



## **Level 5 Award in Understanding Waste Water Treatment**

### **Qualification Specification**

# Contents

	<b>Page</b>
Introduction	3
Qualification profile	3
Qualification structure	4
Centre requirements	4
Support for candidates	5
Assessment	5
Internal quality assurance	6
Adjustments to assessment	6
Results enquiries and appeals	6
Certification	6
Learning Outcomes and Assessment Criteria	7

## Introduction

The **Level 5 Award in Understanding Waste Water Treatment** is aimed at candidates who wish to demonstrate their knowledge and understanding of regulatory compliance requirements and best practice in waste water treatment.

The Regulated Qualifications Framework (RQF) is the single framework for regulated qualifications, the regulatory body for this qualification is the Office of Qualifications and Examinations Regulation (Ofqual). This qualification is accredited onto the RQF.

## Qualification Profile

Qualification title	<b>ProQual Level 5 Award in Understanding Waste Water Treatment</b>
Ofqual qualification number	603/3980/9
Level	Level 5
Total qualification time	120 hours
Credits	12 credits
Guided learning hours	120
Assessment	Pass or fail Assessed and verified by centre staff External quality assurance by ProQual verifiers
Qualification start date	21/1/2019
Qualification end date	

## Entry Requirements

There are no formal entry requirements for this qualification. Centres should carry out an **initial assessment** of candidate skills and knowledge to identify any gaps and help plan the assessment.

## Qualification Structure

To achieve the qualification candidates must complete ONE Mandatory unit.

Unit Reference Number	Unit Title	Credits	Unit Level	GLH
A/617/4257	Understanding Waste Water Treatment	12	5	120

## Centre Requirements

Centres must be approved to offer this qualification. If your centre is not approved please complete and submit form **ProQual Additional Qualification Approval Application**.

### Staff

Staff delivering this qualification must be appropriately qualified and occupationally competent.

### Assessors/Internal Quality Assurance

For each competence-based unit centres must be able to provide at least one assessor and one internal quality assurance verifier who are suitably qualified for the specific occupational area. Assessors and internal quality assurance verifiers for competence-based units or qualifications will normally need to hold appropriate assessor or quality assurance verifier qualifications, such as:

- ProQual Level 3 Certificate in Teaching, Training and Assessing
- Award in Assessing Competence in the Work Environment
- Award in Assessing Vocationally Related Achievement
- Certificate in Assessing Vocational Achievement
- Award in the Internal Quality Assurance of Assessment Processes and Practices
- Certificate in Leading the Internal Quality Assurance of Assessment Processes and Practices

## Support for Candidates

Materials produced by centres to support candidates should:

- enable them to track their achievements as they progress through the learning outcomes and assessment criteria;
- provide information on where ProQual's policies and procedures can be viewed;
- provide a means of enabling Internal and External Quality Assurance staff to authenticate evidence

## Assessment

Candidates must demonstrate the level of knowledge and/or skills described in the units. Assessment is the process of measuring a candidate's knowledge and understanding against the standards set in the qualification.

Each candidate is required to produce evidence which demonstrates their achievement of all of the learning outcomes and assessment criteria for each unit.

Evidence could include:

- observation report by assessor
- assignments/projects/reports
- professional discussion
- witness testimony
- record of oral and written questioning
- Recognition of Prior Learning

**Learning outcomes** set out what a candidate is expected to know, understand or be able to do. **Assessment criteria** specify the standard a candidate must meet to show the learning outcome has been achieved.

*Learning outcomes and assessment criteria for this qualification can be found from page 7 onwards.*

To achieve this qualification all candidates must produce evidence which demonstrates their achievement of all of the assessment criteria.

There must be valid, authentic and sufficient for all the assessment criteria. However, one piece of evidence may be used to meet the requirements of more than one learning outcome or assessment criterion.

Simulations are permitted where candidates, during the course of their qualification, are not able to provide evidence from naturally occurring events.

## Internal Quality Assurance

An internal quality assurance verifier confirms that assessment decisions made in centres are made by competent and qualified assessors, that they are the result of sound and fair assessment practice and that they are recorded accurately and appropriately.

## Adjustments to Assessment

Adjustments to standard assessment arrangements are made on the individual needs of candidates. ProQual's Reasonable Adjustments Policy and Special Consideration Policy sets out the steps to follow when implementing reasonable adjustments and special considerations and the service that ProQual provides for some of these arrangements. Centres should contact ProQual for further information or queries about the contents of the policy.

## Results Enquiries and Appeals

All enquiries relating to assessment or other decisions should be dealt with by centres, with reference to ProQual's Enquiries and Appeals Procedures.

## Certification

Candidates who achieve the requirements for qualifications will be awarded:

- A certificate listing the units achieved, and
- A certificate giving the full qualification title -

### **ProQual Level 5 Award in Understanding Waste Water Treatment**

#### **Claiming certificates**

Centres may claim certificates for candidates who have been registered with ProQual and who have successfully achieved the requirements for a qualification. All certificates will be issued to the centre for successful candidates.

#### **Unit certificates**

If a candidate does not achieve all of the units required for a qualification, the centre may claim a unit certificate for the candidate which will list all of the units achieved.

#### **Replacement certificates**

If a replacement certificate is required a request must be made to ProQual in writing. Replacement certificates are labelled as such and are only provided when the claim has been authenticated. Refer to the Fee Schedule for details of charges for replacement certificates.

# Learning Outcomes and Assessment Criteria

## Unit A/617/4257

### Understanding Waste Water Treatment

Learning Outcome - The learner will:	Assessment Criterion - The learner can:
1 Understand regulatory License compliance requirements and Water Quality standards applicable to waste water treatment	<ul style="list-style-type: none"><li>1.1 Explain the regulatory framework pertaining to waste water treatment and the discharge of treated wastewater to the environment</li><li>1.2 Explain the licensing requirements and regulations pertaining to wastewater treatment and the discharge of treated wastewater to the environment</li><li>1.3 Explain the Water Quality standards applicable to clean waste water treatment</li><li>1.4 Explain regulatory quality compliance and financial reporting requirements in relation to waste water treatment and the discharge of treated wastewater to the environment</li><li>1.5 Explain how Corporate Governance needs to operate to ensure compliance with regulatory requirements for waste water treatment and the discharge of treated wastewater to the environment</li></ul>
2 Understand best practice for preliminary treatment of waste water	<ul style="list-style-type: none"><li>2.1 Explain typical operations in the wastewater network such as pumping and combined sewer overflows</li><li>2.2 Explain how the wastewater network and conditions in the network influence the operation of wastewater treatment works</li><li>2.3 Explain the need for, general design of and operation of storm water storage</li><li>2.4 Explain how flow to full treatment is calculated and how this applies to storm water by-pass settings</li><li>2.5 Explain the need for, and function of screening</li><li>2.6 Explain the need to remove grit and how this is accomplished</li></ul>
3 Understand best practice for primary treatment of waste water	<ul style="list-style-type: none"><li>3.1 Explain the reasons for primary treatment of waste water and the range of processes available</li><li>3.2 Describe the different types of plant and processes used in primary treatment of waste water</li><li>3.3 Explain factors impacting upon the choice of plant and design of primary treatment of waste water</li><li>3.4 Explain best practice for operation of different types of plant and processes used in primary treatment of waste water</li></ul>

Learning Outcome - The learner will:	Assessment Criterion - The learner can:
	<p>3.5 Explain best practice for thickening of sludge and removal from primary tanks</p> <p>3.6 Explain how primary treatment affects downstream processes</p>
<p>4 Understand best practice for fixed film biological treatment</p>	<p>4.1 Explain the microbiology of biofilms and how biofilms are affected by process conditions</p> <p>4.2 Describe the different types of plant used in fixed-film biological processes</p> <p>4.3 Explain factors impacting upon the choice of plant and design of fixed-film biological processes</p> <p>4.4 Explain best practice for operation of fixed-film biological processes</p>
<p>5 Understand best practice for Suspended-growth processes (Activated sludge) treatment</p>	<p>5.1 Explain the main types of suspended-growth processes (Activated sludge)</p> <p>5.2 Describe the different types of plant used in Suspended-growth processes (Activated sludge)</p> <p>5.3 Explain factors impacting upon the choice of plant and design of Suspended-growth processes (Activated sludge)</p> <p>5.4 Explain best practice for operation and optimisation of Suspended-growth processes (Activated sludge)</p>
<p>6 Understand best practice processing of Trade Effluent in line with Regulatory requirements</p>	<p>6.1 Explain the regulatory framework and legislation pertaining to Trade Effluent</p> <p>6.2 Explain typical impact of trade effluent of wastewater treatment works and how the affects can be mitigated</p> <p>6.3 Explain how industrial dischargers of trade effluent are affected by enforcement of legislation</p> <p>6.4 Explain how trade effluent legislation governs treatment costs</p> <p>6.5 Explain how trade effluent is managed in the commercial environment the water industry operates</p> <p>6.6 Describe the process for enforcing trade effluent legislation</p>
<p>7 Understand best practice for tertiary wastewater treatment</p>	<p>7.1 Explain the main types of tertiary wastewater treatments</p> <p>7.2 Describe the different types of plant used in tertiary wastewater treatments</p> <p>7.3 Explain factors impacting upon the choice of plant and design of tertiary wastewater treatment</p> <p>7.4 Explain best practice for operation of tertiary wastewater treatments</p>
<p>8 Understand best practice for sludge collection and treatment</p>	<p>8.1 Explain the origin and nature of sludge</p>



Learning Outcome - The learner will:	Assessment Criterion - The learner can:
	<ul style="list-style-type: none"> <li>8.2 Explain how sludge is stored</li> <li>8.3 Explain best practice to mitigate health and safety hazards arising from sludge handling and storage</li> <li>8.4 Explain the anaerobic digestion of sludge</li> <li>8.5 Describe the different types of plant used in anaerobic digestion of sludge</li> <li>8.6 Explain factors impacting upon the choice of plant and design for anaerobic digestion of sludge</li> <li>8.7 Explain best practice for operation and optimisation of anaerobic digestion of sludge</li> </ul>
9 Understand best practice for chemical storage	<ul style="list-style-type: none"> <li>9.1 Explain the hazards of chemicals used in the wastewater treatment process</li> <li>9.2 Describe a range of personal protective equipment (PPE) which may be used</li> <li>9.3 Describe the safe working procedures in the organisation for delivery, storing and handling a range of chemicals</li> </ul>
10 Understand best practice for odour control	<ul style="list-style-type: none"> <li>10.1 Explain the origin and nature of odours arising from wastewater</li> <li>10.2 Explain how odour can affect the health and well-being of workers and stakeholders</li> <li>10.3 Explain legislation pertaining to odour control</li> <li>10.4 Explain methods for assessing odour</li> <li>10.5 Explain the range of treatment and odour control methods available</li> <li>10.6 Explain best practice for operation of odour treatment</li> </ul>
11 Understand hydraulics for wastewater treatment processes	<ul style="list-style-type: none"> <li>11.1 Explain the application and importance of hydraulics for waste water treatment</li> <li>11.2 Apply units and perform essential arithmetical operations for hydraulic calculations</li> <li>11.3 Explain fundamental Hydraulic principles including the Continuity Equation, energy friction losses and open channel flow</li> <li>11.4 Explain Pumping systems and the effects of friction on pump duties</li> <li>11.5 Perform hydraulic calculations relevant to waste water treatment</li> </ul>
12 Understand engineering principles in relation to waste water treatment	<ul style="list-style-type: none"> <li>12.1 Explain the requirements and applicability of plant maintenance regimes within the water industry including the role and importance of first line maintenance</li> </ul>

Learning Outcome - The learner will:	Assessment Criterion - The learner can:
	12.2 Explain the basic electrical theory and principle and engineering practices to ensure the safe operation and isolation of electrical and mechanical plant
13 Understand best practice for process control of water treatment	13.1 Explain the principles and mechanisms for process control of water treatment
	13.2 Describe the different types of process control mechanisms and why they are chosen, the common issues of mechanism performance and how these can be overcome and optimised
14 Understand best practice for dealing with failures or problems arising with treatment processes	14.1 Explain how to identify and evaluate process operations outside normal parameters of operation
	14.2 Explain necessary actions that may be required to safeguard the health and safety of customers and minimise detrimental impact on the environment
15 Understand the importance and application of innovation within the Water Sector	15.1 Explain the importance and application of innovation within the Water Sector
	15.2 Describe how they can use the innovation process within their organisation to deliver tangible benefits
16 Understand the importance and application of resilience within the Water Sector	16.1 Explain the importance and application of resilience within the Water Sector
	16.2 Describe how resilience can be enhanced within their organisation to deliver tangible benefits
17 Understand the compilation of compliance reports intended for regulatory reporting	17.1 Explain the collection, validation and collation of compliance data for regulatory reporting
	17.2 Explain the analysis of compliance data for regulatory reporting
	17.3 Explain the production of compliance reports intended for regulatory reporting
18 Be able to Investigate and evaluate the operation of a waste water treatment works within their organisation	18.1 Investigate waste water treatment process at a particular waste water treatment works in their organisation and collect data on performance
	18.2 Analyse performance data and critically evaluate how the works is performing with respect of compliance, efficiency and resilience
	18.3 Explain how the performance of each stage of the treatment process impacts upon the whole treatment process
	18.4 Identify, evaluate and recommend options to secure or enhance performance of the waste water treatment works selected

## Assessment

There must be valid, authentic and sufficient for all the assessment criteria. However, one piece of evidence may be used to meet the requirements of more than one learning outcome or assessment criterion.



[www.proqualab.com](http://www.proqualab.com)

[enquiries@proqualab.com](mailto:enquiries@proqualab.com)

Tel: +44 (0)1430 423822

ProQual AB Limited, ProQual House, Westbridge Court, Annie Med Lane, South Cave HU15 2HG  
Company Registration Number: 07464445