



Higher National Graded Unit specification

General information for centres

This Graded Unit has been validated as part of the HNC Sustainable Building Technology. Centres are required to develop the assessment instrument in accordance with this validated specification. Centres wishing to use another type of Graded Unit or assessment instrument are required to submit proposals detailing the justification for change for validation.

Graded Unit title: Sustainable Building Technology: Graded Unit 1

Graded Unit code: F84F 34

Type of Graded Unit: Project

Assessment Instrument: Case Study

Credit points and level: 1 HN credit at SCQF level 7: (8 SCQF credit points at SCQF level 7*)

**SCQF credit points are used to allocate credit to qualifications in the Scottish Credit and Qualifications Framework (SCQF). Each qualification in the Framework is allocated a number of SCQF credit points at an SCQF level. There are 12 SCQF levels, ranging from Access 1 to Doctorates.*

Purpose: This Graded Unit is designed to provide evidence that the candidate has achieved the following principal aims of the HNC Sustainable Building Technology:

- ◆ To develop study and research skills in the area of sustainable building technology.
- ◆ To develop candidates' ability to undertake planning, development, synthesis and evaluation in the area of sustainable building technology.
- ◆ To develop core skills in learning, career planning, communication, problem solving, IT, numeracy and working with others.
- ◆ To enhance employability through development of the key knowledge and understanding in the context of built and natural environment projects.
- ◆ To develop a firm foundation in the science and technology of sustainable building technology.
- ◆ To apply science and technology to develop environmentally-sensitive methods and systems.
- ◆ To ensure that candidates have a sound appreciation of environmental issues and the concept of sustainability.
- ◆ To ensure that candidates are fully aware of health and welfare at work and safe working practices.

General information for centres (cont)

Recommended prior knowledge and skills: It is recommended that the candidate should have completed or be in the process of completing the following Units relating to the above specific aims prior to undertaking this Graded Unit:

F780 34: Built and Natural Environment Integration

DW1E 34: CAD 2D 1

DW53 34: Construction Materials and Specification

F783 34: Sustainable Building Development: Structure and Fabric

DW4P 33: Building Services: An Introduction

DW3P34: Architectural Procedures and Design

Core Skills: There are opportunities in this Unit to develop the Core Skills of *Problem Solving*, *Numeracy*, *Information and Communication Technology*, and *Communication*, all at SCQF level 6, although there is no automatic certification of Core Skills or Core Skills components.

Assessment: This Graded Unit will be assessed by the use of a case study. The developed case study should provide the candidate with the opportunity to produce evidence that demonstrates they have met the aims of the Graded Unit that it covers.

Administrative Information

Graded Unit code: F84F 34

Graded Unit title: Sustainable Building Technology: Graded Unit 1

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History of changes:

Version	Description of change	Date

Source: SQA

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Higher National Graded Unit specification: instructions for designing the assessment task and assessing candidates

Graded Unit title: Sustainable Building Technology: Graded Unit 1

Conditions of assessment

The candidate should be given a date for completion of the Case Study. However, the instructions for the assessment task should be distributed to allow the candidate sufficient time to assimilate the details and carry out the assessment task. During the time between the distribution of the assessment task instructions and the completion date, assessors may answer questions and provide clarification, guidance and reasonable assistance. The assessment task should be marked as soon as possible after the completion date. The final grading given should reflect the quality of the candidate's evidence at the time of the completion date.

The evidence for the project is generated over time and involves three distinct stages, where each stage has to be achieved before the next is undertaken. Thus any re-assessment of stages must be undertaken before proceeding to the next stage.

If a candidate fails the project overall or wishes to upgrade, then this must be done using a *substantially different* project, ie all stages are undertaken using a new project, assignment, case study, etc. In this case, a candidate's grade will be based on the achievement in the re-assessment, if this results in a higher grade.

Instructions for designing the assessment task

The assessment task is a project. The project undertaken by the candidate must be a complex task, which involves:

- ◆ complex decision making with justification
- ◆ relationships which need to be clarified
- ◆ a context which may be familiar to the candidate

The assessment task must require the candidate to:

- ◆ analyse the task and decide on a course of action for undertaking the project
- ◆ plan and organise work and carry it through to completion
- ◆ reflect on what has been done and draw conclusions for the future
- ◆ produce evidence of meeting the aims which this Graded Unit has been designed to cover

The candidate will be asked to plan, develop and evaluate the application of low/zero carbon technologies to a new-build dwelling to create a building with a high level of sustainability based on a case study brief, which may include an initial, scene-setting, site visit. The candidate should be required to apply suitable technologies to a given design outline which may be in diagrammatic form, or derived from a site visit. The candidate will provide an action planning document, prepare a development plan and evaluate the management and effectiveness in producing the final solutions.

Higher National Graded Unit specification: instructions for designing the assessment task and assessing candidates (cont)

Guidance on grading candidates

Candidates who meet the minimum Evidence Requirements will have their achievement graded as C (competent), or A (highly competent) or B (somewhere between A and C). The grade related criteria to be used to judge candidate performance for this Graded Unit is specified in the following table.

Grade A	Grade C
<p>Is a seamless, coherent piece of work which:</p> <ul style="list-style-type: none"> ◆ has comprehensive evidence for each of the three phases of the project and forms a coherent whole ◆ demonstrates high standards through presentation style, language, accuracy and technical content ◆ demonstrates an accurate and insightful analysis and interpretation of the project brief ◆ demonstrates a systematic approach and a logical progression of ideas and argument ◆ has sought and made good use of a wide range of supporting material ◆ has provided evidence of innovation or dynamism in approach ◆ embodies highly effective integration of knowledge and skills ◆ recognises conflicts and potential drawbacks of ideas ◆ clearly recognises key areas for improvement when reflecting on the proposals relative to the objectives or the action plan ◆ demonstrates independence of thought by successfully completing the stages of the project with infrequent and minimal tutor support 	<p>Is a co-ordinated piece of work which:</p> <ul style="list-style-type: none"> ◆ provides sufficient but minimal evidence for each of the three phases of the project ◆ is produced to the language, style and technical content conveyed for this grading ◆ has occasional inaccuracies and at times offers uneven responses which drift from the project brief ◆ has poorly structured arguments and a report that lacks consistency ◆ has not sought or made use of materials other than those provided ◆ is very conventional in approach and does not demonstrate the depth of consideration offered by the project brief ◆ presents evidence of integration of skills and knowledge but at a basic level ◆ tends to consider ideas and proposals in isolation ◆ assumes the technical solutions proposed are optimal with only superficial reflection on the objectives ◆ Candidate seeks additional tutor intervention to keep the case study on track

The project will be marked out of 100. Assessors will mark each stage of the project, taking into account the criteria outlined. The marks will then be aggregated to arrive at an overall mark for the project. Assessors will then assign an overall grade to the candidate for this Graded Unit based on the following grade boundaries:

- A = 70% — 100%
- B = 60% — 69%
- C = 50% — 59%

Note: the candidate must achieve all of the minimum evidence specified below for each stage of the project in order to achieve the Graded Unit.

Higher National Graded Unit specification: instructions for designing the assessment task and assessing candidates (cont)

Evidence Requirements

The project consists of three stages: planning; developing; and evaluating. The following table specifies the minimum evidence required to pass each stage.

Note: The candidate must achieve **all of the minimum evidence** specified below for each stage of the project in order to pass the Graded Unit.

Project stage	Minimum Evidence Requirements
Stage 1 — Planning 18%	Develop an action planning document to include: <ul style="list-style-type: none"> ◆ the aims of the case study ◆ the identification of the tasks to be undertaken ◆ identification of the research required to fulfil the case study requirements ◆ a time line action plan to manage and complete subsequent stages within the requisite timescale <p><i>The candidate must achieve all of the minimum evidence specified above in order to pass the Planning stage.</i></p>
Project stage	Minimum Evidence Requirements
Stage 2 — Developing 64%	Preparation of a case study report (approximately 2,000 words or equivalent plus a CAD drawing of the proposed development) that includes: <ul style="list-style-type: none"> ◆ aims and objectives of the development ◆ identification and collection of significant data relevant to the applied technologies ◆ the application of technologies that are clearly related to the case study brief and any relevant constraints ◆ presentation of evidence to support claims of sustainability (eg reports, drawings, schedules, calculations, specifications) ◆ development notes for the builder ◆ consideration of the Health and Safety implications of installing the technologies ◆ presentation in a style appropriate to a stated client type <p>The case study report should include:</p> <ul style="list-style-type: none"> ◆ Introduction including the aims and objectives ◆ Details of the sustainability technologies employed ◆ Justification for the applied technologies ◆ Key issues for the builder/developer <p>Candidates may be required to answer questions from the assessor to validate the evidence.</p> <p><i>The candidate must achieve all of the minimum evidence specified above in order to pass the Developing stage.</i></p>

Higher National Graded Unit specification: instructions for designing the assessment task and assessing candidates (cont)

Project stage	Minimum Evidence Requirements
Stage 3 — Evaluating 18%	Preparation of an evaluation submission which: Reflects on Stage 1 and 2 achievements <ul style="list-style-type: none"> ◆ An evaluation of the case study progress compared to the time line action plan ◆ An evaluation of the case study outcome against the objectives ◆ Positive aspects of the case study ◆ Areas for improvement ◆ Identification of key issues to inform future similar tasks <p><i>The candidate must achieve all of the minimum evidence specified above in order to pass the Evaluating stage.</i></p>

Higher National Graded Unit specification: instructions for designing the assessment task and assessing candidates (cont)

Support notes

The candidate may be asked to plan, develop and evaluate the application of low/zero carbon technologies to a new-build dwelling to create a building with a high degree of sustainability. The candidate should be required to demonstrate how suitable technologies may be applied to a new building. This might be either at the design stage as part of the iterative design process in which case the candidate may be provided with the concept outline in diagrammatic form, or the study could be based around buildings in construction, in which case the candidate would indicate how the sustainability of the design could have been improved by the application of technology. These will entail the candidate preparing proposals for the use of specific building fabrics and services with a justification for their incorporation in terms of their sustainability. Hence the case study may include a visit to a proposed building site.

The case study could be enhanced by discussions with a client to elicit development constraints indicative levels of sustainability, and client preferences. This could then be followed by the preparation of a draft proposals followed by a return visit to confirm the suitability of proposals for the selected technologies and collect relevant information for development notes. This could culminate in a report that details the technology design with a justification of its sustainability and which may include outline costs. The development notes need not be comprehensive but should illustrate the candidates' ability to recognise significant issues. The brief should ensure candidates recognise the iterative nature of the process of applying technology to a design as part of the architectural process.

The candidates could work independently or within the context of a typical working environment, where it may be possible for candidates to co-operate, for example, in the collection of site data. However, the planning, development and evaluation should be undertaken individually.

Candidates may be encouraged to complete an activity log or to keep a diary of the progress and tasks completed to facilitate the reflective component. It is recommended that there are regular scheduled meetings between the tutor and the candidates to review progress, and to provide appropriate guidance. The guidance must not be such that it influences the final grading, but, for example, pointing out to the candidate the consequences of significant deviation from their plan during the development phase would be legitimate. It is desirable for notes of the meetings to be made for the purposes of clarity and to further simulate the working environment. The notes should be agreed upon by both parties.

Tutor questions may be used to ascertain the candidate's understanding of the issues contained in the case study report and to probe the validity of the applied technologies.

Disabled candidates and/or those with additional support needs

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering whether any reasonable adjustments may be required. Further advice can be found on our website www.sqa.org.uk/assessmentarrangements

General information for candidates

Unit Title: Sustainable Building Technology: Graded Unit 1

Graded Unit code: F84F 34

This is a single credit Graded Unit at SCQF level 7: (8 SCQF credit points at SCQF level 7).

This is a project-based Graded Unit and will be assessed by a case study, to be completed towards the end of your course. It is designed to assess your ability to integrate and apply Knowledge and Skills from the mandatory Units of your course in order to meet the principal aims of the HNC Sustainable Building Technology.

You will be asked to plan, develop and evaluate the application of low/zero carbon technologies to a new-build dwelling to create a building with a high degree of sustainability. This might be based around information from outline building designs or based on information from a site visit to a development site. In either case the study will require you to provide an action planning document, propose and detail technological improvements with justifications, and evaluate your management and effectiveness in producing the final solutions in a report format. You will be given a high degree of autonomy during all stages of the case study, however your tutor is available for guidance and support as and when required. After submission of your case study report, your tutor may interview you to probe your understanding of the issues contained in your report and the validity of your proposals.

The project (case study) will be assessed in three stages: planning, developing and evaluating. You will need to pass the planning stage of your case study before you can progress to the developing stage, and pass the developing stage before you continue to the evaluating stage.

The project will be marked out of 100. To pass you must achieve 50% of the total marks and all the minimum evidence requirements for each of the three phases of the work.

Assessors will mark each stage of the project, taking into account the criteria outlined. The marks will then be aggregated to arrive at an overall mark for the project. Assessors will then assign an overall grade to the candidate for this Graded Unit based on the following grade boundaries:

A = 70% — 100%
B = 60% — 69%
C = 50% — 59%

There are opportunities in this Unit to develop your Core Skills in *Problem Solving*, *Numeracy*, *Information and Communication Technology* and *Communication*, all at SCQF level 6.