



## Higher National Unit specification

### General information for centres

**Unit title:** Construction: New and Sustainable Building Technologies

**Unit code:** F8P1 34

**Unit purpose:** This Unit is designed to highlight the purpose and uses of new and emerging technologies and practices, in relation to sustainability of building systems and materials within domestic, commercial and industrial properties.

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

- 1 Demonstrate knowledge and understanding of new and sustainable building systems.
- 2 Demonstrate knowledge and understanding of new and sustainable building materials.

**Credit points and level:** 0.5 HN credit at SCQF level 7: (4 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.*

**Recommended prior knowledge and skills:** Access to this Unit will be at the discretion of the centre. It would be beneficial if candidates have successfully completed any Professional Development Award (PDA) at SCQF level 6 in a Construction Craft or have the equivalent level of industrial experience and prior learning.

**Core Skills:** There are opportunities to develop the Core Skills of *Communication, Numeracy, Problem Solving* and *Information and Communication Technology* at SCQF level 5 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. This Unit was developed as part of the Professional Development Award in Carpentry and Joinery at SCQF level 7 and is aimed at candidates following a career in a Construction and receiving complementary industrial experience.

## General information for centres (cont)

**Unit title:** Construction: New and Sustainable Building Technologies

**Assessment:** Candidates may be assessed on an Outcome by Outcome basis or, by a single holistic assessment which covers both Outcomes. Please note that candidates must achieve all the minimum evidence specified for each Outcome in order to pass this Unit.

Assessment will take the form of an open-book assignment where candidates are given the task of researching the use of building/component systems and materials, with specific regard to new technology and/or sustainability and eco-friendly use. It is recommended that candidates formulate a short computer generated report, backed up by technical information, justifying their choices for both the system(s) and the material(s) chosen.

The assessment instrument used should follow the assessment guidelines specified for each of the Outcomes. Centres may use the instruments of assessment which they consider most appropriate, but are advised to use as a guide the exemplar material in the Carpentry and Joinery Training and Assessment Programme (TAP) SCQF level 7 which has been developed centrally by SQA. Any other instruments of assessment used must be comparable to the TAP 7.

Accurate records should be made of the assessment instruments used showing how evidence is generated for each Outcome and given marking schemes, checklists and recorded candidate feedback. Records of candidates' achievements should be retained. These records must be made available for external verification.

## **Higher National Unit specification: statement of standards**

**Unit title:** Construction: New and Sustainable Building Technologies

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

### **Outcome 1**

Demonstrate knowledge and understanding of new and sustainable building systems

#### **Knowledge and/or Skills**

- ◆ Building types
- ◆ Component parts of buildings
- ◆ New and emerging construction technology
- ◆ Sustainability
- ◆ Building or component systems
- ◆ Interpretation of technical data
- ◆ Appropriate use of technical data

#### **Evidence Requirements**

Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can formulate a report, which details technical information on the construction of a new and/or sustainable building or component system, for a building specifically designed for domestic or commercial or industrial use. The candidate, with tutor guidance, can decide on an appropriate building or component system.

Evidence will be generated in open-book, controlled, unsupervised conditions.

### **Outcome 2**

Demonstrate knowledge and understanding of new and sustainable building materials

#### **Knowledge and/or Skills**

- Constituent materials for building or component systems
- New and emerging materials
- Interpretation of technical data
- Appropriate use of technical data
- Sustainability

#### **Evidence Requirements**

Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can formulate a report, which details technical information on the new and/or sustainable materials used in a building or component system, for a building specifically designed for domestic or commercial or industrial use. The candidate, with tutor guidance, can decide on an appropriate building or component system.

Evidence will be generated in open-book, controlled, unsupervised conditions.

## **Higher National Unit specification: statement of standards (cont)**

**Unit title:** Construction: New and Sustainable Building Technologies

### **Assessment Guidelines for all Outcomes**

Although candidates may be assessed on an Outcome by Outcome basis, a single holistic approach to assessment which covers both Outcomes would be recommended. This could be based on a single case study for a specific building (or part thereof).

Assessment will take the form of an open-book assignment where candidates are given the task of researching the use of building/component systems and materials, with specific regard to new technology and/or sustainability and eco-friendly use. It is recommended that candidates formulate a short computer generated report, backed up by technical information, justifying their choices for both the system(s) and the material(s) chosen.

As a guideline the candidate report should be the equivalent of approximately 500 words and should cover all Knowledge and/or Skills with a focus on either new technology, sustainability or both.

Centres are recommended to refer to the Carpentry and Joinery TAP at SCQF level 7 as a guide and a benchmark.

## Administrative Information

**Unit code:** F8P1 34

**Unit title:** Construction: New and Sustainable Building Technologies

**Superclass category:** TE

**Original date of publication:** August 2010

**Version:** 01

### History of changes:

Version	Description of change	Date

**Source:** SQA

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## Higher National Unit specification: support notes

### Unit title: Construction: New and Sustainable Building Technologies

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 20 hours.

### Guidance on the content and context for this Unit

This Unit has been developed as a mandatory Unit in the Professional Development Award (PDA) in Carpentry and Joinery at SCQF level 7 but would be suitable for any of the construction crafts. It has been designed for experienced crafts persons, working in the construction industry. It is recommended that candidates should have successfully completed a Professional Development Award in a Construction Craft, eg Carpentry and Joinery at SCQF level 6 and the associated Training and Assessment Programme (TAP) for the SVQ level 3 in that particular Craft.

This Unit is intended to further candidate's careers in the construction industry by developing their competence and improving their knowledge of new and sustainable building systems and materials. It will allow them to gain a working appreciation of how and why new technologies and sustainable buildings and materials are both preferable and essential in modern building design and construction.

To cover various aspects of the underpinning knowledge and skills relating to sustainable building systems and materials, tutors may consider covering — as a good starting point — some or all of the following subjects in appropriate depth:

- ◆ planning site operations;
- ◆ ground clearing and stacking/reuse of materials;
- ◆ alternative foundations for different building types;
- ◆ substructure building systems and materials;
- ◆ dampproofing and ventilation;
- ◆ superstructure building systems and materials;
- ◆ pitched and flat roof systems and finishing materials;
- ◆ integral insulation systems and materials;
- ◆ joisting, flooring systems and materials;
- ◆ internal partition systems and materials;
- ◆ window types and materials;
- ◆ glazing types and coatings;
- ◆ door types and materials;
- ◆ plaster, paint and other internal finishes;
- ◆ curtain walling and external cladding;
- ◆ heating, lighting, ventilation systems;
- ◆ waste management and recycling systems.

New and emerging technologies may also be considered as appropriate topics for tutors to cover or appropriate topics for candidates to base their report on. This will be at the discretion of the tutor to discuss and agree with the candidate.

Health and Safety and Sustainability are integral and key to the Construction Industry, therefore throughout the Unit emphasis will be placed, where appropriate, on the application of Health and Safety and Sustainability. Safe working practices should be looked at in accordance with current safety codes of practice and regulations. Sustainability should include reference to criteria affecting sustainability, the possible impact on the environment of not implementing sustainability and, the legislation promoting sustainability.

## **Higher National Unit specification: support notes (cont)**

### **Unit title:** Construction: New and Sustainable Building Technologies

It may therefore assist candidates overall awareness of ‘sustainability’ if they are directed to the most current information. At the time of writing this includes such sources as: National Government Action on Climate Change; Local Authority Planning; Considerate Constructors Scheme, Forestry Stewardship Council; BREEAM — Environmental Assessment Methods for Building; Building Research Establishment; Zero Carbon Hub and the UK Green Building Council, amongst others.

Where feasible, centres should also incorporate modern methods of construction used in industry. Candidates should be made aware of current industry practices and emerging practices and, where appropriate, technology which may become conventional in the future.

### **Guidance on the delivery and assessment of this Unit**

As part of the Professional Development Award (PDA) in Carpentry and Joinery at SCQF level 7, or any other award, this Unit may be delivered in a sequence suitable to individual candidates and centres. When completing this Unit as part of the PDA it is recommended that, where possible, opportunity is taken to integrate aspects of Constructional Technical Communication Skills (DW4D 34).

Although candidates may be assessed on an Outcome by Outcome basis, a single holistic approach to assessment which covers both Outcomes may suit best. This could be based on a single case study for a specific building (or part thereof).

Outcomes 1 and 2 may take the form of an open-book assignment where candidates are given the task of researching the use of building/component systems and materials, with specific regard to sustainability and eco-friendly use. Candidates could be tasked to formulate a short computer generated report, backed up by technical information, justifying their choices for both the system(s) and the material(s) chosen.

Tutors would be expected to agree an appropriate topic, give candidates guidelines, set submission dates and support candidates where appropriate. Candidates would largely be expected to carry out their research and report generation in their own time. A structured tutorial approach would be one method of ensuring candidates receive sufficient guidance and support throughout.

Candidates will find it helpful to use basic computer applications to assist in compiling evidence for the assignment. For example: some technical information could be interpreted and produced on a spreadsheet — where a basic knowledge of appropriate formulae may be beneficial, whereas the justification of choices may be written up on a word processing package.

Centres may use the instruments of assessment which they consider to be the most appropriate, but are advised to use as a guide the exemplar material in the Carpentry and Joinery Training and Assessment (TAP) at SCQF level 7 which has been developed centrally by SQA. Any other instruments of assessment used must be comparable to the TAP 7.

If feasible, site visits or information about modern and potential future methods of construction would be beneficial. This approach could be used to enhance the candidate’s experience and understanding of how their skills and knowledge might be applied in real industry situations.

## Higher National Unit specification: support notes (cont)

**Unit title:** Construction: New and Sustainable Building Technologies

### Opportunities for developing Core Skills

There are opportunities to develop the Core Skill of *Communication* at SCQF level 5 in this Unit through student centred learning packs for use in the teaching and learning of Outcomes 1 and 2 along with formative assessment. Opportunities will also arise where candidates will have to interpret specifications and technical data relating to building systems, components and materials.

Outcomes 1 and 2 will also provide opportunities to develop skills in *Information and Communication Technology* at SCQF level 5 through internet research and the use of word processing and spreadsheet packages to interpret and collate technical information. Development of skills in *Numeracy* at SCQF level 5 and also *Problem Solving* at SCQF level 5 would both be possible within these activities.

Each of these, in part, can be covered during the teaching and learning process and in various Outcomes, as outlined in the grid below.

Core Skill	SCQF level	O1	O2
Communications	5	✓	✓
Information and Communication Technology	5	✓	✓
Numeracy	5	✓	✓
Problem Solving	5	✓	✓

### Open learning

This Unit could be delivered by distance learning. However, it would require planning by the centre to ensure the sufficiency and authenticity of candidate evidence.

To keep the administrative burden to a minimum, it is recommended that a single assessment be used to cover the requirements for Outcomes 1 and 2. This may be based on a single case study for distance learning candidates.

### 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](http://www.sqa.org.uk/assessmentarrangements)



## General information for candidates

### Unit title: Construction: New and Sustainable Building Technologies

This Unit has been designed to further your career in the construction industry by developing your competence and improving your knowledge of new and sustainable building systems and materials. It has been written as part of the Professional Development Award (PDA) in Carpentry and Joinery at SCQF level 7 but is suitable for someone with experience in any of the construction crafts working in industry.

The Unit will allow you to gain a working appreciation of how and why new technologies and sustainable buildings and materials are both preferable and essential in modern building design and construction.

On completion of this Unit you will be able to:

- ◆ demonstrate knowledge and understanding of new and sustainable building systems
- ◆ demonstrate knowledge and understanding of new and sustainable building materials

Outcomes 1 and 2 will allow you to formulate ideas on the sustainability factors relevant to building component systems and materials choice. Assessment will take the form of an open-book assignment where you are given the task of researching the use of building/component systems and materials, with specific regard to new technologies and/or sustainability and eco-friendly application. You will formulate a short computer generated report, backed up by technical information, justifying your choices for both the system(s) and the material(s) chosen.

There are opportunities within the Unit to develop parts of the four Core Skills listed. Each of these, in part, can be covered during the teaching and learning process and in various Outcomes, as outlined in the grid below.

Core Skill	SCQF level	O1	O2
Communications	5	✓	✓
Information and Communication Technology	5	✓	✓
Numeracy	5	✓	✓
Problem Solving	5	✓	✓

There is no automatic certification of Core Skills or Core Skills components.

If you successfully complete this Unit and the full PDA at SCQF level 7, you will not only have advanced your craft skills, but will also automatically receive some credit for your achievement of the PDA if you progress on to the HNC Construction.