either accessing trade publications, undertaking courses of learning, attending networking events relevant to this qualification and/or attending industry events.

The IQA has a pivotal role in ensuring that centre marked assessment is standardised. They should work with assessors to ensure that the correct procedures are always being followed and ensure that assessment decisions taken by different assessors are consistent, fair and reliable. Key activities will include:

- meeting with assessors (individually and collectively) throughout the course to discuss quality assurance and standardisation issues and provide support and guidance where needed,
- observing assessors and giving them feedback to help improve their assessment technique,
- sampling evidence across different cohorts to ensure that appropriate standards have been met,
- arranging cross-marking of assessments to compare results and agree benchmarks in line with the Consortium training.

The Consortium will provide guidance to centre IQAs throughout the change management process.

External Quality Assurance

The practical project and guided discussion must be internally assessed and externally verified. Quality assurance of internal assessment will be externally verified by our team of technically competent, External Quality Assurers (EQAs). EQAs are inducted, trained and regularly updated on changes to qualifications, ensuring a standardised approach. Thorough vetting ensures required knowledge, including attainment of EQA Training Assessment and Quality Assurance (TAQA) qualifications. All Building Services Engineering (BSE) and Construction EQAs will be briefed on the Sector Review including the new qualification suite. Our EQAs follow robust verification processes. They monitor centres' assessment systems, practice and outcomes in line with regulatory requirements. Their sampling strategies are based on 'CAMERA' (ensuring a representative sample of Learners, Assessors, Methods of assessment, Evidence, Records, Assessment sites).

The Consortium will:

- carry out necessary quality assurance of this assessment which can include direct observation, assessment sampling, and feedback from learners,
- have a robust appeals procedure in place for learners.

External Quality Assurers

External Quality Assurers must:

- be accountable to the Consortium
- have achieved or be working towards the TAQA award have achieved V2 or D35 and possess CPD evidence of practicing to the TAQA Standards
  and
- demonstrate an understanding of the assessment process
- have no connections with the assessment centre, in order to maintain objectivity
- have sufficient and relevant technical/occupational understanding in the qualification(s)/unit(s) being externally quality assured,
- be able to provide centres with advice and guidance on assessment and IQA procedures.

They must be able to demonstrate evidence of being up to date with the relevant trade/industry. This can be evidenced for example by either accessing trade publications, undertaking courses of learning, attending networking events relevant to this qualification and/or attending industry events.

The Consortium will

- carry out necessary quality assurance of the assessment process which can include direct observation, assessment sampling, and feedback from learners.
- have a robust appeals procedure in place for learners.

Roles, responsibilities and Quality Assurance

Internal Assessor Profile

The centre must provide the Consortium with the details of personnel who they plan to undertake assessment, so that they can be approved prior to them carrying out this role. Prior to the first assessments taking place; assessors must also complete the Consortium training. This is to ensure the reliability of assessment at centres over time.

Assessors must be working towards or have achieved a relevant recognised assessor qualification such as a Level 3 Certificate in Assessing Vocational Achievement **and** continue to practice to that standard. Assessors who hold earlier qualifications (D32 or D33 or TQFE/TQSE) must have CPD evidence to the most current standards.

Assessors must be occupationally competent. Evidence which supports this is by the assessor holding a relevant NVQ or equivalent* to the full occupational competence threshold of the trade and/or having registration with a relevant trade body or having appropriate recognition which clearly evidences the assessor as competent in the trade.

*Assessors who qualified before NVQs were developed should provide evidence of how they are occupationally competent (such as through a CV or CPD Log together with any relevant references).

Internal Assessor Requirements

Internal Assessors must:

- carry out and document assessment in line with the Consortium and regulatory arrangements including:
    - acting in a professional and courteous manner at all times when conducting the assessment
    - marking the assessments, in accordance with grading criteria.
- maintain a knowledge of assessment policies and procedures,
- maintain and document CPD (to be submitted on request),
- understand the sector, the qualification, and the assessment requirements,
- be occupationally competent,
- produce clear, accurate and concise documentation and relevant records (written and electronic), and ensure they are controlled and administered in accordance with the awarding bodies procedures,
- make robust assessment decisions,
- handle relevant information in accordance with GDPR requirements,
- prepare for and participate in relevant Consortium meetings and events – such as induction, CPD/training and standardisation events, and ensure any personal action/ improvement plans are achieved, within agreed timescales and to required standards,
- report to the IQA any suspicion of malpractice or maladministration, including academic misconduct,
- declare any conflicts of interest (such as between the assessor and the learner).
- provide access to information and records when requested,
- complete and submit all reports within specified timeframes.

External associates/appointees

Associates/Appointees are the terms adopted by the Consortium to refer to individuals appointed by City & Guilds or EAL to undertake specific roles on their behalf, for example, External Quality Assurers (EQAs).

There is criteria set by the Consortium to ensure that all associates/appointees have the right occupational knowledge, experience and skills to perform the specific role.

The Consortium will ensure that all associates/appointees undertaking a quality assurance role in centre approval, qualification approval and assessment decisions are trained, appropriately qualified and occupationally competent. Training and attendance at standardisation events is mandatory.

All associates/appointees are performance managed by staff within the Consortium. If concerns are identified with an individual, each Consortium partner will take corrective action in line with organisational policies, which may result in the requirement of improvement actions and close monitoring or further actions as needed.

The Consortium will ensure that sufficient bilingual associates/appointees are recruited to meet the needs of Welsh-medium centres and learners. The level of quality assurance activity will be consistent across provision in both English and Welsh mediums. Provision will be made for monitoring and standardisation to take place for both languages.

Welsh context

For individuals who have not previously conducted assessment activities in Wales, it is suggested that having an awareness of Welsh language and an understanding of Welsh culture, policy and context would be beneficial to support their roles.

Continuing Professional Development

Centres are expected to support their staff in ensuring that their knowledge and competence in the occupational area is current and of best practice in delivery, mentoring, training, assessment and quality assurance and that it takes account of any national or legislative developments.

Delivering the qualification

Learner entry requirements

The Consortium does not set entry requirements for this qualification. However, centres must ensure that learners have the potential and opportunity to gain the qualification successfully.

Entries for the qualification can be made via the Walled Garden, see the Consortium website for further details.

Age restrictions

The Consortium cannot accept any registrations for learners under 16 years of age as this qualification is not approved for those under 16.

Initial assessment and induction

An initial assessment of each learner should be made before the start of their programme to identify:

- if the learner has any specific training needs,
- support and guidance they may need when working towards their qualification,
- any units they have already completed, or credit they have accumulated which is relevant to the qualification,
- the appropriate type and level of qualification.

We recommend that centres provide an induction programme so the learner fully understands the requirements of the qualification, their responsibilities as a learner, and the responsibilities of the centre. This information can be recorded on a learning contract.

Support materials

The following resources are available for this qualification:

Description	How to access
Assessment pack	Consortium website

Quality assurance of internal assessment arrangements

External Quality Assurance processes are in place for checking the validity and reliability of assessment decisions made by centre staff, as appropriate to this qualification.

The assessment will be internally assessed and subject to risk-based monitoring and sampling by external quality assurers to ensure the consistency and validity of centre assessment decisions. Quality assurance activities will be undertaken by appropriately qualified and trained assessment associates. In all instances of sampling for quality assurance purposes, formal written feedback will be provided by City & Guilds.

Significant non-compliance or areas of concern identified during external monitoring will be subject to investigation by the Consortium. As a result of this activity appropriate improvement actions and/or sanctions may be put in place. In some instances, investigations may result in de-registration for the centre(s) in question.

Internal appeal

Centres must have an internal process in place for learners to appeal the marking of internally marked assessments. The internal process must include learners being informed of the results the centre has given for internally assessed components, as they will need these to make the decision about whether or not to appeal.

Malpractice

Please refer to the City & Guilds guidance notes *Managing cases of suspected malpractice in examinations and assessments*. This document sets out the procedures to be followed in identifying and reporting malpractice by learners and/or centre staff and the actions which City & Guilds may subsequently take. The document includes examples of learner and centre malpractice and explains the responsibilities of centre staff to report actual or suspected malpractice. Centres can access this document on the City & Guilds website.

Examples of learner malpractice are detailed below (please note that this is not an exhaustive list):

- falsification of assessment evidence or results documentation
- plagiarism of any nature
- collusion with others
- copying from another learner (including the use of ICT to aid copying), or allowing work to be copied

- deliberate destruction of another's work
- false declaration of authenticity in relation to assessments
- impersonation.

These actions constitute malpractice, for which a penalty (e.g. disqualification from assessment) will be applied.

Please refer to the form in the document *Managing cases of suspected malpractice in examinations and assessments*.

Access arrangements and special consideration

Access arrangements are adjustments that allow learners with disabilities, special educational needs and temporary injuries to access the assessment and demonstrate their skills and knowledge without changing the demands of the assessment. These arrangements must be made before assessment takes place.

It is the responsibility of the centre to ensure at the start of a programme of learning that learners will be able to access the requirements of the qualification.

Please refer to the *JCQ access arrangements and reasonable adjustments and Access arrangements - when and how applications need to be made to City & Guilds* for more information. Both are available on the City & Guilds website: **http://www.cityandguilds.com/delivering-ourqualifications/centre-development/centre-document-library/policies-andprocedures/access-arrangements-reasonable-adjustments**

Special consideration

We can give special consideration to learners who have had a temporary illness, injury or indisposition at the time of assessment. Where we do this, it is given after the assessment.

Applications for either access arrangements or special consideration should be submitted to City & Guilds by the Examinations Officer at the centre. For more information please consult the current version of the JCQ document, *A guide to the special consideration process*. This document is available on the City & Guilds website: http://www.cityandguilds.com/delivering-ourqualifications/centre-development/centre-document-library/policies-andprocedures/access-arrangements-reasonable-adjustments

Summary of Assessment

The **Foundation in Construction and the Built Environment (Level 2)** is assessed using 3 assessment methods:

Assessment type	Approach to assessment	Weighting (Contribution to overall qualification grade)
On-Screen Assessment	Externally-set, externally-marked	20%
Practical Project	Externally-set, internally-marked	60%
Guided Discussion	Externally-set, internally-marked	20%

An assessment pack detailing the requirements of the assessment can be downloaded from the Consortium website.

Details of coverage of each assessment can be found in the assessment specifications within the assessment pack.

Assessment timings and phasing

The following must be applied to the assessment of this qualification:

- all units must be undertaken and related requirements must be completed and assessed within the learner's period of registration.

Assessments can be taken on-demand, centres must ensure that learners have undertaken all required learning and are adequately prepared to undertake each assessment.

Learners must have completed the Practical Project assessment prior to undertaking the Guided Discussion assessment.

Result Release

On-screen assessment

The on-screen assessment is auto-marked and results will be received by the centre the same day the assessment is completed. A result release processed will be followed by the Consortium when new assessment versions are released.

Practical project

The practical project is internally marked and externally verified. Provisional marks awarded following internal assessment are translated into grades using the marking and grading tables provided in the assessment pack. Provisional grades are then submitted to City & Guilds via the Walled Garden. These provisional grades are then aggregated based on the assessment weighting, in line with the grade aggregation guidance provided within the assessment pack, to provide an overall qualification grade which will be issued by City & Guilds.

Guided discussion

The guided discussion is internally marked and externally verified. Provisional marks awarded following internal assessment are translated into grades using the marking and grading tables provided in the Assessment pack. Provisional grades are then submitted to City & Guilds via the Walled Garden. These provisional grades are then aggregated based on the assessment weighting, in line with the grade aggregation guidance provided within the assessment pack, to provide an overall qualification grade which will be issued by City & Guilds.

Overall qualification results

Provisional grades for the Practical project and Guided discussion must be provided to learners within one week of completion of each assessment. Guidance should be given around the provisional nature of these results, with recognition that they will undergo internal and external quality assurance activities, and final qualification grading by City & Guilds.

Final qualification grades will be notified to centres following completion of external quality assurance activities. This notification will be within eight weeks of centre submission of learner results for both the practical project and guided discussion (and following successful completion of the on-screen assessment).

Resubmission/re-sit of assessment

If the learner fails to successfully achieve any of the assessments, they are permitted to resit/resubmit.

When resitting/resubmitting learners can achieve the full range of marks and grades available.

If a learner is required to resit or resubmit any of the assessments, appropriate feedback and support must be provided to enable the learner to do so within an appropriate timeframe. If a learner does not meet the appropriate level required in the resit/resubmission, the centre should either:

- arrange additional support for the learner, or,
- inform the learner of the right to appeal.

Centres must record any actions taken and/or any additional support given to the learner. There will be no limit on the number of resits or resubmissions which can take place.

For further information on the approach to resubmitting/resitting any specific assessments, please see information within the Assessment pack.

Qualification Grading

This qualification is graded **Fail, Pass, Merit, Distinction.**

Learners will gain marks within each assessment component; this will lead to the awarding of a grade (Fail, Pass, Merit, Distinction) for each assessment component.

Learners must achieve at least a Pass grade in each assessment component to pass the qualification.

The assessment level grades are combined to determine the overall qualification grade (Pass, Merit, Distinction) using the following grade aggregation table:

MCQ Grade	Project Grade	Discussion Grade	Qualification Grade
Pass	Pass	Pass	**Pass**
Pass	Merit	Pass	**Merit**
Pass	Distinction	Pass	**Distinction**
Merit	Pass	Pass	**Pass**
Merit	Merit	Pass	**Merit**
Merit	Distinction	Pass	**Distinction**
Distinction	Pass	Pass	**Pass**
Distinction	Merit	Pass	**Merit**
Distinction	Distinction	Pass	**Distinction**
Pass	Pass	Merit	**Pass**
Pass	Merit	Merit	**Merit**
Pass	Distinction	Merit	**Distinction**
Merit	Pass	Merit	**Pass**
Merit	Merit	Merit	**Merit**
Merit	Distinction	Merit	**Distinction**
Distinction	Pass	Merit	**Merit**
Distinction	Merit	Merit	**Distinction**
Distinction	Distinction	Merit	**Distinction**
Pass	Pass	Distinction	**Pass**
Pass	Merit	Distinction	**Merit**
Pass	Distinction	Distinction	**Distinction**
Merit	Pass	Distinction	**Merit**
Merit	Merit	Distinction	**Distinction**
Merit	Distinction	Distinction	**Distinction**
Distinction	Pass	Distinction	**Merit**
Distinction	Merit	Distinction	**Distinction**
Distinction	Distinction	Distinction	**Distinction**

Content Key

The information below aims to provide an overview of how unit content is structured and how the areas of content relate to each other as well as qualification delivery and assessment.

Learning outcomes

Learning outcomes group together chunks of related practical skills and/or knowledge and are presented as the result of the learning process i.e. what learners must understand or be able to do following teaching and learning. All learning outcomes are supported by a number of assessment criteria. In the below for example, this learning outcome is about the different processes for stacking, storing and preparing.

Learning outcome:

2. *Understand the processes of* ***stacking, storing and preparing materials*** *for building brick, block and stone walls.*

Assessment criteria

Assessment criteria break down the learning outcome into smaller areas to be covered, these criteria are what will be assessed in connection with the learning outcome. In the below for instance, assessment criteria 2.1 is about the reasons for stacking and storing materials, which has been written and will be assessed against the learning outcome.

Criteria

2.1 Reasons for ***stacking and storing*** *materials*

Range

Range contains information about the breadth required for a specific assessment criteria, for example, the actual reasons for stacking and storing materials. The range is not an exhaustive list, there may be other examples that could fit within that topic area, however those that are listed in the range are key for the delivery of the unit content – **all elements listed in the range must be covered as part of the delivery of the unit.**

Range: *Protection, efficiency, security*

Delivery Guidance

The following definitions are used for specific terms used within the content of this qualification.

Modern buildings and construction

Buildings constructed using impermeable materials and incorporating barriers to external moisture, such as cavities, rain-screens, damp-proof courses, vapour barriers, and membranes. Often reliant upon mechanical extraction to remove water vapour formed by the activities of building occupants.

Historic buildings and structures

May be of traditional or modern construction. Often given statutory protection by being listed as buildings of special architectural or historic interest or scheduled as monuments. May also be protected by being locally listed or by being within a conservation area or World Heritage Site.

Repurposing

Adapting and modifying redundant buildings to extend the life of building or structure by investing in regeneration and repurposing to meet the needs of the local community

Unit 101: Introduction to the Built Environment

Level:	2
GLH:	15

What is this unit about?

The purpose of this unit is for learners to recognise the different types and purposes of buildings from pre-1919 to the 21st century. The unit will also explore the interaction between the infrastructure and the modern working and living environment.

Learners will develop their knowledge and understanding of:

- ✓ The types and purpose of domestic, commercial, industrial and public buildings within the built environment.
- ✓ Key design areas within traditional and heritage buildings
- ✓ The main design changes within traditional, commercial, industrial and public buildings within the built environment.
- ✓ The main types of infrastructure and their purpose within the built environment.

Learners may be introduced to this unit by asking themselves questions such as:

- How have buildings changed over time?
- What are the different types of buildings within the built environment?
- What makes up the infrastructure within the built environment?

Learning outcome:

1. Understand the types and purposes of buildings in the built environment

Criteria

1.1 Types of buildings in the built environment

Range: types, design features, purpose, differences

1.2 Key construction design areas and changes over time

Range: Traditional and modern forms of construction, historic buildings

1.3 The main cultural requirements for different buildings and structures

Range: religious, civic, arts

1.4 Societal requirements for communities

Range: Infrastructure and transport links; local development plan; purpose of building regulations

Learning outcome:

2. Know the different types of structures in the built environment

Criteria

2.1 Know the types of infrastructure and their purpose

Range: Highways, bridges, tunnels, dams, viaducts, canal and waterway structures, quays, docks and piers, towers, transport networks, service distribution, flood and coastal defences and renewable energy.

Unit 102: Introduction to the Trades in the Construction and Built Environment Sector

Level:	2
GLH:	30

What is this unit about?

The purpose of this unit is for learners to know the range of trades available within the construction and built environment sector and how they interact within a construction project. Learners will know the skills required to carry out traditional and modern construction practices, as well as understanding the materials used to carry out these tasks.

Learners will develop their knowledge of:

- ✓ Trowel occupations
- ✓ Wood occupations
- ✓ Plastering
- ✓ Decorative finishing and industrial painting occupations
- ✓ Roofing occupations
- ✓ Construction and civil engineering operations
- ✓ Electrotechnical installations
- ✓ Plumbing, heating and ventilation
- ✓ Gas installation engineering
- ✓ Refrigeration and air conditioning

Learners may be introduced to this unit by asking themselves questions such as:

- What is the difference between construction and building service trades?
- What skills will I need /develop to work within the construction and built environment sector?
- What traditional techniques could I use in the construction industry today?

Learning outcome:

1. Know the trades in the construction and built environment sector

Criteria

1.1 The main trades in the construction industry

Range: Trades, roles, activities associated with, career paths

1.2 The main trades in the building services industry

Range: Trades, roles, activities associated with, career paths

Learning outcome:

2. Know the traditional skills used in construction and building services

Criteria

2.1 The main traditional skills used in construction and building services today

Range: Marking out, cutting, installing, finishing.

2.2 Appropriate materials for use in traditional and historic buildings and structures

Range: Heritage materials - qualities, uses, importance of

Unit 103: Introduction to the Built Environment Life Cycle

Level:	2
GLH:	55

What is this unit about?

The purpose of this unit is for learners to develop an understanding of the implications and impacts a building has on the environment.

Learners will develop their knowledge and understanding of:

- ✓ The designing and planning of buildings and structures
- ✓ The main stages of the construction and the installation of services
- ✓ The maintenance of buildings, structures and installed services
- ✓ Repurposing of buildings and structures
- ✓ Demolition and deconstruction of buildings and structures
- ✓ Promotion of services in the construction and built environment sector

Learners may be introduced to this unit by asking themselves questions such as:

- What impact does building a structure have on the local environment and its wildlife?
- What are the stages involved in constructing a building?
- How is a building maintained and adapted to suit changes in its use?
- What types of demolition exists in the construction industry?

Learning outcome:

1. Understand the design of buildings and structures

Criteria

1.1 Surveying

Range: Purpose; basic principles; equipment

1.2 The environmental factors that impact on construction

Range: Precautionary measures**;** preventive measures**;** rectifying at source; integration within the environment**;** polluter pays principle

1.3 Sustainability

Range: Principles of sustainability; the importance of sustainability; the impact of sustainable and unsustainable practices

1.4 Designing waste out of projects

Range: Planning, ordering, storage, standardised development projects

1.5 Plans and documentation used in construction

Range: Types of drawings and scales; schedules; specifications; hatchings and symbols

Learning outcome:

2. Know the planning process

Criteria

2.1 Roles and responsibilities

Range: Sources of information, official guidance and advice

2.2 Primary planning legislation and regulations

Range: Main types of consent or approval, types of permitted development, implications of breaching legislation and regulations.

2.3 Heritage protection

Range: Types of heritage protection

Learning outcome:

3. Understand the stages of construction and the installation of services

Criteria

3.1 Building structure

Range: substructures; superstructures; internal components

3.2 Typical sequence of tasks used to construct a two-storey building

Range: Sequence of work; trades associated with each task in the sequence

3.3 Effective and productive working relationships between trades

Range: Methods of communication during the planning and construction process; ways of working.

Learning outcome:

4. Know the methods of promoting the services offered within the construction and built environment sector

Criteria

4.1 Methods of marketing

Range: Methods; Business types

4.2 The impact of successful marketing on businesses

Range: Financial; reputation; forward planning

Learning outcome:

5. Know types of and purposes of maintenance of buildings, structures and installed services

Criteria

5.1 Types of servicing, maintenance schedules and repairs for construction and BSE trades

Range: buildings; structures; services, tradespeople

5.2 The purposes of servicing and maintenance

Range: maintaining safety, maintaining security, extend serviceable life, reduce running costs, maintain fabric of the building

Learning outcome:

6. Understand repurposing of buildings and structures

Criteria

6.1 Repurposing and reinstatement of buildings and structures

Range: Definition; change of use; refurbishment; system upgrades

6.2 Recycling and reuse

Range: Benefits; importance of; traditional and historic materials

Learning outcome:

7 Know the process for demolition and destruction of buildings and structures

Criteria

7.1 Requirements in decommissioning

Range: Environmental impact, Health and safety

7.2 Methods of demolition

Range: Methods; selection; risks

7.3 Demolition waste removal.

Range: Stages of demolition waste removal, importance of stages, environmental considerations; benefits

Unit 104: Employability in the Construction and Built Environment Sector

Level:	2
GLH:	30

What is this unit about?

The purpose of this unit is for learners to understand construction and the built environment, what it takes to become part of the industry and to progress within it. Throughout the unit, learners will be introduced to the Building team and the many roles available when looking to develop a career pathway.

Learners will develop their knowledge, understanding and skills of:

- ✓ the routes into the sector and entry onto each
- ✓ types of employment
- ✓ how the learner can find roles to apply for
- ✓ progression routes in the trade environment including the different career pathways and educational opportunities
- ✓ the behaviours employers count as being essential
- ✓ the basic economics of business and how successful businesses are run.

Learners may be introduced to this unit by asking themselves questions such as:

- How can I build a career within the industry?
- What are the career opportunities in construction and the built environment?
- What skills and behaviours will I need to show in order for me to succeed in the industry?

Learning outcome:

1 Know employment options and opportunities

Criteria

1.1 Employment contracts available in the industry
Range: Contracts; differences

1.2 Finding current job opportunities and apprenticeship vacancies in the industry
Range: research types, work preparation, work readiness, CV building, interview preparation

Learning outcome:

2. Know about employability skills

Criteria

2.1 Behaviours and work ethic
Range: Positive behaviours, negative behaviours

2.2 Problem-solving techniques
Range: materials, tools, safety and environment

2.3 Team working and interpersonal skills

Range: individual contribution, team contribution, communication skills

Learning outcome:

3 Understand the basic principles of business

Criteria

3.1 Basic principles of business
Range: income, expenditure, book-keeping, overheads, business growth

2.2 The importance of productivity and reputation
Range: quality, reputation

3.3 The importance of customer service
Range: positive customer service; consequences of non-compliance; expectations; causes of disruption

3.4 The consequences of loss of business
Range: effects of poor planning; effects of loss of business

Learning outcome:

4 Be able to use basic business and employability skills

Criteria

4.1 Basic research skills
Range: internet searches, literary searches

4.2 Basic calculations and invoicing
Range: profit and loss calculations, calculating basic invoices

4.3 Use positive communication techniques
Range: verbal, written, listening/following instructions

4.4 Problem-solving
Range: working with others, materials, tools, safety and environment

4.5 Team-working and interpersonal skills
Range: timekeeping, attitude, personal presentation, flexibility.

Unit 105: Protecting Health, Safety and the Environment when working in the Construction and Built Environment Sector

Level:	2
GLH:	48

What is this unit about?

The purpose of this unit is for learners to gain an understanding of construction and the built environment and what it means to work with consideration for protecting the environment, as well as protecting the health and welfare of themselves and others.

Learners will develop their knowledge, understanding and skills of:

- ✓ legislation that controls health and safety
- ✓ how regulations control the way in which work is carried out
- ✓ common safety regulations and sources of guidance and how these affect the learners as individuals as well as their supervisors, the client, the public and construction organisations.
- ✓ principles of health and welfare in the workplace such as accident management, common risks they may be exposed
- ✓ fundamental considerations in terms of their personal well-being including mental health, bullying within the workplace and substance abuse.

Learners will apply this knowledge to the construction environment and will be able to identify hazards, assess risk and suggest appropriate actions. Learners will be introduced to working with a range of work equipment and will be taught to safeguard themselves and others from potential risks.

Learners may be introduced to this unit by asking themselves questions such as:

- What risks are there on a construction site?
- What does health and safety best practice look like?
- How can I best protect myself, others and the environment when working on-site?

Learning outcome:

1. Know workplace health and safety

Criteria

1.1 The importance of health and safety

Range: Personal safety, site safety, consequences of non-compliance

1.2 Regulations

Range: Purpose of the regulation; consequence of non-compliance for the regulation; who is affected by the regulation

1.3 Roles and Responsibilities

Range: Individual, employer, client, Health and Safety Executive (HSE)

Learning outcome:

2. Know health and welfare considerations for working on-site

Criteria

2.1 Accidents and injuries at work

Range: Common accidents and injuries; causes; consequences; responsibilities; prevention.

2.2 Reporting procedures

Range: roles and responsibilities; accident reporting; procedures**.**

2.3 Personal welfare

Range: Personal hygiene, Physical health, mental health, substance abuse

2.4 Site welfare

Range: responsibilities; facilities

Learning outcome:

3. Understand principles of risk management

Criteria

3.1 Terminology

Range: Accident, near miss, hazard, risk, competence

3.2 Risk assessment process

Range: Purpose, risk assessment completion, hazard identification, risk rating, method statements, permits to work

3.3 Protective Equipment

Range: Use; application

3.4 Emergency procedures
Range: Exit signs, fire extinguishers, assembly points, roles and responsibilities

3.5 Safety signs
Range: Categories; Mandatory, prohibition, hazard, information signs, fire, safe condition

Learning outcome:

4. Know the equipment and associated risks within the construction and built environment

Criteria

4.1 Access equipment and working at height
Range: Types of equipment; storage of equipment; hazards; implications.

4.2 Power tools
Range: Selection of power tools; risk identification; risk controls; maintenance

4.3 Plant and machinery
Range: Vehicles, lifting equipment, fixed machines and dangers associated

4.4 Risks in construction and the built environment
Range: Areas of risk when working; working with hazardous substances; storage of hazardous substances; unsafe buildings

Learning outcome:

5. Know the principles of environmental protection

Criteria

5.1 Waste management and disposal
Range: Segregation, recycling, landfill, incineration, hazardous waste disposal, dust

5.2 Pollution
Range: Land contamination, air contamination, noise pollution, water course pollution

Learning outcome:

6. Be able to apply waste management principles when working in the Construction and Built environment sector

Criteria

6.1 Apply basic waste management and disposal practices

Range: Segregation, recycling, landfill, incineration, hazardous waste disposal, dust

Unit 106: Introduction to emerging technologies in Construction and The Built Environment Sector

Level:	2
GLH:	20

What is this unit about?

The purpose of this unit is for learners to be introduced to the emerging technologies that are currently being used in the construction and built environment, their uses and how they benefit the industry. They will also be introduced to future technologies that are being introduced to construction and the built environment.

Learners will develop their knowledge and understanding of:

- ✓ introduction to Building Information Modelling (BIM) and how it is used widely throughout the construction and built environment by a range of stakeholders including tradespeople, project managers and the end point user.

Learners may be introduced to this unit by asking themselves questions such as:

- How can technology by used within construction and the built environment?
- What are the advantages of embracing new technology?
- What are the emerging considerations of using new technology?

Learning outcome:

1. Know the use of Building Information Modelling (BIM) within construction and the built environment

Criteria

1.1 Introduction to BIM
Range: Principles; process; main stages, collaboration

1.2 Key terminology
Range: Definitions of key terminology; place in the process

Learning outcome:

2. Know about emerging technologies and materials

2.1 Introduction to 3D printing
Range: Uses, benefits, limitations.

2.2 Introduction to immersive technologies
Range: Simulations, collaboration, proof of concept and planning

2.3 Evolving materials
Range: Use, benefits, advantages

Delivery outcomes (depth of content)

2.1 Learners will have a basic knowledge of the concepts of 3D printing including its uses, benefits and limitations in relation to planning, designing, modelling and constructing.

2.2 Learners will know the characteristics of, and how to differentiate between Virtual reality (VR), Augmented reality (AR) and Mixed reality (MR). Learners will have an awareness of the uses of these technologies within construction and the built envronment through simulation and collaborative environments to show proof of concept and planning.

2.3 Learners will know the benefits and advantages of new evolving materials and their uses, including buildings using:

- graphene
- surface coverings
- ventilated building materials
- liquid roof
- transparent aluminium

- self-healing concrete

Learning outcome:

3. Know about off-site construction

Criteria

3.1 Benefits of pre-fabricated construction

Range: Sustainability; value; efficiency

3.2 Types of pre-fabrication work

Range: Types of pre-fabricated buildings, pre-fabricated sub-assemblies and components, uses, characteristics, construction materials

Unit 107: Working with brick, block and stone

Level:	2
GLH:	140

What is this unit about?

The purpose of this unit is to provide the learner with the principles, knowledge and practical skills to allow them to understand the trade specific terminology used within the trowel occupations.

Learners will be introduced to the tools and equipment used in the trade and learn the safest way to work with them and relevant materials. Learners will be able to understand the use of documentation to communicate information relating to the work that will be carried out.

The learner will know how to select, store, and prepare materials for laying bricks, blocks and stone and will develop practical skills to allow them to mix materials, handle, store and stack materials ready for use. The learner will develop the skills required to lay bricks, blocks, and stone to a line and develop skills to gauge, level and plumb the work.

Learners may be introduced to this unit by asking themselves questions such as:

- What is the difference between brick, block and stone?
- What is the process of building a wall?
- How should I handle the materials used in trowel occupations?
- How can I work to ensure that I am safe when working with brick, block and stone?

Learning outcome:

1. The underlying principles of the trowel occupations

Criteria

1.1 Understanding work and roles in the trowel occupations trade area

Range: Planning work, preparing work area, covering, placing and protecting materials, bedding, levelling, lining, plumbing, gauging mortar, environmental considerations

1.2 The tools and equipment used

Range: For brick, block and stone walling activities, appropriate uses

1.3 The materials used in trowel occupations

Range: Bricks, blocks, natural stone, reconstituted stone, sand, cement, plasticiser, lime, water, additives

Learning outcome:

2. Know the processes of stacking, storing and preparing materials for building brick, block and stone walls

Criteria

2.1 Reasons for stacking and storing materials

Range: Protection, efficiency, security

2.2 Methods of preparing mortar for work

Range: Gauging and mixing mortar, ratios, hand and mechanical mixing

2.3 Methods of preparing the area for work

Range: Position mortar boards ready for the work, move and stack bricks, blocks and stone ready for the work

Learning outcome

3. Planning the completion of common tasks in brick, block and stone

Criteria

3.1 Planning the sequence of work
Range: Timescale, drawings, specifications, labour and material schedule, manufacturer's information, resources, instructions, problem solving, teamwork

3.2 Calculating quantities
Range: Measure areas, linear measurements, allowances for waste

3.3 Recording work
Range: Timesheets, job sheets, tools and materials list, snagging list, recording deliveries

Learning outcome

4. Set out and build a range of walls using brick, block and stone

Criteria

4.1 Set out and build straight walls
Range: Stretcher bond, half bond, dry bonding

4.2 Set out and build return quoins
Range: Racking back, stopped ends

4.3 Carry out the work effectively and safely

Learning outcome

5 Understand performance criteria for the completion and evaluation of common brick, block and stone tasks

Criteria

5.1 Evaluation against standards

Range: Quality of finish, working to tolerances, ability to work to set timescales, safe working practice

5.2 Performance analysis

Range: Self-evaluation, peer evaluation, oral discussion, written feedback, quality of work, grading

Unit 108: Wood Occupations

Level:	2
GLH:	140

What is this unit about?

The purpose of this unit is to enable learners to practice and develop key carpentry and joinery skills. Learners will also gain an understanding of the role, tools, materials and equipment used when performing wood working tasks.

Learners may be introduced to this unit by asking themselves questions such as:

- What does wood occupations cover?
- How should I plan wood working tasks?
- What tools will I use when completing wood working tasks?

Learning outcome:

1. Know the underlying principles used in wood occupations

Criteria

1.1 The main roles and tasks undertaken

Range: Site Carpenter, Architectural Joinery, Shop fitter, Fitted Interiors.

1.2 Materials used

Range: Softwoods, hardwoods, sheet material, fixings, adhesives

1.3 Hand tools used

Range: Hammers, mallets, saws, chisels, screwdrivers, marking tools, measuring tools, planes, pliers, pincers, oil/diamond stones

1.4 Power tools used

Range: Drill drivers, drills (percussion), planer, routers, sanders, circular saws, chop saws, jigsaw

Learning outcome:

2. Know how to plan and produce a sequence of work

Criteria

2.1 Planning a sequence of work

Range: Drawings, timescales, risk assessment

2.2 Producing a sequence of work

Range: Setting out rods, cutting lists, resource lists, tool lists

Learning outcome:

3. Be able to complete common wood working tasks

Criteria

3.1 Preparation of timber
Range: Square-edged timber, face and edge sides

3.2 Production of wood working joints
Range: Housings, halvings, mortice and tenons

3.3 Constructing common wood working tasks
Range: Stud partition with openings

3.4 Installing mouldings
Range: Skirting and architrave

3.5 Working safely
Range: PPE use, housekeeping, maintaining equipment

Learning outcome

4. Understand performance criteria and methods of evaluating performance

Criteria

4.1 Evaluation against set standards
Range: Working to tolerances, ability to work to set time scales, safe working

4.2 Performance analysis
Range: Self-evaluation, oral discussion, written feedback, quality of work

Unit 109: Plastering and interior systems

Level:	2
GLH:	140

What is this unit about?

The purpose of this unit is for learners to develop their knowledge, understanding and skills in different aspects of the plastering trade.

Learners will be introduced to the different plastering developments that have evolved over time, be able to recognise the different tools, equipment and resources used to prepare surfaces and gain practical experience in installing components such as plasterboards and beads, mixing materials such as sand and cement, and applying traditional and modern plastering systems.

Learners will need to understand technical information to plan and carry out a range of plastering activities, which include measuring, calculating quantities of materials and working out costs. They will be able to identify and recognise different background surfaces that require preparing before plastering.

Learners may be introduced to this unit by asking themselves questions such as:

- What are the different types of plastering systems?
- Why do we need to learn about the characteristics of different backgrounds?
- What skills will I need to learn and practise to develop and become a competent plasterer?

Learning outcome:

1. The underlying principles that guide the work of a plasterer

Criteria

1.1 The role of a plasterer

Range: Planning work, protecting surfaces, preparing backgrounds, mixing materials, applying plasters, environmental considerations, safe working

1.2 The types of plastering systems and backgrounds

Range: Solid route, fibrous route, dry-lining, metal and timber partitioning and ceiling systems, rendering, solid brick and block, masonry, steel beams, lath and plaster

1.3 The types of materials used in plastering

Range: Coarse sand, building sand, hydrated lime, hydraulic lime, lime putty, cement, pre-blended gypsum backing and setting plaster, dry wall adhesive, casting plasters, timber laths, plasterboards

1.4 Additives

Range: Plasticiser, waterproofer, accelerator, retarder, salt inhibitor, pozzolans

1.5 Components

Range: Types of standard and thin coat beads, self- adhesive scrim, paper tape, fixings, fibreglass strands, hessian

Learning outcome:

2 Know the requirements to prepare for applying plastering materials

Criteria

2.1 Preparing mixing and work areas for plastering

Range: Water, electricity, ventilation, waste area, setting up spot board and stand, access equipment, hand tools, power tools and accessories, cleaning equipment

2.2 Preparation tools

Range: Brushes, roller and tray, bolster and chisel, scutch hammer, pick hammer, nail bar, scrapers

2.3 Methods of preparation

Range: Controlling suction, cleaning, raking, stripping, forming a key by hacking, mechanical key, grit adhesive, SBR and PVA bonding agents, slurries, stipple, sealers, stabilizers

Learning outcome:

3 Planning the completion of common plastering tasks

Criteria

3.1 Planning the sequence of work

Range: Timescale, drawings, specifications, labour and material schedule, manufacturers information, resources, instructions, problem solving, teamwork

3.2 Calculating quantities

Range: Measure areas, cubic measurements, linear measurements, allowances for waste

3.3 Storing materials and components

Range: Stock rotation, shelf life, protection, limitation, ease of access and identification, transportation, types of materials

Learning outcome:

4 Carrying out common plastering tasks

Criteria

4.1 Tools

Range: Application and installation, mixing

4.2 Installing plasterboards and timber laths

Range: Setting out, measuring, cutting, rasping, fixing methods

4.3 Preparing backgrounds

Range: Hacking, stripping, de-nailing, providing a key, controlling suction

4.4 Installing beads

Range: Setting out, measuring, cutting, fixing methods

4.5 Applying plaster systems

Range: Scratch coat, pricking up coats, backing floating coat, setting finishing coat

4.6 Maintain safe working area

Range: Cleaning work area, cleaning tools and equipment, disposal of waste materials, hazards.

Learning outcome:

5 Understand performance criteria for the completion and evaluation of common plastering tasks

Criteria

5.1 Evaluation against industry standards

> **Range:** Quality of installation and application, performance of mixed plasters and plasterboards, working to tolerances, ability to work to set time scales

5.2 Performance analysis

> **Range:** Self-evaluation, oral discussion, written feedback, quality of work

Unit 110: Decorative Finishing and Industrial Painting Occupations

Level:	2
GLH:	140

What is this unit about?

The purpose of this unit is for learners to develop the skills and understanding required to carry out common tasks in the Painting and Decorating trade. Throughout the unit, learners will be encouraged to carry out safe working practices in line with current government and environment legislation guidelines.

This unit will introduce the basic principles of preparing bare and previously painted surfaces and applying water-based and solvent-based coatings by brush and roller to non-complex areas. Included within the unit will be how to use access equipment and working platforms to carry out these tasks.

Learners will then be able to safely apply these skills and enable them to achieve a standard of decorative finish acceptable within the industry.

Learners may be introduced to this unit by asking themselves questions such as:

- What are the different types of painted surfaces and how would I prepare them to be ready for painting?
- What are the different types of surface coatings and what application technique would I be using to apply them?
- How would I use access equipment to reach awkward, hard to reach areas?
- How do I work safely to promote the health and safety of myself and others around me?

Learning outcome:

1. **Know the underlying principles that guide the work of a painter and decorator**

Criteria

1.1 The role of the painter and decorator

Range: Role of a painter and decorator, relevant surfaces and finishes

1.2 Types of painting and decorating work

Range: Domestic, commercial, industrial, heritage.

1.3 Reasons for painting surfaces

Range: Decoration, identification, preservation, sanitation

1.4 Key legislation

Range: HASAWA, COSHH, Control of lead at work regulations (2002) (CLAW), Working at Height regulations (WAHR)

1.5 Sustainability of resources

Range: Environmental impact, Volatile Organic Compounds (VOCs), recyclable, re-usable, disposal of waste.

Learning outcome:

2. Know common tools, equipment and materials used in the painting and decorating trade

Criteria

2.1 Painting tools and equipment

Range: Hand tools, power tools, application tools and equipment

5.2 Preparation materials and surface coatings

Range: Abrasive papers, fillers, paints, varnishes

2.3 Materials used to protect surrounding areas

Range: Protective sheeting, protective tape, protective board

Learning outcome:

3. Preparation for common painting and decorating tasks

Criteria

3.1 Planning the sequence of work

Range: Risk assessment, method statement, calculate material quantities, timescale, drawings, specifications, labour and material schedule, manufacturers' information, resources, instructions, problem-solving

3.2 Preparing the work area and protecting surrounding areas

Range: Flooring, floor coverings, soft furnishings, ironmongery and electrical fittings.

3.3 Erecting and dismantling access equipment and working platforms

Range: Stepladders, ladders, platform/podium steps, hop-ups

3.4 Preparing surfaces

Range: New, bare, previously painted, defective paint coatings

3.5 Making good surfaces

Range: Raking out, undercutting, wetting in, proud filling, flush filling, abrading, levelling, applying caulk

3.6 Preparing water-based and solvent-based coatings

Range: To the correct consistency for application without defects.

3.7 Storing materials before and after use

Range: Protection from effects of temperature, potential fire hazards, stock rotation, shelf life, handling limitations, ease of access, product identification, security

Learning outcome:

4 Carry out common painting and decorating tasks

Criteria

4.1 Applying water-based and solvent-based paint systems without defects

Range: Surface areas, application by brush and roller, defects

4.2 Cleaning, maintaining and storing application tools and equipment

Range: Paint brushes, paint rollers, associated equipment

4.3 Maintaining a clean and safe work area

Range: Practice good housekeeping, protect surrounding area, wearing appropriate PPE, identifying hazards, cleaning work area, cleaning tools and equipment, disposal of waste materials

Learning outcome:

5 Understand performance criteria for the completion and evaluation of common painting and decorating tasks

Criteria

5.1 Evaluation against industry standards

Range: Quality of surface and material application, application of surface coating systems, cleanliness of work area, quality of finish, working within tolerances, ability to work to set timescales

5.2 Performance analysis

Range: Self-evaluation, oral discussion, written feedback, quality of work.

Unit 111: Roofing occupations

Level:	2
GLH:	140

What is this unit about?

The purpose of this unit is for learners to understand the scope of the roofing industry, with an overview of traditional/heritage skills to modern methods, allowing learners to go on and work on a range of buildings from pre-1919 structures such as castles to new build housing. Learners will cover the use of different tools, equipment and resources to install backgrounds and coverings.

Learners will be introduced to installing underlay and battens to gauge as common tasks across the industry area. Learners will gain an introduction to the British standards, legislation such as working at heights, manual handling and contextualised health and safety.

Learners will gain a basic understanding of working drawings to be able to identify specific roof details in order to complete common tasks and evaluate their own performance as part of their progression.

Learners may be introduced to this unit by asking themselves questions such as:

- What is the difference between traditional and modern roofing methods?
- Why do we need to learn about the characteristics of different materials?
- What skills and behaviours will I need to become a slater and tiler?

Learning outcome:

1. Know the underlying principles used in roofing occupations

Criteria

1.1 Types of tiling and natural slating

Range: Natural slating, single lap interlocking tiling, double lap tiling

1.2 The tools and equipment used

Range: For slating tasks, for tiling tasks, appropriate uses

Learning outcome:

2. Know the requirements to install slating and tiling tasks

Criteria

2.1 Understanding the role of a slater and tiler

Range: Planning work, preparing work area, loading materials, calculating gauges and datums

2.2 Safety requirements for working at height

Range: Risk assessments, method statements, ladders, access platforms, scaffolds, fall arrest systems

2.3 The roof structure

Range: Eaves, fascias, verges, rafters, hips, valleys, ridges, trussed roof construction, traditional roof construction

2.4 Fixing requirements for battens, slate and tiles

Range: Head nailing, tail clipping, centre nailing, hook fixing

Learning outcome:

3. Install roof coverings

Criteria

3.1 Ensure a safe working environment

Range: Site induction, site safety, safety signs, COSHH, appropriate PPE

3.2 Prepare backgrounds

Range: eave systems, calculate datum, calculate gauge

3.3 Install underlay, measure and mark gauge and strike horizontal lines

3.4 Calculate correctly

Range: slate and tile widths, areas, perpendicular lines, load roof

3.5 Cover the roof with slates or tiles using correct fixing methods

3.6 Fit dry fix verge and ridge systems

3.7 Evaluation and performance analysis

Range: Quality of installation and finish, performance of materials, working to tolerances, working to timescales, self-evaluation

Learning outcome

4. Understand performance criteria and methods of evaluating performance

Criteria

4.1 Evaluation against set standards

Range: Working to tolerances, ability to work to set time scales, safe working

4.2 Performance analysis

Range: Self-evaluation, oral discussion, written feedback, quality of work

Unit 112: Construction operations and civil engineering operations

Level:	2
GLH:	140

What is this unit about?

The purpose of this unit is for learners to understand the knowledge requirements for, planning stages of and skills required in common tasks for construction operations and civil engineering. This will allow the learner to gain an awareness and understanding of what roles and typical activities a construction operative will undertake.

Introduction into plant, tools, equipment and materials used on a day to day basis. This unit will enable the learner to practice basic skills used in Construction operations and civil engineering services: site protection, modular paving (block paving, slab laying), drainage and concreting.

Learners may be introduced to this unit by asking themselves questions such as:

- What is civil engineering and what activities does this cover?
- What tools and equipment are typically used in construction operations?
- What materials are used and laid in construction operations?

Learning outcome:

1. Know the underlying principles used in Construction operations and civil engineering operations

Criteria

1.1 The main roles and tasks undertaken

Range: Site protection; Drainage; modular paving; concreting

1.2 Materials used

Range: Barrier protection; Drainage material; modular paving material; concreting material.

1.3 Tools and equipment

Range: Personal Protective Equipment (PPE); tools; equipment

Learning outcome:

2. Know how to plan and produce a sequence of work

Criteria

2.1 Planning a sequence of work

Range: Drawings, timescales, risk assessment, specifications, manufacturers' information

2.2 Calculating resources required

Range: Site protection; concreting; domestic drainage; modular paving

Learning outcome:

3. Be able to complete common construction operations and civil engineering tasks

Criteria

3.1 Erect and remove site protection

Range: Barrier protection; health and safety

3.2 Lay drainage

Range: Domestic drainage

3.3 Lay modular paving

Range: Types of paving required, types of bond, laying methods

3.4 Concreting work

Range: Mix, lay, finish

3.5 Working safely

Range: PPE use, housekeeping, maintaining equipment

Learning outcome

4. Understand methods of evaluating performance

Criteria

4.1 Evaluation against set standards

Range: Quality of finish, working to tolerances, ability to work to set timescales, safe working

4.2 Performance analysis

Range: Self-evaluation, peer evaluation, oral discussion, written feedback, quality of work, grading

Unit 113: Plumbing, heating and ventilation

Level:	2
GLH:	140

What is this unit about?

The purpose of this unit is for learners to obtain trade experience in plumbing and domestic heating systems.

The purpose of this unit is for learners to explore the cold, hot and heating systems within a domestic property and the basic pipework competences that underpin work on these systems. Learners will have the opportunity to plan and create their own pipework installation using a variety of materials, jointing methods and bending techniques.

Pipework installations are a key element in the plumbing and domestic heating industry and require different skills and techniques to enable the installation to meet the customer's needs as well as all the industry requirements.

Learners will develop skills to plan cold, hot and heating systems and implement pipework installations and demonstrate their practical and creative skills. Whilst creating their installation, they will demonstrate the ability to work on their own initiative and/or as part of a team

Learners may be introduced to this unit by asking themselves questions such as:

- What are the work responsibilities of a plumbing and domestic heating engineer?
- What types of water and heating systems are there in a domestic property?
- How will I be able to joint and manipulate various pipework materials?
- How can I apply my pipework skills in the plumbing and domestic heating industry?

Learning outcome:

1. Know the fundamental principles of plumbing and heating systems

Criteria

1.1 The key stages in the rainwater cycle

1.2 The various sources of water and the typical properties of water from those sources
Range: Surface sources; Lakes, Reservoirs, Rivers, Streams.
Underground sources: Deep and shallow wells, Artesian wells, Bore-holes, Springs.

1.3 The types and layout features of cold water systems.
Range: Direct, Indirect, Boosted

1.4 The types and layout features of hot water systems.
Range: Open vented, Indirect, unvented, secondary circulation, instantaneous

1.5 The types and layout features of heating systems.

Learning outcome:

2. Know the underlying principles that guide the work of a plumbing and domestic heating engineer

Criteria

2.1 The work in the Building Services Engineering (BSE) occupations trade area
Range: Planning work, preparing work area, protecting property and furniture, system identification, bending, jointing, clipping, environmental considerations

2.2 How to select and safely use hand tools and power tools
Range:
Hand tools: screwdriver, hammer, chisel, grip, wrench, spanner, spirit, level, manual pipe threader, pipe cutter, hand saw, pliers, bending tool, blow torch, pipework soundness test equipment.
Power tools: power drill, portable pipe threading machine, hydraulic machine bender.

2.3 The pipework materials and sizes used in BSE

Range: copper, low carbon steel (LCS), plastic pipework (hot, cold and heating)**.**

2.4 The clip and bracket types used in BSE

Range: munson rings, school board clips, plastic stand-off clips, nail on clips.

2.5 The fitting types used in BSE

Range: couplers, elbows and bends, equal tees, reducing tees, reducers, pressfit.

2.6 Common fixing devices for pipework

Range: nails, screws, plastic plugs, expansion bolts.

Learning outcome:

3. Know the requirements for carrying out common plumbing and heating tasks

Criteria

3.1 How to measure and mark out for fixings to pipework and plumbing and heating components

3.2 **The sources of information for** carrying out preparatory work

Range: Regulations, industry standards, manufacturers' technical instructions, building plans, specifications

3.3 The methods **for jointing of pipework** used in BSE

Range: copper pipe; solder ring and end feed, compression (type a and b), push-fit, press-fit; low carbon steel (LCS) pipe, threaded, welded; stainless steel pipe; Press fit, plastic pressure pipe, push fit, compression, proprietary - copper and MDPE.

3.4 The methods for the bending of pipework used in BSE

Range: Copper machine bending, Copper spring bend, LCS Hydraulic machine bending, Plastic pressure pipe.

3.5 The requirements for the installation of pipework

Range: Prefabrication of pipework, Installing pipework in-situ, First and second fix.

Learning outcome:

4. Planning the completion of common plumbing and heating tasks

Criteria

4.1 Planning the sequence of work
Range: Timescale, drawings, specifications, labour and material schedule, manufacturers information, resources, instructions, problem-solving, teamwork

4.2 Calculating quantities
Range: Linear measurements, fittings and clips, allowances for waste

4.3 Recording work
Range: Time sheets, job sheets, tools and materials list, snagging list, recording deliveries

Learning outcome:

5. Carry out a pipework installation task

Criteria

5.1 Follow safe working procedures
Range: adopting PPE and RPE appropriate to the task and working environment, working safely (and tidily) in accordance with the risk assessment, visual inspection of power tools, using the appropriate tools and equipment safely

5.2 Measure, mark and cut pipework materials for installation
Range: no range information for this criterion

5.3 Install pipework accurately to the specification
Range: Copper pipework, LCS pipework, plastic pipework

5.4 Inspect work in accordance with the specification
Range: no range information for this criterion

5.5 Select the appropriate test instrument and accessories and prepare them for use
Range: no range information for this criterion

5.6 Carry out the appropriate tests
Range: visual inspection and basic soundness test

5.7 Record the test result accurately

Range: no range information for this criterion

Learning outcome:

6. Understand performance criteria for the completion and evaluation of common plumbing and heating tasks

Criteria

6.1 Evaluation against industry standards

Range: Quality of finish, working to tolerances, ability to work to set timescales, safe working

6.2 Performance analysis

Range: Self-evaluation, peer evaluation, oral discussion, written feedback, quality of work, grading.

Unit 114: Electrotechnical systems and equipment

Level:	2
GLH:	140

What is this unit about?

The purpose of this unit is for learners to learn and undertake fundamental electrical work. Learners will have the opportunity to plan, perform and evaluate their work whilst utilising a range of materials, methods and techniques for basic electrical circuits including 1-way lighting circuits and radial circuits.

Learners may be introduced to this unit by asking themselves questions such as:

- What are the functions of common electrical circuits?
- What are the types of cables and materials used in electrical installations?
- What are the hazards associated with electricity?

Learning outcome:

1. Know the underlying principles for electrotechnical work

Criteria

1.1 The main roles and tasks in electrotechnical work
Range: Domestic, commercial, industrial

1.2 The main electrical principles of a circuit
Range: Supply source (V), current flow (D.C, A.C), overcurrent protection, switches, loads, conductors, insulators, resistance, basic series and parallel circuits

1.3 The quantities that apply to basic electrical work
Range: Electrical quantities; general quantities

1.4 The use of formulas to calculate electrical quantities
Range: Voltage, current, resistance, power

1.5 The key features of how electricity is generated, transmitted and distributed
Range: no range information for this criterion

1.6 The main industry documents associated with electrotechnical work
Range: Electricity at Work Regulations, BS 7671, IET On-Site Guide, IET guidance notes

Learning outcome:

2. Know the main principles of standard circuits

Criteria

2.1 Lighting circuits
Range: Arrangements; components, polarity

2.2 'Power' circuits
Range: Arrangements; components, polarity

2.3 The overcurrent and earth fault protection used on standard circuits
Range: Fuses, circuit breakers, residual current devices

2.4 The reason for the division of an installation into circuits
Range: no range information for this criterion

2.5 The key principles of standard circuits
Range: no range information for this criterion

2.6 The importance of earthing and protective conductors
Range: no range information for this criterion

Learning outcome:

3. Know defined wiring systems, equipment and components used in electrical installations

Criteria

3.1 The types of cables used within electrical installation work

Range: Properties, applications, advantages, limitations

3.2 The features, applications, advantages and limitations of defined containment systems

Range: Conduit (PVC and metallic), trunking (PVC and metallic) and cable tray

3.3 Common fixing and securing methods for cables and containment to the building fabric

Range: Plasterboard, partition walls, lath and plaster walls, ceramic materials, masonry, concrete, brick, wood, and metal

Learning outcome:

4. Know how to plan for common tasks in electrotechnical work

Criteria

4.1 Planning a sequence of work

Range: Timescales, materials list, circuit diagram, wiring diagram, risk assessment method statement

4.2 Interpret relevant sources of information which will inform the installation work

Range: Installation specification, circuit diagram, wiring diagram, layout diagram, drawings/instructions provided by manufacturers

Learning outcome:

5. Carry out common tasks in electrical installation

Criteria

5.1 Safe working procedures

Range: Selecting appropriate PPE, following risk assessment, carrying out safe isolation

5.2 Tools and equipment

Range: Sprit level, tape measure, and basic hand tools

5.3 The methods for installation, termination and connection of cables and conductors

Range: Single core cable (singles), multicore insulated cable (flex), PVC/PVC flat profile cable (twin and earth)

5.4 Install wiring systems and equipment

Range: Conduit, trunking, equipment and accessories

5.5 Techniques and methods for termination and connection of cables

Range: Single core cable (singles), multicore insulated cable, PVC/PVC flat profile cable (twin and earth)

Learning outcome

6. Understand methods of evaluating performance

Criteria

6.1 Inspect work in accordance with the specification

Range: no range information for this criterion

6.2 Test de-energised circuits

Range: Selecting instruments and accessories, continuity, insulation resistance, polarity, and functional checks, recording results

6.3 Evaluation against set standards

Range: Working to tolerances, ability to work to set timescales, safe working

6.4 Performance analysis

Range: Self-evaluation, oral discussion, written feedback, quality of work

Unit 115: Plant Operations

Level:	2
GLH:	140

What is this unit about?

The purpose of this unit is for learners to obtain trade experience in plant operations.

Learners will develop skills to plan and implement plant operations and demonstrate their practical and creative skills. Whilst creating their installation, they will demonstrate the ability to work on their own initiative and/or as part of a team

Learners may be introduced to this unit by asking themselves questions such as:

- What are the work responsibilities of a plant operator?
- What types of plant or machinery are used within construction?
- How will I be able to operate plant or machinery?
- How can I apply my skills in the construction industry?

Learning outcome:

1. Know the underlying principles that guide the work of a Plant Operator required for common tasks

Criteria

1.1 Know what type of construction work requires Plant, equipment and machinery in construction

Range:
Work: Earthworks, Excavation, Road building, Compaction, Loading
Plant: 180, 360 excavators, Telehandlers, Dumpers, Road Rollers, Pedestrian Roller, Vibrating Plates, Hydraulic Breakers, Air Tools, Compressors, Single or Double diaphragm pumps.

1.2 Skill requirements, Industry operator licences, safe systems of work appropriate to common tasks in plant operations in construction

Range:
Industry licenses requirements, Health & safety Legislation appropriate to types of plant used.
Personal Protective Equipment (PPE) appropriate to types of plant used.

1.3 Recognition of Potential Hazards

Range:
Crushing, Flying debris, Fuel spills fumes, Noise, Vibration, Contamination of environment

Learning outcome:

2. Know the requirements for carrying out plant operation tasks

Criteria

2.1 Identify plant and attachments on plant and equipment used in construction

Range:
180, 360 excavators, Telehandlers, Dumpers, Road Rollers, Pedestrian Roller, Vibrating Plates, Hydraulic Breakers, Air Tools, Compressors, Single or Double diaphragm pumps.

Plant and Attachments: Vibrating Plates, Pedestrian Roller, Hydraulic Breakers, Air Tools, Compressors, Single or Double diaphragm pumps.

2.2 Know how to carry out pre-start inspections on plant and equipment used in construction

Range:
Checks on: Tyre pressures, Fuel, Oil, Water, Hydraulic fluids, Grease points, signs of wear and tear.

2.3 Know how to identify deficiencies, defects and record the information and potential implications if not carried out.

Range:
Inspections of types of plant, Pre-start checks, testing follow manufactures literature. mechanical damage wear, faulty gauges and controls, protection equipment.

Plant and Attachments: Vibrating Plates, Pedestrian Roller, Hydraulic Breakers, Air Tools, Compressors, Single or Double diaphragm pumps

2.4 Know how to carry out post stop inspection on plant and equipment used in construction

Range:
Plant inspection on: Vibrating Plates, Pedestrian Roller, Hydraulic Breakers, Air Tools, Compressors, Single or Double diaphragm pumps, in accordance with manufacturer's instructions

Learning outcome:

3. Carry out plant operation tasks

Criteria

3.1 Carry out plant and equipment familiarisation in accordance with manufacturer's instructions

Range:
Plant: Pedestrian Roller, Vibrating Plates, Hydraulic Breakers, Air Tools, Compressors, Single or Double diaphragm pumps.

3.2 Operate **plant** to complete tasks in accordance with manufacturer's instructions

Range:

Plant: Vibrating Plates, Pedestrian Roller, Hydraulic Breakers, Air Tools, Compressors, Single or Double diaphragm pumps.

3.3 Identify, record and report defects when operating plant

Range:
Damage: mechanical damage wear, faulty gauges and controls, protection equipment

3.4 Carry out post stop inspection on plant and equipment used in construction

Range:
Plant inspection on: Vibrating Plates, Pedestrian Roller, Hydraulic Breakers, Air Tools, Compressors, Single or Double diaphragm pumps, in accordance with manufacturer's instructions

3.5 Store plant and make ready for future use and complete reporting and record damage or deficiencies.

Range:

Plant and Attachments: Vibrating Plates, Pedestrian Roller, Hydraulic Breakers, Air Tools, Compressors, Single or Double diaphragm pumps

Reporting: Maintaining records, follow service intervals
Storage: Follow manufacturer's instructions and best practice guidance, maintain a clean and safe working environment.

Learning outcome:

4. Understand performance criteria for the completion and evaluation of plant operation tasks.

Criteria

4.1 Evaluation against industry standards

Range: Quality of finish, working to tolerances, ability to work to set time scales, safe working

4.2 Performance analysis

Range: Self-evaluation, peer evaluation, oral discussion, written feedback, quality of work, grading.