L3 - BIM - Unit 1 - Defining a Sustainable Construction Project

Overview

The candidate can research and define the standards required for a building project. They will analyse issues such as requirements and local needs and convey the overall project brief through a mission statement. They will clearly define the sustainability factors that will be deployed, with strong factual evidence and show the involvement of s range of stake-holders.. They will define the key parameters of the project such as staff roles and responsibilities, topographical elements, geotechnical issues and environmental considerations.

A work activity will typically be 'non-routine or unfamiliar' because the task or context is likely to require some preparation, clarification or research to separate the components and to identify what factors need to be considered. For example, time available, audience needs, accessibility of source, types of content, message and meaning, before an approach can be planned; and the techniques required will involve a number of steps and at times be non-routine or unfamiliar.

Example of context – candidates can investigate and prepare a design for a local building to suit a specific purpose, i.e a low carbon footprint youth centre for their locality.

Assessor's guide to interpreting the criteria

General Information

RQF general description for Level 3 qualifications

- Achievement at RQF level 3 (EQF Level 4) reflects the ability to identify and use relevant understanding, methods and skills to complete tasks and address problems that, while well defined, have a measure of complexity. It includes taking responsibility for initiating and completing tasks and procedures as well as exercising autonomy and judgment within limited parameters. It also reflects awareness of different perspectives or approaches within an area of study or work.
- Use factual, procedural and theoretical understanding to complete tasks and address problems that, while well defined, may be complex and non-routine.
- Identify, select and use appropriate skills, methods and procedures.
- Use appropriate investigation to inform actions.
- Review how effective methods and actions have been.
- Take responsibility for initiating and completing tasks and procedures, including, where relevant, responsibility for supervising or guiding others.
- Exercise autonomy and judgement within limited parameters information and ideas.

Requirements

- Standards must be confirmed by a trained Platinum Level Assessor or higher

- Assessors must at a minimum record assessment judgements as entries in the on-line mark

book on the INGOTs.org certification site.

- Routine evidence of work used for judging assessment outcomes in the candidates' records of their day to day work will be available from their e-portfolios and on-line work. Assessors should ensure that relevant web pages and files are available to their Account Manager on request by supply of the URL.

- When the candidate provides evidence of matching all the criteria to the specification subject to the guidance below, the assessor can request the award using the link on the certification site. The Account Manager will request a random sample of evidence from candidates' work that verifies the assessor's judgment.

- When the Account Manager is satisfied that the evidence is sufficient to safely make an award, the candidate's success will be confirmed and the unit certificate will be printable from the web site.

- This unit should take an average level 3 learner 60 hours GLH to complete.

Assessment Method

Assessors can score each of the criteria N, L, S or H. N indicates no evidence. L indicates some capability but some help still required. S indicates that the candidate can match the criterion to its required specification. H indicates performance that goes beyond the expected in at least some aspects. Candidates are required to achieve at least a S on all the criteria to achieve the full award.

Expansion of the assessment criteria

1. Candidates will Plan select and analyse the connectivity required for cloud based services and applications

1.1 I can research and convey the project remit.

Candidates will identify sources which will provide the basis for a construction project.

Evidence: will be provided directly from portfolios of evidence.

Additional information and guidance

Learners will select an appropriate project either through an existing genuine architectural competition, or by identifying a building which they believe is needed in
their own town.

1.2 I can communicate the vision for the project

Candidates will write a vision statement for their project and communicate it to relevant third parties.

Evidence: will be provided directly from student portfolios.

Additional information and guidance

Learners should articulate their high level, aspirational ambitions for their project; what it will achieve when it is completed in the context of the people who will use it, the environment in which it

sits and the sustainable objectives it will realise.

1.3 I can set the scene for the project in the context of the existing environment

Candidates will provide a descriptive study of the local area where their project will be constructed.

Evidence: will be provided directly from student portfolios.

Additional information and guidance

Learners should discuss the existing built environment and infrastructure, describe the current social, economic and environment situation and the general aesthetics and ‘feel’ of the area, what it means to the people who live and work, and indeed what it means to them personally. Candidates can provide a range of evidence to support their findings by devising appropriate questionnaires for on street surveys and interviewing diverse groups of the immediate local community e.g. local businesses, shoppers, the elderly, young people and students etc. They can find information through, for example, local authority, civic society, chamber of commerce and the office of national statistics’ websites.

1.4 I can set the scene for the project in the context of the end user

Candidates will describe the prospective end user.

Evidence: will be provided directly from portfolios of evidence, internal testing.

Additional information and guidance

Learners will provide a profile of the end user of their building project, detailing anticipated wishes and demands. They may choose to research end users in similar facilities both physically and operationally.

1.5 I can write a mission statement for the project

Candidates will produce a mission statement for their project.

Evidence: will be provided directly from student portfolios.

Additional information and guidance

Learners will determine clear values, objectives and outcomes for their project, ideally working as a team to identify key themes, for example purpose, environmental impact, design excellence, sustainability, economic contribution. Candidates might gain inspiration by exploring the mission statements of leading architecture, engineering and construction companies.

2. Candidates will set standards for sustainability in a construction project.

2.1 I can define commitments to positively impact on the local community and the local environment

Candidates will produce a community and environmental statement.

Evidence: will be provided directly from portfolios of evidence.

Additional information and guidance

Learners will produce a statement which outlines their commitment to positively impact the local community and the local environment not only in terms of the building itself and its entire life cycle,

but also through the ethos, behaviour and passion of the entire project team in caring for the community and protecting the
environment in the immediate vicinity of the project. This should be based on referenced research evidence.

A series of Construction Commitments devised by the Strategic Forum for Construction [1] provides valuable guidance.

2.2 I can define and explain commitments to energy and water efficiency and carbon reduction

Candidates will produce an energy, water and carbon statement based on research.

Evidence: will be provided directly from student portfolios.

Additional information and guidance

Learners will produce a statement which outlines their commitment to energy and water efficiency, and to reduce carbon emissions throughout the entire life cycle of the building, and also through the ethos, behaviour and passion of the entire project team. This should be based on referenced research evidence.

A series of Construction Commitments devised by the Strategic Forum for Construction [1] provides valuable guidance.

WRAP [2] (Waste and Resources Action Programme) also provides valuable guidance.

2.3 I can define and explain commitments to minimise construction waste

Candidates will produce a waste statement based on research.

Evidence: will be provided directly from student portfolios.

Additional information and guidance

Learners Candidates will produce a statement which outlines their commitment to waste minimisation throughout the entire life cycle of the building, and also through the ethos, behaviour and passion of the entire project team. This should be based on referenced research evidence.

A series of Construction Commitments devised by the Strategic Forum for Construction [1] provides valuable guidance.

WRAP [2] (Waste and Resources Action Programme) also provides valuable guidance.

2.4 I can define and explain commitments to ethical sourcing of materials and responsible procurement

Candidates will produce a procurement statement based on research and their personal ethics.

Evidence: will be provided directly from student portfolios.

Additional information and guidance

Learners will produce a statement which outlines their commitment to ethical sourcing and responsible procurement throughout the entire life cycle of the building,
and also through the ethos, behaviour and passion of the entire project team. This statement should be based on referenced research including information from the Strategic Forum for Construction.

A series of Construction Commitments devised by the Strategic Forum for Construction [1] provides

valuable guidance.

WRAP [2] (Waste and Resources Action Programme) also provides valuable guidance.

2.5 I can define and explain sustainability monitoring and reporting procedures for the lifecycle of the project

Candidates will define their methods for monitoring and reporting their commitments to sustainability throughout the entire life cycle of the project.

Evidence: will be provided directly from student portfolios.

Additional information and guidance

Learners should explore existing industry procedures to produce a methodology. Valuable guidance can be found by registering with BREAMM [3], an internationally recognised measure and mark of a building's sustainable qualities, and certified buildings are immediately identifiable as having been planned, designed, constructed and operated in accordance with best practice sustainability principles.

3. Candidates will be able to define site information required at pre-design phase.

3.1 I can identify the importance of site analysis and the roles of professional consultants at pre design phase

Candidates will produce an overview of site analysis requirements and the professionals involved at pre-design stage.

Evidence: will be provided directly from portfolios of evidence.

Additional information and guidance

Learners will understand the importance of an adequate site investigation and describe who and what is involved, and why it is carried out. They will outline the risks involved in gathering insufficient or inadequate data.

3.2 I can determine requirements for topographical information including ways to collect accurate data for the site

Candidates will explain the need for an accurate topographical survey and can suggest and validate an appropriate survey method.

Evidence: will be provided directly from student portfolios and internal testing.

Additional information and guidance

Learners will understand the role of the topographical surveyor in providing accurate survey data. They will explore the limitations of everyday mapping information (e.g. conventional ordnance survey maps) in providing accurate geotechnical data and how technology has advanced the methods of surveying.

Learners will compare methodologies and technologies and will determine appropriate above ground survey methods for their project including laser scanning, satellite based positioning systems (GPS/GNSS), electronic distance measurement (total station), Geographical Information Systems (GIS) and ground penetrating radar (GPR) for below ground utility mapping. They will define appropriate vertical/horizontal accuracy and understand the need for precision to establish boundaries, elevation for flood plain data, positioning of trees, water courses and other natural

features, existing buildings and man-made features, and also the need to discover existing utilities running through and adjacent to the site. They will explore the limitations of surveying tools, for example GPS requires good satellite geometry and visibility. Tree canopies and dense, built up areas can render GPS methods ineffective. Total stations can produce unreliable data when used in highly reflective and laser Scanning: can produce poor results on low-reflectance surfaces (e.g., anything painted black), specular surfaces (e.g., shiny metal and mirrors), and transparent or translucent surfaces (e.g., windows). All methods require professional expertise and varying degrees of time to process collected data and candidates will understand the process of translating collected data to a usable, manageable format, and the data outputs produced by different methods (e.g. laser scan point clouds, GPS/EDM raw data).

3.3 I can identify information required to produce a geotechnical report and relate to the specified project

Candidates will identify the geotechnical data required to produce a report.

Evidence: will be provided directly from student portfolios.

Additional information and guidance

Learners will understand the role of the geotechnical surveyor in providing accurate ground condition information regarding soil and geologic conditions on and below the surface. They will understand the process of site analysis through desk study, survey and reporting.

3.4 I can identify information required to produce an ecological study to related to the specified project

Candidates will identify the ecological data required to produce a report.

Evidence: will be provided directly from student portfolios.

Additional information and guidance

Learners will understand the role of the ecology professional in providing accurate information regarding vegetation and wildlife and their habitats in the local area. They will understand the process of site analysis through desk study, survey and reporting.

3.5 I can identify information required to produce a hydrology study and relate to the specified project

Candidates will identify the hydrological data required to produce a report.

Evidence: will be provided directly from student portfolios and internal testing.

Additional information and guidance

Learners will understand the role of the hydrology professional in providing accurate information regarding the quality, position and flow of watercourses in the local area. They will understand the process of site analysis through desk study, survey and reporting.

Moderation/verification

The assessor should keep a record of assessment judgements made for each candidate and make notes of any significant issues for any candidate. They must be prepared to enter into dialog with their Account Manager and provide their assessment records to the Account Manager through the on-line mark book. They should be prepared to provide evidence as a basis for their judgements through reference to candidate e-portfolios and through signed witness statements associated with the criteria matching marks in the on-line markbook. Before authorizing certification, the Account Manager must be satisfied that the assessors judgements are sound.

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Links
[1] http://www.strategicforum.org.uk/
[2] http://www.wrap.org.uk/category/sector/construction
[3] http://www.breeam.org/