ProQual Level 5 Award in Understanding Waste Water Treatment

Qualification Specification

Contents

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	**ProQual Level 5 Award in Understanding Waste Water Treatment**
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	31/7/2026

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 -

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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.

Unit A/617/4257
Understanding Waste Water Treatment

Learning Outcomes – the learner will	Assessment Criteria – The learner can:
1. Understand the regulatory and legislative framework in which the water industry operates	1.1 Explain the regulatory framework pertaining to wastewater treatment and other site discharges to the environment 1.2 Explain the licensing requirements and regulations pertaining to wastewater treatment 1.3 Explain the quality standards applicable to wastewater treatment 1.4 Explain the regulatory quality compliance and financial reporting requirements in relation to wastewater treatment and other discharges to the environment 1.5 Explain how corporate governance needs to operate to ensure compliance with regulatory requirements or wastewater treatment and other discharges to the environment
2. Understand the regulatory compliance framework used by water industry regulators	2.1 Explain the regulatory and economic impact of over and under achieving regulatory performance outcomes and the impact on the prioritisation of business activities to maximise a company's regulatory position. 2.2 Demonstrate understanding of the enforcement powers available to key regulators and their statutory reporting requirements
3. Understand the implication of climate change for the water industry and the remedial measures required to address this	3.1 Critically analyse the nature of climate change and how the impact is seen on the water and environmental industries 3.2 Demonstrate understanding of the relevant standards for adaption to climate change and how your organisation could apply these standards 3.3 Critically analyse their organisation's capability in carrying out adaption to climate change
4. Understand best practice for preliminary treatment of wastewater	4.1 Explain typical operations in the wastewater network such as pumping and combined sewer overflows 4.2 Explain how the wastewater network and conditions in the network influence and are interdependent with the operation of the wastewater treatment works, and vice versa 4.3 Explain the need for general design and operation of storm water storage 4.4 Explain how full flow to treatment is calculated and how this applies to storm water bypass settings 4.5 Explain the need for and function of screening 4.6 Explain the need for and function of grit removal
5. Understand best practice for primary treatment of wastewater	5.1 Explain the reasons for primary treatment of wastewater and the range of processes available 5.2 Describe the different types of plant and processes used in primary treatment of wastewater 5.3 Explain factors impacting upon the choice of plant and design of primary treatment of wastewater 5.4 Explain best practice for operation of different types

			of plant and processes used in primary treatment of wastewater
		5.5	Explain best practice for thickening of sludge and removal from primary tanks
		5.6	Explain how primary treatment affects downstream processes
6.	Understand best practice for fixed film biological treatment	6.1	Explain the microbiology of biofilms and how biofilms are affected by process conditions
		6.2	Describe the different types of plant used in fixed-film biological processes
		6.3	Explain factors impacting upon the choice of plant and design of fixed film biological processes
		6.4	Explain best practice for operation of fixed film biological processes
7.	Understand best practice for suspended growth (activated sludge) treatment	7.1	Explain the main types of suspended growth processes (activated sludge)
		7.2	Describe the different types of plant used in suspended growth processes (activated sludge)
		7.3	Explain factors impacting upon the choice of plant and design of suspended growth processes (activated sludge)
		7.4	Explain best practice for operation and optimisation of suspended growth processes (activated sludge)
8.	Understand best practice processing of Trade Effluent in line with regulatory requirements	8.1	Explain the regulatory framework and legislation pertaining to Trade Effluent
		8.2	Explain typical impact of trade effluent on wastewater treatment works and how the effects can be mitigated
		8.3	Explain how industrial dischargers of trade effluent are affected by enforcement of legislation
		8.4	Explain how trade effluent legislation governs treatment costs
		8.5	Explain how trade effluent is managed in the commercial environment the water industry operates
9.	Understand best practice for tertiary wastewater treatment	9.1	Explain the main types of tertiary wastewater treatment
		9.2	Describe the different types of plant used in tertiary wastewater treatments
		9.3	Explain factors impacting upon the choice of plant and design of tertiary wastewater treatment
		9.4	Explain best practice for operation of tertiary wastewater treatment
10.	Understand best practice for sludge collection and treatment	10.1	Explain the origin and nature of sludge
		10.2	Explain how sludge is stored
		10.3	Explain best practice to mitigate health and safety hazards arising from sludge handling and storage
		10.4	Explain the anaerobic digestion of sludge
		10.5	Describe the different types of plant used in anaerobic digestion of sludge
		10.6	Explain factors impacting on the choice of plant and design for anaerobic digestion of sludge
		10.7	Explain best practice for operation and optimisation of anaerobic digestion of sludge

11. Understand best practice for chemical storage	11.1 Describe the hazards of chemicals used in the wastewater treatment process 11.2 Describe the range of personal protective equipment (PPE) which may be used. 11.3 Describe the safe working procedures in the organisation for delivery, storing, handling and disposing of a range of chemicals
12. Understand best practice for nuisance control	12.1 Explain the origin and nature of nuisances arising from wastewater treatment 12.2 Explain how nuisances can affect the health and wellbeing of workers and stakeholders 12.3 Explain legislation pertaining to nuisance control 12.4 Explain methods for assessing nuisance 12.5 Explain the range of treatment and abatement for nuisance control methods available 12.6 Explain best practice for operation of nuisance control
13. Understand the requirements for an effective supply chain management within the water industry	13.1 Critically evaluate different supply chain models used in the water industry. 13.2 Identify common types of contracts that are in use in the water industry and the structure of a water industry supply chain. 13.3 Explain the principles of inventory management and its relationship to the supply chain in relation to risk and resilience management
14. Understand hydraulics for wastewater treatment processes	14.1 Explain the application and importance of hydraulics for wastewater treatment 14.2 Apply and convert SI units and perform essential arithmetical operations for hydraulic calculations. 14.3 Explain fundamental Hydraulic principles including the Continuity Equation, hydraulic forces, Bernoulli energy conservation and energy friction losses. 14.4 Explain Pump Curves and System Curves 14.5 Demonstrate the appropriate application of hydraulic principles across a range of wastewater treatment applications and uses, including a scenario exercise.
15. Understand engineering principles in relation to wastewater treatment	15.1 Explain the basic electrical theory and principle and engineering practices to ensure the safe operation and isolation of electrical and mechanical plant. 15.2 Explain the requirements and applicability of plant maintenance regimes within the water industry including the role and importance of first line maintenance
16. Understand best practice for process control in wastewater treatment	16.1 Explain the principles and mechanisms for process control of wastewater treatment 16.2 Describe the different types of process control mechanisms and why they are chosen, the common issues of mechanical performance and how these might be overcome
17. Understand the importance and application of innovation within the water sector	17.1 Identify drivers for innovation within the water and environmental industry, to include regulatory, political, environmental, financial etc 17.2 Describe an innovation model and explain the desired outcomes from the different stages of the process

	17.3 Explain how organisational culture can support and promote the innovation process
18. Understand the importance and application of resilience within the water sector	18.1 Identify the principles, essential features and objectives of risk and resilience management 18.2 Explain the regulatory framework pertaining to risk and resilience and the needs and expectations of relevant regulators in respect of risk and resilience 18.3 Demonstrate an understanding of emergency planning and business continuity, by identifying risks to a business and steps that can be made to reduce such risks 18.4 Critically analyse the various techniques for gathering data in order to manage risk and resilience

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.

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