



## **National Unit specification: general information**

**Unit title:** Water Industry: Environmental Issues (SCQF Level 5)

**Unit code:** FY9X 11

**Superclass:** TL

**Publication date:** November 2011

**Source:** Scottish Qualifications Authority

**Version:** 01

### **Summary**

The purpose of this Unit is to provide candidates with a general understanding of the various environmental issues which impact the water industry.

This is a mandatory Unit within the National Progression Award in Water Operations: An Introduction at SCQF level 5.

The Unit is suitable for candidates who currently work in the water industry or aspire to work within the water industry.

### **Outcomes**

- 1 Develop knowledge and understanding of the principal factors contributing to climate change and global warming.
- 2 Demonstrate knowledge of carbon footprint within the water industry and identify appropriate reduction policies.
- 3 Identify and describe sources and effects of diffuse pollution within the water industry.
- 4 Describe aquatic ecology in relation to various aquatic ecosystems.

### **Recommended Entry**

Entry is at the discretion of the centre. Candidates doing this Unit do not need any prior knowledge or experience of the water industry. Good skills in Communication and ICT will be an advantage.

## **General information (cont)**

**Unit title:** Water Industry: Environmental Issues (SCQF Level 5)

### **Credit points and level**

0.5 National Unit credit at SCQF level 5: (3 SCQF credit points at SCQF level 5\*)

*\*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.*

### **Core Skills**

Opportunities to develop aspects of Core Skills are highlighted in the Support Notes of this Unit Specification.

There is no automatic certification of Core Skills or Core Skill component in this Unit.

## **National Unit Specification: statement of standards**

**Unit title:** Water Industry: Environmental Issues (SCQF Level 5)

Acceptable performance in this Unit will be the satisfactory achievement of the standards set out in this part of the Unit Specification. All sections of the statement of standards are mandatory and cannot be altered without reference to SQA.

### **Outcome 1**

Develop knowledge and understanding of the principle factors contributing to climate change and global warming.

#### **Performance Criteria**

- (a) Identify signs of environmental change in the global climate.
- (b) Identify and describe components of the climate system.
- (c) Identify atmospheric gases classed as greenhouse gases and describe the process of the greenhouse effect.
- (d) Identify potential effects of climate change on the water industry.

### **Outcome 2**

Demonstrate knowledge of carbon footprint within the water industry and identify appropriate reduction policies.

#### **Performance Criteria**

- (a) Explain the concept of the carbon footprint in the context of the water industry.
- (b) Identify and describe carbon reduction methods in the water industry.
- (c) Provide examples of reduction policies employed within the water industry.

### **Outcome 3**

Identify and describe sources and effects of diffuse pollution within the water industry.

#### **Performance Criteria**

- (a) Define the term diffuse pollution in relation to water bodies.
- (b) Describe control and prevention approaches to diffuse pollution.

### **Outcome 4**

Describe aquatic ecology in relation to various aquatic ecosystems.

#### **Performance Criteria**

- (a) Describe types of aquatic ecosystems that support life and give examples of each.
- (b) Identify and explain the basic needs of an aquatic ecosystem.
- (c) Identify and describe the main threats to aquatic ecosystems.

## **National Unit Specification: statement of standards (cont)**

**Unit title:** Water Industry: Environmental Issues (SCQF Level 5)

### **Evidence Requirements for this Unit**

#### **Outcome 1: Written and/or oral evidence**

The evidence for this Outcome must be obtained under controlled, supervised conditions. The assessment will be closed-book.

Candidates will need to provide evidence to demonstrate their knowledge by:

- ◆ identifying four signs of environmental change
- ◆ describing the four components of the climate system — lithosphere, hydrosphere, biosphere, atmosphere
- ◆ identifying four greenhouse gases and their concentrations
- ◆ producing an annotated sketch of the green house effect
- ◆ identifying four potential effects of the greenhouse effect

#### **Outcome 2: Written and/or oral evidence**

The evidence for this Outcome must be obtained under controlled, supervised conditions. The assessment will be closed-book.

Candidates will need to provide evidence to demonstrate their knowledge by:

- ◆ identifying and explaining at least five water industry activities that add to the carbon footprint
- ◆ identifying five carbon reduction methods and giving a description of two
- ◆ listing at least two reduction policies

#### **Outcome 3: Written and/or oral evidence**

The evidence for this Outcome must be obtained under controlled, supervised conditions. The assessment will be closed-book.

Candidates will need to provide evidence to demonstrate their knowledge to include:

- ◆ at least two sources of diffuse pollution and two potential effects
- ◆ two control methods of diffuse pollution in the water industry
- ◆ two prevention methods used in the water industry

#### **Outcome 4: Written and/or oral evidence**

The evidence for this Outcome must be obtained under controlled, supervised conditions. The assessment will be closed-book.

Candidates will need to provide evidence to demonstrate their knowledge to include:

- ◆ three types of ecosystems — freshwater, transitional, marine.
- ◆ examples to include: freshwater — lentic and lotic; transitional — estuarial and one other; marine — to include shorelines and one other
- ◆ four basic needs of an aquatic ecosystem
- ◆ three factors of influence: natural, artificial and human

## **National Unit Specification: support notes**

### **Unit title:** Water Industry: Environmental Issues (SCQF Level 5)

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 is a mandatory Unit within the National Progression Award in Water Operations: An Introduction at SCQF level 5.

This Unit is designed to give the candidates a basic understanding of current environmental issues affecting the operation and future development of the water industry, both internal and various external factors that impact on the business.

It is suitable for those who are currently employed in, or who are seeking employment in the water industry or related occupational areas, or for those wishing to progress to more advanced study.

### **Guidance on learning and teaching approaches for this Unit**

Tutorial delivery methods include a variety of teaching methods which will enhance the learning experience, including face to face tutorials, field trips, group discussion and networking, candidates' industrial experience and expertise, visiting industry specialists, work related project activities etc.

This Unit should be delivered using current standards, regulations and government targets. It would be beneficial to candidates to visit water industry assets to see in practice how environmental issues are dealt with.

### **Guidance on approaches to assessment for this Unit**

Assessment for this Unit, will in the main be conducted on a continuous basis through coursework and structured questions. However, this Unit can be assessed as part of an integrated approach with other Units in the NPA: Water Operations: An Introduction in the form of an extended response paper at the end of each year and an assignment on a given topic at the end of each year.

Outcomes could be assessed by candidates producing a report combined with a closed-book assessment. Questions could take the form of an appropriate balance of multiple choice and/or restricted response. The evidence for the report should if possible be drawn from a water source that the candidate can get physical access to. However if for practical reasons the candidate cannot access a suitable water source, evidence could be provided by means of a desk top study and/or literature search and review of an appropriate location as long as the Evidence Requirements are met.

Written, oral, diagrammatical or electronic form of evidence should be produced to demonstrate that the candidate has achieved all of the Outcomes and Performance Criteria. The evidence must be obtained under controlled, supervised conditions.

## **National Unit Specification: support notes (cont)**

**Unit title:** Water Industry: Environmental Issues (SCQF Level 5)

### **Opportunities for the use of e-assessment**

E-assessment may be appropriate for some assessments in this Unit. By e-assessment we mean assessment which is supported by Information and Communication Technology (ICT), such as e-testing or the use of e-portfolios or e-checklists. Centres which wish to use e-assessment must ensure that the national standard is applied to all candidate evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. Further advice is available in *SQA Guidelines on Online Assessment for Further Education (AA1641, March 2003)*, *SQA Guidelines on e-assessment for Schools (BD2625, June 2005)*.

### **Opportunities for developing Core Skills**

There are opportunities to develop all five of the Core Skills within this Unit. Progress in development will be dependent on the delivery centre resources and the approaches taken to learning and teaching.

### **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)

## History of changes to Unit

Version	Description of change	Date

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