

T Level Technical Qualification in Building Services Engineering for Construction (8710-30)

Employer-set Project – Marking Grid

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SAMPLE

Employer-Set Project assessment

Assessment objectives

The Employer-Set Project is assessed against five assessment objectives (AOs). The assessment objectives are mapped against each task within the marking grids:

	Assessment Objective
AO1	Plan their approach to meeting the project brief
AO2	Apply core knowledge and skills as appropriate
• AO2a	○ core knowledge
• AO2b	○ core skills - i) communication e.g. providing information and advice to customers and / or wider stakeholders on the potential risks of a change to an industrial system, or making a presentation to a stakeholder on the implications of change - ii) work collaboratively with other team members and stakeholders e.g. to develop content to bid for a construction project - iii) applying a logical approach to solving problems , identifying issues and proposing solutions e.g. through setting criteria for successful implementation of a system, using cost / benefit analysis of the introduction of new procedures or equipment - iv) primary research e.g. obtaining measurements related to a design and / or customer requirement.
AO3	Select relevant techniques and resources to meet the brief
AO4	Use maths, English and digital skills as appropriate
• AO4a	○ maths
• AO4b	○ English
• AO4c	○ digital
AO5	Realise a project outcome and review how well the outcome meets the brief
• AO5a	○ realise a project outcome – was the right outcome achieved
• AO5b	○ review how well the outcome meets the brief, how well was the brief met, the quality of the outcome in relation to the brief

Employer-Set Project mark distribution

This table illustrates how the 100 marks for the Employer-Set Project are distributed against the tasks and mapped to each assessment objective. These have been set by subject matter experts and employers and will support the comparability between versions of the Employer-Set Project over time.

Tasks	AO1	AO2a	AO2b	AO3	AO4a	AO4b	AO4c	AO5a	AO5b	Total
Part 1										
1.1 Research	2	3	0	2	0	0	2	0	0	9
1.2 Report	6	6	6	2	2	2	2	0	0	26
1.3 Project plan	4	10	6	2	2	0	0	0	0	24
1.4 Presentation	2	6	6	2	0	2	0	0	0	18
Total	14	25	18	8	4	4	4	0	0	77
Part 2										
2.1 Collaborative problem-solving	0	6	5	2	0	0	0	2	0	15
2.2 Evaluation	0	0	0	0	0	4	0	0	4	8
Total	0	6	5	2	0	4	0	2	4	23
AO	14	54		10	16			6		100

General marking approach

The following process details at high level the steps that will be undertaken by the external marking teams at City & Guilds following the submission of candidate's submitted evidence (including additional supporting evidence such as videos of presentations etc).

Process

- Marker scans / reads the candidates response, and the band descriptors
- Marker makes an initial assessment of the best fit to band
- Marker reviews the candidate evidence against the initial band descriptor in more detail to decide if the response is securely sitting within the band; i.e. all characteristics described by the band descriptor are seen or it strongly meets the level of performance described by the descriptor holistically
 - Marker will also check the descriptor for the level above
 - If evidence clearly shows some of the characteristics of the higher band, the marker will select a suitable mark at the bottom of that band
 - If not showing characteristics of the higher band the marker will revert to the original band, selecting a mark at the higher end of that mark range.

If the response is not securely in the band, but *is partially* showing the characteristics of the band

- Marker will check the descriptor of the level below/above
- Marker will decide on a suitable mark either at the bottom of the original band as some characteristics shown, or top of the lower band if it better describes the quality of the characteristics being shown.

If the response is largely meeting the band, with only a few concerns and is not showing characteristics aligning with the higher or lower bands, the appropriate mark is likely to be in the middle range.

If there is no alignment with the descriptor, the marker will reassess the starting band, and begin again.

- Based on the level of alignment with the descriptor, the marker will confirm a final mark within the band bearing in mind the marks available form an evenly distributed scale:
 - If the quality of response fully aligns with the performance described by the descriptor – the marker will assign a high mark within the band
 - If the quality of the response partially aligns with the performance described by the descriptor – the marker will assign a low to medium mark within the band
 - The marker will consider the quality of a range of similar responses (e.g. annotated lead grade exemplification materials, responses reviewed during standardisation, and through experience) and choose a mark that would give an appropriate ranking amongst those responses in relation to the full range of marks available in each band.
- In order to fully assess the evidence, it may be necessary to focus on several distinct aspects. These have been grouped into separate sub-grids (e.g. 1.1, 1.2 etc.) to allow the marker to make separate assessment decisions, rather than attempt to bring disparate elements together as a holistic judgement, to support reliability, validity and manageability for the marker.

Marking grids

Task 1.1

Indicative content

Typical evidence may include:

Details of researched technology in relation to the tender requirements including details of costings, components, manufacturers, suppliers, components, installation considerations.

Collated visual resources - pictures, images, diagrams, sketches etc.

Projects or buildings where technologies have been used successfully or have been considered and the benefits of their use in those contexts.

Legislation and regulations would directly or indirectly impact on the selected SMART technology e.g. health and safety, training requirements, reporting etc.

Details of advantages and disadvantages, potential risks or 'red flags' – indication of potential future issues or benefits of technology inclusion.

Details of information that would be required but has not yet been possible to source.

List of sources or referenced sites/materials.

Note: where there is insufficient evidence to award a mark, a zero mark may be given	Band 1 descriptor			Band 2 descriptor			Band 3 descriptor			AO	Total marks available
	1	2	3	4	5	6	7	8	9		
Task 1.1										AO1	9
Research	<p>Some evidence of a planned approach to research, results lack order and organisation.</p> <p>Some elements of Core knowledge referenced but focus may be imbalanced and more focused on one area than another (e.g. focus on environmental benefits more than financial etc).</p>			<p>Approach to research and collation of information is planned and organised.</p> <p>The application of Core knowledge is referenced consistently for example in relation to legislation/regulation, referencing and health and safety considerations.</p> <p>Evidence of a range of sources used and referenced, with different sources considered.</p> <p>Digital skills applied consistently in the sourcing and collation of materials.</p>			<p>Brief requirements fully considered prior to and throughout research and information collation – clear evidence of methodical and thorough approach to research and information gathering. Systematic and comprehensive research conducted, including detailed list of sources in line with industry standards.</p> <p>Core knowledge applied in all areas of the brief requirements including - costs, impacts on building performance, environmental benefits, financial benefits, laws/regulations related to installation and maintenance.</p> <p>Evidence of a full range of sources including non-traditional sources e.g. social media.</p>			AO2a AO3 AO4c	

Guidance for markers

The following evidence must be used to assess performance against this assessment objective.

- Research notes

Task 1.2

Indicative content

Typical evidence may include:

Health and Safety, advantages and disadvantages of chosen technology, an evaluation of the building scale and type and the impact technology would have.

Relating to water conservation technologies - applicable building regulations, technology impact on building performance, environmental/financial impacts, town and country planning.

Relating to electricity producing technologies and heat producing technologies - applicable building regulations, town and country planning, permitted development requirements, technology impact on building performance, environmental/financial impacts.

Use and application of maths in timing calculations / critical path analysis, calculations and comparisons of costings, estimations etc.

Note: where there is insufficient evidence to award a mark, a zero mark may be given	Band 1 descriptor		Band 2 descriptor		Band 3 descriptor		AO	Total marks available
Task 1.2	1	2	3	4	5	6	AO1	6
Report	Evidence of a planned approach to meeting brief, which has some structure. Most required elements are present and distinct from each other.		Evidence of a planned approach to meeting brief, which has a clear structure. All required elements are present and distinct from each other.		Evidence of a meticulous planned approach to meeting brief, which has a logical and clear structure. All required elements are present and distinct from each other and in line with industry standards.			

SAMPLE

Note: where there is insufficient evidence to award a mark, a zero mark may be given	Band 1 descriptor			Band 2 descriptor			Band 3 descriptor			Band 4 descriptor			AO	Total marks available
	1	2	3	4	5	6	7	8	9	10	11	12		
Task 1.2													AO2a	12
Report	<p>Some elements of Core knowledge and Core skills drawn on and evidenced within report - limited comprehension of knowledge and skills in relation to brief requirements.</p> <p>Some links to the application of Core knowledge and Core skills to support judgements, but reasoning is not always clear and accurate.</p>			<p>Most elements of Core knowledge and Core skills specifically evidenced within report - comprehension of knowledge and skills may have gaps or show some misunderstanding in relation to brief requirements.</p> <p>Links to the application of Core knowledge and Core skills to justify and support judgements, but with some gaps or inaccuracies in reasoning.</p>			<p>Knowledge and skills from across the Core applied and evident in report in relation to different elements of project brief.</p> <p>Clear links applied from research are demonstrated in the report and are accurate.</p> <p>Judgements are logical with comprehensive lines of reasoning throughout.</p> <p>Concepts explained/referenced clearly and correctly.</p>			<p>Core knowledge and Core skills applied consistently throughout response with minimal technical inaccuracies.</p> <p>Connections between elements of Core knowledge and Core skills exploited to strengthen arguments and demonstrate understanding.</p> <p>Thorough and detailed links from research are demonstrated in the report and are accurate.</p> <p>Judgements are logical with comprehensive lines of reasoning throughout.</p>			AO2b	

Note: where there is insufficient evidence to award a mark, a zero mark may be given	Band 1 descriptor	Band 2 descriptor	AO	Total marks available
Task 1.2	1	2	AO3	2
Report	<p>Information sources may not be fully exploited and may be applied inconsistently in response to meeting the brief with only limited sources used.</p> <p>Some techniques and/or sources selected from those available to respond to brief requirements.</p>	<p>Techniques and sources used effectively to respond to requirements of the brief.</p> <p>All available techniques and sources reviewed and compared to ensure those selected most effectively and efficiently meet all aspects of brief requirements.</p>		

SAMPLE

Note: where there is insufficient evidence to award a mark, a zero mark may be given	Band 1 descriptor		Band 2 descriptor		Band 3 descriptor		AO	Total marks available
	1	2	3	4	5	6		
Task 1.2							AO4a	6
Report	<p>Some, limited mathematical concepts and calculations (e.g. estimating, measuring etc) applied appropriately.</p> <p>Response language contains typographical imprecisions which indicate limited proofing or a less structured approach.</p> <p>A digital option considered or attempted as part of response though use may hinder presentation of response.</p>	<p>A range of mathematical concepts and calculations applied with correct solutions achieved.</p> <p>Working may be incorrect or longhand/inefficiently expressed and workings inconsistently shown.</p> <p>Evidence of attempts to follow language conventions, spelling and grammar – response may contain colloquialisms, jargon or incorrect terminology etc.</p> <p>Consideration and use of basic digital options to strengthen response.</p>	<p>Mathematical approaches and concepts applied fully and consistently with consideration of accuracy and checking workings to ensure correct results.</p> <p>English is clear and eloquent throughout response with minimal/no errors. Language used with consideration of end user and industry conventions.</p> <p>All available digital options considered and applied effectively in line with industry standards. Digital techniques used effectively to add value.</p>	AO4b	AO4c			

Guidance for markers

The following evidence must be used to assess performance against the assessment objectives within this task.

- Report – including sources/references

Task 1.3

Indicative content

Typical evidence may include:

Details of the key stages of the project in reference to the chosen environmental technologies to include design, installation, commissioning, system handover.

Optimising work processes and engaging with relevant mathematical/logical thinking. Consideration should be given on how the programme of works is presented to others.

Details of the trades required for each chosen technology including any specialist contractors that may be required for installation of the technologies, for example rainwater harvesting would require plumber, groundworker, electrician.

Details of risks or potential 'pressure points' and how they could be avoided or minimised, for example delays to material orders or lack of qualified and suitable staff to complete key tasks.

Supporting statement detailing current site health and safety requirements, how materials are moved on a construction site.

A list of specialist equipment required to complete all tasks.

Details of proposed waste management plans in line with the Site Waste Management Plans Regulations.

Note: where there is insufficient evidence to award a mark, a zero mark may be given	Band 1 descriptor		Band 2 descriptor		Band 3 descriptor		Band 4 descriptor		AO	Total marks available
	1	2	3	4	5	6	7	8		
Task 1.3									AO1 AO3 AO4a	8
Project plan	<p>Limited approach to plan containing evidence of some of the required elements.</p> <p>There is limited justification for the selection of techniques, resources (e.g. equipment, contractors), methods, and materials (including disposal) to be used. The choices made are not always the most effective or appropriate for the prescribed project brief.</p> <p>Consideration of some health and safety aspects.</p>	<p>Plan contains required elements in logical order with consideration of deadline.</p> <p>Techniques and/or resources (e.g. equipment, contractors), selected from those available to respond to the brief requirements. The choices made are mostly accurate and appropriate for the prescribed project brief.</p> <p>Consideration of all health and safety aspects in limited detail.</p>	<p>Clear evidence of planning consideration of layout.</p> <p>Selection of techniques, resources (e.g. equipment, contractors), methods and materials (including disposal) are accurate, appropriate, supported with some justifications to meeting project brief.</p> <p>Consideration of all health and safety aspects fully.</p>	<p>Logical and clear approach to plan with evidence of a detailed plan that is in line with industry standards and effectively prioritised.</p> <p>There is a detailed and justified approach to the selection of resources (e.g. equipment, contractors), methods and materials (including disposal). The choices made are accurate and appropriate for the prescribed project brief.</p> <p>Consideration of all health and safety aspects fully with relevant reference to impacts, implications etc.</p>						

Note: where there is insufficient evidence to award a mark, a zero mark may be given	Band 1 descriptor				Band 2 descriptor				Band 3 descriptor				Band 4 descriptor				AO	Total marks available
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
Task 1.3																	AO2a	16
Project plan	Some elements of Core knowledge and Core skills referenced within project plan - limited comprehension of knowledge and skills in relation to brief requirements.				Elements of Core knowledge directly highlighted in brief referenced within project plan – knowledge evidenced may have gaps or show some misunderstanding.				Knowledge from across the Core applied and evident in project plan in relation to different elements of project brief.				Knowledge applied consistently throughout project with no technical inaccuracies. Connections between elements of Core knowledge exploited in full ensuring plan effectiveness and demonstrating full understanding.				AO2b	

Guidance for markers

The following evidence must be used to assess performance against the assessment objectives within this task.

- Programme of work
- Supporting statement

Task 1.4

Indicative content

Typical evidence may include:

Details of the candidate's chosen environmental technology and how the selection is appropriate for use in the project in relation to building layout and applicable regulations.

Advantages and disadvantages of chosen technology detailing why it is credible and relevant to this project and the project brief.

Details of the candidate's chosen SMART technology and how it is appropriate for use in the project in relation to building layout and applicable regulations to include SMART heating and SMART lighting controls. Reference should also be made to the advantages of using the SMART controls.

SAMPLE

Note: where there is insufficient evidence to award a mark, a zero mark may be given	Band 1 descriptor		Band 2 descriptor		Band 3 descriptor		AO	Total marks available
	1	2	3	4	5	6		
Task 1.4							AO1	6
Presentation	<p>The presentation lacks structure and does not always follow a logical approach due to ineffective planning.</p> <p>Technique used to deliver the presentation is sometimes effective. However technical information is not always complete and accurate.</p> <p>Terminology used may have inaccuracies and content provided may include grammatical inconsistencies and therefore not clear to the targeted audience.</p>	<p>The presentation is structured and follows a logical approach most of the time in response to the task because of effective planning.</p> <p>Techniques used to deliver the presentation are mostly effective. The technical information provided is accurate most of the time with valid reasoning.</p> <p>Terminology used is mostly accurate with minor errors. The content provided is in the most grammatically correct but does not always consider target audience.</p>	<p>The presentation is detailed, structured and logical in its approach. It is clear that the presentation has been considered in terms of its audience as a result of detailed and effective planning.</p> <p>Techniques used to deliver the presentation are effective with well justified reasoning behind the information provided.</p> <p>Terminology used is accurate and error free. The content provided is clear, grammatically correct and easily understood by the target audience.</p>	AO3	AO4b			

Note: where there is insufficient evidence to award a mark, a zero mark may be given	Band 1 descriptor				Band 2 descriptor				Band 3 descriptor				AO	Total marks available
	1	2	3	4	5	6	7	8	9	10	11	12		
Task 1.4													AO2a	12
Presentation	Theories and concepts relating to the Core knowledge and Core skills conveyed through the presentation - these may not always be accurate or be directly linked to the brief requirements. Communication of concepts and theories is sometimes effective. The delivery of technical information may lack accuracy and clarity for the audience.				Theories and concepts relating to the Core knowledge and Core skills are coherent throughout the presentation to meet the requirements of the brief set. Concepts and theories are communicated effectively most of the time in an appropriate manner for the target audience. There are minor inaccuracies in the delivery of information which causes a lack of clarity in some instances.				Theories and concepts relating to the Core knowledge and Core skills are coherent with clear justifications on how these are applied in response to the brief requirement. Highly effective communication of concepts and theories is appropriate for the target audience. Technical information is presented accurately and delivered with clarity.				AO2b	

Guidance for markers

The following evidence must be used to assess performance against the assessment objectives within this task.

- Presentation materials – e.g. slides, handouts
- Research notes
- Report – including sources/references
- Video recording or presentation
- Assessor observation record

Task 2.1

Indicative content

Typical evidence may include:

A comparison of advantages and disadvantages of both contractors.

Risks to the project.

Recommended a contractor of choice with justifications and factors considered including timing, cost and staff capacity.

How students collaborate to solve the issue.

Structure, layout and flow of email draft (evidence content).

Style of communication both written (draft email) and verbal (discussions).

Each candidate will be awarded marks in terms of both their contribution to the discussion and email draft. As part of this, in awarding marks a judgement will be made on how the candidate has collaborated with other group members in discussions.

Note: where there is insufficient evidence to award a mark, a zero mark may be given	Band 1 descriptor					Band 2 descriptor					Band 4 descriptor					AO	Total marks available
Task 2.1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	AO2a	15
Collaborative problem-solving	<p>Some active contributions made to discussion although may lack logical structure of argument. Ideas put forward may lack some technical accuracy and on occasions limit progress of the task.</p> <p>Communication skills were not always appropriate and would speak over others or levels of engagement with others was low again impacting on progress of the task.</p> <p>Evidence content lacks structure, flow and is limited in how it meets the issues raised in the task. It is not clear that the proposed methods will address the issue.</p>					<p>Actively contributed throughout the task to discussions. Methods proposed in solving the issue were relevant, logical, technically correct and thought through most of the time so progress in the task was made but not always timely.</p> <p>Communication skills are appropriate and are clear most of the time with a willingness to discuss some details in other's contributions that supports progress in the task. Levels of engagement with others was generally consistent throughout.</p> <p>Evidence content is structured, flows and mostly addresses the issues raised in the task. Proposed methods will go some way to addressing these issues in the task and have some form of reasoning to them.</p>					<p>Levels of contributions to discussions were high throughout all points of the task. Contributions and responses to solving the problem were logical, methodical, and well thought through. All technical information was accurate, resulting in effective and timely progress being made.</p> <p>Communication skills are well developed and clear. Asks probing questions of others in the group that brings about details that supports effective progress in the task. Levels of engagement are high with an indication of wanting to take the lead throughout but in a measured way.</p> <p>Evidence content is structured, flows and clearly addresses all issues raised in the task. Proposed methods for addressing the issues are effective and well justified.</p>					<p>AO2b</p> <p>AO3</p> <p>AO5a</p>	

Guidance for markers

The following evidence must be used to assess performance against the assessment objectives within this task.

- Written discussion notes
- Drafted email
- Video recording of discussions
- Assessor observation notes on contributions to discussions

SAMPLE

Task 2.2

Indicative content

Typical evidence may include:

Reflection on effectiveness and success of responses across project tasks.
Considered analysis and evaluation of project outcome.

SAMPLE

Note: where there is insufficient evidence to award a mark, a zero mark may be given	Band 1 descriptor		Band 2 descriptor		Band 3 descriptor		Band 4 descriptor		AO	Total marks available
	1	2	3	4	5	6	7	8		
Task 2.2									AO4b	8
Evaluation	<p>The evaluation does not clearly address how well the project outcome met the brief and lacks clarity and reasoning in places.</p> <p>There is lack of detail on how the project outcome linked to the requirements of the brief successfully or not.</p>	<p>The evaluation addresses how well the project outcome was achieved. There is some reason and justification in how effectively the brief was met.</p> <p>Detail provided on how the project outcome linked to the requirements of the brief with some explanation and reasons.</p>	<p>The evaluation is comprehensive and specifically addresses how well the project outcome was achieved. There is detailed reasoning behind how successfully the project brief was met.</p> <p>Detail provided on how the project outcome linked to the requirements of the brief with detailed explanations and explained reasons.</p>	<p>The evaluation account is comprehensive and specifically addresses how well the project outcome met the requirements of the brief. There is detailed reasoning behind how successfully the project brief was met, what was successful and why.</p> <p>Evaluations made are accurate and reflective of the quality and effectiveness of project outcome.</p>	AO5b					

Guidance for markers

The following evidence must be used to assess performance against the assessment objectives within this task.

- Evaluation account

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