

Title	Demonstrate knowledge of small drinking-water systems		
Level	3	Credits	5

Purpose	People credited with this unit standard are able to, for small drinking-water systems, demonstrate knowledge of: the factors affecting the quality and quantity of water available from water sources and catchments; water treatment processes; the components used for distribution of drinking-water from source to point of supply; and monitoring and recording procedures to determine the adequacy of supply and quality of drinking-water for small drinking-water systems.
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Classification	Water Industry > Water Treatment
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Available grade	Achieved
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Guidance Information

- 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.
- 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, Health and Safety at Work (Hazardous Substances) Regulations 2017, and subsequent amendments.
Drinking-water Standards for New Zealand, 2005 (Revised 2018), and subsequent replacements, available at www.taumataarowai.govt.nz.
- Definitions
Industry requirements include manufacturers' specifications; and enterprise requirements which may include documented workplace policies, procedures, specifications, business, and quality management requirements relevant to the workplace in which assessment is carried out.
Small drinking-water system refers to a drinking-water supply servicing from 50 to 500 people; and which includes catchment, source, treatment, and distribution.
- Learning and assessment activities for this unit standard must be informed by Te Mana o te Wai (refer to [Taumata Arowai](http://www.taumataarowai.govt.nz)) and the *National Policy Statement for Freshwater Management 2020* available from <https://environment.govt.nz/>.
- Some Marae are using traditional Māori indicators to determine water quality, for example, amount of algae and weed growth, presence of algae on rock, flow rate, and smell.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of the factors affecting the quality and quantity of water available from water sources and catchments for small drinking-water systems.

Performance criteria

- 1.1 Water sources and catchments are described in terms of the factors affecting water quality, and the variation of water quality.
- Range tankered water and one of – surface or surface-influenced water, ground water, rainwater harvesting.
- 1.2 Water sources and catchments are described in terms of the factors affecting availability and reliability of supply, and the need for storage.
- Range surface or surface-influenced water, ground water, rainwater harvesting, tankered water; evidence of two is required.
- 1.3 Contaminants that may be found in source water are identified and described in terms of impacts on water quality and public health.
- Range contaminants – microbiological pathogens, cyanobacteria; impacts – chemical, aesthetics, corrosive.

Outcome 2

Demonstrate knowledge of water treatment processes for small drinking-water systems.

Performance criteria

- 2.1 Water treatment processes and water quality parameters are described in terms of inter-relationship, barriers to contamination and suitability of treatment process for source.
- 2.2 Water treatment settlement processes are described in terms of their effect on contaminant removal.
- 2.3 Water treatment filtration processes are described in terms of their effect on particulate removal, maintenance, and operating cost.
- 2.4 Water treatment ultraviolet processes are described in terms of their effect on microbiological contaminants, the dose rates required, maintenance, and operating cost.
- 2.5 Water treatment chlorination processes are described in terms of their effect on microbiological contaminants, the dose rates required, maintenance, and operating cost.

- 2.6 Water treatment pH control processes are described in terms of their aesthetic impact, impact on disinfection, and corrosion control.

Outcome 3

Demonstrate knowledge of the components used for distribution of drinking-water from source to point of supply in small drinking-water systems.

Range tanks, pipes, pumps, valves, backflow preventers, meters.

Performance criteria

- 3.1 Components used in the distribution of drinking-water are described in terms of their purpose and function.
- 3.2 Hygienic methods of installation and maintenance are described for each component.
- 3.3 Preventative maintenance requirements are identified and their purpose explained for each component.

Outcome 4

Demonstrate knowledge of monitoring and recording procedures to determine the adequacy of supply and quality of drinking-water for small drinking-water systems.

Performance criteria

- 4.1 Frequency of and reasons for drinking-water monitoring are explained.
- 4.2 Sampling results are compared to operational and compliance requirements.
- 4.3 Maintenance of drinking-water monitoring records is described.

Replacement information	This unit standard replaced unit standard 22873.
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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	16 March 2017	31 December 2024
Review	2	24 February 2022	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 Waihanga Ara Rau Construction and Infrastructure Workforce Development Council at qualifications@waihanga.nz if you wish to suggest changes to the content of this unit standard.