Training Qualifications UK

Part of the AQA group

Alternative Academic Qualifications

Qualification Specification

TQUK Level 3 Alternative Academic Qualification in Design, Engineer, and Construct in the Digital Built Environment (Extended Certificate) (RQF)

QN: 610/5499/9

Version DV3

Contents

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
DVI	Please note that this is a draft version of the qualification specification and is subject to further review and updates. The final version will be published once the qualification is live.

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 which 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.

Qualifications offered by TQUK are designed to support and encourage learners in developing their knowledge and skills. These qualifications may lead to further study or support progression into higher education. TQUK qualifications also provide opportunities to progress to further qualifications. The TQUK website provides news and updates on upcoming developments.

Centre Recognition

To offer any 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 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 the centre 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. Centres must also have access to appropriate support in the form of specialist resources. Qualification approval must be confirmed prior to any assessment of learners taking place.

Qualification Specifications

Each qualification offered by TQUK is supported by a specification that includes all the information required by a centre to deliver the qualification. The specification provides mandatory teaching content and assessment details.

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

It is recommended that centres read the qualification specification alongside the documents listed in the mandatory documents section on page 18. TQUK's procedures and policies can be found on the website.

Qualification specifications are also available on the website. If you have any further questions, please contact TQUK for assistance.

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 of the logo.

It is the responsibility of the centre to monitor the use and marketing of TQUK's logos and qualifications on their materials, as well as on those of any resellers or third parties they may use. TQUK must be made aware of any centre relationships with resellers of TQUK qualifications. TQUK must 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 centres' 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.

Accessibility

TQUK is committed to ensuring that all qualifications and assessments are accessible, inclusive, and non-discriminatory. We ensure that no aspect of this qualification disadvantages any group of learners

who share a protected characteristic or introduces unjustifiable barriers to entry, other than those essential to the qualification's intended purpose. Where such features are necessary, they will be clearly stated and justified.

All assessment design processes actively identify and remove unjustifiable barriers that could prevent learners, including those with physical disabilities, from demonstrating their knowledge, understanding, or skills. TQUK monitors and reviews the nine protected characteristics (age, disability, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion or belief, sex, and sexual orientation) throughout qualification development to maintain accessibility and inclusivity. This approach promotes positive attitudes and fosters good relations among all learners.

More information can be found in our Equality and Diversity Policy.

For learners seeking guidance on Reasonable Adjustments, please see our Reasonable Adjustment Policy.

Section 1: Qualification Essentials

The Qualification

Alternative Academic Qualifications (AAQs) are associated with specific subject area routes and have been designed to meet the requirements set by the Department for Education (DfE) following the level 3 educational reforms.

The primary purpose of this qualification is to support learners to progress into higher education.

The TQUK Level 3 Alternative Academic Qualification in Design, Engineer, and Construct in the Digital Built Environment (Extended Certificate) (RQF) is regulated by Ofqual and is equivalent to one A Level.

In a typical study programme where an AAQ is studied alongside two A Levels, this qualification is designed to be delivered over two years.

Qualification Purpose

The purpose of the AAQ in Design, Engineer, and Construct in the Digital Built Environment is to provide learners with the knowledge and skills necessary to progress to higher education and ultimately work within the design, engineering, and construction sectors.

Alternative Academic Qualifications (AAQs) have been approved by the Department for Education (DfE) and are allocated UCAS tariff points. An AAQ Extended Certificate is 360 guided learning hours, equivalent to one A Level and will complement a traditional A Level route. When combined with A Levels as part of a mixed-study programme, AAQs provide learners with a high-quality entry route into higher education.

It provides learners with a strong foundation of knowledge and skills in design, engineering, and construction principles that complement theoretical concepts covered in the A Level curriculum. This integrated approach will enable learners to gain a full understanding of academic principles and their practical application. This will, in turn, showcase their ability to apply concepts and techniques and strengthen their university/college applications, giving them a competitive edge.

Learners will develop knowledge and skills in areas such as conducting research to inform the creation of initial design concepts; developing and adapting designs; responding to feedback; project management and planning; teamworking and presenting a design to an audience. Learners will also gain key knowledge in Building Information Modelling (BIM), evaluating site conditions, conducting a feasibility study, applying sustainable construction principles and practices involving energy efficiency, waste management and assessing the environmental impact of a construction project. It brings together the built and natural environment, focusing on climate resilience, biodiversity, and regeneration.

By undertaking this Extended Certificate, learners will acquire a diverse set of skills that can be effectively applied to higher education studies. The qualification's breadth ensures that learners develop transferable skills that are relevant for pursuing higher-level studies. These skills encompass a broad range of areas and can be utilised across various disciplines and fields of study.

Entry Requirements

There are no formal entry requirements, however, learners should have a minimum of a level two in literacy and a GCSE Mathematics (grade 4 or above) or equivalent.

A solid foundation in level 2 mathematics is important to ensure learners can effectively engage with and comprehend the mathematical concepts and applications integral to the course content.

This qualification is particularly committed to increasing participation among female learners to address gender disparities in STEM subjects and promote diversity within the industry.

Although TQUK does not require learners to have prior subject knowledge before registering on the AAQ, having a foundational understanding would support their progress.

Entry to the qualification is at the centre's discretion.

The recommended minimum age for this qualification is 16 years.

What Will The Learner Study as Part of This Qualification?

Learners will study the core principles and key stages that underpin the research, pre-design, design, and evaluation of a sustainable construction project. They will develop and apply a range of digital skills throughout the qualification, particularly during the creation and visualisation aspects of the design process. They will understand different approaches for specific projects to include regulatory requirements, sustainability, and the exploration of structural materials and building services elements to incorporate within a design.

Project management will form a large part of knowledge and essential skills building, and learners will gain an understanding of techniques to include 3D modelling, floor planning, and the use of BIM.

Learners will study financial planning, budgeting, and financial control to create cost-effective design solutions. They will also learn about the role of a building's lifecycle when designing a construction project and its economic and social impact.

The qualification aligns with the United Nations' Sustainable Development Goals and the UK's 2050 Net Zero strategy, emphasising the development of knowledge and skills that are essential for reducing the global carbon footprint of the built environment.

What Knowledge and Skills Will The Learner Develop as Part of This Qualification?

The qualification is designed to provide learners with a strong, academic and transferable skillset essential for studying at a higher level. Throughout the AAQ, learners will have the opportunity to develop written and verbal communication skills, proficiency in academic writing, critical thinking and analysis, time management skills, collaborative working, and the ability to carry out independent research.

The qualification is designed to foster innovation and creativity, equipping learners with the tools necessary to drive forward the advancements in sustainable design, engineering, and construction practices required in the 21st century.

These skills closely align with university expectations and will ensure that the learners are prepared for the rigour of higher-level study, where they will be able to utilise them at an advanced level.

Which A Level Subjects Will Complement This Qualification?

The A Level subject areas that will complement the qualification include:

- Mathematics
- Physics
- Art and Design
- Design and Technology
- Environmental Technology
- Business Studies
- Economics.

Which Higher Education Courses Can This AAQ Lead To?

This qualification has been designed to support progression to higher education. It may support entry to a range of degree programmes, including:

- Architectural Engineering
- Architectural Technology
- Building Services Engineering
- Building Surveying
- Civil and Structural Engineering
- Construction Project Management
- Construction Site Management
- Electrical Engineering
- Geographical Information Systems
- Geospatial Science and Mapping
- Interior Architecture and Design
- Landscape Architecture
- Mechanical Engineering
- Property Development and Planning
- Quantity Surveying and Construction
- Urban Planning.

UCAS Tariff Points

The qualification will attract UCAS Tariff Points, helping learners progress to higher education. The number of tariff points awarded will depend on the final grade achieved.

The tariff points assigned to this qualification are outlined in the following table:

Grade	UCAS Tariff Points
D*	56
D	48
M	32
P	16

Further details may be found on the UCAS website, where learners can also use the Tariff Calculator to estimate their overall predicted tariff points for this AAQ and A Levels.

Learners should be encouraged to verify individual university entry requirements by visiting the university's website, referring to their admission policies, or contacting their admissions team directly.

Structure and Assessment Approach

Structure

The TQUK Level 3 Alternative Academic Qualification in Design, Engineer, and Construct in the Digital Built Environment (Extended Certificate) (RQF) comprises five mandatory units.

Mandatory units

Year	Unit Number	Unit Title	GLH	Assessment Type
1	M/651/5411	Unit 1 Sustainability and Planning	90	EA
	R/651/5412	Unit 2 Research, Concept, and Context	90	NEA
2	T/651/5413	Unit 3 Facilities Management and Financial Planning	60	EA
	Y/651/5414	Unit 4 Design and Information Management	60	NEA
	A/651/5415	Unit 5 Evaluating & Documenting a Sustainable Construction Project	60	NEA

Assessment approach

The assessment has been designed to ensure validity and its fitness for purpose, aligning with regulatory requirements for Alternative Academic Qualifications.

It is essential that all learners are assessed in English. This ruling also applies to all learner evidence presented for external quality assurance purposes.

Each unit in the AAQ is assessed separately using one of two different assessment methods:

- Examination Assessment (EA)
  - an externally set and marked examination
  - designed to assess the learner's understanding and application of knowledge under controlled conditions
- Non-examination Assessment (NEA)
  - an externally set brief that requires the learner to apply their knowledge and skills in a practical or research-based context

- supports the demonstration of critical thinking and independent research skills through structured tasks
- internally marked by a centre's assessors and externally moderated by TQUK.

For specific unit assessment requirements, centres should refer to the teaching content section in this Qualification Specification, from page 19.

Additionally, centres must refer to the Assessment Guidance for the Delivery of Alternative Academic Qualifications document. This essential document provides full instructions for the conduct of the EAs and NEAs and explains TQUK's approach to:

- the administration of both types of assessment under controlled conditions
- internally assessed marking
- standardisation and training
- external moderation.

Synoptic assessment

Whilst this qualification is unitised, there are opportunities for synoptic assessment through the NEA assessments of Units 4 and 5 in Year 2. Underpinning unit-specific content is the application of knowledge and research, project management, problem-solving, and critical thinking skills.

The approach of full compensatory marking and the use of a Uniform Mark Scheme (UMS) will also provide an indication of learners' holistic skills, knowledge, and understanding from across the qualification content.

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Assessment Delivery

The following table shows the delivery approach for this qualification.

AAQ Extended Certificate Delivery Model										
Year 1										
Unit	**NEA Release**	**Standardisation activities**	**EA Window 1**	**EA Window 2**	**NEA completion, internal marking, retake opportunity**	**Initial external moderation**	**NEA results and feedback**	**NEA resubmission opportunity**	**Final external moderation**	**Results release**
1			Late January/ early February *	Mid-May						Window 1 April Window 2 July
2	September	Between 1 October and 28 February			Until 30 April	Between 1-14 May	Mid-May	Between 30 May and 14 June	Between 15-30 June	July
Year 2										
3			Late January/ early February *	Mid-May						Window 1 April Window 2 July
4	September	Between 1 October and 28 February			Until 30 April	Between 1-14 May	Mid-May	Between 30 May and 14 June	Between 15-30 June	
5	September	Between 1 October and 28 February			Until 30 April	Between 1-14 May	Mid-May	Between 30 May and 14 June	Between 15-30 June	

*** In the first year of delivery, there will be no January assessment window in 2027. Thereafter, two assessment window opportunities for the EA will be available annually.**

**** The results for the full qualification will be confirmed at the end of Year 2 in August to coincide with the release of A Level results.**

Guided Learning Hours (GLH)

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

The GLH for this qualification is 360 hours.

Directed Study Requirements

In addition to the guided learning hours, learners are expected to dedicate a certain amount of time to self-study and the completion of their Non-examination Assessment (NEA). This directed study time allows learners to review and consolidate their learning, engage in independent research, and prepare for the assessments.

This additional time spent on independent study and assessment preparation is an essential component of the learning process and contributes to the overall achievement of the qualification.

The directed study for this qualification is 40 hours.

Total Qualification Time (TQT)

The TQT provides an estimate of the overall time a learner will typically take to achieve and demonstrate the required level of attainment for the award of the qualification. The TQT includes both the guided learning hours and the directed study requirements.

For this qualification, the TQT is calculated by combining the guided learning hours and the estimated directed study hours. The TQT reflects the total commitment required from learners to successfully complete the qualification.

The TQT for this qualification is 400 hours.

Grading Overview

The grading structure for the qualification comprises Pass, Merit and Distinction for the component assessments and Pass, Merit, Distinction, and Distinction* for the overall qualification grade.

Please refer to the Grading and Marking section, on page 62, for full details.

Reasonable Adjustments and Special Considerations Policy

Learners who require reasonable adjustments or special considerations should discuss their requirements with their tutors or teachers. Centres must seek approval from TQUK before any adjustments or considerations can be put in place.

The centre should identify any potential difficulties a learner may face in accessing the Examination Assessment and Non-examination Assessment as early as possible and select appropriate adjustments to ensure accessibility. The centre staff are responsible for ensuring all reasonable adjustments are made and must follow TQUK's process for requesting and implementing adjustments. The centre must ensure that all approved Reasonable Adjustments are applied during the Examination Assessment and Non-examination Assessment.

For more information, please refer to TQUK's Reasonable Adjustments and Special Considerations Policy, or visit our website.

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 tutor or teacher of the level of the learner's current knowledge, skills, and any additional specific support requirements the learner may need.

Initial assessment can be undertaken by a tutor or teacher 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.

Resource Requirements

TQUK expects centres to provide access to appropriate resources and equipment to facilitate the successful delivery of this qualification.

Centres must ensure that facilities and equipment support a safe and engaging learning environment and align with the mandatory teaching content and outcomes. This must include access to digital resources and appropriate technical support.

We do not provide centres with a prescriptive list of equipment to have in place, nor do we stipulate the specific IT requirements or software packages centres should provide.

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.

Staffing Requirements

Centres delivering this AAQ must ensure they appoint individuals who are suitably qualified and competent to carry out their respective roles. It is the centre's responsibility to verify that all appointed personnel possess the necessary expertise and experience to deliver and assess the qualification.

The Designated Person

The centre must appoint a designated person in a senior leadership role to be responsible for overseeing the administration, delivery, and integrity of assessments.

The designated person could hold the following position:

- Head of Centre
- Principal
- Assistant Principal
- Vice Principal.

The designated person is responsible for ensuring that all staff involved in the teaching, assessment delivery, including administration, supervision, facilitation, management, and quality assurance of the AAQs comply with this document to maintain the security and integrity of the NEA and EA.

Any failure to comply may lead to a malpractice or maladministration investigation by TQUK.

The designated person may appoint additional non-teaching member(s) of staff to support the administration, delivery, and integrity of assessments.

The additional member(s) of staff could hold the following positions:

- Examinations Manager
- Examinations Officer
- Administrative Assistant.

Tutor/Teacher, 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, teachers or 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 or Teacher

Tutors or Teachers 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.

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:

- Department for Education
- Learning Aim Reference Service (LARS)

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Mandatory Documentation

Centres must ensure they read this Qualification Specification alongside the following TQUK policies and guidance documentation:

- Appeals Policy
- Assessment Guidance for the Delivery of the Alternative Academic Qualifications
- Complaints Policy
- Conflict of Interest Policy
- Equality and Diversity Policy
- GDPR and Privacy Policy
- Reasonable Adjustments and Special Considerations Policy
- Malpractice and Maladministration Policy.

Section 2: Teaching and Learning

Teaching Approach

Each unit includes the following information to support its delivery:

- an overview of the unit structure and its assessment approach
- an introduction to the unit and any key considerations that apply
- the mandatory teaching content
- assessment requirements.

The mandatory teaching content has been structured to provide a clear distinction between the level of breadth and depth of knowledge that the learner must cover. It is presented in the specification as follows:

- **topic**: each subject area is introduced within a light blue box that provides a clear reference point for the content that will be covered
- **breadth:** the introductory "stem" sentence in each outcome outlines the overarching scope of the topic. It defines the key concepts, principles, approaches, and themes that learners are expected to understand. The use of amplification terminology further supports the exploration of the topic
- **depth:** the bullet points following each stem sentence outline the specific details and expectations for learner knowledge and application. All bullet points must be covered, as they define the required level of detail and establish the scope and focus of mandatory teaching, learning, and assessment.

Each unit includes essential information to support effective planning and delivery. We outline the mode of assessment and any required resources followed by the mandatory teaching content. Additionally, a dedicated assessment approach section specifies key details including the assessment objectives (AOs) tested, important dates, and any specific requirements relevant to the topic.

Centres should inform learners that some topics within qualification specifications and its associated assessments may cover themes that certain learners may find triggering. Centres must be aware that assessment materials may include vocationally relevant content that could be sensitive.

Mathematics content

The appendix outlines key mathematical concepts that learners are expected to understand and apply in order to meet the qualification requirements and successfully complete assessments.

Unit 1: Sustainability and Planning

Unit Number:	M/651/5411		
Level:	3	**GLH:**	90
Unit Introduction:	Modern construction must balance progress with sustainability, ensuring that buildings meet the needs of both present and future generations. This unit explores industry commitments to reducing carbon emissions, resource efficiency, and environmental responsibility. It examines how strategies such as energy conservation, responsible material sourcing, and waste reduction influence construction projects and planning decisions. Understanding planning regulations is essential for any project. This unit explores the planning process, including how site constraints, environmental factors, and community engagement shape proposals. It also covers feasibility studies and how they assess the viability of a project before construction begins. By developing an understanding of sustainability principles and planning considerations, this unit provides insight into how the built environment can be designed and managed responsibly, aligning with environmental, social, and economic goals.		
Assessment Type:	Examination Assessment (EA)		

Teaching content:	
1.1	**Sustainability standards in construction**

1.1.1	The application of commitments to reducing carbon emissions:
	
	• guiding principles:
	  ○ decarbonisation as a core sustainability goal
	  ○ commitment to net-zero strategies
	  ○ industry and regulatory alignment
	• carbon reduction strategies:
	  ○ operational carbon:
	  ▪ energy-efficient building systems
	  ▪ renewables
	  ○ embodied carbon:
	  ▪ low-carbon materials
	  ▪ circular economy principles
	  ▪ Environmental Product Declarations (EPDs)
	  ○ whole-life carbon assessment:
	  ▪ measuring, monitoring and mitigating emissions
	  ▪ using EPDs as a tool for whole-life carbon analysis
	  ▪ comparing materials based on their Global Warming Potential.

1.1.2	The application of commitments to positively impact the local community and natural environment:
	
	• guiding principles:
	  ○ ethos:
	  ▪ overarching character
	  ▪ guiding beliefs that inspire project
	  ○ values:

	▪ motivation ▪ ethics ▪ credibility/trust ▪ reputation ▪ reliability • commitments to the local community: ○ job creation ○ training and skills development ○ health and wellbeing initiatives • commitments to environmental community: ○ re-wilding ○ eco-friendly landscaping using native species ○ sustainable building design: ▪ green roofs and walls ▪ 'nature-friendly' design • commitment to long-term sustainability and accountability: ○ embedding ethos and values ○ sustainability and community commitments at all project stages ○ ethical and environmental values in design, construction, and operation ○ transparency and accountability in long-term impact.
1.1.3	The application of commitments to energy efficiency and water conservation: • water use, energy, and carbon relationship: ○ abstraction ○ treatment ○ distribution ○ heating ○ pumping ○ sewage and wastewater treatment • responsible use of water and energy: ○ influence behaviour through regular audits, reporting, and education programmes ○ ensure accountability of project team and supply team commitments ○ identify and reduce embodied water ○ reduce wastewater ○ adopt a whole lifecycle approach • sustainable technologies and renewable solutions: ○ rainwater harvesting ○ greywater systems ○ water-efficient fixtures and fittings ○ sustainable drainage systems (SuDS).
1.1.4	The application of commitments to resource efficiency and minimising construction waste: • designing out waste using information management: ○ optimising material use through design efficiency • using modern methods of construction: ○ lean construction principles • minimising plastic waste in packaging: ○ using responsibly sourced, low-carbon and recycled materials • adopting a whole lifecycle approach: ○ designing for disassembly and material reuse ○ incorporating circular economy principles • engaging project and supply teams in waste reduction goals: ○ setting measurable waste minimisation targets across project teams.
1.1.5	The application of commitments to ethical sourcing of materials, responsible procurement and reducing embodied carbon:

	• ensuring responsible use of natural resources through sustainable extraction and sourcing • prioritising recycled, low-carbon, and sustainably certified materials • minimising hazardous substances and pollutants to protect health and the environment • maintaining a transparent supply chain with ethical sourcing verification • applying a whole lifecycle approach to material selection and carbon impact • aligning project teams and supply chains with ethical and sustainability commitments.

1.1.6	The application of commitments to lifecycle sustainability monitoring using digital workflows and a Common Data Environment:
	
	• Common Data Environment (CDE) – centralised digital storage for sustainability data:
	  ○ collecting, managing, and sharing sustainability information in real time
	  ○ improving transparency and accountability in environmental performance
	• adopting a circular economy and 'cradle to cradle' approach:
	  ○ raw material extraction – responsible sourcing
	  ○ manufacturing and processing - reducing energy consumption and emissions
	  ○ transportation - lowering carbon footprint
	  ○ operational usage – enhancing energy efficiency and reducing waste
	  ○ planning for recycling, reusing and repurposing of materials at the end of a building's life.

1.2	**Information and resources in support of a planning application**

1.2.1	The stages of the planning process for a specific construction project:
	
	• securing authorised consent for a proposed building project
	• compliance with national guidance and local planning policies
	• submission of detailed planning documents to local authority:
	  ○ location and site plan
	  ○ proposed elevations and floor plans
	  ○ specialist surveys and supplementary information.

1.2.2	A range of planning constraints affecting construction projects:
	
	• regulatory constraints:
	  ○ national and local policy
	  ○ flood risk management:
	  ▪ The Flood and Water Management Act 2010
	  ○ land contamination issues:
	  ▪ Environmental Protection Act 1990
	  ○ biodiversity net gain
	  ○ environmental protection:
	  ▪ protected species
	  ▪ conservation areas
	• protected natural environments:
	  ○ conservation of habitats
	  ○ Tree Preservation Orders (TPO)
	  ○ protected sites and landscapes:
	  ▪ Sites of Special Scientific Interest (SSSI)
	  ▪ Area of Outstanding Natural Beauty (AONB)
	  ▪ Green Belt/Zone
	• heritage and conservation considerations:
	  ○ listed buildings
	  ○ conservation areas
	  ○ brown field (previously developed land)

	• physical boundaries:
	  ○ fences, hedges, walls, and watercourses
	  ○ building lines and party walls
	  ○ rights of way/access and easements.

1.2.3	The role of a planning feasibility study in a construction project:
	
	• identifies relevant planning constraints:
	  ○ location-specific restrictions
	  ○ flood risk and water management
	  ○ trees preservation
	  ○ ecology impact
	  ○ listed buildings
	  ○ heritage areas
	• evaluates project compliance with national, regional and local planning policies
	• assesses approval likelihood
	• considers financial, environmental, and community impact.

1.3	**Structural elements**

1.3.1	A range of structures in the built environment and their features:
	
	• mass structures:
	  ○ resist loads through own weight
	  ○ constructed by piling or forming similar materials into a shape or design
	  ○ manufactured structures:
	  ▪ dams
	  ▪ pyramids
	  ○ natural:
	  ▪ mountains
	  ▪ cliffs
	• frame structures:
	  ○ built from multiple small members joined together:
	  ▪ forms a skeleton of very strong materials
	  ○ composed of beams, columns, and slabs:
	  ▪ designed to resist lateral and gravity loads
	  ○ manufactured:
	  ▪ skyscrapers
	  ▪ bridges
	  ○ natural:
	  ▪ tree branches
	  ▪ spider webs
	• shell structures:
	  ○ strong and hollow:
	  ▪ designed to retain shape, and distribute loads efficiently
	  ○ force is spread through whole structure
	  ○ manufactured
	  ○ natural.

1.3.2	The impact of forces on structural elements:
	
	• tension - pulling/stretching force:
	  ○ force applied increases size, volume and dimension
	• compression - pushing/squeezing force:
	  ○ force applied reduces size, volume, and dimension
	• shear - sliding/opposing force:
	  ○ force applied in one direction and an internal force acts in the opposite direction

	• torsion - twisting force:
	  ○ force applied to a material causes it to twist or rotate
	• bending - deflecting force:
	  ○ force applied to a length of material causes it to curve
	  ○ involves both compression and tension
	  ○ created when load applied from a distance.

1.3.3	The purpose and properties of structural materials:
	
	• purpose of structural materials:
	  ○ transmit or support loads
	  ○ resist deformation and failure
	• properties of structural material:
	  ○ strength - stress or force a material can endure before failing
	  ○ toughness - energy required to break a material
	  ○ elasticity - ability to return to its original shape after deformation
	  ○ plasticity - ability to be shaped, moulded, or formed
	  ○ ductility - ability to be stretched or pulled (elongated) without breaking
	  ○ malleability - ability to be beaten or hammered into another shape before it fractures or breaks
	  ○ brittleness - tendency to break or shatter before it deforms
	  ○ hardness - resistance to surface deformation; ability to resist permanent distortion, penetration, indentation, and scratching.

1.3.4	Application of science and mathematics in calculating structural elements:
	
	• bending moments:
	  ○ effect of a force resulting in an object rotating on a pivot
	  ○ formula: moment = force x perpendicular distance to pivot
	  ○ SI unit for moments: Newton metres (Nm)
	• forces:
	  ○ defined as a push or pull acting on an object
	  ○ horizontal and vertical forces
	  ○ component and resultant forces
	• loads:
	  ○ forces that act on a building or structure affecting its stability and strength.

1.3.5	Types of structural load and their effect on a building:
	
	• dead load (permanent load):
	  ○ the fixed weight of the building, including:
	  ▪ structural elements:
	  • walls
	  • floors
	  • beams
	  • columns
	  ▪ fixed fixtures:
	  • roofing materials
	  • built-in furniture
	  ○ remain constant over time and form the foundation of structural design
	• live load (variable load):
	  ○ weight of occupants, furniture, and equipment
	  ○ changes over time depending on occupancy and usage
	  ○ floors and structures designed to withstand fluctuations in live load
	• environmental load (natural forces):
	  ○ external forces caused by weather and geological conditions:

	▪ wind load – pressure from strong winds on walls, roofs, and windows ▪ snow load – weight of accumulated snow, which can cause roof collapse if excessive ▪ rain load – water accumulation, adding stress and causes structural strain ▪ soil pressure – forces exerted by surrounding earth on foundations and retaining walls.
1.4	**Building services elements**
1.4.1	The principles and impact of good practice in building services design: • safety – compliance with health and safety regulations • fitness for purpose – align with building function and occupant needs • resource efficiency – minimises energy and water consumption • low carbon solutions - reduces environmental impact • occupant comfort - enhances thermal, visual, acoustic, and respiratory comfort • health and wellbeing - promotes good indoor air quality and accessibility • ease of operation and maintenance – ensures systems remain functional and cost-effective.
1.4.2	The definition of 'occupant comfort' and the ways in which it can be digitally measured: • occupant comfort: ○ state of physical ease or relaxation, wellbeing, and freedom from distress ○ encompassing thermal, visual, acoustic, and respiratory comfort creation of spaces of physical and mental wellbeing • thermal comfort: ○ satisfaction with the thermal environment ○ the condition of when an individual is neither too hot nor too cold ○ metrics: ▪ air temperature – dry bulb temperature (DBT) measured in degrees Celsius (°C), SI unit Kelvin (K) ▪ air velocity - measured in metres per second (m/s) ▪ radiant temperature – measured in Mean Radiant Temperature (MRT) ▪ relative humidity – RH measured in percentage (%) ○ physical factors: ▪ clothing ▪ metabolic heat or level of activity ▪ age, wellbeing, and health ▪ furniture room layout and personal preference • visual comfort: ○ quantity and quality of natural and artificial illumination sources ○ an individual's reaction to the light inside a space ○ metrics: ▪ light quantity - amount of natural and artificial light ▪ light distribution as perceived by the eye: • contrasts • colour 'temperature' • glare ▪ quality of the light ▪ quality of the view • acoustic comfort: ○ perceived state of satisfaction with acoustical conditions of an environment ○ quality of preferred sounds or absence of unwanted sounds ○ metrics: ▪ sound level – measured in decibels (dB) ▪ sound level measured by background versus peak noise level

	▪ room acoustics measured by: • reverberation time • intelligibility level • privacy level • respiratory comfort: ○ air quality within and around buildings and structures ○ level of pollution in the air ○ metrics: ▪ air pollution levels – measured in micrograms per cubic metre of air (µg/m) or parts per million (ppm) ▪ sources of pollution: • human-caused air pollution • natural sources of air pollution.
1.4.3	A range of considerations affecting lighting, temperature, and air exchange in a digital building design project: • lighting: ○ levels: ▪ ambient – uniform and general illumination; primary source of light ▪ task – direct illumination for detailed work ▪ accent – highlights a specific area or object ○ light sources and reflective surfaces ○ glare control and use of filters and blinds ○ colour of artificial lighting ○ sudden contrast • temperature: ○ optimum temperature varies by type of building ○ building age impacts heat retention and insulation ○ indoor activities ○ outside temperature influence ○ smart controlling of heating and cooling systems • air exchange: ○ type of space ○ occupancy levels and usage ○ geographical location of the building ○ indoor air pollutant removal.
1.4.4	The application of science and mathematics in a range of building services contexts: • thermal resistance and heat transfer: ○ R-Value (thermal resistance): ▪ how resistive a specific material is to heat conduction ▪ measured in square metre-Kelvin per watt (m^2K/W) ▪ R Value = $\frac{\text{Thickness}}{\text{Thermal Conductivity}}$ ▪ R Value = $\frac{mT}{\lambda}$ ○ U-Value (thermal transmittance): ▪ measure of heat conducted through specific material ▪ the lower the U Value, the better the material as a heat insulator ▪ unit of measurement – Watts per square metre-Kelvin (W/m^2K) ▪ U Value = where Rt is total thermal resistance • lighting (brightness) calculations: ○ lumens (lm): unit of measurement of total amount of light produced by light source ○ lux (lx): measure of light density or illuminance ○ one lux (1 lx) light equivalent to one lumen per square metre (lm/m^2) ○ lumens required = lux x area

	○ calculating required lumens = lux x area of room • water consumption: ○ unit of measurement: litre (l) and cubic metres (m^3) ○ one cubic metre = 1,000 litres ○ calculations based on flow rate (number of litres per minute and % water saved by using water efficient products) • emergency exits: ○ calculations based on minimum number of escape routes/exits for occupant level ○ exit widths based on the number of occupants and Building Regulations for Fire Safety.
1.4.5	The application of building services technology to maximise efficiency: • occupant comfort: ○ automated controls for temperature, lighting, and air quality • water use: ○ smart metering ○ greywater recycling ○ efficient fixtures • energy use: ○ renewable energy ○ smart grid integration ○ energy-efficient HVAC systems • emergency exits: ○ automated fire safety systems ○ evacuation lighting ○ real-time occupancy monitoring.

Unit 1: Assessment Approach

The mode of assessment used for this unit is an Examination Assessment (EA). This assessment method is externally set and marked by TQUK, ensuring consistency and reliability in the evaluation of learner's knowledge and understanding.

The EA for an individual unit cannot commence until the unit content has been fully taught to learners.

An overview of the assessment approach is outlined in the table below:

Assessment description	The EA comprises a balance of multiple-choice questions (MCQ), extended-response questions (ERQ), and short-answer questions (SAQ).
Assessment windows	Late January/early February** and early May Centres have the flexibility to timetable the Examination Assessment within the specified assessment window.
Duration of EA	2 hours

** **Important**: in the first year of delivery, there is no assessment window opportunity in January 2027. Thereafter, EAs will be available annually in late January/early February and mid-May.

The Examination Assessment will be conducted under exam conditions in a controlled environment. Centres must refer to the Assessment Guidance for the Delivery of Alternative Academic Qualifications document available on our website for further information to support the administration of the EA.

The assessment has been carefully aligned with the unit's assessment objectives (AOs) to create a consistent framework for learners. The table below confirms the assessment objectives that will be covered in the Examination Assessment.

Assessment objective	Description
AO1 – Recall knowledge and information	Learners are to **recall** knowledge and information.
AO2 – Apply knowledge and information	Learners are to **apply** knowledge and information to situations and contexts relevant to the given sector.
AO3 – Interpret, analyse or evaluate information, ideas or different viewpoints	Learners are able to **interpret**, **analyse**, or **evaluate** information, ideas, or different viewpoints to make **judgements** that are reasoned or draw conclusions.

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Unit 2: Research, Concept, and Context

Unit Number:	R/651/5412		
Level:	3	**GLH:**	90
Unit Introduction:	The built environment is shaped by thorough research, careful planning, and a clear understanding of project requirements. Before a single structure is built, professionals must gather and analyse data to inform design decisions. This unit introduces different research methods used in the construction industry, from interviews and surveys to geospatial and ecological surveys. It explores how site analysis, sustainability considerations, and professional collaboration influence project outcomes. By investigating real-world projects, this unit examines how social, economic, and environmental factors shape the development of the built environment. It also considers how end-user needs, inclusivity, and accessibility play a key role in creating functional, sustainable spaces. The role of architectural precedent and the importance of integrating facilities and information management early in the design process are also covered. This unit provides a foundation for understanding how research informs design and how early-stage decision-making can impact a project's long-term success. It establishes key principles that support the development of design concepts and effective planning in later units.		
Assessment Type:	Non-examination Assessment (NEA)		

Teaching content:	
2.1	**Researching design and construction projects**
2.1.1	The differences between a range of research methods: • interviews - one-on-one discussions to gain in-depth insights from participants • questionnaires - structured surveys with open or closed questions to gather quantitative or qualitative data • focus group - group discussions to explore opinions, attitudes, and experiences on a topic • workshop - interactive sessions designed to generate ideas, feedback, and collaborative problem-solving • data gathering - the process of collecting relevant information through observations, surveys, or digital sources.

2.1.2	Considerations in design and construction research:
	
	• built environment and project scope:
	  ○ built environment:
	  ▪ urban
	  ▪ rural
	  ▪ commercial
	  ▪ residential settings
	  ○ building types:

	▪ new builds ▪ renovations ▪ sustainable structures ○ infrastructure: ▪ transport ▪ utilities ▪ public spaces • professional disciplines: ○ architecture: ▪ conceptual design ▪ aesthetics ▪ functionality ○ structural engineering: ▪ material strength ▪ load-bearing structures ○ building services engineering: ▪ heating ▪ lighting ▪ ventilation systems ○ project management: ▪ coordination ▪ budgeting ▪ compliance • industry standards: ○ RIBA (Royal Institute of British Architects) Plan of Work ▪ structured approach to design and construction phases.
2.1.3	The importance of early integration of Facilities Management and Information Management to optimise a whole-life approach to building design: • improves collaboration between architecture, engineering, construction, and operations from project initiation • ensures buildings are designed and managed with specialist knowledge of their use and function • supports lifecycle planning, addressing long-term operational and maintenance needs • enables cost-effective design choices by considering whole-life costs • early identification of common issues, challenges, and risks • provides valuable information of building performance and energy efficiency • ensures accurate whole-life cost projections for improved financial planning • guidance on operational decision-making, including: ○ equipment placement ○ system functionality • defines service and user requirements embedded early, including: ○ car parking ○ security ○ maintenance ○ cleaning.
2.1.4	The impact of social, economic, and environmental factors on design and construction project development: • social factors: ○ addresses local needs, community wellbeing, and public health ○ promotes inclusivity, accessibility, and safety in the built environment ○ encourages social interaction through public spaces and community facilities ○ considers cultural heritage and identity in design decisions ○ supports employment and skills development in local communities

	• economic factors:
	  ○ project viability, cost efficiency, return on investment
	  ○ boosts local and regional economies through job creation and supply chain engagement
	  ○ supports business growth and attracts investment in surrounding areas
	  ○ evaluates long-term operational and maintenance costs for financial sustainability
	  ○ balances affordability with quality, resilience, and efficiency
	• environmental factors:
	  ○ reduces carbon footprint through low-impact materials and energy-efficient design
	  ○ promotes sustainability with circular economy principles and waste reduction
	  ○ enhances biodiversity through green infrastructure and ecological considerations
	  ○ manages resources effectively, including water conservation and renewable energy use
	  ○ aligns with environmental regulations and climate resilience strategies.

2.1.5	The importance of end user, inclusivity, and accessibility in design and construction project development:
	
	• empathy for all end users – considering diverse needs and experiences:
	  ○ disabilities – physical, hidden, and neurodiverse conditions
	  ○ different age groups – children, elderly, and varying mobility needs
	  ○ cultural and religious backgrounds – inclusive spaces for diverse communities
	• assessing and addressing user needs – understanding expectations, preferences, and values
	• promoting equality, diversity, and inclusion (EDI) in design and construction:
	  ○ how users experience spaces physically, emotionally, and socially
	  ○ ergonomics and human-centred design for comfort, safety, and usability
	  ○ assistive technologies and adaptive design solutions for accessibility
	  ○ digital tools to test and visualise accessibility features before implementation
	  ○ inclusive practices in project teams and supply chains
	  ○ reducing barriers and improving social integration in the built environment
	  ○ aligning with legal requirements and best practices in accessible design.

2.1.6	The role of architectural precedent in sustainable architectural design and improving building performance:
	
	• inspires design development by establishing a baseline good practice
	• identifies strengths and weaknesses
	• saves time and costs through research
	• supports problem-solving in own design
	• provides sustainability benchmarks
	• enhances performance efficiency – operation and maintenance
	• refines construction methods and structure
	• optimises function –by ensuring buildings are fit for purpose
	• considers local context:
	  ○ location and orientation
	  ○ vernacular and culture
	  ○ climate
	  ○ history and heritage
	  ○ aesthetics.

2.1.7	The purpose and production of a project vision:
	
	• action-oriented, detailing the practical steps, commitments, and approach that will turn the vision into reality:
	  ○ sets clear values, objectives, and outcomes
	  ○ defines purpose of a project

	○ provides commitment to quality, functionality, and impact ○ confirms approach to sustainability and the environment ○ outline the project's economic contribution.
2.2	**Site analysis and pre-design considerations**
2.2.1	The importance of site analysis and the roles of professional consultants at the pre-design stage: • rationale for site analysis: ○ ensures informed design decisions by assessing the following factors: ▪ environmental ▪ structural ▪ regulatory • personnel involved: ○ architects ○ engineers ○ surveyors ○ environmental consultants • tasks to be undertaken: ○ site surveys ○ feasibility studies ○ risk assessments ○ regulatory compliance checks • risks in gathering insufficient or inadequate data: ○ design flaws ○ safety hazards ○ regulatory issues ○ cost overruns.
2.2.2	The purpose of geospatial surveying, information collecting, and application of geospatial data: • purpose of a geospatial survey: ○ provides a precise detailed map of a piece of land ○ provides accurate geospatial data and information ○ identifies site constraints and terrain features ○ establishes site boundaries and development limitations • geospatial data collection methods: ○ satellite-based positioning systems (GPS/GNSS) ○ electronic distance measurement (total station) ○ laser scanning ○ unmanned aerial vehicle (UAV) or drone ○ ground penetrating radar (GPR) ○ geographical information systems (GIS) • geospatial information collected: ○ site access ○ natural and manufactured features ○ site terrain ○ boundaries ○ ground levels and feature levels/heights ○ position and canopy of trees ○ water courses and other features ○ existing buildings ○ walls and fences ○ roads and footpaths ○ existing utilities running under, through, and adjacent to the site • application of Geospatial Survey Data:

	○ site feasibility: ▪ assessing land suitability and constraints ○ design and planning: ▪ integrating spatial data into BIM/GIS ○ construction and engineering: ▪ accurate positioning and layout ○ environmental impact: ▪ sustainability ▪ biodiversity ▪ flood risk ○ infrastructure development: ▪ roads ▪ utilities ▪ transport ○ legal and regulatory compliance: ▪ boundary disputes ▪ land rights ○ asset management: ▪ monitoring existing structures and networks.
2.2.3	The purpose of geotechnical surveying, information collected, and the application of geotechnical survey data: • purpose of a geotechnical survey: ○ conducts desk-top study, ground investigation, and assessment ○ examines surface and sub-surface exploration of a site ○ determines physical characteristics of soil and rocks ○ provides recommendations for foundation design, excavation, and drainage • geotechnical information collected: ○ site's geological condition: ▪ structure ▪ composition ▪ evolution ▪ dynamics of the Earth ○ soil properties: ▪ condition ▪ consistency ▪ strength ▪ structure ○ groundwater conditions: ▪ water table height ▪ flow characteristics ○ contamination risks: ▪ evaluates potential pollutants in 'brown field' sites ▪ previous industrial, horticultural, or agricultural activity ○ geological hazards: ▪ landslides ▪ subsidence ▪ flooding • application of geotechnical survey data: ○ foundation design: ▪ stability ▪ load-bearing capacity ○ construction planning: ▪ excavation risks ▪ suitable materials ○ drainage and water management:

	▪ groundwater issues ○ infrastructure development ○ risk assessment: ▪ contamination ▪ geological hazards ○ environmental impact: ▪ sustainable land use ▪ remediation strategies.
2.2.4	The purpose of ecology surveys, information collected, and application of data: • purpose of an ecological survey: ○ assesses the environmental impact of a project ○ identifies opportunities to protect and enhance local biodiversity ○ provides recommendations to mitigate ecological risks and comply with environmental regulations • ecological information collected: ○ important habitats and ecosystems on or near the site: ▪ ancient woodlands ▪ salt marshes ▪ wetlands ○ presence of protected species on or near the site: ▪ bats ▪ great crested newts ▪ dormice • application of ecology survey data: ○ planning and development: ▪ integrating biodiversity considerations ○ habitat conservation: ▪ implementing protection measures for key ecosystems ○ wildlife mitigation: ▪ safe relocation/preservation of protected species ○ compliance and legislation: ▪ environmental laws ▪ planning requirements ○ sustainable land use: ▪ enhancing biodiversity through green infrastructure.
2.2.5	The purpose and information produced from a digital hydrological survey in early project development: • purpose of a hydrological survey: ○ conducts a desk-top study, investigation, and assessment ○ determines water level, velocity, and flow across the site ○ identifies flood risks: ▪ pluvial flooding ▪ fluvial flooding ▪ groundwater flooding • hydrological information collected: ○ watercourse mapping: ▪ position of source ▪ routes ▪ flow directions ○ water depths ○ flooding patterns: ▪ historical ▪ seasonal

	○ surface water run-offs ○ water quality analysis • application of ecology survey data: ○ flood risk management: ▪ mitigation strategies ○ infrastructure planning: ▪ road, rail, and building resilience ○ drainage system design: ▪ surface water management ○ water resource management: ▪ sustainable use ▪ conservation ○ environmental protection: ▪ minimising pollution ▪ minimising habitat disruption ○ regulatory compliance: ▪ meeting planning regulations ▪ environmental law.
2.3	**The design brief, concept development, and collaboration**
2.3.1	The role and responsibilities of the client in a construction project: • commissioning entity: ○ individual or organisation for whom a project is being completed • project oversight: ○ overall responsibility for project management and execution • defining scope and priorities: ○ timelines ○ objective ○ key requirements • financial management: ○ budgeting ○ funding ○ cost constraints • appointment of professionals: ○ designers ○ contractors ○ consultants • health and safety coordination: ○ compliance with legal and safety regulations on site • decision making and communication: ○ clear reporting structures ○ decision-making process • project evaluation and sign-off: ○ formally signs off project.
2.3.2	The purpose of a design brief: • defines client vision, goals, and priorities • contains client and end user requirements • establishes project scope and objectives • provides project location and site details • describes project specification: ○ type ○ style ○ size ○ function

	• integrates sustainability principles:
	  ○ biophilic design: incorporating natural elements to improve health and wellbeing of occupants
	  ○ regenerative design: restoring environment and reversing ecological damage
	• specifies materials
	• defines work stages and realistic timeline
	• sets project budget.

2.3.3	The features and benefits of an integrated project team:
	
	• features:
	  ○ inclusive structure - comprises client's project team, supply chain of consultants, contractors, and specialist suppliers
	  ○ multi-disciplinary expertise – brings together diverse skills and technical knowledge
	  ○ aligned decision-making– promotes collaboration with shared goals
	• benefits:
	  ○ enhances a collaborative culture and environment
	  ○ improves efficiency through information management:
	  ▪ real-time data sharing
	  ▪ better coordination
	  ▪ reduced errors
	  ○ streamlines workflows
	  ○ increases accountability and shared ownership.

2.3.4	The importance of meeting design brief requirements:
	
	• aligns with client expectations:
	  ○ meets aspirations, visions, and goals
	  ○ defines success criteria
	• guides design decision-making:
	  ○ data validation and research
	  ○ manages conflicts and limitations
	  ○ ensures compliance.

2.3.5	Considerations to inform the size, layout, and function of rooms and spaces:
	
	• physical dimensions:
	  ○ area – size of room/space
	  ○ height (ceiling)
	  ○ units of measurement: (such as m, m^2, m^3)
	• function and usage
	  ○ purpose of the space
	  ○ occupancy/capacity – how many people will use the space
	  ○ circulation requirements – how users move from one space to another:
	  ▪ vertically:
	  • staircases
	  • lifts
	  ▪ horizontally:
	  • corridors
	  • pathways.

2.3.6	The purpose and function of a schedule of accommodation in a construction project:
	
	• determines minimum space requirements for the building project:
	  ○ rooms
	  ○ spaces

	○ circulation • provides an itemised list of accommodation (internal rooms and spaces): ○ room name and reference ○ room location (specifies name and floor) ○ room type and function ○ user and occupancy information ○ floor area (m^2) ○ total number of areas ○ exclusions (such as circulation spaces) ○ furniture, fixtures, and fittings ○ technical/environmental factors: ▪ lighting ▪ ventilation ▪ access.
2.4	**Information management in concept design**
2.4.1	The purpose and benefits of preliminary concept designs based on a design brief: • purpose: ○ optimises space efficiency ○ facilitates safe and inclusive movement ○ defines spatial requirements for a range of occupant activities and equipment ○ enhances circulation and accessibility through key areas: ▪ corridors ▪ lifts ▪ escalators ▪ staircases • benefits: ○ identifies design errors at early design stage ○ facilitates communication of ideas, feedback, and changes ○ supports early-stage analysis for building life cycle sustainability ○ enables early-stage cost analysis.
2.4.2	The role of concept design to produce preliminary costs: • cost estimation methodology varies with the building type and use • level of finish – materials and detailing influence final costs • floor area (m^2) calculations - determines construction cost estimates • risks of concept-based estimation – include uncertainties, changes, and unforeseen costs.
2.4.3	The features of energy analysis for building design: • orientation: ○ sun path and shadow analysis: ▪ optimises building form and mass ▪ determines optimal orientation of the site ▪ helps position the building to maximise sun or shadow • local environment: ○ effects of surrounding buildings ○ effects of trees and vegetation: ▪ sun control strategies ▪ deciduous trees provide shade in summer and allow sunlight in winter ○ urban heat island effect • climate and weather: ○ temperature ○ precipitation

	○ wind patterns ○ sunlight exposure • surface properties and heat management: ○ dark surfaces absorb heat ○ light surfaces reflect heat ○ impervious versus permeable affects water retention and cooling ○ water elements can enhance cooling • fenestration: (doors, windows, and skylights): ○ size, type, and position affect natural daylighting and energy usage ○ thermal performance reduces heat loss or gains through glazing ○ ventilation strategies: ▪ natural ventilation promotes fresh air circulation ▪ mechanical ventilation uses HVAC and air conditioning.
2.4.4	The role of a Common Data Environment in managing project lifecycle data and digital design analysis: • defines the minimum level of information required • ensures material identification and traceability throughout the project lifecycle • enables real-time access and collaboration across disciplines • maintains accurate records of design updates and changes • enhances coordination and reduces errors – ensures consistency in digital design analysis • compliance with standards and industry regulations • improves project efficiency and decision-making.
2.5	**Construction materials and their properties**
2.5.1	The characteristics, performance, and sustainability of common construction materials: • common materials: ○ bricks/masonry ○ concrete ○ stone ○ steel ○ wood ○ glass • performance: ○ safety ○ durability ○ strength ○ weather and decay resistance: ▪ moisture ▪ erosion ▪ corrosion fire resistance ○ fire and natural disaster resilience: ▪ heatwaves ▪ floods ▪ droughts ▪ earthquakes ○ energy efficiency and thermal properties ○ maintenance requirements • sustainability: ○ health and wellbeing risks: ▪ toxicity ▪ hazardous materials ▪ flammability ▪ pollutants

	▪ volatile organic compounds (VOCs) ○ product lifecycle transparency: ▪ traceability ▪ recycling ▪ repurposing ▪ deconstructing and reusing ▪ embodied energy and water ○ aesthetic and cultural relevance: ▪ shape ▪ size, proportion ▪ texture, pattern, decoration ▪ context, fit reflecting vernacular architecture, and cultural significance ○ cost implications: ▪ material cost ▪ local availability ▪ transportation ▪ specialist installation requiring skilled labour requirements.
2.5.2	A range of regulatory requirements to ensure common materials meet environmental performance standards: • building regulations: ○ compliance with: ▪ safety ▪ durability ▪ sustainability • certification and industry standards: ○ Cradle to Cradle Certified® ○ International Standards Organisation (ISO) ○ Forest Stewardship Council® (FSC®) ○ Building Research Establishment Environmental Assessment Method (BREEAM) ○ Leadership in Energy and Environmental Design (LEED) ○ WELL Building Standard® ○ Green Star ○ Health Product Declaration® (HPD) ○ Environmental Product Declaration (EPD).

Unit 2: Assessment Approach

The mode of assessment used for this unit is a Non-examination Assessment (NEA). This assessment method is externally set by TQUK and internally marked by centres.

The NEA for an individual unit cannot commence until the unit content has been fully taught to learners and TQUK's mandatory standardisation training is completed.

An overview of the assessment approach is outlined in the table below:

Assessment description	The NEA comprises a brief designed to assess the learners' applied knowledge and skills and their ability to evidence critical analysis and reflective evaluation of the subject content.
Duration of NEA	The timeframe for the completion of the NEA is 10-12 hours.
Assessment windows	The NEA brief is released in September each year. Centres have flexibility in scheduling the NEA within the academic session but must ensure it is completed by 30 April at the latest to allow for marking, internal quality assurance, and external moderation activities.

The Non-examination Assessment will be conducted under controlled assessment conditions.

Centres **must** refer to the Assessment Guidance for the Delivery of Alternative Academic Qualifications document, available on our website, to ensure the appropriate administration and marking of this assessment and adherence to TQUK regulations.

The NEA has been carefully aligned with the assessment objectives (AOs) to create a consistent framework for learners. The table below confirms the assessment objectives that will be covered in the Non-examination Assessment.

Assessment objective	Description
AO4a – Research and plan	Learners are able to **research**, **investigate,** and **plan** tasks, **choose** appropriate methods and actions.
AO4b - Review skills, methods, and actions	Learners are able to **review** their skills, methods, and actions.
AO5- Demonstrate and apply skills and methods relevant to the given sector	Learners are able to **demonstrate** their application of technical skills relevant to the sector by **applying** the appropriate processes, tools, and techniques.

Unit 3: Facilities Management and Financial Planning

Unit Number:	T/651/5413		
Level:	3	**GLH:**	60
Unit Introduction:	Once a building is completed, its long-term success depends on effective operation, maintenance, and financial management. This unit explores how digital tools, sustainability strategies, and lifecycle planning contribute to the efficient running of buildings. It examines how facilities management integrates systems such as heating, lighting, and security to ensure optimal building performance. Cost control is a critical part of construction projects. This unit investigates how accurate budgeting, financial planning, and procurement strategies help to balance project costs while maintaining quality and sustainability. It also explores the importance of auditing supply chains, ensuring ethical and responsible sourcing of materials. By understanding how buildings are managed beyond the construction phase, this unit provides insight into how financial and operational decisions shape the long-term sustainability and efficiency of the built environment.		
Assessment Type:	Examination Assessment (EA)		

Teaching content:	
3.1	**Building operation, maintenance and management**

3.1.1	The importance of Building Information Management (BIM) in whole-life performance:
	
	• tracking and monitoring systems to improve safety and efficiency in the following systems:
	  ○ lighting
	  ○ air conditioning
	  ○ electrical wiring and distribution
	  ○ plumbing
	  ○ fire protection
	  ○ information technology infrastructure
	  ○ furniture and fixtures
	• predicting maintenance:
	  ○ predicting and preventing issues with the use of digital tools
	  ○ assessing wear, efficiency, and maintenance needs
	  ○ evaluating the benefits and challenges of predictive maintenance
	  ○ impact on building costs and occupant comfort
	• understanding how building systems work together:
	  ○ different systems and interaction between systems
	  ○ impact of different systems on overall building performance
	  ○ optimal integration of services to improve energy efficiency and sustainability
	  ○ reviewing, updating, and accuracy of information:
	  ○ maintaining accurate digital records of modifications, upgrades, and repairs
	  ○ using a Common Data Environment with real-time access to information.

3.1.2	Stages in the handover process from the construction team to the client:
	
	• health and safety information:
	  ○ fire appliances and emergency equipment
	  ○ safety compliance measures
	  ○ identification of risks and hazards:
	  ▪ ground conditions
	  ▪ fragile material
	  ▪ asbestos presence
	  ▪ potential contamination
	  ○ location of building services:
	  ▪ shut-off valves
	  ▪ electric cables and wiring
	  ▪ utilities connections
	• operations and maintenance information:
	  ○ operation
	  ○ maintenance
	  ○ decommissioning
	  ○ demolition
	• building logbook:
	  ○ records detailing how the building was designed to operate
	  ○ documentation of any changes made during construction
	• building user guide:
	  ○ technical details for facilities management team, including sustainability-related aspects
	  ○ non-technical guidance for end users:
	  ▪ day-to-day building operation
	  ▪ health and safety
	  ▪ accessibility information
	  ▪ control systems
	  ▪ waste management
	  ▪ use of amenity space and shared facilities
	  ▪ contact details for technical assistance
	• regulatory compliance documentation:
	  ○ up-to-date testing data
	  ○ certificates and warranties
	  ○ building regulations and approvals
	  ○ condition surveys
	• federated model and as-built drawings:
	  ○ finalised digital models and construction drawings provided by:
	  ▪ consultants
	  ▪ specialist suppliers
	  ▪ contractors.

3.1.3	Considerations for performance targets for the lifecycle of a building:
	
	• energy efficiency - minimising energy use to balance initial costs with long-term savings:
	  ○ smart design
	  ○ renewable sources
	  ○ optimised building systems
	• water conservation – reducing water consumption to improve efficiency and sustainability:
	  ○ low-flow fixtures
	  ○ rainwater harvesting
	  ○ greywater recycling

	• waste reduction – minimising construction and operational waste to enhance resource efficiency:
	  ○ circular economy principles
	  ○ material efficiency
	  ○ on-site recycling
	• operational costs – optimising resource use to improve long-term cost-effectiveness:
	  ○ building management systems
	  ○ smart automation
	  ○ scheduled maintenance
	• maintenance costs – reducing long-term repair expenses through proactive planning:
	  ○ durable material choices
	  ○ preventive maintenance
	  ○ adaptable building systems.

3.1.4	The benefits of post-occupancy evaluation:
	
	• promotes continuous improvement – insight into improving a building's performance
	• enhances user satisfaction – strengthens communication and improves relationships
	• identifies design flaws:
	  ○ comfort:
	  ▪ heat loss
	  ▪ glare
	  ▪ poor acoustics
	  ▪ ineffective lighting
	  ○ layout:
	  ▪ spaces that do not meet user needs
	  ○ access barriers – affecting movement and usability
	• validates energy efficiency
	• provides transparency – compares actual use with design expectations
	• informs future project success
	• reduces operational costs
	• demonstrates overall value for money.

3.2	**Analysing information to develop cost and audit elements**
3.2.1	The role of effective information management in the financial management of a building project: • improved cost accuracy - ensures precise cost plans, bills of quantities, and estimates • time and cost efficiency - reduces delays and optimises resource allocation • financial transparency - provides clear, up-to-date cost data • automatic cost updates - automatically updates costs when building models are modified.
3.2.2	The role of information management in the production of an accurate cost plan: • accurate cost calculations from building model • optimised procurement ensuring materials and resources ordered at appropriate time • reduced waste and storage costs through ordering in correct quantities • supply chain visibility to identify potential disruptions • automated cost updates to adjust budget in real-time if design is modified • minimise human error to reduce manual input mistakes • faster decision making through transparent cost data • increased stakeholder confidence.
3.2.3	The importance of accountability for managing a project budget:

	• key project stages – how budgeting aligns with different phases of a construction project:
	  ○ concept and design:
	  ▪ estimating initial costs
	  ▪ feasibility studies
	  ○ planning and approvals:
	  ▪ securing funding
	  ▪ cost implications of regulations
	  ○ procurement:
	  ▪ cost management in sourcing materials and services
	  ○ construction phase:
	  ▪ monitoring expenses
	  ▪ tracking financial performance
	  ○ completion and handover:
	  ▪ final cost reconciliation
	  ▪ budget reporting
	• associated costs – financial considerations that impact overall project expenditure:
	  ○ material and equipment costs
	  ▪ budgeting for quality and availability
	  ○ labour costs:
	  ▪ balancing workforce expenses with project timelines
	  ○ permit and compliance fees:
	  ▪ financial implications of legal requirements
	  ○ risk and contingency funds:
	  ▪ planning for unexpected financial challenges
	  ○ operational and maintenance costs:
	  ▪ evaluating long-term cost efficiency
	• roles and responsibilities – financial accountability within a project team:
	  ○ project manager:
	  ▪ overseeing budget allocation
	  ▪ financial decision-making
	  ○ quantity surveyor:
	  ▪ cost estimation
	  ▪ value engineering
	  ▪ financial risk assessment
	  ○ finance team/accountant:
	  ▪ tracking expenses
	  ▪ compliance with financial regulations
	  ○ procurement manager:
	  ▪ ensuring cost-effective purchasing
	  ▪ contract management
	  ○ contractor and subcontractors:
	  ▪ managing on-site costs
	  ▪ ensuring budget adherence.

3.2.4	The consequences of weaknesses in financial control: • bank account and reconciliation • assets and liabilities • cash flow • invoicing • supply chain management • resolution of errors • resource prediction and allocation.
3.2.5	The stages of supply chain auditing to demonstrate sustainable procurement:

	• evidence log – recording and verifying supply chain practices:
	  ○ tracking supplier credentials, certifications, and sustainability claims
	  ○ documenting sourcing, ethical labour practices, and carbon footprint
	• whole life: cradle to cradle – assessing sustainability across a product's lifecycle:
	  ○ evaluating material sourcing, production, use, and disposal
	  ○ applying circular economy principles (reuse, recycling, remanufacturing)
	• social impact – ensuring ethical labour and community benefits:
	  ○ assessing fair wages, working conditions, and employment opportunities
	  ○ identifying risks of exploitation and supply chain inequalities
	• economic impact – balancing cost-effectiveness with sustainability:
	  ○ evaluating long-term value versus short-term savings
	  ○ considering financial risks of unsustainable procurement
	• environmental impact – reducing ecological footprint in sourcing:
	  ○ assessing carbon emissions, resource use, and waste generation
	  ○ prioritising sustainable materials and low-impact suppliers
	• ethics – ensuring responsible and transparent procurement:
	  ○ avoiding corruption, bribery, and exploitative labour practices
	  ○ aligning with industry ethical standards and independent audits
	• compliance with environmental legislation and regulation – meeting legal and industry standards:
	  ○ ensuring adherence to environmental laws and sustainability policies
	  ○ aligning with certifications.

3.3	**Producing a budget for a complex building project**

3.3.1	Considerations when producing an accurate list of capital costs:
	
	• costs: a 'one-time' expenditure or accumulated over time as part of a project:
	  ○ land purchase
	  ○ planning and feasibility studies
	  ○ architectural and engineering design
	  ○ construction:
	  ▪ materials
	  ▪ equipment
	  ▪ labour
	  ▪ construction management
	  ○ insurance:
	  ▪ liability
	  ▪ worker protection
	  ▪ professional indemnity
	  ▪ construction site
	  ▪ building warranty
	  ○ tax:
	  ▪ land and property taxes
	  ▪ sales and service taxes (such as VAT)
	  ▪ development levies
	  ▪ waste disposal taxes
	  ○ inspections and testing:
	  ▪ building code inspections
	  ▪ structural and ground testing
	  ▪ fire safety checks
	  ▪ energy and environmental testing
	  ▪ health and safety inspections
	  ▪ water and drainage testing
	  ○ equipment and furnishings.

3.3.2	A range of recurrent fixed costs in construction projects:

	• costs that remain constant in the short term irrespective of output:
	  ○ permanent office utilities
	  ○ permanent staff wages
	  ○ bank interest
	  ○ leasing costs.

3.3.3	A range of recurrent variable costs in construction projects:
	
	• costs that vary with output:
	  ○ temporary site labour
	  ○ sub-contractors
	  ○ materials
	  ○ equipment
	  ○ fuel.

3.3.4	The role of a sensitivity analysis in determining cost-effective, sustainable design solutions: • financial modelling – how changing costs affect project affordability and sustainability • design modifications – evaluating how small changes in design influence overall costs • decision making – using comparative data to assess different design choices and their impact on cost and sustainability • optimum efficiency – understanding how buildings can be designed to reduce long-term operational costs while improving sustainability • impact on lifecycle costs – identifying how early investment in sustainable solutions can reduce long-term expenses.

3.3.5	The purpose of a variation to contract and avoidance of dispute:
	
	• variation: alteration to the scope of works described in a project contract:
	  ○ addition, substitution, or omission
	• avoidance of dispute:
	  ○ ensures thorough site investigations and surveys carried out
	  ○ ensures client brief and contract is clear and comprehensive
	  ○ ensures all stakeholders understand and support project
	  ○ ensures legal and planning requirements are properly undertaken
	  ○ identifies and deals with potential risks
	  ○ ensures contractor rates are clear
	  ○ ensures accurate, up-to-date information included in model, drawings, bills of quantities, and specifications.

Unit 3: Assessment Approach

The mode of assessment used for this unit is an Examination Assessment (EA). This assessment method is externally set and marked by TQUK, ensuring consistency and reliability in the evaluation of learner's knowledge and understanding.

The EA for an individual unit cannot commence until the unit content has been fully taught to learners.

An overview of the assessment approach is outlined in the table below:

Assessment description	The EA comprises a balance of multiple-choice questions (MCQ), extended-response questions (ERQ) and short-answer questions (SAQ).
Assessment windows	Late January/early February** and early May Centres have the flexibility to timetable the Examination Assessment within the specified assessment window.
Duration of EA	1 hour 30 minutes

** **Important**: in the first year of delivery, there is no assessment window opportunity in January 2027. Thereafter, EAs will be available annually in late January/early February and mid-May.

The Examination Assessment will be conducted under exam conditions in a controlled environment. Centres must refer to the Assessment Guidance for the Delivery of Alternative Academic Qualifications document available on our website for further information to support the administration of the EA.

The assessment has been carefully aligned with the unit's assessment objectives (AOs) to create a consistent framework for learners. The table below confirms the assessment objectives that will be covered in the Examination Assessment.

Assessment objective	Description
AO1 – Recall knowledge and information	Learners are to **recall** knowledge and information.
AO2 – Apply knowledge and information	Learners are to **apply** knowledge and information to situations and contexts relevant to the given sector.
AO3 – Interpret, analyse, or evaluate information, ideas or different viewpoints	Learners are able to **interpret**, **analyse**, or **evaluate** information, ideas, or different viewpoints to make **judgements** that are reasoned or draw conclusions.

Unit 4: Design and Information Management

Unit Number:	Y/651/5414		
Level:	3	**GLH:**	60
Unit Introduction:	Once a building is completed, its long-term success depends on effective operation, maintenance, and financial management. This unit explores how digital tools, sustainability strategies, and lifecycle planning contribute to the efficient running of buildings. It examines how facilities management integrates systems such as heating, lighting, and security to ensure optimal building performance. Cost control is a critical part of construction projects. This unit investigates how accurate budgeting, financial planning, and procurement strategies help to balance project costs while maintaining quality and sustainability. It also explores the importance of auditing supply chains, ensuring ethical and responsible sourcing of materials. By understanding how buildings are managed beyond the construction phase, this unit provides insight into how financial and operational decisions shape the long-term sustainability and efficiency of the built environment.		
Assessment Type:	Non-examination Assessment (NEA)		

Teaching content:	
4.1	**Researching key design factors**

4.1.1	Sources for researching building compliance requirements:
	
	• building regulations:
	  ○ defines statutory safety, energy efficiency, and accessibility requirements
	• building regulations Part M:
	  ○ ensures accessibility for all users
	  ○ covers entrances, circulation, and sanitary facilities
	• NHBC Building Control (Part M): Access to and Use of Buildings and Dwellings:
	  ○ provides best practice standards
	  ○ supports compliance for residential and commercial developments
	• Planning and Access for Disabled People: A Good Practice Guide:
	  ○ offers supplementary guidance on inclusive design
	  ○ covers integration of accessibility in planning and construction
	• Equality Act 2010, BS 8300:
	  ○ establishes legal and technical accessibility standards
	  ○ covers physical adjustments, wayfinding, and reasonable adjustments.

4.1.2	Approaches to researching lighting, heating, and ventilation solutions:
	
	• lighting solutions:
	  ○ artificial and natural lighting systems
	  ○ energy efficiency and compliance considerations
	• heating and ventilation systems:
	  ○ conventional, renewable, and hybrid approaches

	○ efficiency, usability, and environmental impact • passive and active building services: ○ passive solutions: ▪ use natural ventilation, lighting, and insulation ○ active solutions: ▪ use mechanical systems for environmental control ○ comparative evaluation of benefits and limitations.
4.1.3	Considerations for ensuring disabled access and inclusive design: • entrances and circulation: ○ accessible doorways, ramps, and corridors ○ compliance with accessibility standards • vertical and wayfinding accessibility: ○ lifts, clear signage, and fire exits ○ step-free navigation routes • sanitary facilities: ○ accessible toilet dimensions and fixtures ○ automatic doors and emergency pull cords • emergency egress and support: ○ evacuation chairs and accessible alarm systems ○ staff training for disabled occupant assistance • inclusive design principles: ○ lighting, acoustics, and high-contrast materials ○ sensory considerations.
4.2	**Developing a design using information management**
4.2.1	Application of 3D model generation using material and component libraries: • constructing external and internal walls • integrating doors and windows • designing floors and roofing structures • defining rooms with appropriate spatial considerations • configuring circulation spaces for efficient movement.
4.2.2	The application of floorplan generation from a schedule of accommodation: • floor plan creation: ○ producing a 'bird's eye view'/view from above/horizontal section representation ○ defining the relationship between rooms, spaces, and physical features ○ applying appropriate scale and dimensions ○ incorporate external and internal walls ○ labelling room with appropriate names ○ positioning windows and doors, including arc depicting direction they open ○ adding stairs and ramps for accessibility ○ integrating lifts and elevators ○ representing sanitary fittings accurately ○ including fixed furniture where necessary.
4.2.3	Methods for communicating designs using 3D views and renders: • illustrating the evolution of building design • generating external views • creating internal views • depicting the accommodation provided • applying realistic materials and textures

	• representing accessibility features.

4.2.4	The features of clash detection and mitigation in building structures and services and the role of Common Data Environments:
	
	• clash detection – the process of identifying design conflicts:
	  ○ hard clash - two or more elements occupy same space
	  ○ soft clash - element has insufficient space or geometric tolerance
	  ○ workflow clash - conflicting or inconsistent information
	• clash mitigation - strategies for resolving clashes to improve design coordination:
	  ○ adjusting model components to remove physical overlaps
	  ○ applying tolerance and clearance adjustments to resolve soft clashes
	  ○ improving collaboration and workflow alignment to prevent inconsistencies
	• role of Common Data Environments:
	  ○ real-time access to up-to-date models
	  ○ integrates with BIM tools to automate clash detection
	  ○ enables teams to track and resolve clashes efficiently
	  ○ reduces errors and improves accuracy before construction begins.

4.3	**Building information management to develop structural elements in a building project**

4.3.1	The role of a structural grid generation to identify the main structural elements:
	
	• structural grid:
	  ○ framework of reference lines where dimensions of major structural components of a building plan are attached
	• foundation:
	  ○ supports the whole building
	  ○ transmits and distributes total load of building to the ground
	  ○ provides stability to the structure
	• structural walls:
	  ○ load-bearing walls that support vertical and lateral loads
	• slabs:
	  ○ flat structural features
	  ○ uniform thickness
	  ○ used as a floor or a roof in a building
	• beams:
	  ○ horizontal structural elements
	  ○ withstands:
	  ▪ vertical loads
	  ▪ shear forces
	  ▪ bending moments
	• columns:
	  ○ vertical structural elements
	  ○ transmit compressive loads
	  ▪ from a ceiling to a floor
	  ▪ foundation.

4.3.2	The steps to take when creating a 3D structural model using component libraries:
	
	• select structural elements from component library:
	  ○ columns
	  ○ beams
	  ○ walls
	  ○ floors
	  ○ roof structures
	• placement of structural elements to ensure:

	○ stability ○ balance ○ weight distribution • conduct quality checks to verify: ○ accuracy of placement ○ detection of errors and clashes ○ structural integrity.
4.4	**Building information management to develop building services elements**
4.4.1	Methods for testing energy efficiency and recommending improvements: • assessing lighting levels: ○ measuring illuminance to ensure optimal brightness and efficiency ○ evaluating natural versus artificial lighting balance ○ recommending energy-efficient lighting solutions ▪ LED upgrades ▪ automated controls • evaluating ventilation: ○ analysing airflow and air exchange rates ○ identifying inefficiencies in natural and mechanical ventilation systems ○ recommending: ▪ enhanced ducting ▪ filtration ▪ smart ventilation • optimising heating systems: ○ measuring heat distribution and thermal performance ○ identifying heat loss areas and insultation gaps ○ recommending: ▪ zone-based heating ▪ smart thermostats ▪ high-efficiency systems.
4.4.2	Elements of building services detailing on floorplans: • symbols and annotations for building services: ○ lighting levels: ▪ representation of brightness levels ▪ indication of energy efficiency ○ ventilation: ▪ depiction of air circulation pathways ▪ indicators for air quality ▪ consideration of occupant comfort ○ heating: ▪ symbols for temperature control mechanisms ▪ notation for energy-efficient distribution.

4.4.3	The components of a building services strategy (heating, lighting, and ventilation):
	
	• active and passive strategies:
	  ○ active strategies use mechanical systems to control indoor conditions
	  ○ passive strategies use natural elements
	• human comfort:
	  ○ balancing temperature, air quality, and lighting to enhance occupant comfort
	• building research establishment environmental assessment method (BREEAM):
	  ○ understanding how BREEAM assesses environmental performance in building services
	  ○ incorporating sustainability principles to improve energy efficiency
	• performance:
	  ○ evaluating the efficiency and effectiveness of heating, lighting, and ventilation systems
	  ○ monitoring energy consumption
	• building regulations Part L:
	  ○ ensuring compliance with UK regulations on energy performance and carbon emissions
	  ○ understanding how Part L impacts building design, insulation, and systems efficiency.

Unit 4: Assessment Approach

The mode of assessment used for this unit is a Non-examination Assessment (NEA). This assessment method is externally set by TQUK and internally marked by centres.

The NEA for an individual unit cannot commence until the unit content has been fully taught to learners and TQUK's mandatory standardisation training is completed.

An overview of the assessment approach is outlined in the table below:

Assessment description	The NEA comprises a brief designed to assess the learners' applied knowledge and skills and their ability to evidence critical analysis and reflective evaluation of the subject content.
Duration of NEA	The timeframe for the completion of the NEA is 8-10 hours.
Assessment windows	The NEA brief is released in September each year. Centres have the flexibility in scheduling the NEA within the academic session, but must ensure it is completed by 30 April at the latest to allow for marking, internal quality assurance, and external moderation activities.

The Non-examination Assessment will be conducted under controlled assessment conditions.

Centres **must** refer to the Assessment Guidance for the Delivery of Alternative Academic Qualifications document, available on our website, to ensure the appropriate administration and marking of this assessment and adherence to TQUK regulations.

The NEA has been carefully aligned with the assessment objectives (AOs) to create a consistent framework for learners. The table below confirms the assessment objectives that will be covered in the Non-examination Assessment.

Assessment objective	Description
AO4a – Research and plan	Learners are able to **research**, **investigate,** and **plan** tasks, **choose** appropriate methods and actions.
AO4b - Review skills, methods, and actions	Learners are able to **review** their skills, methods, and actions.
AO5- Demonstrate and apply skills and methods relevant to the given sector	Learners are able to **demonstrate** their application of technical skills relevant to the sector by **applying** the appropriate processes, tools, and techniques.

Unit 5: Evaluating and Documenting a Sustainable Construction Project

Unit Number:	A/651/5415		
Level:	3	**GLH:**	60
Unit Introduction:	Every construction project leaves a lasting impact on the environment, economy, and community. Evaluating a project's success involves analysing its design, performance, and sustainability. This unit compares traditional and modern construction methods, considering how factors such as cost, efficiency, and environmental impact influence project choices. The unit examines different perspectives when assessing a project, from end users and architects to engineers and facilities managers. It considers how strengths and areas for improvement in both design and construction are identified. It also explores how digital tools and lifecycle analysis help measure a project's long-term success. By the end of this unit, learners will be able to evaluate construction projects, document findings effectively, and communicate outcomes from different professional perspectives. These skills are essential for understanding how sustainable construction principles are applied and assessed in the built environment.		
Assessment Type:	Non-examination Assessment (NEA)		

Teaching content:	
5.1	**Comparing traditional and modern methods of construction**

5.1.1	Differences between different construction methods:
	
	• aesthetics and design intent:
	  ○ trade-offs between customisation versus standardisation in shape, size, and materials
	  ○ influence of sustainability on aesthetics
	  ○ selection of materials and their visual impact
	  ○ decorative and finishing choices
	  ○ influence of vernacular architecture and historical significance on design
	  ○ public perception of off-site versus on-site construction
	• operational and lifecycle costs:
	  ○ weather resistance and environmental durability
	  ○ availability of skilled versus unskilled labour and technical expertise
	  ○ construction timeframes and associated costs
	  ○ impact of global and local supply chains on material availability and pricing
	  ○ raw material costs and energy demands of production
	  ○ transportation, delivery, and logistics in material sourcing
	  ○ speed and efficiency differences between traditional (linear) and modern (non-linear) methods
	• sustainability and environmental impact:
	  ○ use of environmentally-friendly materials and sustainable sourcing

	○ methods for recycling, reclaiming, and reusing construction waste ○ water conservation strategies ○ energy efficiency through integrated renewable energy ○ ventilation and passive design strategies for reduced energy consumption ○ impact of living roof and wall systems on thermal performance ○ reduction of transportation emissions through local sourcing ○ impact on surrounding communities and ecosystems: ○ modern methods: ▪ lower emissions ▪ quieter ▪ factory-based production ○ traditional methods: ▪ higher emissions ▪ noise ▪ disruption to communities • endurance, reliability, and longevity: ○ weather resilience in extreme conditions ○ material durability ○ fire resistance and regulatory safety requirements ○ scalability and mass production opportunities in modern construction ○ smart technology integration.
5.2	**Communicating outcomes from different perspectives**
5.2.1	The strengths and weaknesses of a design from an end user perspective: • responsiveness to user needs: ○ how well does the building or space meet the needs of the people using it: ▪ a well-designed building adapts to user requirements ▪ an overly-complicated or rigid design may frustrate users instead of helping them • fitness for purpose and functionality: ○ does the design allow the building to perform its intended function efficiently: ▪ a functional design ensures ease of movement, efficiency, and practicality ▪ poorly planned layout or unsuitable materials may cause disruptions or higher maintenance costs • diversity and inclusion: ○ does the design allow equal access for all users, regardless of ability, background, or needs: ▪ a diverse, inclusive design welcomes all users and meets different physical and social needs ▪ poorly planned inclusive features could be expensive, hard to maintain, or impractical • social impact: ○ how does the building affect the wider community: ▪ a well-designed project can enhance safety, encourage social interaction, and boost local economy ▪ poor planning may lead to displacement • innovation and technology integration: ○ does the building use modern materials, digital tools, or smart systems to improve performance: ▪ innovation can enhance sustainability, efficiency, and long-term usability ▪ cutting-edge technology can be expensive, require specialist maintenance, or become outdated quickly • appropriateness of project choice in the local context: ○ how well does the building fit with its surroundings: ▪ good design can blend into the local environment and enhance community character

	▪ poor design may stand out negatively or face resistance from the community.
5.2.2	The strengths and weaknesses of the design from a professional perspective: • architectural perspective: ○ strengths: ▪ compliance ▪ sustainability ▪ aesthetic appeal ▪ spatial efficiency ○ weaknesses: ▪ structural limitations ▪ material constraints ▪ budget restrictions • structural engineering perspective: ○ strengths: ▪ safe ▪ durability ▪ material efficiency ○ weaknesses: ▪ high costs ▪ complex construction processes ▪ design rigidity • facilities management perspective: ○ strengths: ▪ ease of maintenance ▪ energy efficiency ▪ operational effectiveness ○ weaknesses: ▪ costly maintenance ▪ accessibility issues ▪ long-term sustainability concerns • building services engineering perspective: ○ strengths: ▪ system integration ▪ environmental performance ▪ occupant comfort ○ weaknesses: ▪ complexity of systems ▪ high upfront costs ▪ need for specialised maintenance.
5.3	**Evaluating the success of a construction project**
5.3.1	Considerations when evaluating the success of the building design: • alignment with client vision • appropriateness of design concept: ○ functionality ○ feasibility ○ sustainability • realisation of design • meeting end user needs: ○ accessibility ○ usability ○ adaptability • analysis of whole lifecycle costs and benefits: ○ long-term financial viability

	○ environmental impact • identification of strengths and successes in the design process: ○ identifying areas of innovation ○ effective problem-solving • identification of issues • recommendations for improvement • informing future project designs.
5.3.2	Consideration when evaluating the success of the construction project: • effectiveness of special planning: ○ functionality ○ accessibility ○ user experience • assessment of aesthetic quality • analysis of indoor environmental comfort and efficiency: ○ heating ○ lighting ○ ventilation • consideration of user comfort: ○ temperature control ○ noise levels ○ air quality ○ overall satisfaction • examination of maintenance and operations efficiency: ○ ease of upkeep ○ durability of materials ○ overall cost-effectiveness • measurement of environmental performance: ○ energy efficiency ○ water usage ○ waste management ○ sustainability • identification and resolution of defects: ○ structural issues ○ material issues ○ workmanship issues.
5.3.3	Impact of early client and end-user engagement on a successful construction project: • enhanced project vision and alignment: ○ specific needs and expectations ○ clarity: ▪ project objectives ▪ function ▪ long-term use • improved decision-making: ○ informed decisions based on requirements ○ collaborative problem-solving ○ innovation • risk reduction and management: ○ identifies potential issues early ○ reduce likelihood of redesign or disputes • increased design efficiency and quality: ○ early feedback ensuring design is fit for purpose ○ integration of sustainable, user-friendly solutions • cost and time savings:

	○ minimise late-stage changes ○ better forecasting of resources • enhanced satisfaction and long-term use: ○ trust and engagement ○ improved functionality ○ improved experience • support for planning and regulatory approvals: ○ address planning constraints ○ address local community concerns.
5.3.4	The social, economic, and environmental impact of a construction project: • social: ○ health and wellbeing of end users: ▪ indoor air quality ▪ natural light ▪ access to green spaces ○ quality of life: ▪ housing ▪ transport links ▪ accessibility to services ○ local economy: ▪ job creation ▪ business opportunities ▪ tourism ○ pride in the community: ▪ enhancement of public spaces ▪ cultural identity ▪ civic engagement ○ public relations: ▪ residents ▪ businesses ▪ key stakeholders ○ inclusivity: ▪ accessibility ▪ social integration ▪ equitable design • economic: ○ investment potential: ▪ attraction of businesses ▪ property value growth ▪ infrastructure funding ○ regeneration: ▪ revitalisation of urban and rural areas ▪ improved amenities ▪ transport links ○ employment opportunities and training: ▪ job creation ▪ apprenticeships ▪ skills development ○ productivity: ▪ improved transport ▪ better workplaces ▪ enhanced infrastructure efficiency ○ local supply chain: ▪ regional businesses ▪ contractors

	▪ material sourcing • environmental: ○ greenhouse gas emissions: ▪ carbon footprint from construction processes and building operation ○ embodied carbon – environmental cost of materials: ▪ production ▪ transport ▪ disposal ○ exposure to toxins: ▪ air and water pollution ▪ site contamination ○ natural resources: ▪ water ▪ timber ▪ minerals ○ climate change: ▪ resilience of the project to extreme weather and long-term environmental shifts ○ biodiversity: ▪ disruption or conservation of local ecosystems and wildlife habitats ○ materials/resources going to landfill: ▪ waste generation ▪ recycling efforts ▪ circular economy initiatives ○ pollution: ▪ noise pollution ▪ air pollution ▪ water pollution.
5.3.5	Good practice when presenting a project design to an audience: • visualisation of a construction project: ○ drawings ○ 3D models ○ digital simulations • communication of outcomes: ○ explanation of: ▪ project goals ▪ benefits ▪ expected impact on stakeholders • showcasing alignment with client vision: ○ client needs ○ requirements ○ aspirations • providing opportunities for questions: ○ encouraging audience engagement ○ addressing concerns or feedback • establishing networking and collaboration – creating connections for potential partnerships, further development, or investment.

Unit 5: Assessment Approach

The mode of assessment used for this unit is a Non-examination Assessment (NEA). This assessment method is externally set by TQUK and internally marked by centres.

The NEA for an individual unit cannot commence until the unit content has been fully taught to learners and TQUK's mandatory standardisation training is completed.

An overview of the assessment approach is outlined in the table below:

Assessment description	The NEA comprises a brief designed to assess the learners' applied knowledge and skills and their ability to evidence critical analysis and reflective evaluation of the subject content.
Duration of NEA	The timeframe for the completion of the NEA is 6-8 hours.
Assessment windows	The NEA brief is released in September each year. Centres have the flexibility in scheduling the NEA within the academic session but must ensure it is completed by 30 April at the latest to allow for marking, internal quality assurance, and external moderation activities.

The Non-examination Assessment will be conducted under controlled assessment conditions.

Centres **must** refer to the Assessment Guidance for the Delivery of Alternative Academic Qualifications document, available on our website, to ensure the appropriate administration and marking of this assessment and adherence to TQUK regulations.

The NEA has been carefully aligned with the assessment objectives (AOs) to create a consistent framework for learners. The table below confirms the assessment objectives that will be covered in the Non-examination Assessment.

Assessment objective	Description
AO4a – Research and plan	Learners are able to **research**, **investigate,** and **plan** tasks, **choose** appropriate methods and actions.
AO4b - Review skills, methods, and actions	Learners are able to **review** their skills, methods, and actions.
AO5- Demonstrate and apply skills and methods relevant to the given sector	Learners are able to **demonstrate** their application of technical skills relevant to the sector by **applying** the appropriate processes, tools, and techniques.

Section 3: Assessment and Achievement

Assessment Objectives and Weightings

The assessment objectives for the qualification are set out below and provide the basis for the assessment of each unit.

- AO1, AO2, and AO3 are assessed through Examination Assessments (EAs)
- AO4 and AO5 are assessed through Non-examination Assessments (NEAs).

The following table outlines the overall weightings of each assessment objective across the qualification.

	Assessment Objective	Weighting
EA	AO1 Recall knowledge and information Learners are able to recall knowledge and information.	4%
	AO2 Apply knowledge and information Learners are able to apply knowledge and information to questions, problems, or scenarios.	18%
	AO3 Interpret, analyse, or evaluate information, ideas, or different viewpoints Learners are able to interpret, analyse, or evaluate information, ideas, or different viewpoints to make judgements that are reasoned or draw conclusions.	18%
NEA	AO4a Research and plan AO4b Review skills, methods, and actions Learners are able to research, investigate, and plan tasks, choose appropriate methods and actions, as well as review these skills, methods, and actions.	26%
	AO5 Demonstrate and apply skills and methods relevant to the given sector Learners are able to demonstrate their application of technical skills relevant to the sector by applying the appropriate processes, tools, and techniques.	34%

In Examination Assessments, the primary focus is on applying knowledge, interpreting, and analysing information.

In Non-examination Assessments, the weighting is more balanced between research, planning, review, and the demonstration of sector-relevant skills and methods.

This table overleaf details how marks are allocated across the assessment objectives in each assessment.

	AO1	AO2	AO3	AO4a	AO4b	AO5
Unit 1	11%	45%	44%			
Unit 2				33%	11%	56%
Unit 3	10%	42%	48%			
Unit 4				43%		57%
Unit 5				43%		57%

Assessment Adaptation

Centre adaptation of the Examination Assessment or Non-examination Assessment is **not permitted**. This is to ensure that the qualification as a whole, and each associated assessment task, retains its reliability and comparability across centres and learners. TQUK has taken the approach of externally setting the assessments to ensure that each learner has a fair opportunity to achieve the qualification.

Grading and Marking

Grading and aggregation

The grading structure for the qualification comprises Pass, Merit, and Distinction for the component assessments and Pass, Merit, Distinction, and Distinction* for the overall qualification grade.

TQUK will be using a Uniform Mark Scheme (UMS) to aggregate grades. The standard for a pass will be decided by a minimum mark, which is correlated to a UMS. The UMS will be able to factor in variations across unit achievement and over time to ensure comparability across mark ranges and assessment series.

Each assessment will be marked against raw marks, and at the awarding meeting, cut scores for each of the grade boundaries for Pass, Merit, and Distinction will be decided. These will then be converted into the UMS for that unit. The UMS for each unit will then be aggregated into a qualification grade.

The qualification follows a compensatory grading model, meaning that marks from different assessments are aggregated. Learners do not need to achieve a minimum mark in individual units, as the final qualification grade is based on the total UMS marks gained across all assessments.

Each unit assessment contributes a set percentage to the final qualification grade. The total UMS score for the qualification is 500 marks, with assessments, weightings, and marks as follows:

Unit	Assessment method	Weighting	Raw Marks	UMS marks
Unit 1	EA 90 GLH	24%	75	120
Unit 2	NEA 90 GLH	24%	72	120
Unit 3	EA 60 GLH	16%	50	80
Unit 4	NEA 60 GLH	18%	56	90
Unit 5	NEA 60 GLH	18%	56	90
			309	500

The overall percentage grading scale for each unit is:

Grade	%
Not Yet Achieved	0-39%
Pass	40-59%
Merit	60-79%
Distinction	80-100%

Grade boundaries

The grade boundaries for the UMS for each unit are as follows:

Unit	Pass	Merit	Distinction
Unit 1	48	72	96
Unit 2	48	72	96
Unit 3	32	48	64
Unit 4	36	54	72
Unit 5	36	54	72

Learners' final grades for the qualification are determined using the following UMS boundaries:

Grade	Boundary
Not Yet Achieved	0-199
Pass	200-299
Merit	300-399
Distinction	400-449
Distinction*	450-500

The grade of Distinction* will be awarded at **qualification level only** to learners scoring marks of 450 and above overall.

Aggregation for the award of the qualification will be based on the sum of marks awarded for the UMS across all the units and awards will be made in line with the qualification grade thresholds. There will be no minimum expectation within units as the qualification is fully compensatory.

These UMS grade boundaries ensure consistency across assessment series while allowing for adjustments in raw mark thresholds, which are finalised in the awarding meeting.

A grading calculator is available to support centres in calculating final grades. This can be downloaded from TQUK's management system, Verve.

Marking approach

The qualification follows a structured marking approach designed to ensure that learners are assessed consistently across all qualification outcomes. This approach rewards learners for demonstrating their knowledge, understanding, and skills, providing a fair and reliable indication of their achievement.

The marking system allows for full compensation, meaning that there is no minimum threshold of achievement required within individual assessments. Learners can demonstrate a broad range of knowledge and skills across the qualification, making their final grade a meaningful indicator of ability for higher education institutions and employers.

This approach also supports assessors in differentiating between different levels of performance within units. It provides a detailed and accurate measure of learner achievement while balancing positive and negative variations in assessment performance, ensuring that the final aggregated mark reflects a learner's overall ability.

Examination Assessments are marked using a combination of points-based and levels-based mark schemes, depending on the type of question and level of demand. For example:

- multiple-choice questions (MCQs) are marked using a points-based system
- short-answer questions (SAQs) and extended response questions (ERQs) are marked using a levels-based approach.

The examination paper is designed to align with the assessment objective weightings, ensuring that knowledge recall, application, and evaluation skills are measured appropriately.

Non-examination Assessments are marked using a levels-based approach with four distinct mark bands. This structure provides a clear and consistent way for assessors to differentiate between levels of performance. The four-band system helps prevent grades clustering at the Merit level (known as 'regression to the mean') and instead ensures that learners are more reliably placed within the grading structure of Pass, Merit, or Distinction. Please refer to the Assessment Guidance for the Delivery of the Alternative Academic Qualifications for full marking guidance.

Once raw marks have been assigned, they are converted into the Uniform Mark Scheme (UMS), ensuring that final grades remain fair and comparable across different assessment series.

This marking approach ensures that all assessments provide a robust, valid, and fair measure of learner performance, supporting progression to further study or employment.

Awarding meeting and grade boundary setting

TQUK will hold an awarding meeting following each assessment session to determine grade boundaries for the qualification. The awarding meeting is a critical part of the quality assurance process, ensuring that results are fair, reliable, and comparable across different assessment sessions.

During the judgemental review, the committee will independently review learner work for all units at Pass, Merit, and Distinction, focusing on mark ranges identified within each grade boundary.

While the grading scale and UMS boundaries have been pre-set, the actual raw mark cut scores may vary from series to series based on assessment difficulty.

The awarding meeting will use statistical analysis and expert judgement to review learner performance. If an assessment is found to be more or less challenging than expected, the raw mark boundaries may be adjusted to ensure fairness and consistency.

Once awarding activities, including internal scrutiny, are completed, TQUK will:

- convert raw marks to UMS marks for each unit
- apply unit grades based on UMS scores
- determine the final qualification grade for each learner based on their aggregated UMS score.

TQUK will issue the AAQ results for the full qualification at the end of Year 2 to coincide with A Level results in August and within our standard certification timeframe following the post-results appeals period.

Grade descriptors

TQUK will use the following performance descriptors to indicate the level of attainment overall across the qualification.

Grade	Descriptor
Pass	Learners show adequate recall and communication of the basic elements of much of the content being assessed. They can apply their knowledge and understanding to some basic and familiar questions, problems, or scenarios. Responses to higher-order tasks involving detailed evaluation and analysis are often limited. Research, investigation, and planning of tasks are executed effectively but lack refinement, and the demonstration and application of skills and methods will produce often functional outcomes. More advanced skills and processes might be attempted, but not always executed successfully. Learners will be able to review their skills, methods, and actions, but this may lack a detailed reflection or analysis.
Merit	Learners show good recall and communication of many elements of the content being assessed. They can sometimes develop and apply their knowledge and understanding to different questions, problems, or scenarios, including some that are more complex or less familiar. Responses to higher-order tasks involving detailed evaluation and analysis are likely to be mixed, with good examples at times and others that are less detailed. Research, investigation, and planning of tasks are executed effectively, and the demonstration and application of skills and methods, including those that are more advanced, are developed in range and quality. Outcomes are good quality as well as being functional. Learners will be able to review their skills, methods, and actions with good application of reflection and analysis.
Distinction	Learners show thorough recall and communication of most elements of the content being assessed. They can consistently develop and apply their knowledge and understanding to different questions, problems, or scenarios, including those that are more complex or less familiar. Responses to higher-order tasks involving detailed evaluation and analysis are mostly successful. Research, investigation, and planning of tasks are executed effectively, and the demonstration and application of skills and methods, including those that are more advanced, are well-developed and executed. Outcomes are mostly of high quality. Learners will be able to review their skills, methods, and actions with consistent and thorough application of reflection and analysis.
Distinction*	Learners show comprehensive recall and communication of the content being assessed. They can develop and apply their knowledge and understanding to a range of complex or less familiar questions, problems, or scenarios. Outcomes are consistently highly developed and executed. Learners will be able to comprehensively review their skills, methods, and actions with a comprehensive application of reflection and analysis.

Resits, Retakes, and Resubmissions

The qualification includes resit, retake, and resubmission opportunities, with availability determined by the mode of assessment and specific assessment stipulations.

Resit (EA only)

Learners are permitted resit opportunities for Unit 1 and Unit 3 Examination Assessments (EA) as outlined in the table below:

	Year 1 May	Year 2 Jan	Year 2 May
Unit 1	First sit	Resit	Resit
Unit 3	X	First sit	Resit

Once the learner has sat the EA, their completed paper cannot be amended or improved. When the EA result is released, if a learner wishes to improve their mark, they must do so by resitting a new EA in a subsequent assessment series.

The highest mark achieved will be used to calculate the final grade.

Centres must discuss the resit process with their learners and consider any practical implications.

Retake (NEA only)

Learners may refine specific elements of their completed NEAs based on the internal feedback they receive. This provides them with a **retake** opportunity. The retake must take place **before** the final submission of the NEAs for external moderation. This process allows learners to improve their submissions, but any feedback given to them must be documented and retained by the centre. Once an NEA is submitted for external moderation, no further changes can be made to it.

Resubmission (NEA only)

A **resubmission**, in contrast to a retake, occurs **after** external moderation has taken place, with **one** resubmission opportunity permitted per NEA brief (Units 2, 4, and 5).

Only learners who receive a 'Not Yet Achieved' (NYA) outcome following moderation are eligible to resubmit their NEA.

If a learner wishes to resubmit, they will be given 50% of the original supervised assessment time to complete the work for resubmission. This must be submitted by 14 June to ensure that the external moderation process is completed before final grades are awarded.

If a learner has exhausted both submission attempts on the same NEA project brief (retake and resubmission) and their evidence is graded 'Not Yet Achieved', they must complete the next live NEA project brief in the following session. In the event of a learner receiving an NYA grade, the marks achieved will count towards the overall grade.

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Reviews and Appeals

TQUK is committed to ensuring any decisions it makes remain fair, reliable, and provide accurate and comparable results; however, we recognise that there may be situations where an individual wishes to appeal a decision or judgement TQUK has made.

Centres may appeal the results of the NEA moderation process. If a centre has concerns about the moderation of a cohort, it must request a review for all learners within that cohort. Written consent from all affected learners is required for the appeal to proceed.

Full details of the appeals process, including reviews of moderation, can be found in the Appeals Policy on our website.

Section 4: The NEA Moderation Process

The moderation process ensures that assessment decisions are fair, consistent, and aligned with national standards to ensure the qualification's integrity.

In line with JCQ (Joint Council for Qualifications) regulations, our moderation process ensures that assessors have applied our marking criteria accurately across all centres and learners.

The process involves standardisation activities, the sampling of learner work, and a review of the centre-assessed marks allocated to NEA completion.

Internal standardisation and training

To maintain consistency in our assessment approach, all centres must complete standardisation training between 1 October and 28 February before marking begins. Training on administrative processes is available via Verve, with completion confirmed on conclusion of the standardisation training. Centres must sign and submit a declaration to TQUK to confirm adherence to this policy. Standardisation materials, including exemplar assessments, will be accessible from September each year.

Submission of marks and moderation

Centres must submit the learner marks awarded for the NEAs via the TQUK Portal by 30 April each year.

On 1st May, (or the next working day if this date falls on a weekend or Bank Holiday), TQUK will release to centres the list of the learners selected for moderation.

The moderation sample will be selected following the submission of all centre marks and will include learners with the lowest and highest marks and a balanced range of learners between these points. Centres are not allowed to select their own learner sample for moderation.

The moderation sample size requested adheres to JCQ sampling guidelines and will be determined by the size of the learner cohort as outlined in the table below:

Number of Learners in Cohort	Sample Size Stage 1	Sample Size Stage 2	Sample Size Stage 3
Up to 5	All	All	All
6-10	5	All	All
11-15	6	10	All
16-100	6	10	15
101-200	6	15	20
Over 200	6	20	25

Centres have three working days to upload the selected learner work. Mark submission guidance is provided in the Portal User Guide to support this activity, and all learner work must be securely retained until final grades are awarded and any queries or appeals are resolved.

If all centre marks are within tolerance of the Moderator review, they will be accepted as final. If any centre marks are outside of tolerance, the moderation moves to stage 2, and the moderation sample is increased. If marking is not consistent, the sample size will be further increased, as illustrated in the sampling size table.

Late submissions

A late submission will only be considered at TQUK's discretion, and extensions are only granted in exceptional cases. Centres anticipating any delays must submit a Special Consideration request. Failure to meet the deadlines may result in delays to results, ineligibility for results day, and a review of the centre's risk rating, potentially leading to compliance investigations.

External moderation process

TQUK will assign Moderators to remotely review selected samples, ensuring that the assessments align with national standards. Moderation outcomes, alongside provisional results, will be accessible to centres via the Portal.

If the centre-assigned marks and moderation outcomes are within an acceptable tolerance range, the centre's marks will be applied.

Where the marks fall outside the tolerance range, a regressed mark may be applied across the learner cohort.

TQUK may request the submission of all learner work for review.

A Final Moderation Report will be provided to centres via the Portal by 14 May and will include confirmation of results, feedback on good practice, and will identify any areas of improvement.

The table below outlines the key dates relating to the moderation process:

Moderation Schedule		
Activity	**Deadline date**	**Notes**
NEA brief released	September (annually)	NEA briefs are available to approved centres by Verve
Standardisation training window	1 October – 28 February	All assessors must complete standardisation using TQUK materials
Submission of learner marks	30 April	Centres must submit marks via the Portal
Release of moderation sample lists	1 May	TQUK releases a list of learners to be sampled
Upload of selected learner work	Within 3 working days of 1 May	
Resubmission deadline	14 June	

Review of NEA moderation

Following the completion of a clerical check, the centre may appeal the results of the NEA moderation process. In such cases, TQUK will review the original moderation to ensure that all adjustments were applied fairly, reliably and consistently.

If a centre has concerns regarding the moderation of a specific cohort, it must request a review of moderation for all learners within that cohort. Written consent from all learners in the cohort is required for the appeal to proceed.

A review of moderation is expected to take 20 working days from when the centre formally instructs TQUK to undertake the review. TQUK will inform a Recognised Centre if circumstances dictate that this timescale cannot be met.

Full details of the appeals process, including reviews of moderation, can be found in the Appeals Policy on our website.

Section 5: Appendices

Terminology

The following table defines the terminology used in this qualification specification.

Term	Definition
Examination Assessment	An externally set assessment that is internally marked and externally moderated by TQUK
Extended Response Question	An assessment question format that requires a detailed response and is often used to assess a learner's reasoning, analysis, or evaluation skills
External Moderation	The process of reviewing assessment decisions to ensure they meet accepted standards. TQUK will assign a moderator to review samples of learner work
Internal Standardisation	The process of ensuring consistency and fairness in the application of assessment decisions across assessors within a centre
Late Submission	Any submission received after the published deadline will be considered late and will only be marked at TQUK's discretion
Mark Scheme	A structured framework to determine how marks are awarded outlining expected and acceptable answers and the grading criteria to support grade application
Multiple Choice Question	An assessment question format where learners select the correct answer from a list of predefined options
NEA Brief	The Non-examination Assessment
Non-examination Assessment	A mode of assessment involving a project and a series of tasks that learners complete in a controlled environment in a timeframe defined by TQUK
Raw Marks	The initial score achieved before any adjustments are applied
Retake	An opportunity for a learner to reflect on their NEA and the internal feedback received and improve it **before** it has been externally moderated by TQUK.
Resubmission	An opportunity for a learner to revise and submit their work again **after** their original attempt(s) have been externally moderated by TQUK.
Short Answer Question	An assessment question format where a brief, concise response is required and is typically used to assess the recall or understanding of key facts or concepts.
Special Consideration Request	A formal application for reasonable adjustments to be put in place due to unforeseen circumstances that impact a learner's assessment performance.
Uniform Mark Scheme (UMS)	A standardised scoring system that is used to convert raw marks from assessments and is used across different assessment series to support the fair comparison of results.

Verve	TQUK's management system is used by centres for learner registration, the submission of marks, and certification claims. The system is also referred to as the Portal.

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Amplification Terminology

The following table provides a selection of amplification statements used in the Alternative Academic Qualifications. This list is not exhaustive but does provide a range of commonly used statements to provide teaching staff with the intent and scope of the learning objectives.

Common amplification statements	
Characteristics and scope	**Definition**
Aspects of …	The various parts, features, or perspectives of a subject
A range of …	A collection of related items or things
The characteristics/features of …	The unique attributes or qualities of something
Common types of …	The usual classifications found within a subject
The components of …	The individual parts that combine to form a whole
The concepts of …	The ideas that are fundamental to understanding something
The elements of …	The primary components within a specific context
The fundamentals of …	The essential principles for understanding a particular subject
The types of …	The classification of different parts of a subject
The properties of …	The constituent parts or inherent characteristics of something
Function	
The contribution of …	The role something plays in achieving a result
The definition of …	The explanation or meaning of something
The function of …	The specific action or role performed by something
The principles of …	The fundamental concepts or rules underlying something
The purpose of …	The underpinning reason or intent behind something
The role of …	The specific function that something plays in a given context
Implementation	
Approaches for …	Methods or strategies for addressing a problem or achieving an objective
The application of …	The practical use or implementation of an idea or method
Considerations …	The factors to take into account
Controls when …	Measures to guide actions in certain situations
The procedures for …	The established steps for completing a task
Steps to take when …	Specific actions to be taken in a particular sequence
Strategies to …	Plan of action designed to achieve a desired result
Technical considerations …	Specific technical factors to be considered in a particular context
The use of …	The act of utilising something for a particular purpose
The ways in which …	The ways or techniques used to achieve something

Significance	
The benefits of …	The positive effects or advantages of something
The challenges associated with …	The difficulties or obstacles related to a specific topic
The criteria for …	The standards or principles used for judging or deciding something
The cultural considerations of …	Aspects related to the customs, beliefs, and social behaviour of a particular society that affects a subject
The impact / potential impact of …	The effect that something has on another
The importance of …	The significance or value of something
The meaning of …	The explanation or definition of a term or concept
A range of factors to consider when …	The elements that influence the outcome or development of something
Impact	
How X affects Y …	The direct impact one factor has on another
The consequences of …	The results or effects of or influence of an action or decision
The effects of …	The changes that result from an action
The influence of …	The capacity to have an effect on something
The implications of …	The possible future effects of a decision or action
The potential barriers to …	The factors that may hinder progress
The risks of …	The potential negative outcomes of an action
Development	
Methods of …	The ways of doing something
The origin of …	The beginning or source from which something develops
The evolution of …	The gradual change or development of something over time
The stages of …	The distinct phases or periods in a process
The structure of …	The organisation or arrangement of something
Distinctiveness	
The advantages of …	The beneficial aspects of something
The differences between …	The distinguishing characteristics between two or more things
Different ways of …	Various approaches to accomplishing something
The disadvantages of …	The unfavourable or detrimental aspects of something
The diversity of …	The variety or range of differences within a group
The limitations of …	The restricting factors or constraints of something
The positive and negative impact of …	The beneficial and detrimental effects of something
Regulatory	
Legal requirements …	The legal obligations related to something
The minimum requirements …	The lowest acceptable standards or thresholds

The responsibilities of …	The required actions and considerations
The scope of practice …	The boundaries of an individual's competence or responsibilities
Review	
Best practice for …	The most effective method or approach to achieve the desired result
The evaluation of …	The process of assessing the value or significance of something

Mathematics of Design Engineer Construct in the Digital Built Environment

Learners will be expected to have an understanding of the following mathematics 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 – $c^2 = a^2 + b^2$.
• 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 mathematics 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, and room size
  ○ use of the following formulas to calculate lighting requirements:
  ▪ lumens = lux x area
  ▪ bulbs required = lumens required / lumens of the 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 a building 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 volume of common building elements such as:
  ▪ cube/rectangle = length * width * height
  ▪ triangle = 0.5 * b * h * length
  ▪ cylinders = πr^2 * h.

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

• learners will be able to apply their mathematical skills to understand the calculation of area and volume within a building, along with being able to apply these calculations with consideration to contexts and costings, including:
  ○ application of level 2 concepts of area and volume of shapes in combination or reduction, for example, a room and a roof or a roof with a window
  ○ combine costs and areas to make accurate costing calculations.

• learners will be able to assess concept design to produce preliminary cost and lifecycle cost prediction, including: ○ application of mathematical skills to scenarios involving measurements in £/m^2 and £/ m^3.

- learners will understand how to calculate heat loss for various periods of time and materials using U-Values:
  - surface heat loss (W) = U Value (W/m^2 C) x wall area (m^2) x ΔT (C)
  - compare and contrast different insulation materials to identify the most efficient.

- learners will understand and be able to apply knowledge relating to bending moments, cantilevers, forces and loads including:
  - dead load (kN) = volume (m^3) * unit weight (kN/m^3)
  - live load (kN) = Area of Floor (m^2) * Uniformly distributed load (kN/m^2)
  - density (kg/m3) = mass (kg) / volume (m^3)
  - moment (Nm) = force (N) x distance (m), plus the application of the formula in various scenarios including clockwise moments, anticlockwise moments and balance
  - resolve forces acting at angles into their horizontal and vertical component using trigonometry - Sin a = opp/hyp Cos a = adj/hyp.

- learners will be able to apply mathematical skills in the context of a project budget and capital costs, fixed costs and variable costs:
  - learners must understand how capital, fixed and variable costs are defined
  - this understanding will then be able to be applied to contexts allowing for the calculation of budgets with consideration to other contingencies in a project such as professional wages.

- learners will be able to apply their mathematics knowledge and skills to scenarios where construction methods are being compared including:
  - calculation and selection of optimal construction method and sourcing when presented in context.

Standard units:

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

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 (kW)
Force	Newton (N)	Kilonewton (kN)
Light	Lumens (Lux)	
Sound	Decibels (db)	