



National Unit specification: general information

Unit title: Water Industry Technology (SCQF Level 6)

Unit code: H004 12

Superclass: TL

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Summary

This is a mandatory Unit within the National Progression Award in Water Operations at SCQF level 6.

The purpose of this Unit is to give candidates a general understanding of the various technologies used in the water industry.

This Unit is intended for candidates who have recently joined the water industry. The Unit is also suitable for candidates who have joined the water industry as an apprentice or at a similar level.

Outcomes

- 1 Demonstrate an understanding of the functions of simple mass and reinforced concrete structures.
- 2 Demonstrate knowledge and understanding of piling and trench support systems used in the water industry.
- 3 Demonstrate an understanding of the conditions that lead to flood and drought and the resultant actions.
- 4 Describe the multiple use of water sources within the water industry.
- 5 Develop an understanding of the importance of operational safety and personal safety in the water industry.

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. However, good skills in communication and ICT will be an advantage.

General information (cont)

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Credit points and level

2 National Unit credits at SCQF level 6: (12 SCQF credit points at SCQF level 6*)

**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 Technology (SCQF Level 6)

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

Demonstrate an understanding of the functions of simple mass and reinforced concrete structures.

Performance Criteria

- (a) Identify correctly the properties of concrete and reinforced concrete.
- (b) Identify in general terms the uses of concrete within the water industry.
- (c) Accurately describe the workability and testing of concrete.

Outcome 2

Demonstrate knowledge and understanding of piling and trench support systems used in the water industry.

Performance Criteria

- (a) Identify the main features of trench support systems.
- (b) Explain how typical trench support systems are used in the water industry.
- (c) Describe the general techniques of sheet and box piles used in the water industry.

Outcome 3

Demonstrate an understanding of the conditions that lead to flood and drought and the resultant actions.

Performance Criteria

- (a) Identify correctly the conditions that lead to flood.
- (b) Identify correctly the conditions that lead to drought.
- (c) Explain in general terms how these conditions can be mitigated.
- (d) Describe in general terms emergency procedures for dealing with floods and droughts.

Outcome 4

Describe the multiple uses of water sources within the water industry.

Performance Criteria

- (a) Correctly identify recreational and other amenities provided on a water source.
- (b) Explain in general terms how the control of recreational and other amenities on a water source are applied.
- (c) Briefly explain problems associated with the multiple use of water space amenities.

National Unit specification: statement of standards (cont)

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Outcome 5

Develop an understanding of the importance of operational safety and personal safety in the water industry.

Performance Criteria

- (a) Identify current legislation relating to operational and personal safety in the water industry.
- (b) Describe current operational safety regulations in the water industry.
- (c) Describe current personal protective equipment (PPE) requirements for working in the water industry.
- (d) Accurately describe emergency procedures for pollution incidents.

Evidence Requirements for this Unit

Evidence is required to demonstrate that candidates have achieved all Outcomes and Performance Criteria.

This Unit can be assessed by individual Outcome assessment or by adopting a holistic approach to assessment.

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 should be produced under supervised conditions to a given brief.

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 an understanding of the functions of simple mass and reinforced concrete structures by showing that they can:

- ◆ describe two properties of concrete and reinforced concrete
- ◆ describe one process of determining the workability of concrete and one method of testing concrete
- ◆ identify four uses of concrete within the water industry

Evidence may in written, oral, diagrammatical or electronic form but must be the individual's own response.

National Unit specification: statement of standards (cont)

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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 and understanding of the piling and trench support systems by showing that they can:

- ◆ describe two trench support systems used in the water industry
- ◆ describe the general techniques for one method of sheet piles
- ◆ describe the general techniques for one method of box piles

Evidence may in written, oral, diagrammatical or electronic form but must be the individuals own response.

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 understanding of the conditions that lead to flood and drought, and resultant actions, by showing that they can:

- ◆ identify and explain two factors that lead to both flooding and droughts to include both groundwater and surface water conditions and give one mitigating factor each
- ◆ describe standard operational procedure for dealing with flood and drought conditions

Evidence may in written, oral, diagrammatical or electronic form but must be the individuals own response.

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 of the multiple use of water sources within the water industry, by showing that they can:

- ◆ list at least four uses of a water source outwith the provision of water
- ◆ explain how each of the above can be controlled
- ◆ explain how the multi use of a water source can cause problems for water supply

National Unit specification: statement of standards (cont)

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Outcome 5 — 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 understanding of the importance of operational safety and personal safety in the water industry, by showing that they can:

- ◆ list two pieces of legislation relating to operational and personal safety in the water industry
- ◆ describe operational safety regulations relating to four activities in the water industry
- ◆ describe PPE requirements for four activities in the water industry
- ◆ describe the emergency procedures for one pollution incident in a water source

Evidence may in written, oral, diagrammatical or electronic form but must be the individuals own response.

National Unit specification: support notes

Unit title: Water Industry Technology (SCQF Level 6)

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 80 hours.

Guidance on the content and context for this Unit

This Unit is a mandatory Unit within the National Progression Award in Water Operations: An Introduction at SCQF level 5, but can also be taken as a free-standing Unit.

This Unit is intended to give candidates basic information on the various peripheral issues and safety requirements outwith the key areas of operation. The emphasis is on providing an understanding of other riparian users of a water source, as well as safety and emergency procedures.

This Unit is a knowledge based Unit in which candidates are required to develop their knowledge and understanding of:

- ◆ multiple use of water sources and structures within the water industry
- ◆ of operational safety and personal safety in the water industry
- ◆ flood and drought conditions and the resultant actions

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 visiting industry specialists, work related activities.

It is recommended that candidates have access to a workshop where can do practical work for example in mixing and testing concrete and trench support. It is also envisaged that candidates have access to a water source where other uses of water and riparian interest can be studied.

Guidance on approaches to assessment for this Unit

Outcomes could be assessed by candidates producing a report combined with a closed-book assessment. Questions used to elicit candidate response could take the form of an appropriate balance of multiple choice and/or restricted response.

As part of the NPA in Water Operations at SCQF level 6 this Unit can be assessed as part of an integrated examination in the form of an extended response paper and/or an assignment on a given topic.

National Unit specification: support notes (cont)

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Opportunities for the use of e-assessment

Research has indicated that it is important to retain face to face contact with the candidates and opportunities for networking with other water industry personnel. In the event of any centre wishing to deliver this Unit on a fully open learning basis, then it would be highly desirable that prospective candidates have access to water industry installations and work experience to enable them to undertake this course.

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 social software. 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

In this Unit candidates will develop aspects of Core Skills at SCQF level 6 through contextualised activities designed to support the candidate develop a general understanding of the various technologies used in the water industry.

Development of Core Skills elements will take place through learning and teaching activities as well as through practical activities which candidates will be involved in planning and delivering and reflection of such activities.

In this Unit candidates will through development of their knowledge and understanding of the key aspects of the water supply, be provided the opportunity to develop the following Core Skills:

Communication — both Oral and Written

- ◆ small group working, discussion
- ◆ verbal and written instructions
- ◆ written responses to wide range of questioning techniques

Problem Solving — Critical Thinking; Planning and Organising; Reviewing and Evaluating

- ◆ applying knowledge and understanding to a series of tasks
- ◆ completing assignments through effective planning and organising within groups and individually
- ◆ self evaluation

Information and Communication Technology — Accessing and Processing Information

- ◆ conducting research on current technologies applied within the industry
- ◆ using technology to present findings

National Unit specification: support notes (cont)

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Numeracy — Using Graphical Information; Using Number

- ◆ applying graphical and numerical skills within specially designed assignments relating to technological studies

Working with Others

- ◆ participating in group activities and discussion

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

History of changes to Unit

Version	Description of change	Date

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