



## Higher National Unit specification

### General information for centres

**Unit title:** Water Operations: Water Utilisation

**Unit code:** F7NE 34

**Unit purpose:** This Unit is designed to enable the candidate to develop the skills and knowledge required to influence the efficient use of water drawn from a drinking water distribution network.

This Unit forms part of the Professional Development Award (PDA) Water Operations: Water Distribution and Utilisation designed to increase the knowledge and skills of existing or potential water industry line managers/team leaders, inspectors, technician and/or graduate water industry engineers and water industry employees in the efficient use of water utilised within a drinking water distribution network.

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

- 1 Describe how water is used by customers.
- 2 Specify a water audit system for implementation by water officers.
- 3 Explain factors to be considered when involving communities in water utilisation policy implementation.
- 4 Describe effective drinking water sampling techniques to prevent sample contamination for 5 the delivery of a wholesome water supply.

**Credit points and level:** 1 HN credits 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 Access 1 to Doctorates.*

**Recommended prior knowledge and skills:** Access to this Unit is at the discretion of the centre. However, it is recommended that candidates have communication and numeracy skills level 4 or equivalent.

**Core Skills:** There are opportunities to develop the Core Skills of *Communication*, *Problem Solving*, and *Working with Others* at SCQF level 6, and *Numeracy* and *Information and Communication Technology* at SCQF level 5, although there is no automatic certification of Core Skills or Core Skills component.

**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.

## General information for centres (cont)

**Assessment:** It is possible to assess candidates on an individual Outcome basis, by combinations of Outcomes, or by a single holistic assessment encompassing all Outcomes. Assessment should be conducted under supervised conditions. The assessment(s) should consist of an appropriate balance of restricted response, structured questions and assignments. If a single assessment covering all Outcomes is used, it should not exceed three hours in duration.

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

**Unit title:** Water Operations: Water Utilisation

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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 how water is used by customers

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

- ◆ Water infrastructure systems
- ◆ Distribution network demand planning
- ◆ Forecasting future population growth
- ◆ Supply and control mechanisms of water usage (domestic and commercial customers)

#### **Evidence Requirements**

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

- ◆ Explain the function of water distribution systems in relation to (1) domestic, and (2) non-domestic customers.
- ◆ Calculate the supply and demand requirements of a (1) domestic, and (2) non-domestic water network distribution system, allowing for current and future usage.
- ◆ Clearly explain a regulatory control mechanism for monitoring and controlling customer use of water.
- ◆ Describe four physical control mechanisms for monitoring and controlling customers' use of water.

#### **Assessment Guidance**

For this outcome it is suggested that the assessment could consist of a closed-book assessment using an appropriate balance of short answer, restricted response or extended response questions.

However, as an alternative assessment can be combined with Outcome 2 in an assignment either in the form of a centre-devised case study, or a case study based on verified data from the water sector relevant to the candidate's workplace.

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

**Unit title:** Water Operations: Water Utilisation

### **Outcome 2**

Specify a water audit system for implementation by water officers

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

- ◆ Water regulation
- ◆ Economic sustainability and administration
- ◆ Water audit system
- ◆ Water monitoring technology and techniques
- ◆ Supply and demand balance

#### **Evidence Requirements**

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

- ◆ Explain the purpose of a water regulatory framework.
- ◆ Specify a 'fit for purpose' water audit system clearly demonstrating how the system will be operated, taking account of economic and administrative factors aligned to domestic and non-domestic customers.
- ◆ Describe two water technology and two techniques that could be implemented to monitor usage and misuse of water supplies.

#### **Assessment Guidance**

Assessment will be completed using an assignment either in the form of a centre-devised case study, or a case study based on verified data from the water sector relevant to the candidate's workplace.

However, the scope of the assignment can be extended to include Outcome 1.

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

**Unit title:** Water Operations: Water Utilisation

### **Outcome 3**

Explain factors to be considered when involving communities in water utilization policy implementation

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

- ◆ Social, cultural and gender factors
- ◆ Economic and financial issues
- ◆ Technical characteristics of water saving devices
- ◆ Effective monitoring of policy implementation

#### **Evidence Requirements**

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

- ◆ Understand social, cultural and gender sensitivities of planning interventions aimed at conserving water by changing community behaviour.
- ◆ Explain three tariff setting issues within a water company, regulatory and customer context.
- ◆ Describe three types of water saving devices for use in customers' installations.
- ◆ Describe one quantitative and one qualitative technique for monitoring policy implementation for domestic and non-domestic customers.

#### **Assessment Guidance**

For this outcome, it is suggested that the assessment could consist of a closed book assessment using an appropriate balance of short answer, restricted response and extended response questions.

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

**Unit title:** Water Operations: Water Utilisation

### **Outcome 4**

Describe effective drinking water sampling techniques to prevent sample contamination for the delivery of a wholesome water supply

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

- ◆ Water sampling processes
- ◆ Public health water regulation and/or guidelines
- ◆ Microbiology (water borne diseases)
- ◆ Point of source sampling (river abstraction/treated/distribution network)
- ◆ Water supply zones

#### **Evidence Requirements**

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

- ◆ Describe three purposes, two processes and two control measures required to carry out effective water sampling from source to tap.
- ◆ Describe three requirements of water supply zone sampling programmes, to ensure the point of source to the water distribution network is effectively sampled.
- ◆ Describe three requirements of water regulation and/or guidelines in relation to water sampling frequency and sampling parameters aligned to public health.

#### **Assessment Guidance**

For this Outcome, it is suggested that the assessment could consist of a closed-book end assessment using an appropriate balance of short answer, restricted response and extended response questions.

## Administrative Information

**Unit code:** F7NE 34  
**Unit title:** Water Operations: Water Utilisation  
**Superclass category:** TL  
**Original date of publication:** August 2009  
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### History of changes:

Version	Description of change	Date

**Source:** SQA

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## **Higher National Unit specification: support notes**

### **Unit title:** Water Operations: Water Utilisation

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 designed to give the candidates a sound underpinning knowledge of how to influence customer use of water to improve the efficiency of a drinking water distribution network enabling the candidate to function as a water operative, inspector or technician, or to enable further progress to advanced study.

This Unit would be suitable for candidates who are employed in, or seeking employment with, the water sector and related industries.

This Unit is intended as part of the framework for the PDA in Water Operation: Water Distribution and Utilisation but may be suitable for inclusion in another HNC and/or HND award.

Recommended contexts for each Outcome are given as guidance towards the depth of study that might be applied to each topic.

#### **Outcome 1**

Customer use of water is within the context of a public water supply to small, medium and large communities within varied urban and metropolitan settings using a network of pipes with either single or multiple terminal fittings at each customer's premises. The water use referred to includes the domestic use of water in domestic, commercial and industrial premises including industrial process use of water from a public water supply network.

#### **Outcome 2**

Water audit is within the context of all distribution and use of water within a public water supply network from source to point of use. This includes auditing and monitoring regimes for all part of the network including, trunk and distribution mains network and service pipes and customers installations.

#### **Outcome 3**

Community involvement of policy implementation is within the context of combining sensitive interventions aimed at behaviour change designed to reduce water consumption by paying attention to gender, equity, equality and demographics combined with effective qualitative and quantitative information collection and monitoring.

#### **Outcome 4**

The development of drinking water sampling techniques is within the context of regional or national regulations, or if they don't exist, within the context of best practice and guidelines published by the World Health Organisation (WHO).



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

**Unit title:** Water Operations: Water Utilisation

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

It is recommended that the Unit be delivered by a combination of structured teaching to develop the baseline knowledge and skills. Candidates may also be given a series of case studies to develop their knowledge and skills via distance learning format, with guidance offered by lecturers on a structured interim basis or as required.

It is recommended that evidence of Outcomes is achieved through assessment of candidates' assignment(s) and structured responses from questions set via closed-book assessments.

The Unit will be delivered either through class room teaching, or a combination of class room teaching and distance learning with frequent contact between candidates and lecturers.

#### *Opportunities for developing Core Skills*

Candidates may have the opportunity to develop the Core Skill Communication at SCQF 6 through the assessment for Outcomes 1 to 3 where they may have to research, write and develop a report that meets the requirements of the three Units.

Other opportunities for the opportunities development of Core Skills are indicated in the table below.

Core Skill	Outcome 1	Outcome 2	Outcome 3	Outcome 4
<b>Numeracy</b>				
Using Number	X			X
Using Graphical Information	X	X		X
<b>ICT</b>				
Accessing Information	X	X	X	X
Providing/Creating Information				
<b>Problem Solving</b>				
Critical Thinking	X	X	X	X
Planning and Organising	X	X	X	X
Reviewing and Evaluating	X	X	X	X
<b>Working with Others</b>				
Working Cooperatively with Others	X	X		
Reviewing Cooperative Contributions		X		

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

**Unit title:** Water Operations: Water Utilisation

### **Open learning**

This course may be delivered in a flexible/distance/open learning format with a limited physical tutor support. In this case, a considerable amount of independent study will be required, and to relate the knowledge to real events, it is recommended that the candidate should liaise with their employer so that the report for Outcomes 1, 2 and 3 can be appropriately structured.

### **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: Water Operations: Water Utilisation

Whilst this Unit may be taken as a stand alone Unit it has been written as a mandatory Unit for the PDA Water Operations: Water Utilization.

You will find this Unit useful if you are already employed in the water supply industry or seek to be employed in the water supply industry.

This Unit is designed to provide you with a good understanding of how customers use water and how their water use can be influenced.

The Unit starts with an examination of how domestic and industrial customers use water and examines patterns of use.

The Unit encourages you to design a water audit system appropriate for your geographical location and introduces factors to be considered when involving communities in water utilisation policy implementation.

The Unit also develops your skills, allowing drinking water sampling techniques to be effectively used.

The assessment for this Unit will be a combination of closed-book assessments and assignment(s) which ideally will be linked to your workplace should you be employed within the water industry. There are opportunities to undertake assignment(s) using centre-devised case studies if you do not have access to water industry workplaces.

There are opportunities to develop the Core Skills of *Communication*, *Problem Solving*, and *Working with Others* to SCQF level 6 and *Numeracy* and *Information and Computing Technology* to SCQF level 5, although there is no automatic certification of Core Skills or Core Skills components.

#### Outcome 1

Describe how water is used by customers.

#### Outcome 2

Specify a water audit system for implementation by water officers.

#### Outcome 3

Explain factors to be considered when involving communities in water utilization policy implementation.

#### Outcome 4

Describe effective drinking water sampling techniques to prevent sample contamination for the delivery of a wholesome water supply.