

## SQA Advanced Unit specification

### General information for centres

**Unit title:** Golf Course Management: Sportsturf Drainage Systems

**Unit code:** HW8D 47

**Unit purpose:** This Unit is designed to enable candidates to gain knowledge of the nature of soil water movement to drainage systems and the types of system available. Candidates will develop knowledge and skills relating to the design needs for sportsturf drainage systems and will be able to identify the problems that may arise related to the drainage system.

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

- 1 Describe the factors that influence soil water movement within sportsturf.
- 2 Evaluate the range of drainage systems available for use on sportsturf.
- 3 Develop a drainage design plan for a sportsturf area.
- 4 Describe a range of faults associated with drainage systems in sportsturf areas and how they may be corrected.

**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:** Knowledge of soils and their structure would assist the candidate with relating to soil water terminology. Possession of the following National Certificate modules would be desirable but not essential:

D0NC 12 *Soils: Formation and Cropping Potential*  
E9FP 10 *Drainage 1: Introduction*

**Core Skills:** There are opportunities to develop the Core Skills of *Problem Solving*, *Communication*, *Numeracy* and *IT* 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.

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## **SQA Advanced Unit Specification**

**Assessment:** This Unit is assessed by four assessments:

Outcome 1 by an assignment.

Outcome 2 by an assignment to evaluate drainage systems.

Outcome 3 by a report and a scale drawing.

Outcome 4 by an assignment covering design, installation and maintenance faults.

## **SQA Advanced 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**

Describe the factors that influence soil water movement within sportsturf areas

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

- ◆ water table types
- ◆ hydraulic conductivity
- ◆ capillarity and surface tension
- ◆ bulk density
- ◆ soil porosity
- ◆ saturated flow

#### **Evidence Requirements**

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

- ◆ describe various ways that water can move in the soil
- ◆ identify the forces that are involved in this

#### **Assessment Guidelines**

This Outcome is assessed by an assignment of 1,000–1,200 words. This should cover the soil water movement principles shown in the knowledge and/or skills section.

### **Outcome 2**

Evaluate the range of drainage systems available for use on sportsturf

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

- ◆ drainage systems: grid, herringbone, fan, random, bypass systems, eg sand slitting and gravel banding
- ◆ component parts of a drainage system and their functions

## SQA Advanced Unit Specification

### Evidence Requirements

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

- ◆ describe a range of systems and their components in different sportsturf areas
- ◆ evaluate these systems for their suitability for a range of sports

### Assessment Guidelines

This Outcome is assessed by an assignment. The assignment should include an evaluation of the systems mentioned in knowledge and/or skills. It should also include appropriate illustrations of the types listed under '*Knowledge and/or Skills*' and should be of approximately 1,200–1,500 words.

## Outcome 3

Develop a drainage design plan for a sportsturf area

### Knowledge and/or Skills

- ◆ criteria for design; position of outlets, inspection chambers, silt traps pipegradient, positions, spacing, sizes, types
- ◆ selection of backfill materials
- ◆ application of different drainage types to given sportsturf situations
- ◆ drawing drainage plans to scale

### Evidence Requirements

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

- ◆ identify an appropriate design
- ◆ draw drainage plans to scale
- ◆ produce a drainage design that would be applicable and effective to the given area

### Assessment Guidelines

This Outcome should be assessed as a project consisting of the production of an appropriately scaled plan drawing of a given site, showing a suitable drainage scheme for the site, with a report justifying the choice of scheme and the materials used for backfill.

## Outcome 4

Describe a range of faults associated with drainage systems in sportsturf areas and how they may be corrected

### Knowledge and/or Skills

- ◆ Faults based on: design — poor spacing of laterals, incorrect gradients for pipes, etc
- ◆ Faults based on: installation — poor or inconsistent gradients, trench widths, pipe insertion, etc
- ◆ Faults based on: maintenance — neglect, ditch cleaning, outlet protection, silt trap cleaning, etc

## **SQA Advanced Unit Specification**

### **Evidence Requirements**

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

- ◆ describe a range of potential faults in a drainage system
- ◆ recommend appropriate remedial action

### **Assessment Guidelines**

This Outcome should be assessed by an assignment covering design, installation and maintenance faults associated sportsturf drainage. Appropriate remedial action should be sited for the faults suggested. Approximately 800–1,000 words.

## SQA Advanced Unit Specification

### Administrative Information

<b>Unit code:</b>	HW8D 47
<b>Unit title:</b>	Golf Course Management: Sportsturf Drainage Systems
<b>Superclass category:</b>	SF
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#### History of changes:

Version	Description of change	Date

**Source:** SQA

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### SQA Advanced Unit specification: support notes

#### Unit title: Golf Course Management: Sportsturf Drainage Systems

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 is intended for candidates who wish to develop their knowledge and understanding of soil-based areas such as winter pitches and golf fairways. Outcome 1 could look at the soil water movements from an existing poorly drained soil versus an improved structure. The properties of well drained soils and the factors which adversely change these should be covered. Additionally, actions which are carried out to reduce poor drainage. Outcomes 2 and 3 can be discussed together if appropriate to integrate the types of drainage system with their design requirements related to the sport most appropriate to the student.

Outcome 4 should emphasise not only the faults and their remedies but the awareness of these for preventative (pro-active) procedures in design, installation and maintenance.

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

This Unit would benefit from delivery alongside ‘Soil Science’ and/or ‘Golf Course Irrigation Systems’.

The Unit is set out in the best and most logical order. Candidates may identify with for example, the maintenance of the system but the design or installation/construction may have dictated your activities.

The sequence should stress that the ultimate problems of maintaining a system are affected by various combinations of; poor understanding of soil water movement, poorly selected, designed or installed drainage systems.

For soil-based sports areas, the use of soil as the growing medium is not the best. Consequently, the need for an effective/efficient drainage system is paramount. Many of the problems are not the drainage system but the process of water reaching it. The need to understand what allows water to move is therefore fundamental to any drainage Unit.

Each area of sports has a particular type of system that suits its size and shape best for a range of reasons. No two systems are identical and selection can vary for a number of reasons. In some smaller areas the candidate may carry out all the processes discussed and the thought processes for this will be assisted by completing this Unit.

#### *Opportunities for developing Core Skills*

While there may be opportunities to develop the Core Skills of *Problem Solving*, *Communication*, *Numeracy* and *IT*, all at SCQF level 6, there is no automatic certification of Core Skills or Core Skills components.

### **Open learning**

If used for open learning, validity of evidence would be assisted by production of photographic evidence and/or other visual evidence from the workplace.

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



### **General information for candidates**

#### **Unit title:** Golf Course Management: Sportsturf Drainage Systems

This Unit will provide you with the knowledge and skills to design sportsturf drainage systems and to identify potential faults in systems. You will also gain knowledge of soil water movement in relation to drainage systems and of the different types of drainage systems available.

On completion of the Unit you should be able to:

- 1 Describe the factors which influence soil water movement within sportsturf.
- 2 Evaluate the range of drainage systems available for use on sportsturf.
- 3 Develop a drainage design plan for a sportsturf area.
- 4 Describe a range of faults associated with drainage systems in sportsturf areas and how they may be corrected.

You will be assessed in this Unit by three assignments (for Outcomes 1, 2 and 4) and by a report supported by a scale drawing for Outcome 3.