Training Qualifications UK

Qualification Specification

TQUK Level 2 Certificate in Design Engineer Construct! The Digital Built Environment (RQF)

Qualification Number: 603/1992/6

V5

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Summary of changes

The following table provides a summary of the changes that have been made to the qualification specification since the publication of the previous version.

Version number	Summary of changes
Version 4, May 2024	General updates have been added following the rebranding of the specification.
Version 5, December 2024	Revisions made to the Internal Assessment – Portfolio of Evidence section to provide clarity of the points-based grading model Some typographical changes have been made throughout the specification.

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Introduction

Welcome to TQUK

Training Qualifications UK (TQUK) is an Awarding Organisation recognised by the Office of Qualifications and Examinations Regulation (Ofqual) in England and CCEA Regulation in Northern Ireland.

TQUK offers qualifications that are regulated by Ofqual and, in some cases, by CCEA Regulation. All regulated TQUK qualifications sit on the Regulated Qualifications Framework (RQF) and are listed on the Register of Regulated Qualifications.

Our qualifications are designed to support and encourage learners to develop their knowledge and skills. This development may result in progression into employment or career development in the workplace. Our qualifications also allow learners to progress onto further qualifications. Please visit our website for news of our new and coming soon developments.

Centre Recognition

To offer a TQUK qualification, a centre must be recognised by TQUK.

The TQUK centre recognition process requires a centre to have in place a number of policies and procedures to protect the learners undertaking a TQUK qualification and the integrity of TQUK's qualifications. These policies and procedures will also support a recognised centre's quality systems and help support the centre to meet the qualification approval criteria.

Recognised centres must seek approval for each qualification they wish to offer.

The approval process requires centres to demonstrate that they have sufficient resources, including suitably qualified and occupationally competent staff to deliver, assess and quality assure the qualification and access to appropriate support in the form of specialist resources. Qualification approval must be confirmed before any assessment of learners takes place.

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Qualification Specifications

Each qualification TQUK offers is supported by a specification that includes all the information required by a centre to deliver the qualification. Information in the specification includes unit information, learning outcomes, and how the qualification is assessed.

The aim of the qualification specification is to guide a centre through the process of delivering the qualification.

Please read it alongside the TQUK Centre Handbook. Details of TQUK's procedures and policies can be found on our website.

Qualification specifications can also be found on our website. If you have any further questions, please contact TQUK.

Centres must ensure they are using the most recent version of the qualification specification for planning and delivery purposes.

Reproduction of this document

Centres may reproduce the qualification specification for internal use only but are not permitted to make any changes or manipulate the content in any form.

Centres must ensure they use the most up-to-date pdf version of the specification.

Use of TQUK Logo, Name and Qualifications

TQUK is a professional organisation and the use of its name and logo is restricted. TQUK's name may only be used by recognised centres to promote TQUK qualifications. Recognised centres may use the logo for promotional materials such as corporate/business letterheads, pages of the centre's website relating to TQUK qualifications, printed brochures, leaflets, or exhibition stands.

When using TQUK's logo, there must be no changes or amendments made to it, in terms of colour, size, border or shading. The logo must only be used in a way that easily identifies it as TQUK's logo. Any representation of TQUK's logo must be a true representation.

It is the responsibility of the centre to monitor the use and marketing of TQUK's logos and qualifications on their own materials as well as on those of any re-sellers or third parties they may use. TQUK must be made aware of centre relationships with re-sellers of TQUK qualifications. TQUK must also be made aware of any additional websites where the centre intends to use TQUK's name and/or logo. If this information is changed, TQUK should be notified immediately. TQUK is required to monitor a centre's websites and materials to ensure that learners are not being misled.

If a centre ceases to be/surrenders recognition as a TQUK centre, it must immediately discontinue the use of TQUK's logo, name, and qualifications from all websites and documents.

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The Qualification

The TQUK Level 2 Certificate in Design Engineer Construct! The Digital Built Environment (RQF) is regulated by Ofqual. This qualification has been accredited on the Scottish Credit and Qualifications Framework as a SCQF Level 6.

The qualification was developed in association with Class Of Your Own® Limited (COYO).

COYO has licensed the Intellectual Property Rights in the Design Engineer Construct! Learning Programme to TQUK, on an exclusive basis, for incorporation into the TQUK DEC qualifications.

At development, this qualification was supported by the following institutions:

Industry	**Professional Bodies andSpecialist Organisations**	**Further and Higher Educational Establishments**
The qualification is formally supported by industry leaders in the Built Environment sector who represent some of the UK's most respected companies.These include:	The qualification is formally supported by professional bodies and specialist organisations including:	This qualification isformally supported by leading universities including:
• Mott MacDonald • Topcon Positioning Systems • Laing O'Rourke • Willmott Dixon • Arup • BAM • Balfour Beatty • Bentley Systems.	• Royal Institution of Chartered Surveyors • Chartered Instituteof Building • Chartered Institutionof Civil Engineering Surveyors • UK BIM Alliance.	• Newcastle • Heriot-Watt (incl. Edinburgh, Dubai & Malaysia campus) • Dundee • London South Bank • Westminster • Salford • Northumbria.

Qualification Purpose

Design Engineer Construct! Level 2 is an intermediate programme for learners looking to increase their knowledge of professional practice in the Digital Built Environment and provides an excellent opportunity to advance knowledge gained at Level 1 and extend the knowledge and practice required to progress to Level 3.

The Design Engineer Construct!® Learning Programme (now commonly known as 'DEC') has gained a solid reputation as "the most innovative, challenging and relevant curriculum development in recent years", championed by respected leaders, and referenced in numerous, national reports.

The programme prepares learners for a meaningful career that can positively impact society given the focus on sustainability and innovation in the construction industry. Learners will gain holistic knowledge and skills in:

- STEM and digital engineering
- Project-based learning
- Sustainable development goals
- Net zero and modern construction methods
- Collaborative working
- Problem solving.

Learners will design, develop, deliver, and evaluate a fit-for-purpose, functional building that can be based on their interpretation of a 'real' project brief. Their building should be highly sustainable and inclusive to be used by the local community and enable learners to demonstrate knowledge and the use of a range of industry processes and digital skills.

The building types they might consider include:

- Community health centre
- Scout and guide hut
- Nursery/child care centre
- Community sports centre
- Music and events centre.

Learners can use a site near to them that they can visit (for example facilitated by a local company through COYO's Adopt A School scheme) or an area of their existing school grounds as the 'building site' location of their building, enabling ease of access to a safe, outdoor space in which they can explore key topics such as spatial requirements, orientation and access.

Learners are empowered to take ownership of their own project focusing on a justifiable need for a community. We recommend they are also given the opportunity to liaise with their 'client' – the local community itself - through the involvement of learners' families, assessors and governors.

Where possible, we recommend learners are given access to professional volunteers for example, through the Class Of Your Own 'Adopt A School' scheme and Professional Body outreach programmes.

A key objective is to provide a benefit to learners by preparing them for progression to a qualification in the Digital Built Environment but at a higher level. This qualification also serves as a benefit to learners, especially those who may choose to use it to prepare themselves for employment in the Digital Built Environment. The TQUK Level 2 Certificate in Design Engineer Construct! The Digital Built Environment (RQF) further develops the learning introduced in the Level 1 qualification. Learners are required to demonstrate scientific and mathematical knowledge and understanding in the context of the built environment.

Aligning with the sustainable development goals, the themes of social, environmental and economic sustainability run throughout Design Engineer Construct! programmes and learners discover how to minimise their own and their community's impact on the planet through role play and project-based learning. They understand the value of inclusivity and diversity, designing for a world where everyone matters.

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Entry Requirements

This qualification is accessible to learners in secondary schools, University Technical Colleges, Further Education Colleges, International Schools, and other educational institutions.

There are no specific entry requirements. This qualification is suitable for learners aged 14 years and above.

Centres should ensure that any learner registered on a TQUK qualification undertakes an initial assessment to ensure they have the ability to complete the course in full. The outcomes of the process inform:

- Early judgements about the learner
- The focus and level of learning
- The skills and needs that will be developed and supported.

A review of a learner's prior achievements, well-managed interviews, and diagnostic tests are all suitable forms of initial assessment.

Progression

This qualification provides an opportunity to progress to level 3 and access further education or employment in the built environment. It provides access to a wide range of career pathways, including architecture and architectural technology, geospatial and property surveying, quantity surveying and cost management, information management, civil, structural and building services engineering, and construction project management.

The qualification complements other subject areas at level 2, such as mathematics, physics, engineering, computer science, art, geography, business studies and design technologies to broaden the curriculum. With a range of transferable knowledge and skills, learners can also access wider industry opportunities, for example in the town planning, creative and digital, financial, and legal sectors.

Learners wishing to access traditional trade and craft and advanced manufacturing destinations will have a more rounded approach to the Built Environment, understanding basic principles of building design processes.

Structure

The qualification comprises 4 mandatory units. Learners must achieve a pass grade in each unit to achieve the qualification. In the event of a learner failing one unit, they will **not be awarded** the qualification.

Mandatory units

Title	Unit ref.	Level	Guided learning hours	Credit value
Defining a sustainable construction project	H/615/8831	2	40	7
Developing a sustainable constructionproject	K/615/8832	2	30	6
Delivering a sustainable constructionproject	M/615/8833	2	30	6
Evaluate a sustainable constructionproject	T/615/8834	2	20	5

Guided Learning Hours

These hours are made up of all contact time, guidance, or supervision of a learner by a lecturer, supervisor, tutor, trainer, or other appropriate provider of education or training.

The GLH for this qualification is 120 hours.

Directed Study Requirements

Learners are expected to study and complete aspects of their assessment portfolio in their own time. This additional time is expected to be approximately 120 hours over the cycle of the programme.

Total Qualification Time

This is an estimate of the total length of time it is expected that a learner will typically take to achieve and demonstrate the level of attainment necessary for the award of the qualification i.e. to achieve all the learning outcomes.

The Total Qualification Time is comprised of the GLH and an estimate of the number of hours a learner is likely to spend in preparation, study, or any other learning including assessment which takes place as directed by, but not under the supervision of, a lecturer, supervisor, or tutor. The credit value for a qualification, where given, is determined by the TQT where one credit corresponds to 10 hours of learning.

The Total Qualification Time for this qualification is 240 hours.

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Resources

The recognised centre is required to have one or more delivery sites that offer facilities to support the programme of learning and assessment.
These must comply with health and safety regulations and have in place appropriate access arrangements. All training and/or assessment sites must include the following facilities:

- A practical space to be used for learning and assessment activities. This should offer multimedia facilities such as a data projector and laptop, flipchart and pens.
- Architectural model-making facilities (card, foam board).
- A high specification* IT suite and IT hardware
- Industry standard design CAD and BIM software such as, Autodesk, Bentley.

The use of industry-standard software is a critical element of the programme and prepares learners for working in a modern, digital industry. Training is available through Class Of Your Own and who can provide advice to each centre.

Assessment

It is essential that all learners are assessed in English unless the qualification specification specifically states that another language may be accepted. This ruling also applies to all learner evidence presented for external quality assurance purposes.

The qualification is assessed by a combination of an:

- Internally assessed and externally moderated portfolio (50%)
- Externally set and externally marked examination (50%).

The externally set and marked examinations will take place on a date published in advance by TQUK.

The dates for the submission of work for standardisation and moderation will be published alongside the examination dates.

The externally set and externally marked examination requires learners to sit the exam under the conditions set out in the TQUK Exam and Invigilation Procedures within the TQUK Centre Handbook. The examination will test learners on the knowledge assessment criteria identified in the unit tables. Where an assessment criterion has been identified as 'knowledge' the exam will test the general knowledge of a learner on this topic where the portfolio will show the application of this knowledge in a specific context.

The qualification is graded on the scale C/B/A/A*. The overall grade for the qualification is calculated using a points-based system. A point score is awarded for each assessment component (examination and portfolio), before being weighted, combined, and converted into a grade.

Centre Devised Assessment (CDA) Guidance

Centre-devised assessments play a vital role in the evaluation of a learner's progress as they are based on the qualification's learning objectives. They provide learners with the opportunity to evidence the

knowledge, understanding, and skills gained while studying the qualification and support teaching staff in monitoring the learner's progress.

As the portfolio component of this qualification is internally assessed, TQUK allows centres to produce their own assessments. When designing them, assessors must give consideration to the depth and breadth of knowledge allowed by each task.

TQUK has produced centre guidance on our suggested approaches to designing appropriate assessment tasks, and these may be accessed from our website www.tquk.org.

This includes templates to support the design of internal assessments and a checklist to ensure that the assessments are valid and fit for purpose.

To ensure the validity and fairness of our qualifications, centre-devised assessments form part of our quality assurance processes. More information about this and how to prepare for external quality assurance reviews can be found on our website.

Internal Assessment – Portfolio Marking

The learner's portfolio of evidence is marked holistically using a points-based system. An overall grade is awarded on successful completion of the 4 mandatory units. **Individual unit grades are not awarded.**

Each assessment criterion (AC) must be assigned a point value between 1 and 4 to reflect the level of achievement demonstrated by the learner. Centres should refer to the guidance provided in the assessment matrices towards the end of this specification (pages 35-45) to support this activity.

A point value of zero should be assigned where the evidence presented by the learner does not meet the minimum required standards within the assessment matrix.

To calculate learner achievement for a Learning Outcome (LO), the total point value for the ACs within the LO should be averaged using the following formula:

Formula	Example
$\text{LO1 total} = \frac{\text{AC1.1} + \text{AC1.2} + \text{AC1.3} + \text{AC1.4}}{\text{total number of ACs}}$	$(\text{LO1}) \quad \text{Points total of } 2.25 = \frac{2+3+3+1}{4}$

The points awarded for the LOs within a unit are then added together to calculate the unit point value.

Each unit has a minimum point value to confirm achievement. The minimum points required for each unit are as follows:

- Unit 1: 4 points
- Unit 2: 3 points
- Unit 3: 2 points
- Unit 4: 2 points.

If a learner does not meet the minimum required points for any unit, they should be marked with a fail result.

Calculating the overall grade

The points achieved for each of the 4 mandatory units must be added together to calculate the overall total for the portfolio component of the qualification. The overall total will be compared against the grade boundary table provided below to determine the final portfolio grade.

Learners must meet the minimum required points for each unit to be eligible for the award of an overall grade.

Portfolio Marking Scale				
Combined unit points	11-21	22-32	33-38	39-44
Overall portfolio grade	C	B	A	A*

Centres may wish to use the TQUK 'DEC Learner Attainment with Mark Logger' spreadsheet, available for download via our Verve Management Suite. This has been designed to support centres with logging and calculating learner grades.

Centres should arrange for their completed Learner Attainment Records (LARs) to be sent to TQUK's Quality Team (quality@tquk.org) by the submission date confirmed in our Key Dates communication.

Centres must ensure that portfolios are submitted to TQUK as a single PDF file. If learners have any paper-based evidence within their portfolio, centres must ensure that a scanned copy is taken and included with the digital portfolio before submitting it to TQUK.

External examination marking

The TQUK examiners are required to mark the examination in line with the pre-standardised mark scheme. All papers are then subject to the application of grade boundaries to maintain comparable standards over time.

Learners are eligible to achieve up to a maximum of 80 marks per paper.

Points scale					
Marks	0	Variable marking		80	
Grade	Fail	C	B	A	A*

Calculating the qualification grade

The mark from the examination is converted into a mark out of 44 to align with the overall maximum portfolio mark.

The portfolio and examination points are then weighted as follows:

- 50% Portfolio: points x 0.5 to weight the portfolio score
- 50% Exam: points x 0.5 to weight the exam score.

Weighted points are added to produce a Final Points Score. These points are used to determine the overall grade for the qualification. Examination grades are determined using a variable scale, with grade

boundaries being adjusted annually. As a result, final grading calculations are dynamic and may be subject to change.

All assessments require a minimum of a Pass to be awarded for the learner to achieve a final grade. Learners who do not reach a minimum of a Pass for all assessment components will not be awarded the qualification.

Special consideration requirements

Centres are required to ensure that any learner who is disadvantaged, unable to complete the full learning programme due to emotional or physical difficulties, or was subject to any adverse circumstances during their registration period are made aware of, and are able to access and request, a specification consideration in accordance with the *TQUK Access Arrangements Policy*.

Re-assessment Requirements

Externally assessed exam

External reassessment requires learners to retake the examination on a date specified by TQUK. Examination dates will be published in September for the following year.

Centres will be required to pay an additional reassessment fee per learner. Details of the reassessment fees can be found in our resit and resubmission fees document located at www.tquk.org/design-engineer-construct/.

Internally assessed portfolio

Portfolio reassessment requires learners to submit new evidence for the units. New evidence must be presented in line with specified awarding windows. Learners who submit a portfolio with new evidence will always be part of the cohort sample.

Centres will be required to pay an additional reassessment fee per learner. Details of the re-assessment fees can be found in our resit and resubmission fees document located at www.tquk.org/design-engineer-construct/.

Course Delivery

Pre-Course Information

All learners should be given appropriate pre-course information regarding any TQUK qualifications. The information should explain the qualification, the fee, the form of the assessment, and any entry requirements or resources needed to undertake the qualification.

Initial Assessment

Centres should ensure that any learner registered on a TQUK qualification undertakes some form of initial assessment. The initial assessment should be used to inform a teacher/trainer of the level of the learner's current knowledge and/or skills and any additional specific support requirements the learner may need.

The initial assessment can be undertaken by a teacher/trainer in any form suitable for the qualification to be undertaken by the learner/s. It is the centre's responsibility to make available forms of initial assessment that are valid, applicable, and relevant to TQUK qualifications.

Teaching resources

All teaching materials and additional resources used to support the delivery of this qualification must be age-appropriate. Centres must ensure when developing or sourcing delivery materials that careful consideration is given to the safeguarding and wellbeing of their learners in line with the centre's policies and procedures.

Learner Registration

Once approved to offer a qualification, centres must follow TQUK's procedures for registering learners. Learner registration is at the discretion of the centre and in line with equality legislation and health and safety requirements.

Centres must register learners before any assessment can take place.

Tutor, Assessor, and Internal Quality Assurer Requirements

All members of staff involved with the qualification (assessing or IQA) will need to be occupationally competent in the subject area being delivered. This could be evidenced by a combination of:

- A higher level qualification in the same subject area as the qualification approval request.
- Experience in the delivery/assessment/IQA of the qualification requested.
- Work experience in the subject area of the qualification.

Staff members will also be expected to have a working knowledge of the requirements of the qualification and a thorough knowledge and understanding of the role of tutors/assessors and internal quality assurance. They are also expected to undertake continuous professional development (CPD) to ensure they remain up to date with work practices and developments associated with the qualifications they assess, or quality assure.

Tutor

Tutors or trainers who deliver a TQUK qualification must possess a teaching qualification appropriate for the level of qualification they deliver. This can include:

- Further and Adult Education Teacher's Certificate
- Cert Ed/PGCE/Bed/MEd
- PTLLS/CTLLS/DTLLS
- Level 3 Award/Level 4 Certificate/Level 5 Diploma in Education and Training.

Assessor

Staff who assess a TQUK qualification must possess an assessing qualification appropriate for the level of qualification they are delivering or be working towards a relevant qualification and have their assessment decisions countersigned by a qualified assessor. This can include:

- Level 3 Award in Assessing Competence in the Work Environment
- Level 3 Award in Assessing Vocationally Related Achievement
- Level 3 Award in Understanding the Principles and Practices of Assessment
- Level 3 Certificate in Assessing Vocational Achievement
- A1 or D32/D33.

Specific requirements for assessors may be indicated in the assessment strategy/principles identified in individual unit specifications.

Internal Quality Assurer

Centre staff who undertake the role of an Internal Quality Assurer (IQA) for TQUK qualifications must possess or be working towards a relevant qualification and have their quality assurance decisions countersigned by a qualified internal quality assurer. This could include:

- Level 4 Award in the Internal Quality Assurance of Assessment Processes and Practice
- Level 4 Certificate in Leading the Internal Quality Assurance of Assessment Processes and Practice
- V1 qualification (internal quality assurance of the assessment process)
- D34 qualification (internally verify NVQ assessments and processes).

It is best practice that those who quality assure qualifications also hold one of the assessing qualifications outlined above. IQAs must follow the principles set out in Learning and Development NOS 11 - Internally monitor and maintain the quality of assessment.

The centre is required to have in place an Internal Quality Assurance strategy that is directly related to the internal moderation of the portfolios and includes strategic objectives which require:

- A selected sample of learner evidence and assessor feedback covering 25% of registered learners or a minimum of five learners across the rank order is internally standardised for all authorised qualifications.
- All assessors and all activities within the portfolios are standardised across all active assessment sites, over a twelve-month period
- Standardisation meetings are conducted annually and are focused on the assessment and internal verification. Ideally, this would progress from unit to unit across the years.

External Quality Assurance

External Quality Assurance will be undertaken by TQUK to ensure that centres are satisfying TQUK quality assurance compliance with the requirements associated with their TQUK recognised centre status and formal written agreement. This will consist of physical activities and remote reviews.

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Useful Websites

- Office of Qualifications and Examinations Regulation
- Register of Regulated Qualifications

For further details regarding approval and funding eligibility please refer to the following websites:

- Education & Skills Funding Agency for public funding information for 14+ learners in England
- Learning Aim Reference Service (LARS)

You may also find the following websites useful:

- Design Engineer Construct! - Educating the Future of Construction
- Class Of Your Own: Educating the Future of Construction

A full list of useful links is available through Class Of Your Own's teaching resources and 'DEC School' eLearning platform. All Centres will be invited to use 'DEC School' as their central resource for learning and teaching support.

Mandatory Units

Title:		Defining a sustainable construction project	
Unit reference number:		H/615/8831	
Level:		2	
Credit value:		7	
Guided learning hours:		40	
Learning outcomes The learner will:		Assessment criteria The learner can:	
1.	Understand a client's needs.	1.1	Identify the contextual needs of a client to create a design brief.
		1.2	Record project requirements and client expectations.
		1.3 (K)	Calculate benchmark costs in relation to the agreed client's needs.
2.	Be able to formulate a projectbrief.	2.1 (K)	Outline the functional requirements of the project.
		2.2	Establish quality objectives for the project.
		2.3	Set the sustainability aspirations of the project.
3.	Understand constraints on theproject.	3.1 (K)	Identify constraints associated with the site location and present solutions.
		3.2 (K)	Test initial ideas against planning protocol.
		3.3 (K)	Explain the principles of legislation relevant to the project.
		3.4	Carry out a feasibility study and present the results.
		3.5	Make a judgement on project viability based onevidence.
		3.6 (K)	Explain how the building design helps minimise energy use.
4.	Be able to draft a project plan.	4.1	Create a draft project plan.
		4.2 (K)	Match project planning to the human resources of the team.
		4.3	Create an Organogram for the project.

		4.4	Estimate the lifespan of the completed project.
		4.5	Calculate facilities management costs.
		4.6	Take account of environmental considerations inplanning the project.

Assessment Guidance:

All assessment criteria will be expected to be evidenced in the learner's portfolio.

1.1 Learners should aim to create a short design brief for their project that outlines the project's location, local climate, and explores surrounding buildings and precedents. Learners should also identify the stakeholders in their project. Additionally, learners could interview their clients to identify their needs.

Evidence: Paragraph in portfolio.

1.2 Learners will produce an architect's agreement defining the function of the building, how the building will be used and the type of end user, examine the location in an international, regional and local sense, budget of the building, and the style of the building. What materials may be needed to support this style?

Evidence: Paragraph justifying building choice. In-depth project brief.

1.3 Learners will demonstrate research skills using the internet and other methods, e.g. contact with local professionals, sending questionnaire to design and construction organisations. Learners should demonstrate how they have attempted mathematically to establish what a similar building might cost.They should report values in £/m^2.

Evidence: Paragraph in portfolio.

2.1: Learners should be able to define the spatial requirements of their building and determine what rooms/spaces/equipment are needed to perform certain functions. They can use buildings known to them to help determine the size (by measuring existing spaces accurately using specific tools), the relationship of one space to another, functionality, and use of each room, but must demonstrate good and bad examples of this.

Evidence: Identification of rooms. Bubble diagrams for basic building ideas based on space. Schedule of accommodation.

2.2: Learners will present a precedent study evaluating similar buildings using set criteria. A vision document will contain images, drawings, sketches, ideas, and written aspirations.

Evidence: Paragraph in portfolio.

2.3: Learners will present a strategy that will make their building sustainable.

Evidence: Paragraph in portfolio.

3.1 : Learners should identify potential issues to help them through the planning process and also engage with the local community. A site analysis of the site should be produced using maps and photographs to help produce a sketch that highlights existing buildings and areas, surface level changes, boundaries, geographical features, site access, site orientation, and site climate.

Evidence: Paragraph in portfolio.

3.2: Learners will create a 'planning statement' study outlining how their proposal will conform to and respond to particular areas of policy. The planning process can be quite lengthy, however, the 'National Planning Policy Framework', is an important part of the government's reforms to make the planning system less complex and easier to understand.

Evidence: Paragraph in portfolio.

3.3: The planning process is wide-ranging and can be extensive. Learners can find significant information via the government planning website www.planningportal.gov.uk and key points are noted below. There is a difference between a planning application being approved, and a building being constructed with the health and safety of the end users in mind. Building regulations approval sets out design standards that focus on issues of health, safety, energy efficiency, and disability access.

Evidence: Paragraph in portfolio. Building regulations, BREEAM, HASAWA.

3.4: Learners should consider that a feasibility study is the opportunity to test all aspects of their early proposals and the first chance to review and refine their emerging ideas. It is also an opportunity to present their work completed to date (both visually and verbally) to their clients – which will be good practice for the project stages further ahead. A successful feasibility study will clearly demonstrate how the project is feasible in ALL respects and should cover function, quality, policy, budget, programme, team, and the way forward.

Evidence: Paragraph in portfolio.

3.5: Learners should be encouraged to work together to discuss and establish the merits of each project. They should seek feedback on their design proposal from a variety of different people. They should then identify the viability of their project from this feedback and identify any changes that may be needed to for the project to be viable.

Evidence: Paragraph in portfolio.

3.6: Learners will create a set of criteria that will enable every element of their project to be interrogated through a systematic approach to understand how the whole building and process must be challenged in terms of embodied energy and energy demand from the outset. They can present an 'environmental and sustainability strategy' comprising a series of criteria annotated with diagrams and images that demonstrate an understanding of different green/renewable technologies and passive measures that

could potentially be incorporated into their building.

Evidence: Paragraph in portfolio.

4.1 : The learner should determine the client's mission and vision for the building, and also the short, medium, and long-term strategic plan. Priorities, goals, and objectives for future use should be established in terms of scope, schedule, and cost. A space analysis should be carried out. There may be a need to increase facilities or the number of people who use the building in years to come, and this will obviously impact the design. Spaces should be functional, accessible and durable, but may also need to be flexible - easily changed depending on the nature of the activity taking place. The space may need to be inspiring and allow interaction between different user groups. The space should be efficient and environmentally friendly.

Evidence: Description(s) in portfolio. Schedule produced.

4.2: Learners will create a plan that allocates specific tasks to members of the team and establishes clear lines of communication and key points of contact.

Evidence: Paragraph in portfolio.

4.3: Learners will create an annotated diagram that clearly explains the scope of each role and how they relate to one another. The learner should explain why each team member has a pivotal part to play in the successful development and delivery of the building project. Learners could produce an organogram to support this.

Evidence: Paragraph in portfolio.

4.4: The lifespan needs to be based on standard methods including maintenance schedules and the purpose of the building.

Evidence: Paragraph in portfolio.

4.5: Forecasting should include the most significant cost areas related to operational requirements. These will depend on the particular project, but they are likely to include energy costs, building maintenance, and health and safety checks.

Evidence: Paragraph in portfolio.

4.6: Learners will use energy analysis and software (e.g. Excel) to evaluate their designs for energy efficiency, carbon footprint, and lighting. They will check data using mathematical calculations and comparisons with precedents. Learners could investigate ventilation, energy sources, water distribution, lighting types and sources, electrical distribution, and the impact of glazing and insulation.

Evidence: Paragraph in portfolio.

Amplification:

(K) – This symbol refers to Knowledge, which indicates that the Assessment Criteria will also be measured by an External Synoptic Exam.

Title:		Developing a sustainable construction project	
Unit reference number:		K/615/8832	
Level:		2	
Credit value:		6	
Guided learning hours:		30	
Learning outcomes The learner will:		Assessment criteria The learner can:	
1.	Be able to develop a feasible proposal from a needs analysis.	1.1	Prepare concept diagrams to describe and communicate ideas.
		1.2	Present the quality of the proposal to a client.
		1.3	Communicate the concept design to the project team.
		1.4 (K)	Identify procurement options related to key elements of the project.
2.	Be able to produce technical support collateral for a project.	2.1	Prepare 3D representations of outline information.
		2.2	Utilise the 3D environment to test the design in virtual locations.
		2.3 (K)	Use quantitative methods to establish the lighting and energy requirements.
		2.4	Produce detailed, scaled drawings that can form the basis of a planning application.
		2.5	Describe the key features that form the basis of a planning application.
		2.6	Establish a budget that aggregates the estimated benchmark costs of the project.
3.	Be able to support development of a project concept.	3.1 (K)	Explain the importance of compatibility betweene existing infrastructure and the project proposals.
		3.2 (K)	Explain the environmental and climate change reduction strategies.
		3.3 (K)	Monitor the execution of the plan to ensure compliance with client requirements, taking appropriate action where necessary.

		3.4 (K)	Establish strategies for the proposed construction that support health and safety, occupancy, management, and operation.
		3.5	Relate building design specification to energy efficiency.
		3.6	Inform planning through collaborative working groups.

Assessment Guidance:

All assessment criteria will be expected to be evidenced in the learner's portfolio.

1.1 : Learners could use sketches, paintings, collages, 3D computer models, physical models, photographs, and images of precedents to communicate their ideas.

Evidence: Paragraph(s) in portfolio.

1.2 : Presentation that addresses if the project will meet their design brief, if all end users will be satisfied,will the design contribute to the efficiency of the building, and can individuals easily navigate the building. The presentation should also include sections explaining circulation, fire exit placement, and window placement.

Evidence: Paragraph in portfolio.

1.3 : The concept design can then be worked into a coherent proposal that provides a basis for a team briefing. The information must be clear and concise so colleagues can undertake their required tasks. Services should be identified on the floor plan.

Evidence: Paragraph in portfolio. Flow diagram. Images of concept.

1.4 : Learners need to consider procurement in terms of social, economic, and environmental responsibility so that the client does not just get "a building" but that they get the best possible building within the project constraints. Several targets should be described, the life cycle of products established, and the social, economic, and environmental impact of obtaining these materials.

Evidence: Paragraph in portfolio.

2.1 : Learners can choose their preferred method to create a concept model. Emphasis must be on detailed thinking, creating a "kit of parts" where each component has a clear purpose and provenance.

Evidence: Images in portfolio.

2.2: Using industry software,lLearners will specify an exact location for their building by address or

latitude and longitude and perform energy/solar/wind analysis. They will consider the situation, orientation, impact of adjacent buildings, and agree the most suitable positioning for optimum solar gain and seasonal thermal performance in relation to the sun's path.

Evidence: Images/descriptions in portfolio.

2.3: Lighting must be thought of in terms of functional/task lighting, necessity/emergency/safety lighting, and from a creative viewpoint, in terms of how lighting can enhance the architecture. Learners should consider alternatives to the obvious lighting hanging from the ceiling, and also ascertain the most efficient light bulb for their particular lighting system calculating potential energy savings and costs in bulbs. Learners should explore types of lighting and understand how this impacts the building energy use and maintenance costs. How is brightness measured and how does it relate to perception?

Evidence: Paragraph in portfolio. Annotated floor plan that illustrates the types and location of different lighting.

2.4 : Learners should have a clear understanding of the types of document that needs to be submitted with a planning application, and what scale is suitable. Typically, planners require a location plan which defines where the project is situated relative to surrounding properties (usually issued on a scale of 1:1250 and 1:2500) and a site plan which shows the position of the project relative to its boundary (usually issued at a scale of 1:200 or 1:500) and any trees on site. Learners should be aware of Tree Protection Orders (TPO). The (compass) north point and scale should always be shown clearly on the plan. Learners should prepare floor plans and elevations at a suitable scale (usually 1:50 or 1:100) and have an understanding of the relationship of the size of the building and the paper size a drawing is to be plotted on. Note: At a scale of 1:100, 10 mm on a plan = 1m in reality, and 1:50 = 10mm = 0.5m. Drawings are usually submitted digitally as pdf formats.

Evidence: Paragraph/Annotated images in portfolio. Series of scale drawings: Locations, site plan, elevations and floor plan. These should be screenshot and placed onto the relevant slide.

2.5 : Learners should establish the type of planning permission they require as there are a number of types for example domestic/household, conversion, a listed building. The project description should be clear and concise with sufficient detail. Planning applications should describe the project's size and location, how it will function, and its relationship with the immediate surroundings. It should also contain information including drainage, vehicle and pedestrian access, materials to be used, design of the building, and the direction it faces. It should also include the location of waste and recycling facilities (e.g.where they will situate a bin).

Evidence: Paragraph/Annotated images in portfolio.

2.6: : Using software tools, Learners can produce an estimated project costing based on a square metre cost or can calculate the total cost of the project by materials used using scheduling. Accuracy is dependent on the definition of design and engineering data. Learners should be encouraged to discuss the significance of complete data in producing reliable costing.

Evidence: Report in portfolio. Screenshots of analysis.

3.1 : Infrastructure is the basic physical systems of a country's or community's population, including roads, transport systems, utilities, water, sewage, etc. New buildings should benefit the people who will use them in terms of appeal, health (e.g. air quality), and aesthetics, but to be explicitly functional and minimise the impact on the environment. A building can contribute to energy and water collection, and even food harvesting through green roofs and vertical farms. Accessible transport links and close proximity to public (green) spaces are fundamental to good urban design. Consideration should be given as to whether the building or structure can be repurposed after its proposed 'useful' life. Learners should identify existing infrastructure around their project site and suggest improvements that could be made to help contribute to the building's success.

Evidence: Paragraph/ in portfolio.

3.2: Learners should outline their objectives and expectations, and clearly iterate how their low carbon measures are sensitive to the environment and are cost effective. They should determine how they will record, review, and evaluate their recommendations. Learners should consider existing local environmental regulations and building codes, and whether there are existing or complimentary programmes that can support their aims.

Evidence: Development checklist in portfolio.

3.3: Regular meetings with the client are necessary to ensure compliance. Learners should prepare a list that will enable them to check the progress of the project in accordance with their client's brief (and that outlined in the Architect's Agreement). This list should clearly support the future direction of the project adhering to agreed principles, standards, specifications and functionality. Preparing a compliance list aims to highlight errors quickly and easily, thereby reducing costs and delays due to unforeseen changes as the project develops.

Evidence: Paragraph in portfolio.

3.4: Learners must demonstrate that they have taken reasonable steps to ensure health and safety is of paramount importance throughout the life cycle of the building, and that a collaborative coordinated approach with others involved in the building can only support the management and control of risk. Preparation of a plan should reflect foreseeable key risks to the health and safety of those involved in or affected by construction, use, maintenance and demolition of the building, e.g. working at height, vehicles, power, structure instability (especially concerning excavations, refurbishment of existing buildings, etc), slips trips and falls and project specific hazards (fire etc). Learners can refer to the ERIC model (Eliminate, Reduce, Inform, and Control). Health hazards may include those incurred though lifting, exposure to excessive noise, vibration, hazardous materials, dust, vermin and other animal derived hazards, contaminated land.

Evidence: Health and Safety plan.

3.5: Learners should produce a concise report which outlines the reasoning behind key design decisions relative to achieving optimum energy efficiency requirements including, but not limited to, the use of energy efficient materials, technologies, resources and systems, use of natural resources, and the way

their building promotes and sustains positive end user behaviour.

Evidence: Paragraph/Annotated images in portfolio.

3.6: Learners will outline their methodology to ensure communication of the project plan and processes to all team members, and to promote and facilitate effective collaboration throughout the construction project.

Evidence: Paragraph/Annotated images in portfolio. Schedules and Flow diagrams.

Amplification:

(K) – This symbol refers to Knowledge, which indicates that the Assessment Criteria will also be measured by an External Synoptic Exam.

Title:		Delivering a sustainable construction project	
Unit reference number:		M/615/8833	
Level:		2	
Credit value:		6	
Guided learning hours:		30	
Learning outcomes The learner will:		Assessment criteria The learner can:	
1.	Be able to deliver a project.	1.1 (K)	Coordinate a design proposal to ensure mistakes are avoided.
		1.2	Identify potential problems so appropriate action can be taken.
		1.3 (K)	Identify needs that require specialists from outside the team.
		1.4	Monitor progress in consultation with peers.
		1.5	Ensure the project is developed on time and to budget.
2.	Be able to respond to technical issues.	2.1 (K)	Provide a 3D model to test the design.
		2.2 (K)	Validate the design against the brief using a technical investigation.
		2.3 (K)	Ensure that the project complies with building regulations as it progresses.
		2.4	Explain how the building works in practice using quantitative monitoring.
		2.5	Review progress and reflect on decisions.
		2.6	Consult and respond appropriately to peer review.

Assessment Guidance:

All assessment criteria will be expected to be evidenced in the learner's portfolio.

1.1. Assessors should look for evidence that the learners are actively looking for potential problems and communicating with a range of people to ensure that nothing is missed that would have a major adverse effect on the project delivery.

Evidence: Paragraph in portfolio.

1.2 : Learners should be focused on any issues that could have a significant effect and which, if implemented badly or missed, will be difficult to put right. This is a form of risk assessment prioritising

things early on that will be difficult to put right subsequently.

Evidence: Paragraph in portfolio.

1.3 : Some projects require specialist consultants. An excellent resource outlining a number of these specialists can be found here: https://www.designingbuildings.co.uk/wiki/Consultant_team_for_design_and_construction This task will require some guidance, particularly if the Level 1 syllabus was not studied.

Evidence: Paragraph in portfolio.

1.4 : Learners should outline any feedback following consultation with peers and explain any modifications or improvements to the project's design. Conversely, if no changes are to be made following feedback learners should justify this.

Evidence: Paragraph in portfolio.

1.5 : Learners should produce a short report outlining whether their building proposal is complete. Has the project managed to stay within the budget outlined previously? What changes could have been made historically or going forward to meet expectations?

Evidence: Paragraph in portfolio.

2.1 : Learners should use the model to experiment with variations to improve their model and document successful and unsuccessful changes.

Evidence: Table in portfolio. Issues/outcome/accepted.

2.2: Learners should adopt a systematic approach to validation using a technical investigative approach.

Evidence: Table in portfolio. Issues/Validation/Satisfaction.

2.3: Learners should make any necessary adjustments to their project as a result of building regulations checks. They should document the procedure they have adopted and report their decision that the project is compliant with the regulations.

Evidence: Table in portfolio. Detailed actions.

2.4: Learners should provide statements on whether the building is suitable for its intended use, built to last, adaptable, safe to construct and occupy, contributes to its context, and is aesthetically pleasing.

Evidence: Paragraph(s) in portfolio.

2.5: Learners should suggest 3 further improvements based on technical issues and their solutions. Learners should outline any major changes made so far and give justification for them. Learners should give some sort of timeline to how the project has changed over time.

Evidence: Paragraph(s) in portfolio.

2.6: Taking criticism and giving it constructively is the main purpose of this criterion. It might take some time for some learners to be able to deal with this and tutors will need to set the ground rules so the review is focused on objectivity and improvement.

Evidence: Paragraph(s) in portfolio.

Amplification:

(K) – This symbol refers to Knowledge, which indicates that the Assessment Criteria will also be measured by an External Synoptic Exam.

Title:		Evaluating a sustainable construction project	
nit reference number:		T/615/8834	
Level:		2	
Credit value:		5	
Guided learning hours:		20	
Learning outcomes The learner will:		Assessment criteria The learner can:	
1.	Be able to test the final design against original intentions.	1.1 (K)	Explain how the building works so a user knows how to optimise performance.
		1.2	Explain how well final outcomes meet original intentions.
		1.3 (K)	Evaluate feedback and use it as a basis for improvement in future projects.
		1.4	Analyse data and use it as evidence to inform evaluation.
		1.5	Use data to forecast the long-term performance of the building.
2.	Be able to transfer project evaluation to other contexts.	2.1 (K)	Identify issues in a building.
		2.2 (K)	Make recommendations to improve existing buildings.
		2.3 (K)	Carry out a qualitative audit reporting on aesthetics and sensory experiences of users.
		2.4	Present the building project to a professional audience.

Assessment Guidance:

All assessment criteria will be expected to be evidenced in the learner's portfolio.

1.1: Evaluations of the practical aspects of the building need to be related to user behaviour. Planning seating arrangements, circulation space, and use of storage.

Evidence: Paragraph(s) in portfolio. :

1.2 Learners should be guided to be analytical in their approach to evaluation using strengths and weaknesses classifications to compare and contrast aspects of their design in relation to original intentions. They should realise the importance of clarity at the planning stage so that their final evaluation can be decisive and rational rather than vague and subjective.

Evidence: Paragraph(s) in portfolio.

1.3 : Learners should receive (and give) feedback graciously and objectively. It is difficult to remove emotion from criticism and a good part of this criterion is to demonstrate emotional intelligence in the form of maintaining control and being constructive to foster improvement rather than destructive and precipitating withdrawal or resistance to change.

Evidence: Paragraph(s) in portfolio.

1.4 : While there are always grounds for subjective elements in evaluation, there need to be at least some dimensions of backing evaluation judgements with clear evidence. Learners should understand that they will have to work to gather evidence for objective evaluation, it does not just appear on its own. They need to understand that a representative sample is enough data that is typical of the entire set of data that could be sampled to be confident in the result.

Evidence: Paragraph(s) and Images in portfolio.

1.5 : As a specific example, the energy consumption needed to operate the building will be available from modelling. Overall energy consumption will depend on extrinsic as well as intrinsic factors. Learners could provide a study of possible variations in energy costs in the long term depending on how the building is used and the environmental conditions outside.

Evidence: Paragraph(s) in portfolio.

2.1 : Learners can be given checklists as prompts of what to look for. Typical examples are computer rooms that get too hot through lack of ventilation and too much south-facing glass. Bottlenecks in circulation space. Ineffective sound insulation, plastic sinks or easily marked work surfaces in science labs, leaking flat roofs, asbestos used in construction, lack of adequate parking space, lack of adequate play areas, entrances that are not at all obvious to anyone new to the site, poorly sited WCs, inaccessible spaces for disabled people, lack of siting of rooms in logical subject areas, bells that deafen people waiting to enter a room. High-maintenance wooden galleries where individuals can drop things on other people below them or throw themselves off the gallery. Inadequate display space to encourage a learning environment.

Evidence: Paragraph(s) in portfolio.

2.2: Learners will identify many possibilities that are too expensive to rectify with the existing resources. They should appreciate that will always be a tension between cost and benefit and that issues related to health and safety are the highest priority. Some solutions will have running cost implications e.g. installing air conditioning or carpeting an area. Some capital cost implications will make e.g. replacing a flat roof with a pitched roof prohibitively expensive. The best solutions are ones that have a significant impact but do not cost anything or perhaps even save money e.g. improved energy efficiency.

Evidence: Paragraph(s) in portfolio.

2.3 : Learners can draw up a questionnaire for users of the building based on an inspection of the building and identification of issues related to aesthetics and its sensory impact. They should be provided with guidance to ensure that their questionnaire is free from bias and focused on getting valid and targeted responses from the users. A significant aspect of this criterion is learning how to transfer learning about evaluation to other contexts. Tutors should make it clear to the learner that the methods being used can be employed in other situations including outside the Design, Engineer and Construct domain.

Evidence: Paragraph(s)/Images in portfolio.

2.4: Learners should have the opportunity to make a short presentation of their project to a knowledgeable audience. The questions and comments should be used to help inform the final project evaluation. Tutors should bring out the basic principles for this type of presentation so that learners appreciate that the learning can be transferred to other contexts.

Evidence: Screenshots in portfolio.

Amplification:

(K) – This symbol refers to Knowledge, which indicates that the Assessment Criteria will also be measured by an External Synoptic Exam.

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Maths of Design, Engineer, Construct! The Digital Built Environment

At Level 2, learners will be expected to have an understanding of the following maths concepts:

- addition
- subtraction
- multiplication
- division
- rounding
- fractions and simplifying fractions
- percentages and increases/decreases by percentage
- ratios and working to scale
- perimeters and circumferences
- area of shapes – squares, rectangles (area = width * length), triangles (area = ½*b*h), circles (ΠR^2)
- area of rooms through subtraction and/or addition
- Pythagoras – $c^2 = a^2 + b^2$

Additionally, learners will be expected to demonstrate the following maths knowledge and skills within the portfolio component:

- learners will be expected to have an understanding of basic arithmetic skills to support the calculation of various costs including:
  - addition, subtraction, multiplication, division, estimation, rounding and percentage calculations of various budget costs reported in £ and £/m^2

- learners will be able to apply their maths knowledge to understand lighting and energy requirements and use this to compare efficiency including:
  - use of calculations to compare and contrast different options for lighting and energy requirements based on cost, room size
  - use of the following formulae to calculate lighting requirements:
    - Lumens = lux x area
    - bulbs required = lumens required / lumens of light bulb

- Learners will have an understanding of how the volume and area of various building components are calculated or in situations concerning the functional requirement of abuilding and relative room sizes:
  - common building elements include floors, walls and roofs
  - elements may take the shape of triangles, squares, circles, rectangles and trapeziums
  - calculation of various room sizes
  - calculation of the volume of common building elements such as:
    - cube/rectangle = length * width * height
    - triangle = 0.5 * b * h * length
    - cylinders = $\pi r^2 * h$

Standard units

Learners may be required to convert units within the same measurement type. When providing answers to exam questions, learners should state the units used.

Measurement	Standard Unit	Conversions
Money	Pound, £	N/A
Length	Metre, m	Millimetre (mm) and Kilometre (KM)
Mass	Kilogram, kg	Gram (g)
Temperature	Celsius, (°C)	Kelvin, K
Power	Watts, W	Kilowatts, K
Force	Newton, N	Kilonewton (kN)
Light	Lumens, Lux	
Sound	Decibels, db	

All maths skills and knowledge listed may be assessed in the externally set and marked component.

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Assessment Matrices

Unit 1: Section 1: Understand a client's needs.			
Points	0	1-2	3-4
1.1: Identify the contextual needs of a client to create a design brief.	No evidence submitted or fails to meet minimum requirement.	Location, building type and end users identified.	Short design brief for their project that outlines the project's location, local climate, explores the surrounding buildings and precedents. Learners should also identify the stakeholders in their project.
1.2: Record project requirements and client expectations.	No evidence submitted or fails to meet minimum requirement.	Architect's agreement attempted. Good architect's agreement, covers most of the considerations outlined at bands 3-4.	Detailed architect's agreement that defines location, function, use, end-users, spaces, budget, materials and style.
1.3: Calculate benchmark costs in relation to the agreed client's needs.	No evidence submitted or fails to meet minimum requirement.	Explanation of what benchmark costs are.	Explanation of what a benchmark cost is. Benchmark costs researched and a relevant value identified in £/m^2

Unit 1: Section 2: Be able to formulate a project brief.			
Points	0	1-2	3-4
2.1: Outline the functional requirements of the project.	No evidence submitted or fails to meet minimum requirement.	Spaces and rooms are listed with some relevant areas defined.	Schedule of accommodations presented including information on size of rooms,spaces, areas, adjacencies, circulation.
2.2: Establish quality objectives for the project.	No evidence submitted or fails to meet minimum requirement.	A simple vision that presents what the building could look like and the positive impacts it will provide to the community	Detailed vision that illustrates and explains the design, durability, elegance, efficiency and how building will benefit the community.
2.3: Set the sustainability aspirations of the project.	No evidence submitted or fails to meet minimum requirement.	Vision for the building defined in terms of social, environmental, and economic principles.	Vision for the building explained in terms of social, environmental, and economic principles with examples of how this could be achieved.

Unit 1: Section 3: Understand constraints on the project.			
Points	0	1-2	3-4
3.1: Identify constraints associated with the site locationand present solutions.	No evidence submitted or fails to meet minimum requirement.	Site map and photographs with key features labelled; orientation, access,surrounding buildings, sun path, prevailing wind.	Detailed site map with key features labelled; orientation, access, surrounding buildings, sun path, prevailing wind. Constraints of the site are identified and solutions proposed.
3.2: Test initial ideas against planning protocol.	No evidence submitted or fails to meet minimum requirement.	Relevant aspects of national and local planning policy are identified.	Relevant aspects of National and local Planning policy are identified and then an explanation of how their building will support these policies.
3.3: Explain the principles of legislation relevant to the project.	No evidence submitted or fails to meet minimum requirement.	At least 5 pieces of legislation have been described and the relevance to their project identified in terms of what needs to be considered.	All relevant legislation has been explained in terms of the considerationsrequired for their project.
3.4 Carry out afeasibility study and present the results.	No evidence submitted or fails to meet minimum requirement.	Simple feasibility study that describes the need for their building in terms of; function, quality, policy, budget, programme.	A detailed feasibility study explaininghow the project is feasible in ALL respects and should cover function, quality, policy, budget, programme, team and the way forward.
3.5: Make a judgement on project viability based on evidence.	No evidence submitted or fails to meet minimum requirement.	Feedback obtained from multiple sources and presented in the portfolio. Statement on the viability of the project.	Feedback obtained from multiple sources and presented in the portfolio. Statement on the viability of the project.Identified any changes they make to the building based on this feedback and stated why this is an improvement.
3.6: Explain howthe building design helps minimise energyuse.	No evidence submitted or fails to meet minimum requirement.	Simple environmental and sustainabilitystrategy produced, comprising a series of criteria annotated with diagrams and images that demonstrate an understanding of different green/ renewable technologies and passive measures that could potentially be incorporated into their building	Detailed environmental and sustainability strategy produced, comprising a series of criteria annotatedwith diagrams and images that demonstrate an understanding of different green/ renewable technologiesand passive measures that could potentially be incorporated into their building.

Unit 1: Section 4: Be able to draft a project plan.			
Points	0	1-2	3-4
.1: Create a draft project plan.	No evidence submitted or fails to meet minimum requirement.	Simple project plan that outlines the vision of the building, what the building aims to be and a short, medium and long-term strategic plan. A simple Gantt chart that includes the main stages of the project.	Detailed project plan that outlines the vision of the building, what the buildingaims to be and a short, medium and long-term strategic plan.
4.2: Match projectplanning to the human resources of the team.	No evidence submitted or fails to meet minimum requirement.	Simple resource plan that allocates specific tasks to members of the team and establishes clear lines of communication and key points of contact.	Detailed resource plan that allocates specific tasks to members of the teamand establishes clear lines of communication and key points of contact.
4.3: Create an Organogram forthe project.	No evidence submitted or fails to meet minimum requirement.	Simple explanation of what each role entails and how they relate to each other, along with how they are pivotal to the project.	Detailed explanation of what each role entails and how they relate to each other, along with how they are pivotal to the project.
4.4: Estimate thelifespan of the completed project.	No evidence submitted or fails to meet minimum requirement.	Simple research into the lifespan of a building and applying knowledge found to project to produce a lifespan estimate	Detailed research into the lifespan of a building and applying knowledge foundto project to produce a lifespan estimate.
4.5: Calculate facilities management costs.	No evidence submitted or fails to meet minimum requirement.	Simple forecast produced of costs related to operational requirements including energy costs, building maintenance and health and safety checks.	Detailed forecast produced of costsrelated to operational requirements including energy costs, building maintenance and health and safety checks.
4.6: Take account of environmental considerations in planning the project.	No evidence submitted or fails to meet minimum requirement.	Energy model used to test the energy efficiency of the building with at least 2 suggestions for improvement identified.	Energy model used to test the energy efficiency of the building with more than 2 suggestions for improvement explained.

Unit 2: Section 1: Be able to develop a feasible proposals from a needs analysis.			
Points	0	1-2	3-4
1.1: Prepare concept diagrams to describe and communicate ideas.	No evidence submitted or fails to meet minimum requirement.	Simple 3D representation of project with description. Multiple 3D images representing the product with a description for each.	Multiple formats used (e.g sketches,paintings, collages, 3D computer models, photographs and images of precedents) to communicate thelearner's ideas in a clear manner.
1.2: Present the quality of the proposal to a client.	No evidence submitted or fails to meet minimum requirement.	Clear and well-presented presentationthat addresses if the project will meet their design brief, all end users will be satisfied.	. Clear and well-presented presentation that addresses if the project will meet their design brief, all end users will be satisfied, will the design contribute to the efficiency of the building, and can individuals easily navigate the building.The presentation should also include sections explaining circulation, fire exit placement and window placement.
1.3: Communicate the concept design to the project team.	No evidence submitted or fails to meet minimum requirement.	Concept design worked into a simple proposal. Services identified on the floorplan.	Concept design worked into a coherent proposal. Services identified on the floorplan.
1.4: Identify procurement options related tokey elements of the project.	No evidence submitted or fails to meet minimum requirement.	Multiple targets set out, life cycle of most of the products established with a simple review of the social, economic and environmental impact of obtaining these materials.	Multiple targets set out, life cycle of most of the products established with a detailed review of the social, economic,and environmental impact of obtaining these materials.

Unit 2: Section 2: Be able to produce technical support collateral for a project.			
Points	0	1-2	3-4
2.1: Prepare 3D representations ofoutline information.	No evidence submitted or fails to meet minimum requirement.	Simple 3D Concept. Identifies features.	Detailed 3D Concept, Clearly labelled.Explains some of the defining features.
2.2: Utilise the 3Denvironment to test the design invirtual locations.	No evidence submitted or fails to meet minimum requirement.	Exact location for their building identified by address or latitude and longitude. Simple energy/solar/wind analysis. Consider situation, orientation, impact of adjacent buildings and agreethe most suitable positioning for optimum solar gain and seasonal thermal performance in relation to the sun's path.	Exact location for their building identified by address or latitude and longitude. Detailed energy/solar/wind analysis. Consider situation, orientation, impact of adjacent buildings and agreethe most suitable positioning for optimum solar gain and seasonal thermal performance in relation to the sun's path.
2.3: Use of quantitative methods to establish the lighting and energy requirements.	No evidence submitted or fails to meet minimum requirement.	Simple exploration of lighting. Descriptions of the different types of lights. Delves into the most sustainable type of bulb with regards to energy use and maintenance costs. Suitable lighting solution suggested for building.	In-depth exploration of lighting. Explanation of the different types of lights. Delves into the most sustainable type of bulb with regards to energy use and maintenance costs. Suitable lightingsolution suggested for building. Annotated floor plan that illustrates the different lighting levels needed and the most appropriate alternative
2.4: Produce detailed, scaled drawings that can form the basis of a planning application.	No evidence submitted or fails to meet minimum requirement.	Series of simple scale drawings: Locations, site plan, elevations and floorplan.	Series of detailed scale drawings: Locations, site plan, elevations and floorplan.
2.5: Describe the key features that form the basis of a planning application.	No evidence submitted or fails to meet minimum requirement.	Key features of a planning application described	Key features of a planning applicationand a design and access statement described.
2.6: Establish a budget that aggregates the estimated benchmark costsof the project.	No evidence submitted or fails to meet minimum requirement.	Detailed report on the costs associated with their building. Reported in appropriate units.	Detailed report on the costs associated with their building. Reported in appropriate units. Details of costings forindividual materials.

Unit 2: Section 3: Be able to support development of a project concept.			
Points	0	1-2	3-4
3.1: Explain the importance of compatibility between existing infrastructure andthe project proposals.	No evidence submitted or fails to meet minimum requirement.	Identification of existing infrastructure around their project site and simple improvements suggested that could be made to help contribute to the building's success.	Identification of existing infrastructure around their project site and detailed improvements suggested that could be made to help contribute to the building's success.
3.2: Explain the environmental and climate change reduction strategies.	No evidence submitted or fails to meet minimum requirement.	Simple strategy proposed to combat climate change and environmental impact. Local environmental regulations reported on.	Detailed strategy proposed to combat climate change and environmental impact. Local environmental regulations reported on.
3.3: Monitor the execution of the plan to ensure compliance with client requirements, taking appropriate action where necessary.	No evidence submitted or fails to meet minimum requirement.	Simple compliance list that is used to support the future of the project so it keeps with the agreed principles, standards, specifications and functionality.	Detailed compliance list that is used tosupport the future of the project so it keeps with the agreed principles, standards, specifications and functionality.
3.4: Establish strategies for the proposed construction that support health and safety, occupancy, management and operation.	No evidence submitted or fails to meet minimum requirement.	Simple health and safety plan produced detailing potential concerns, along withactions that could be taken at all stages of a building's lifecycle.	Detailed health and safety plan produced detailing potential concerns,along with actions that could be taken at all stages of a building's lifecycle. ,
3.5: Relate building design specification to energy efficiency.	No evidence submitted or fails to meet minimum requirement.	At least 3 different energy efficiency strategies described.	4 or more strategies for energy efficiency explained in terms of how they will be achieved, the technology used and the impact they will have.
3.6: Inform planning through collaborative working groups.	No evidence submitted or fails to meet minimum requirement.	Simple communication action plan outlining what needs to be communicated, who will communicate this, who will receive this, how frequent communications are to be and the appropriate delivery method.	Detailed communication action plan outlining what needs to be communicated, who will communicate this, who will receive this, how frequent communications are to be and the appropriate delivery method.

Unit 3: Section 1: Be able to deliver a project.			
Points	0	1-2	3-4
1.1: Coordinate a design proposal to ensure mistakes are avoided.	No evidence submitted or fails to meet minimum requirement.	Identification of further potential problems that may arise. Statement on why this would be a problem.	Identified and explained potential problems that may arise and if left unchecked what problems they could cause. They have identified who they may need to communicate with to resolve these problems.
1.2: Identify potential problems at an early stage and take appropriate action.	No evidence submitted or fails to meet minimum requirement.	Simple risk assessment of design. Describe a problem that they or a peer identified in their design and what action you have taken.	Detailed risk assessment of design. Describe 2 or more problems that they or a peer identified in your design, what action they have taken and how this will impact on the design.
1.3: Identify needsthat require specialists from outside the team.	No evidence submitted or fails to meet minimum requirement.	Specialists identified e.g. architect, cost consultant, services engineer, structural engineer. Simple explanation on what they will be needed for.	Specialists identified e.g. architect, cost consultant, services engineer, structural engineer. Detailed explanation on what they will be needed for.
1.4: Monitor progress in consultation with peers.	No evidence submitted or fails to meet minimum requirement.	Consulted with peers and feedback given. Simple report given.	Consulted with peers and feedback given. Moderation and improvements to the project design reported.
1.5: Ensure the project is developed on time and to budget.	No evidence submitted or fails to meet minimum requirement.	A description of how their project will be delivered on time and on budget. At least one possible issue identified.	A detailed description of how their project will be delivered on time and on budget. An explanation of the different factors that could affect this.

Unit 3: Section 2: Be able to respond to technical issues.			
Points	0	1-2	3-4
2.1: Provide a 3D model to test the design.	No evidence submitted or fails to meet minimum requirement.	Multiple models tested with findings explained. Outline successful and unsuccessful changes.	Multiple models tested with findings explained. Outline successful and unsuccessful changes and how they impacted design.
2.2: Validate the design against the brief using a technical investigation.	No evidence submitted or fails to meet minimum requirement.	Simple systematic approach and successful technical investigation ofproject.	Detailed systematic approach and successful technical investigation ofproject.
2.3: Ensure thatthe project complies with building regulations as it progresses.	No evidence submitted or fails to meet minimum requirement.	Multiple regulations taken into account,considerations for each regulation and actions reported if needed.	Multiple regulations taken into account, a minimum of 3 considerations for each regulation and actions reported if needed.
2.4: Explain how the building works in practice using quantitative monitoring.	No evidence submitted or fails to meet minimum requirement.	Simple description of how the building is suitable for intended use, built to last, adaptability, safe to construct and occupy, contributes to its context and is aesthetically pleasing.	Detailed description of how the building is suitable for intended use, built to last, adaptability, safe to construct and occupy, contributes to its context and is aesthetically pleasing.
2.5: Review progress and reflect on decisions.	No evidence submitted or fails to meet minimum requirement.	Simple summary exploring how the project has evolved, outlines key decisions and explains why they were made. Learners suggest 3 or more improvements based on technical issues and their solutions.	Detailed summary exploring how the project has evolved, outlines key decisions and explains why they were made. Learners suggest 3 or more improvements based on technical issues and their solutions.
2.6: Consult and respond appropriately to peer review.	No evidence submitted or fails to meet minimum requirement.	Evidence of peer review and feedback.	Evidence of peer review, feedback andimprovements/modifications made in response.

Unit 4: Section 1: Be able to test the final design against original intentions.			
Points	0	1-2	3-4
1.1: Explain how the building works so a user knows how to optimise performance.	No evidence submitted or fails to meet minimum requirement.	Simple evaluation of the practical aspects of a building related to the end user's behaviour.	Detailed evaluation of the practical aspects of a building related to the end user's behaviour.
1.2: Explain how well final outcomes meet original intentions.	No evidence submitted or fails to meet minimum requirement.	Outline original criteria. A simple statement on the strengths and weaknesses of their final design and identifies whether the original intentions were met.	Outline original criteria. Detailed strengths and weaknesses of their final design and identifies whether the original intentions were met.
1.3: Evaluate feedback and use it as a basis for improvements in future projects.	No evidence submitted or fails to meet minimum requirement.	Briefly summarise feedback and discuss how they might approach a future project with this in mind.	Detailed summary of feedback and discuss how they might approach a future project with this in mind.
1.4: Analyse data and use it as evidence to inform evaluation.	No evidence submitted or fails to meet minimum requirement.	Evidence of data being used to inform decisions in the project.	Evidence of data being used to inform decisions in the project and improve the design.
1.5: Use data to forecast the long-term performanceof the building.	No evidence submitted or fails to meet minimum requirement.	A simple forecast of the future performance of the building, outlining potential energy costs based on building use and environmental conditions.	Detailed forecast on the future performance of the building, outliningpotential energy costs based on building use and environmental conditions.

Unit 4: Section 2: Be able to transfer project evaluation to other contexts.			
Points	0	1-2	3-4
2.1: Identify issues of a building.	No evidence submitted or fails to meet minimum requirement.	Identification of a local building. Multiple building issues stated in relation to the end user and sustainability.	Identification of a local building. Multiple building issues detailed in relation to the end user and sustainability.
2.2: Make recommendations to improve existing buildings.	No evidence submitted or fails to meet minimum requirement.	List of recommendations. Details how they will improve the building.	Recommendations detailing why they will help. Outlines both financial and environmental impact of these.
2.3: Carry out a qualitative audit reporting on aesthetics and sensory experiences of users.	No evidence submitted or fails to meet minimum requirement.	Statement on experiences of users.	Explains how results were acquired and explains what results show.
2.4: Present the building project to a professional audience.	No evidence submitted or fails to meet minimum requirement.	A presentation with concern to the building project has been produced andpresented.	Excellent presentation. Concise and hits the key points. Answers questions when asked.