

SQA Advanced Unit Specification

General information for centres

Unit title: Building Maintenance Technology

Unit code: HR44 47

Unit purpose: This Unit is designed to enable candidates to gain knowledge and understanding of the process of investigating and diagnosing the cause of building defects and providing possible solutions to these defects. The unit covers the common defects in buildings and includes the survey of an appropriate building for defects and a repair strategy.

On completion of the Unit candidates should be able to:

- 1 Describe the investigation, diagnosis and possible cures for building defects.
- 2 Survey a building and prepare a report outlining a repair strategy.

Credit points and level: 1 SQA 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 National 1 to Doctorates.*

Recommended prior knowledge and skills: It would be a distinct advantage for candidates to have a basic knowledge and understanding of construction, although this is not essential. Possession of basic knowledge and understanding may be evidenced by possession of an appropriate Higher award.

Core Skills: There are opportunities to develop the Core Skills of Communication, Problem Solving, Working with Others, 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.

Assessment: The assessment of this Unit is in two parts. The assessment of Outcome 1 should be a single assessment paper. The assessment event should last one and a half hours and be carried out under supervised controlled conditions. In Outcome 2 candidates are required to carry out a maintenance survey and prepare a report. Here candidates may write up the report in their own time.

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Group work may contribute to the assessment. However, planning would be required by the centre to ensure the sufficiency and authenticity of candidate evidence. Arrangements would be required to be put in place to ensure that assessment(s) were conducted under controlled, supervised conditions.

An exemplar instrument of assessment and marking guidelines has been produced to provide examples of the type of evidence required to demonstrate achievement of the aims of the Unit and to indicate the national standard of achievement at SCQF level 7.

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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.

Throughout this 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, impact of not implementing sustainability on the environment and the legislation promoting sustainability.

Outcome 1

Describe the investigation, diagnosis and possible cures for building defects

Knowledge and/or skills

- ◆ Investigation techniques
- ◆ Diagnosis of defects
- ◆ Solutions to remedy building defects

Evidence Requirements

In any assessment of this Outcome **all** knowledge and/or skills items should be included.

Candidates must provide a satisfactory response to all items.

Candidates will need evidence to demonstrate their knowledge and/or skills by showing that they can:

- ◆ describe the investigation, diagnosis and select a possible cures for a variety of building defects presented to them

Evidence should be generated through assessment undertaken in controlled, supervised conditions. Assessment should be conducted under closed book conditions and as such candidates should not be allowed to bring any textbooks, handouts or notes to the assessment.

Assessment guidelines

Assessment used to elicit candidate evidence may take the form of a display of a series of photographs covering a variety of building defects where candidates shall have a period of time to describe the investigation, diagnosis and cure for each defect presented to them.

The assessment of this Outcome should be a single assessment. The assessment event should last 1½ hours and be carried out under supervised controlled conditions.

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Outcome 2

Survey a building and prepare a report outlining a repair strategy

Knowledge and/or skills

- ◆ Planning the survey
- ◆ Identification and recording of building defects
- ◆ Report writing

Evidence Requirements

In any assessment of this Outcome **all** knowledge and/or skills items should be included.

Candidates must provide a satisfactory response to all items.

Candidates will need evidence to demonstrate their knowledge and/or skills by showing that they can:

- ◆ plan and undertake a survey of a building and prepare a report outlining a repair strategy

Evidence should be generated through assessment undertaken in controlled, supervised conditions. Assessment should be conducted under closed book conditions and as such candidates should not be allowed to bring any textbooks, handouts or notes to the assessment.

It is important that candidates are directed to survey a building which is suitable for developing an appreciation of the principles involved i.e. it is neither too large, nor too small. It is suggested that the building selected is one where there are a number of building defects present (Note: for the purposes of continuity, the same building might be used for Building Maintenance Management and other cognate group Units).

Assessment guidelines

Candidates should be supervised during the period when they undertake a survey of a building and thereafter the candidates will prepare a report in their own time. The visit to the building survey should be done in class time and approximately three hours should be allowed for this task.

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Administrative Information

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Superclass category:	TH
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Unit specification: support notes

Unit title: Building Maintenance Technology

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

This Unit has been written in order to allow candidates to develop knowledge, understanding and skills in the following areas:

- 1 Describing the investigation, diagnosis and possible cures for building defects.
- 2 Surveying a building and prepare a report outlining a repair strategy.

In designing this Unit the unit writers have identified the range of topics they would expect to be covered by lecturers. The writers have also given recommendations as to how much time should be spent on each outcome. This has been done to help lecturers to decide what depth of treatment should be given to the topics attached to each of the outcomes. Whilst it is not mandatory for a centre to use this list of topics it is strongly recommended that it does so to ensure continuity of teaching and learning across the Technology units and because the assessment exemplar pack for this Unit is based on the knowledge and/or skills and list of topics in each of the Outcomes.

The list of topics is given below. Lecturers are advised to study this list of topics in conjunction with the assessment exemplar pack so that they can get a clear indication of the standard of achievement expected of candidates in this Unit.

1 Describe the investigation, diagnosis and possible cure for building defects. (30 hours)

This Outcome shall cover the investigation, diagnosis and cures for a range of defects found in buildings.

Study should cover the causes of deterioration, the principles of diagnosis, investigation techniques and the possible cure for building defects.

Causes of deterioration

Building defects to be covered:

Cracking in buildings:

- ◆ Vertical, horizontal and diagonal cracks
- ◆ Movement joint — sealant failure

Defects in masonry and mortar

- ◆ Frost attack, Efflorescence, Lime staining, Sulphate attack, Walls out-of-plumb, Staining
- ◆ Traditional lime mortar — its use in repointing masonry

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Dampness:

- ◆ Rising damp
- ◆ Condensation
- ◆ Penetrating damp
- ◆ Other sources (such as plumbing leaks)

Defects in wall finishes — examples

Defects in floors — structure and finishes

Defects in roofs: pitched and flat

Defects in concrete:

- ◆ Carbonation
- ◆ Chloride attack
- ◆ Sulphate attack
- ◆ Alkali Aggregate Reaction

The deterioration of common building materials such as **timber, concrete and steel** should also be covered.

Defects associated with poor quality work on site may also be covered. Examples of this may be choked/blocked cavities and poor sill details.

Methods of investigation

2 Survey a building and prepare a report outlining a repair/maintenance strategy. (10 hours)

This Outcome covers the maintenance survey of a building and the preparation of a report.

It is important that candidates are directed to survey a building which is suitable for developing an appreciation of the principles involved (Note: for the purposes of continuity, the same building might be used for Building Maintenance Management and other cognate group Units).

The teaching should cover the approach to planning the survey, essential equipment, surveying safely, and report writing. The report should include photographs and sketches showing the main problems with the building and possible solutions. Candidates will have developed knowledge and/or skills in Outcome 1 to permit them to identify and diagnose the main defects in the building.

Unit Assessment (7 hours total)

The assessment of Outcome 1 should be a single assessment. The assessment event should last 1½ hours and be carried out under supervised controlled conditions. Outcome 2 will require a building survey. Three hours approximately may be necessary for this task. The remainder of Outcome 2 shall be completed by the candidates in their time and two and half hours may be required for the report.

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Guidance on the delivery and assessment of this Unit

The scheduling of this Unit will require to fit closely and coherently with others in the award as considerable opportunities exist to integrate teaching over a range of issues which can be based on the selection of a suitable building.

Where this Unit is incorporated into other group awards it is recommended that it be delivered in the context of the specific occupational area(s) that the award is designed to cover.

Details on approaches to assessment are given under Evidence Requirements and Assessment guidelines under each Outcome in the SQA Advanced Unit specification: statement of standards section. It is recommended that these sections be read carefully before proceeding with assessment of candidates.

Note: for the purposes of continuity, the same building might be used for Building Maintenance Management and other cognate group Units.

Opportunities for developing Core Skills

Core Skills Signposting

The following grid provides a general guide to opportunities for the development of Core Skills in this Unit. Opportunities for the development of Core Skills at the output level are more fully identified in the Core Skills Signposting Guide.

Core Skill	Outcome 1	Outcome 2
1 Communication		
Reading		
Writing		3
Oral		
2 Numeracy		
Using Number		
Using Graphical Information		
3 IT		
Using Information Technology		
4 Problem Solving		
Critical Thinking	3	3
Planning and Organising		3
Reviewing and Evaluating		
5 Working with Others		3

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Open learning

This Unit could be delivered by distance learning, which may incorporate some degree of on-line support. However, with regard to assessment, planning would be required by the centre concerned to ensure the sufficiency and authenticity of candidate evidence. Arrangement would be required to be put in place to ensure that the assessment, which is required to be at a single event, was conducted under controlled, supervised conditions.

For information on normal open learning arrangements, please refer to the SQA guide *Assessment and Quality Assurance of Open and Distance Learning* (SQA 2000).

Equality and inclusion

This unit specification has been designed to ensure that there are no unnecessary barriers to learning or assessment. The individual needs of learners should be taken into account when planning learning experiences, selecting assessment methods or considering alternative evidence.

Further advice can be found on our website www.sqa.org.uk/assessmentarrangements.

General information for candidates

Unit title: Building Maintenance Technology

This Unit has been designed to allow you to develop knowledge, understanding and skills in the process of investigating and diagnosing the cause of building defects and providing possible solutions to these defects. The unit covers the common defects in buildings and includes the survey of an appropriate building for defects and the construction of a repair strategy.

The formal assessment for this Unit will consist of one assessment paper, covering the content of Outcome 1 and lasting 1½ hours duration. This will include photographs where you will be asked to describe the investigation you would undertake, outline the diagnosis and cure for a range of building defects. In outcome 2 you will be required to survey a building and prepare a report identifying the repair work required. The survey will be supervised by the centre report in your own time.