L3 - BIM - Unit 4 - Lifecycle and Financial Planning for a Sustainable Construction Project

Overview

The candidate can use BIM related tools to produce a detailed technical and financial series of reports on their building. They will devise reports with evidence to show the life-cycle of their building and its operational levels from hand-over onwards. The report will include some of the interventions and actions of other members of their team such as Facilities Managers.They will create a detailed and workable cost analysis and financial model to show the show the impact of changes in procurement through to completion and explain any issues that arise. They will produce and present an overall budget for critical evaluation.

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 create a range of reports, with detailed evidence and examples, of the management of the building and the overall budgets and ongoing costs.

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

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- 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 use building information modelling techniques to support the operational management of a building.

1.1 I can explain the role of BIM in the operation, management and maintenance of a sustainable building project throughout its lifecycle

Candidates will explain the role of BIM in the context of whole life facilities management.

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

Additional information and guidance

Learners will describe the benefits of developing and maintaining lifecycle data to support the effective, efficient operation, management and maintenance of a building. Data defines the precise location and condition of systems, equipment and objects found in a building (for example lighting, air conditioning, electrical and plumbing systems, fire protection, IT, furniture), and relationships between one component and another. They should understand how information is created and updated throughout the design and construction phase, and how it can be monitored and constantly refreshed throughout the building’s lifetime to provide an up to date, real time ‘as built’ model.

This model can be used to reduce energy usage, monitor life cycle costs, reduce the amount of time required for modification/repair/replacement/ renewal of objects/systems and critically provide a clear picture of how effectively an end user is using the building. Learners should be able to provide examples of efficiencies and suggest how ongoing data evaluation can impact the future of building design.

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1.2 I can devise an appropriate handover process from the construction team to the end user

Candidates will devise an appropriate handover process from the construction team to the end user.

Evidence: will be provided directly from student portfolios.

Additional information and guidance

Learners will further develop knowledge gained in Level 1 and 2 qualifications regarding effective end user behaviour and should devise an effective strategy for end user handover to promote the optimum operational performance of a building. The strategy should include an end user training programme designed to educate users and operators in how they should use the building to support life cycle efficiencies and positive social, economic and environmental outcomes. Learners should also devise a strategy to monitor, evaluate and report outcomes. The UK Government's 'Soft Landings [1]' concept provides further guidance on effective handover: see here [2]. Centres might wish to purhcase a copy of the reaidness guide.

1.3 I can set targets for whole life energy performance, water consumption, waste reduction, operation and maintenance costs

Candidates will set targets for building lifecycle efficiency.

Evidence: will be provided directly from student portfolios.

Additional information and guidance

Learners will produce and validate a clear set of targets for their building focusing on energy use, water consumption, waste reduction and operation and maintenance costs. Learners should consider local, national and global policies and protocols, and research existing local case studies to determine how
targets are set, measured and reported, and their effectiveness over time.

1.4 I can analyse the impact of post occupancy behaviour on the lifecycle of a building

Candidates will understand the impact of post occupancy evaluation on building life cycle.

Evidence: will be provided directly from student portfolios.

Additional information and guidance

Learners should discuss quantitative and qualitative end user/operator data and how this information can provide a measurement of the success (or failure) of a building project. Candidates should discuss the analysis of data to inform the design process and real life building performance prediction.

1.5 I can describe the benefits of early engagement of the Facilities Manager and the client/end user in the design process

Candidates will describe the benefits of early engagement of the Facilities Manager and the client/end user in the design process.

Evidence: will be provided directly from student portfolios.

Additional information and guidance

Learners will discuss the role of the Facilities Manager and the client/end user in early stage building design in contributing key knowledge and experience in the use, operation and maintenance of a

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building.

2. Candidates will understand cost analysis and financial control.

2.1 I can explain the role of BIM in the financial management of a building project

Candidates will understand the role of BIM in the financial management of a building project.

Evidence: will be provided directly from portfolios of evidence.

Additional information and guidance

Learners will understand the role and effectiveness of BIM in producing accurate building project cost information including cost plans, bills of quantities and estimates. They should discuss accuracy, time and cost savings, financial transparency, and also the ability to update cost information automatically when making modifications to the building model.

2.2 I can produce a cost model based on the project time line

Candidates will produce a cost model based on the project time line

Evidence: will be provided directly from student portfolios.

Additional information and guidance

Learners will generate a detailed cost plan from their building model in line with original budget and time line objectives.

2.3 I can identify points of accountability for keeping the project to budget

Candidates will identify points of accountability for keeping the project to budget.

Evidence: will be provided directly from student portfolios.

Additional information and guidance

Learners will identify key project stages and associated cost centres and the roles responsible for their impact on the budget and final project cost.

2.4 I can explain the consequences of weaknesses in financial control

Candidates will explain the consequences of weaknesses in financial control

Evidence: will be provided directly from student portfolios.

Additional information and guidance

Learners will understand the impact of poor financial management and reporting and should discuss the bank account and reconciliation, assets and liabilities, cashflow, invoicing, supply chain management, resolution of errors, resource prediction and allocation.

2.5 I can devise policies for sustainable procurement to establish audit trails

Candidates will devise policies for sustainable procurement to establish audit trails.

Evidence: will be provided directly from student portfolios.

Additional information and guidance

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Learners will establish procedures for sustainable procurement which provides a clear audit trail and promotes responsible sourcing based on whole life costing principles. They should consider social, economic and environmental impact and compliance with environmental legislation and regulation.

3. Candidates will produce a budget for a complex building project.

3.1 I can compile an accurate list of capital costs

Candidates will compile an accurate list of capital costs.

Evidence: will be provided directly from portfolios of evidence.

Additional information and guidance

Learners will provide a definition of capital costs for a construction project and compile a list referenced to their building project. Capital costs include expenses related to the initial establishment of a building and include land purchase, planning and feasibility studies, architectural and engineering design, construction (including materials, equipment and labour), construction management, insurance, tax, inspections and testing, equipment and furnishings not including in the building (e.g. site office furniture and IT).

3.2 I can provide an annual projection for recurrent fixed costs

Candidates will provide an annual projection for recurrent fixed costs.

Evidence: will be provided directly from student portfolios.

Additional information and guidance

Learners will provide a definition of fixed costs for a construction project and provide an annual projection for recurrent fixed costs referenced to their building project. Recurrent fixed costs are regular, anticipated costs and are independent of the output or activity level. They include permanent office utilities, permanent staff wages, bank interest, leasing costs.

3.3 I can provide an annual projection for recurrent variable costs

Candidates will provide an accurate annual projection for variable costs.

Evidence: will be provided directly from student portfolios.

Additional information and guidance

Learners will provide a definition of variable costs for a construction project and provide an annual projection for recurrent variable costs referenced to their building project. Recurrent variable costs are irregular, often unanticipated costs that change during the project’s life cycle. They include temporary site labour, subcontractors, materials and equipment and fuel.

3.4 I can provide a sensitivity analysis based on possible variations in costs

Candidates will provide a sensitivity analysis based on possible variations in costs.

Evidence: will be provided directly from student portfolios.

Additional information and guidance

With an emphasis on sustainability and energy efficiency, candidates will carry out a sensitivity analysis, testing the cost effective potential of a building project throughout its life cycle by

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modifying a number of design objects within the model.

3.5 I can present and negotiate variations to the design within budget constraints

Candidates will present and negotiate variations to the design within budget constraints.

Evidence: will be provided directly from student portfolios.

Additional information and guidance

Learners will present and validate design recommendations to a professional audience. They will use the outcomes of the dialogue to make variations that optimise their designs within the constraints of the budget.

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.

Source URL: https://theingots.org/community/decl3u4x

Links
[1] https://theingots.org/community/sites/default/files/uploads/user4107/soft-landings-fast-facts-for-facilities-managers-updated-24-2-15.pdf
[2] https://www.bifm.org.uk/bifm/knowledge/resources/BIM

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