

Title	Demonstrate knowledge of public health considerations, hydraulics, and corrosion in wastewater and stormwater networks		
Level	4	Credits	5

Purpose	People credited with this unit standard are able to demonstrate knowledge of: public health considerations for installation and maintenance; hydraulics; and corrosion and corrosion protection, in wastewater and stormwater networks.
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Classification	Infrastructure Works > Pipeline Construction and Maintenance
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Available grade	Achieved
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Guidance Information

- 1 Evidence presented for assessment against this unit standard must be consistent with safe working practices and be in accordance with applicable legislative and industry requirements.
- 2 Legislation relevant to this unit standard includes:
Health and Safety at Work Act 2015;
Resource Management Act 1991;
Hazardous Substances and New Organisms (HSNO) Act 1996;
and subsequent amendments.
- 3 Definition
Industry requirements refer to relevant policies, processes, methodologies, industry codes of practice, site specific health and safety plans, standard operating procedures, site safety plans, quality plans, work plans, traffic management plans, contract work programmes, job safety analysis, safe work method statements, job instructions, manufacturer's requirements, contract specifications, manuals, procedural documents, Waka Kotahi New Zealand Transport Agency specifications and guidelines.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of public health considerations for installation and maintenance of wastewater and stormwater networks.

Performance criteria

- 1.1 Pathogens and contaminants in wastewater and stormwater networks are described in terms of potential impacts on public health, testing methods for presence, and risk factors for spread of contamination.
- 1.2 Problems in wastewater and stormwater reticulation networks that may lead to contamination are described in terms of their causes and effects.
- Range flat grades, water velocity in sewers, deposition of solids, blockages, leaks.
- 1.3 Requirements for ensuring the safety of public health when constructing or maintaining wastewater and stormwater pipelines are described in terms of preventive and corrective actions.

Outcome 2

Demonstrate knowledge of hydraulics in wastewater and stormwater networks.

Performance criteria

- 2.1 Pressure and flow are described in terms of grade, water pressure, and causes of flow variations.
- 2.2 Gravity and pressure systems are described in terms of their applications and differences in hydraulics, and flow measurement techniques.
- 2.3 The limitations of a gravity main are described in terms of the issues caused by incorrect fall and pipe diameter and their effects on the network.
- Range friction loss over distance, velocity, surcharge, corrosion.
- 2.4 The velocity in a wastewater or stormwater main is described in terms of self-cleaning limits.
- 2.5 The role of pumps and valves is described in terms of the impact on hydraulic gradients and conditions for their use.
- 2.6 Infiltration and exfiltration are described in terms of the causes, impacts on flows within a network, and effects.

Outcome 3

Demonstrate knowledge of corrosion and corrosion protection in wastewater and stormwater networks.

Performance criteria

- 3.1 The causes of corrosion are identified and described in terms of the physical and biological mechanisms occurring in wastewater and stormwater networks.

- 3.2 Corrosion is described in terms of its effect on materials and components in wastewater and stormwater networks.
- 3.3 Corrosion protection techniques are described and explained in terms of their application in construction and maintenance of wastewater and stormwater networks.

Planned review date	31 December 2026
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	29 November 2018	31 December 2023
Review	2	26 August 2021	N/A

Consent and Moderation Requirements (CMR) reference	0101
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Comments on this unit standard

Please contact Connexis - Infrastructure Industry Training Organisation qualifications@connexis.org.nz if you wish to suggest changes to the content of this unit standard.