Higher National Graded Unit specification

General information for centres

This Graded Unit has been validated as part of the HND Green 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: Green Technology: Graded Unit 2

Graded Unit code: F3PY 35

Type of Graded Unit: Project

Assessment Instrument: Case Study

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

**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 National 1 to Doctorates.*

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

- develop study and research skills in the area of renewable resources and sustainable technologies for rural areas
- further develop transferable skills including the Core Skills
- develop candidates' ability to undertake planning, development, synthesis and evaluation in the area of renewable resources and sustainable technologies for rural areas
- develop candidates' knowledge and understanding of the application of physical and biological sciences to the development and use of sustainable technologies and renewable resources in rural areas
- develop a range of scientific, technical and practical laboratory skills relating to the development and use of sustainable technologies and renewable resources in rural areas
- develop candidates' knowledge and understanding of the environmental issues, economic considerations and regulatory factors that influence the development and use of sustainable technologies and renewable resources in rural areas
- prepare candidates for employment at a technical or supervisory level with companies working in the areas of renewable energy, specialised plant products, crop breeding, pollution control and waste management or with environmental organisations and government departments
- prepare candidates for progression to degree level study in Green Technology and related areas

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:

- F1YK 34 *Renewable Energy Systems: Microgeneration Systems*
- F2G9 35 *Farm Scale Renewable Energy*
- F32B 35 *Energy Performance of Buildings*
- F2GA 35 *Land Use Systems*
- F2E5 35 *Agroecosystems: Energetic Efficiency*
- F21H 35 *Biomass: Technologies for Energy and Bioproducts*
- F2EH 35 *Transport towards a Sustainable Future*
- DV08 35 *Statistics for Science 2*
- F1RJ 34 *Business Management: An Introduction*

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

Context for delivery: If this Unit is delivered as part of a Group Award, it is recommended that it should be taught and assessed within the subject area of the Group Award to which it contributes.

The Assessment Support Pack (ASP) for this unit provides assessment and marking guidelines that exemplify the national standard for achievement. It is a valid, reliable and practicable assessment. Centres wishing to develop their own assessments should refer to the ASP to ensure a comparable standard. A list of existing ASPs is available to download from SQA's website (**http://www.sqa.org.uk/sqa/46233.2769.html**).

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 she/he has met the aims of the Graded Unit that it covers.

Administrative Information

Graded Unit code: F3PY 35

Graded Unit title: Green Technology: Graded Unit 2

Original date of publication: August 2008

Version: 02

History of changes:

Version	Description of change	Date
02	Update of Conditions of Assessment	Jul 2018

Source: SQA

© Scottish Qualifications Authority 2008, 2018

This publication may be reproduced in whole or in part for educational purposes provided that no profit is derived from reproduction and that, if reproduced in part, the source is acknowledged.

SQA acknowledges the valuable contribution that Scotland's colleges have made to the development of Higher National qualifications.

Additional copies of this Graded Unit specification if sourced by the Scottish Qualifications Authority can be purchased from the Scottish Qualifications Authority. Please contact the Customer Contact Centre for further details, telephone 0345 279 1000.

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

Graded Unit title: Green Technology: Graded Unit 2

Conditions of assessment

The candidate should be given a date for completion of the Practical Assignment. 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, provide clarification, guidance and reasonable assistance.

Reasonable assistance is the term used by SQA to describe the difference between providing candidates with some direction to generate the required evidence for assessment and providing too much support which would compromise the integrity of the assessment. Reasonable assistance is part of all learning and teaching processes.

In relation to the assessment of Higher National Project-based Graded Units, assessors may provide advice, clarification, and guidance during the time between the distribution of the project instructions and the completion date, ie at each stage of the project.

Remediation allows an assessor to clarify candidate responses, either by requiring a written amendment or by oral questioning, where there is a minor shortfall or omission in evidence requirements. In either case, such instances must be formally noted by the assessor, either in writing or by recording, and be made available to the internal and external verifier.

In relation to Higher National Project-based Graded Units, candidates must be given the opportunity for remediation at each stage of the project.

The evidence for a Higher National Project-based Graded Unit is generated over time and involves three distinct stages, each of which has to be achieved before the next is undertaken. This means that any re-assessment of stages must be undertaken before proceeding to the next stage. The overall grade is derived from the total number of marks *across all* sections, and should reflect the ability of the candidate to work autonomously and the amount of support required. In relation to Higher National Project-based Graded Units, candidates who have failed any stage of the project and have been unable to provide the necessary evidence through remediation must be given the opportunity for reassessment of that stage.

Any candidate who has failed their graded unit or wishes to upgrade their award must be given a re-assessment opportunity, or in exceptional circumstances, two re-assessment opportunities. In the case of project-based graded units, this must be done using a substantially different project.

The final grading given must reflect the quality of the candidate's evidence at the time of the completion of the graded unit. Candidates must be awarded the highest grade achieved — whether through first submission or through any re-assessment, remediation, and/or reasonable assistance provided.

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

Graded Unit title: Green Technology: Graded Unit 2

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:

- variables which are complex or unfamiliar
- relationships which need to be clarified
- a context which may be familiar or unfamiliar 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 a proposal for reducing the environmental impact of an organisation or site based on a case study brief and which may include an initial scene-setting site visit. The scenario for the case study must focus on the principal aims of the HND course and the need to demonstrate an ability to integrate knowledge and skills across the defined mandatory Units of the award. 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
Is a seamless, coherent piece of work which: ♦ 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	Is a co-ordinated piece of work which: ♦ provides evidence for each of the three phases of the project ♦ is produced to the language, style and technical content conveyed for this grading ♦ responds to project aims and objectives ♦ introduces ideas and arguments ♦ uses materials provided on course ♦ is conventional in approach ♦ presents evidence of integration of skills and knowledge with basic links ♦ considers ideas and proposals in isolation ♦ assumes the technical solutions proposed are optimal and applies superficial reflection on the objectives ♦ candidate seeks additional tutor intervention beyond reasonable assistance 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: ♦ the aims of the case study ♦ the identification and justification 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 *The candidate must achieve all of the minimum evidence specified above in order to pass the Planning stage.*
Stage 2 — Developing 64%	Preparation of a case study report (approximately 2,000 words or equivalent) that includes: ♦ strategic and operational objectives ♦ identification and, where appropriate, quantification of development constraints ♦ identification and collection/collation of significant data ♦ presentation of evidence (eg reports, drawings, schedules, calculations, specifications) to justify proposal(s) ♦ consideration of financial, legal and Health and Safety implications ♦ rationale and justification for the proposal(s) The case study report should include: ♦ contents page ♦ executive summary ♦ evidence for the proposal ♦ recommendations ♦ conclusions ♦ acknowledgements (if appropriate) ♦ references Candidates may be required to answer questions from the assessor to validate the evidence. *The candidate must achieve all of the minimum evidence specified above in order to pass the Developing stage.*

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: ♦ critical evaluation of the case study progress compared to the time line action plan ♦ critical evaluation of the case study findings against the objectives ♦ positive aspects of the case study ♦ areas for improvement ♦ identification of key issues to inform future similar tasks *The candidate must achieve all of the minimum evidence specified above in order to pass the Evaluating stage.*

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

Support notes

The candidate may be asked to develop a plan for reducing the environmental impact of an organisation or site. This could entail the candidate preparing a development plan in relation to the case study brief details, or after an initial scene-setting site visit.

Hence the case study may include a scene-setting site visit, followed by the development of a case study plan. In turn this could lead to a return visit to collect relevant data for subsequent analysis and culminate in a report that identifies a development plan that may include features such as the establishment of a renewable energy scheme. The plan could be costed and/or include consideration of the potential alternative developments within a given budget.

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 candidates' understanding of the issues contained in the case study report and to probe the validity of the proposal.

Equality and inclusion

This graded unit specification has been designed to ensure that there are no unnecessary barriers to learning or assessment. For information on these, please refer to the SQA document *Guidance on Assessment Arrangements for Equality and inclusion*, which is available on SQA's website: **www.sqa.org.uk**.

General information for candidates

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

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 HND Green Technology.

You will be asked to plan, develop and evaluate a proposal for reducing the environmental impact of an organisation or site based on a case study brief and which may include an initial scene-setting site visit. This will require you to provide an action planning document, prepare a development plan 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 proposal.

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