

Title	Demonstrate knowledge of public health considerations, hydraulics, backflow and corrosion in drinking-water 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 pressure zones; backflow prevention; and corrosion and corrosion protection; in drinking-water networks.
----------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Classification	Infrastructure Works > Pipeline Construction and Maintenance
-----------------------	--------------------------------------------------------------

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:
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 drinking-water networks.

Performance criteria

- 1.1 The purposes of drinking-water supply systems are described in terms of protection of public health of communities.
- Range adequate water supply, uses of water, potability of water, ability to prevent endemic diseases, examples of disease outbreaks due to non-potable supplies.
- 1.2 Pathogens and contaminants of drinking-water supply networks are described in terms of methods of entry to the network, potential impacts on public health, signs of presence, and testing methods for presence.
- 1.3 Requirements for ensuring adequacy of supply and potability when installing and maintaining drinking-water pipelines are described in accordance with company requirements.
- Range preventive and corrective actions, notification.

Outcome 2

Demonstrate knowledge of hydraulics and pressure zones in drinking-water networks.

Performance criteria

- 2.1 Pressure and flow are described in terms of ground levels, water pressure, and water demand.
- 2.2 Water hammer is described in terms of its impact and prevention.
- 2.3 Gravity and pressure systems are described in terms of their applications and differences in hydraulics.
- 2.4 Measurement of water pressure is described in terms of the methods used, and accepted levels for minimum and maximum pressure in networks are described in terms of their implications for installation and maintenance of networks.
- 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 Thrust blocks, anchor blocks, and water hammers are described in terms of their applications in drinking-water networks and requirements for installation and maintenance.

Outcome 3

Demonstrate knowledge of backflow prevention in drinking-water networks.

Performance criteria

- 3.1 Backflow is described in terms of the implications for localised contamination of drinking-water supplies.

3.2 Backflow prevention techniques are described in terms of their installation, operation, maintenance, and methods of testing for satisfactory operation.

Range evidence is required for at least two backflow prevention techniques.

3.3 Backflow prevention techniques are described in terms of their suitability for consumer situations.

Range air gap, reduced pressure zone (RPZ), double check valve.

Outcome 4

Demonstrate knowledge of corrosion and corrosion protection in drinking-water networks.

Performance criteria

4.1 Corrosion is described in terms of the contributing physical and biological mechanisms occurring in drinking-water pipes.

4.2 Corrosion is described in terms of its effects on materials and lifetime of pipelines, and the implications for pipeline maintenance.

4.3 Corrosion is described in terms of techniques for monitoring and minimisation.

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	29 November 2018	31 December 2023
Review	2	26 August 2021	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 Connexis - Infrastructure Industry Training Organisation qualifications@connexis.org.nz if you wish to suggest changes to the content of this unit standard.