

Title	Demonstrate knowledge of pathogens, diseases, and their control in water services reticulation		
Level	3	Credits	5

Purpose	People credited with this unit standard are able to: describe pathogens and water-borne diseases; describe the use of testing for indicator organisms for water quality monitoring; and demonstrate knowledge of risk management in relation to transmission of water borne disease due to maintenance and construction of water services reticulation.
----------------	---

Classification	Water Industry > Water Reticulation
-----------------------	-------------------------------------

Available grade	Achieved
------------------------	----------

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 the Health and Safety at Work Act 2015, Water Services Act 2021, Hazardous Substances and New Organisms Act 1996, and subsequent amendments.
- 3 Definitions
Industry requirements may refer to but are not limited 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.
Water reticulation – in this context refers to all pipe systems, pumping systems, and components that contribute to the distribution of water, and collection and disposal of wastewater and stormwater.

Outcomes and performance criteria

Outcome 1

Describe pathogens and water-borne diseases.

Performance criteria

- 1.1 Pathogens are described in terms of their impact on human health.
- 1.2 Pathogens are described in terms of their microbiological classification.
- Range helminths, protozoa, bacteria, viruses.
- 1.3 The cause and general symptoms of water-borne diseases are described in terms of the pathogen and significance of the disease.
- Range includes but is not limited to – gastro-enteritis, salmonella, *E. coli*, typhoid, polio, giardiasis, cryptosporidiosis, hepatitis.

Outcome 2

Describe the use of testing for indicator organisms for water quality monitoring.

Range sample collection location, sampling procedure, use of results.

Performance criteria

- 2.1 Water quality monitoring is described in terms of the use of faecal coliform and/or *E.coli* testing as an indicator of potential contamination.
- 2.2 Water quality monitoring is described in terms of the use of heterotrophic plate count testing as an indicator of general pollution.

Outcome 3

Demonstrate knowledge of risk management in relation to transmission of water borne disease due to maintenance and construction of water services reticulation.

Performance criteria

- 3.1 The opportunities for contamination and risk reduction during new pipeline construction are described in terms of water quality risks and methods to reduce these risks.
- Range includes but is not limited to – pipe storage, site cleanliness, trench inundation, pipe plugs, flushing, disinfection, water quality testing, personal hygiene.
- 3.2 The opportunities for contamination and risk reduction during maintenance and emergency repairs are described in terms of water quality risks and methods to reduce these risks.
- Range includes but is not limited to – positive water flows, site cleanliness, trench inundation, flushing, disinfection, personal hygiene.

- 3.3 The opportunities for contamination and risk reduction during sewer maintenance and emergency repairs are described in terms of water quality risks and methods to reduce these risks.

Range includes but is not limited to – protective equipment, site cleanliness, washing, disinfection, personal hygiene.

- 3.4 Standard preventive practices for personnel are described in terms of personal health risks and methods to reduce these risks.

Range includes but is not limited to – inoculation.

- 3.5 Hygiene procedures are described for staff maintaining both drinking-water and wastewater systems.

Range equipment, personal.

Planned review date	31 December 2026
----------------------------	------------------

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	27 May 2002	31 December 2018
Revision	2	12 February 2003	31 December 2018
Review	3	19 September 2008	31 December 2018
Review	4	16 March 2017	31 December 2023
Review	5	24 March 2022	N/A

Consent and Moderation Requirements (CMR) reference	0101
--	------

This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Comments on this unit standard

Please contact Waihangā Ara Rau Construction and Infrastructure Workforce Development Council at qualifications@waihangā.nz if you wish to suggest changes to the content of this unit standard.