

# Wastewater Network Technician

## Unit WWNC04 Wastewater Network Hydraulics and Modelling

This training specification has been developed from the water process technician standard. The specification details the **minimum** training specification, as agreed by industry employers, to deliver the skills and knowledge required to understand wastewater network hydraulic theory and sewer network design and modelling in the water sector.

The specification details the critical requirements of the activity to establish competence and does not preclude employers from adding to the skills and knowledge detailed by the specification in their own training programmes.

All work must be carried out to approved procedures and practices and in accordance with statutory health, safety and environmental requirements.

### What does this specification look like?

Wastewater network technicians need to be able to:

- WWHM1 Understand and use calculations, formulae and tools applicable to the hydraulic design of wastewater networks
- WWHM2 Understand company requirements and design considerations of wastewater networks
- WWHM3 Understand and identify the most appropriate, effective and efficient techniques for constructing wastewater networks

### What do I need to take this module?

Candidates to be **assessed** as competent in this skill area should have completed the modules shown below or have evidence demonstrating an equivalent level of competence:

1. SHEA water or equivalent

## Performance Criteria

To achieve this unit, you will need to be able to:

### General Requirements

- P1. Identify the work area to be accessed using company documentation, systems and work instructions where appropriate
- P2. Select, inspect and wear required personal protective equipment in line with company procedures where appropriate
- P3. Carry out a site specific risk assessment of the work area, identifying the hazards and the control measures required

### Task Specific – Wastewater Network Hydraulics and Modelling

- P4. Use existing sewer network records and scenarios to determine the gradients of sewer pipes based on invert levels and section length

## Knowledge and Understanding

To achieve this unit, you will need to know and understand:

### General Requirements

- K1. The principles of Health, Safety and Environmental legislation in relation to working with wastewater
- K2. The organisation's safety rules, policies and procedures relating to working with wastewater
- K3. The hazards associated with working with wastewater and the correct way to respond to them
- K4. How to select, inspect and use PPE when working with wastewater
- K5. How to carry out a site specific risk assessment and identify workplace hazards
- K6. How to respond in the event of an emergency situation in the workplace environment
- K7. How to leave the work area in a safe and secure condition
- K8. The company recording and reporting process

### Task Specific – Wastewater Network Hydraulics and Modelling

- K9. The basic calculations relating to wastewater networks and their relevance to design and performance including:
  - a) Area
  - b) Volume

- c) Flow
  - d) Velocity
  - e) Attenuation
- K10. The considerations to be made in relation to the hydraulic design of foul and surface water sewers, including:
- a) Domestic and industrial design flow rates
  - b) Self-cleansing velocity
  - c) Gradient
  - d) Roughness value
- K11. How hydraulic design charts are used when designing or selecting pipes
- K12. How to undertake basic calculations relating to wastewater networks including:
- a) Area
  - b) Volume
  - c) Flow
  - d) Velocity
  - e) Attenuation
  - f) Pipe runs
  - g) Manhole location
- K13. The considerations to be made when designing wastewater networks, including:
- a) Pipe size availability
  - b) Pipe roughness
  - c) Current and future demand
  - d) Cost
  - e) Pump station requirement
  - f) Rising mains
- K14. Current construction methods and available technology. The limitations and benefits including the time / cost implications to be considered
- K15. The company's investment prioritisation process for hydraulic sewer flooding

### How will it be assessed?

To achieve this unit, you will need to be able to provide evidence of the performance criteria and the knowledge and understanding requirements listed above.

Assessment types:

1. External assessment – an external accrediting body will assess against a national minimum standard
2. Internal assessment process – a company led on-going assessment against requirements
3. End-point assessment - see assessment plan for further details here (will be Energy & Utility Skills defined)

### What type of evidence will be expected?

To achieve this unit, you will need to be able to provide evidence of the performance criteria and the knowledge and understanding requirements listed above.

Evidence types:

1. On-going local assessments
  - a) Assessment plan, review, feedback, standard assessment sheets
2. Knowledge based learning
  - a) Classroom, exams, assignments, Q&A sessions, e-learning modules
3. Evidence portfolios
  - a) Learning logs, photos, observation sheets

### Assessment types and process

