

Higher National Unit Specification



General information for centres

Unit title: Environmental Auditing of Buildings

Unit code: F781 35

Unit purpose: This Unit addresses the requirements of environmental auditing in the context of buildings. These requirements include information collection, analysis and interpretation to assess the sustainability credentials of new and existing buildings measured against best practice. It develops an awareness of environmental standards and auditing methodologies.

On completion of the Unit the candidate should be able to:

- 1 Evaluate statutory and voluntary methods for assessing the environmental quality of built environment projects and existing buildings.
- 2 Evaluate a building design for its environmental impact.
- 3 Evaluate an existing building for its environmental impact.

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 Access 1 to Doctorates.*

Recommended prior knowledge and skills: Prior knowledge or skills are not essential for this Unit. However, it will be beneficial for candidates to have a basic knowledge of the way in which a system or an idea can be objectively audited.

Core Skills: There may be opportunities to develop Core Skills in this Unit, for example, there are opportunities to develop both *Numeracy* and *Communications* to SCQF level 6. However, 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.

Assessment: The assessment of this Unit can reflect the teaching approach taken by a particular centre. Outcomes 1, 2 and 3 could be assessed separately in the context of their areas of influence upon Environmental Auditing of Buildings, using an assignment or a closed-book in-class examination with extended response questions or a multiple-choice examination with short response questions based upon case studies of new and existing buildings.

Higher National Unit specification: statement of standards

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The sections of the Unit stating the Outcomes, knowledge and/or skills, and Evidence Requirements are mandatory.

Where evidence for Outcomes is assessed on a sample basis, the whole of the content listed in the knowledge and/or skills section must be taught and available for assessment. Candidates should not know in advance the items on which they will be assessed and different items should be sampled on each assessment occasion.

Outcome 1

Evaluate statutory and voluntary methods for assessing the environmental quality of built environment projects and existing buildings

Knowledge and/or Skills

- ◆ Sustainability assessments
- ◆ Directives, planning policies and building regulations associated with buildings and built environment projects
- ◆ Environmental assessment methodologies for a new building project
- ◆ Environmental assessment methodologies for an existing building

Evidence Requirements

Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can:

- ◆ explain two reasons for carrying out an objective assessment of the sustainability of the built environment
- ◆ critically evaluate the effectiveness of two pieces of legislation that influence sustainability assessment methodologies
- ◆ critically assess the procedures of one method of assessing the sustainability credentials of a building project
- ◆ appraise one method of assessing the sustainability credentials of an existing building

Assessment Guidelines

This Outcome is assessed on its own. It is suitable for a range of assessment methods including an assignment with a series of related questions, a closed-book in-class examination with extended response questions or a multiple-choice examination with short response questions.

Higher National Unit specification: statement of standards (cont.)

Unit title: Environmental Auditing of Buildings

Outcome 2

Evaluate a building design for its environmental impact

Knowledge and/or Skills

- ◆ Building environmental assessment methods
- ◆ Local environmental impacts of buildings
- ◆ Global environmental impacts of buildings

Evidence Requirements

Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can:

- ◆ explain the potential local and global environmental impacts of a newbuild
- ◆ assess a newbuild for its environmental impact using a recognised assessment method

Assessment Guidelines

Outcome 2 may be assessed using a report of an assignment in which the candidate assesses a building design. This submission is to be a report of approximately 1,500 words, supported by graphical material and appropriate building design sustainability evaluation criteria.

Higher National Unit specification: statement of standards (cont.)

Unit title: Environmental Auditing of Buildings

Outcome 3

Evaluate an existing building for its environmental impact

Knowledge and/or Skills

- ◆ Management factors
- ◆ Operational factors
- ◆ Building factors
- ◆ Assessment methods for existing buildings

Evidence Requirements

Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can:

- ◆ explain the influence of management, operation and building factors on the environmental performance of an existing building
- ◆ assess the environmental performance of an existing building using a recognised method

Assessment Guidelines

Outcome 3 may be assessed using a report of an assignment in which the candidate assesses an existing building. This submission is to be a report of approximately 1,500 words, supported by graphical material and appropriate building evaluation criteria.

Administrative Information

Unit code: F781 35
Unit title: Environmental Auditing of Buildings
Superclass category: TA
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History of changes:

Version	Description of change	Date

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Higher National Unit specification: support notes

Unit title: Environmental Auditing of Buildings

This part of the Unit specification is offered as guidance. The support notes are not mandatory.

While the exact time allocated to this Unit is at the discretion of the centre, the notional design length is 40 hours.

Guidance on the content and context for this Unit

Environmental auditing in sustainable building design is a key requirement in improving buildings quality in the immediate and long-term future. Without objective evaluation there will be no useable evidence of improvement. There are three elements to the Unit. Firstly, the challenge of establishing effective methods of evaluating sustainability in buildings. Secondly, the building industry factors that contribute to impacts upon the global natural environment. And, finally, the means by which sustainable building design and construction strategies can reduce negative effects upon the local environment and upon the health and wellbeing of building occupants.

Outcome 1 considers a range of methods of auditing in this context. The background political drivers such as European Union Directives (for example, the Energy Performance in Buildings Directive) and national government regulation and legislation (for example, mandatory SAP and SBEM assessments) will be important parts of Outcome 1 teaching and learning. Further topics will include the influence of sustainability targets on planning authorities, for example the Merton Rule, the group of methodologies known as BREEAM from the Building Research Establishment, including the BREEAM Code for Sustainable Homes, Green Homes Design Guide etc. For existing buildings, Reduced Data SAP, Home Information Packs and Energy Performance Certificates will be important areas of Outcome 1 studies.

In Outcome 2 candidates will take the difficulties and challenges set out by the need for reliable and effective auditing methodologies to the specific context of a new building project. The learning topics may include commissioning strategies for new buildings to ensure optimum energy efficiency of mechanical and electrical services, low impact or low embodied energy construction materials, newbuild impact and the use of building materials that are appropriate to healthy living, natural lighting and ventilation, surface and interstitial condensation and harmful materials in the building fabric. Availability of water for buildings is variable in the UK and the challenge is to improve water conservation in new buildings using effective methods of encouragement and assessment of performance. These will include roof rainwater harvesting and minimising waste from public supply leaks. Outcome 2 will also look at land use for buildings and the effect that this has on the environment, for example in flood events. Evaluating surface water run-off is influencing planning authority reaction to hard landscaping in building projects and alternative sustainable urban drainage systems (SUDS) are receiving encouragement.

Outcome 3 focuses on assessing the impact of existing buildings upon the global environment. These impacts include the energy use monitoring and targeting, the building design factors of older premises, public transport availability, waste management strategies, the ozone depletion potential associated with refrigerants and similar materials used in building cooling and fire suppression systems.

Higher National Unit specification: support notes (cont)

Unit title: Environmental Auditing of Buildings

Guidance on the delivery and assessment of this Unit

The delivery of this Unit will be by a range of teaching methods, including formal lectures, tutorial discussions, workshop experimental exercises, built environment design strategy discussions and construction practicals. In addition, visits to building project or other relevant sites or visits from industry practitioners are encouraged. Details on the approaches to assessment are written into the Evidence Requirements and Assessment Guidelines in the Statement of Standards section, which should be read carefully in advance of candidate assessment.

Opportunities for developing Core Skills

In compiling the reports for Outcomes 2 and 3 candidates will have an opportunity to develop the Core Skill of *Communication* to SCQF level 6. This will typically be the written component, but opportunities may be created to develop Oral Communication by utilising oral presentation of findings to peer groups.

In assessing the environmental impact of a building in Outcome 2, which will entail the use of design data, evaluations of operating parameters and the numerical specification of building components, there will be ample opportunity to develop the Core Skill of *Numeracy* at SCQF level 6 in this Unit (both components).

It may be possible to provide opportunities to develop other Core Skills such as *Working with Others*. For example candidates may be asked to investigate the legislative provisions associated with environmental performance of buildings as a group activity with information being pooled. Similarly opportunities to develop *Information and Communication Technology* skills may be present through the use of software packages for environmental assessment. However, these opportunities may be limited compared to those for *Communication* and *Numeracy*.

Open learning

This Unit could be delivered by distance or flexible learning. Although it would be beneficial for the candidate to attend the centre for supervised assessment, this could be done in off-centre locations with appropriate arrangement.

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: Environmental Auditing of Buildings

This Unit has been written to provide you, the candidate, with an understanding of the factors of influence in sustainable building design and construction and a broad understanding of the ways in which the sustainability of the built environment can be objectively evaluated. The main learning topics may include Directives associated with building design and construction, building regulations and sustainability, planning objectives and sustainability, SAP, BREEAM, environmental impact assessment, energy use in building materials production, transport modes for building materials to point of use, air and water pollution, waste management, water conservation strategies, land use and ecological impact from building projects, health and wellbeing of building occupants and the building materials industry workforce and the global warming potential from building services refrigerants. The Unit is intended for candidates targeting a career in, or associated with, the built environment sector.

On successfully completing the Unit you should be able to:

- 1 Critically evaluate statutory and voluntary methods for assessing the environmental quality of built environment projects and existing buildings.
- 2 Evaluate a building design for its environmental impact.
- 3 Evaluate an existing building for its environmental impact.

The Unit is likely to be delivered using lectures, site visits, practicals, group work, investigation, including the use of technical journals and a range of other written and electronic media, and building project case studies.

The formal assessment for this Unit could consist of a single assignment project, or of separate pieces of work related to each Outcome to become evidence of competence on your part. The assessments will be conducted under controlled conditions of timescale and other aspects of education quality. You should expect to have to submit work at the end of relevant Outcome teaching or at the end of the Unit teaching as a whole.

There are opportunities within the study and assessment work of this Unit for the development of Core Skills particularly in relation to *Communication* and *Numeracy*. For example the assessed work for Outcome 3 of the Unit will be based upon Case Study of an existing building or site and the study will require you to present and evaluate both qualitative and quantitative data. However, the Core Skills developed are not specifically assessed and certificated.