

41231

Relate foundational science principles and mathematical techniques to water services operations

Kaupae Level	3
Whiwhinga Credit	6
Whāinga Purpose	This skill standard is for people who are new to or intending to work in water services operations. People with this skill standard can relate foundational science principles and mathematical techniques to water services operations. This skill standard aligns with the New Zealand Certificate in Water Services (Level 3) with strands in Drinking Water, and Wastewater [Ref: 5674]. This skill standard may also contribute to other water services industry credentials.

Hua o te ako me Paearu aromatawai | Learning outcomes and assessment criteria

Hua o te ako Learning outcomes	Paearu aromatawai Assessment criteria
1. Relate foundational science principles to water services operations.	a. Relate chemical properties of water, to water services operations.
	b. Identify physical properties of water and describe their impact on operational performance.
	c. Identify microbiological properties of water and their impact on operational performance.
2. Relate foundational mathematical techniques to water services operations.	a. Apply measurement and calculation methods to normal operation and monitoring data, and relate results to typical water services operations performance.

Pārongo aromatawai me te taumata paearu | Assessment information and grade criteria

Assessment specifications:

Ākonga must be capable of relating underpinning science principles and mathematical techniques to meet operating requirements, maintaining expected operating ranges, and recording and monitoring outputs for operational requirements.

Definitions

Water services refer to industries responsible for working on or around water supplies, networks, plants, and systems.

Water services operations refer to the management and delivery of water services to and from communities.

Ngā momo whiwhinga | Grades available

Achieved.

Ihirangi waitohu | Indicative content**Water science**

- Chemical properties: pH, alkalinity, hardness, disinfection and by-products, nutrients, organics and inorganics, emerging contaminants.
- Physical properties: flow, pressure, hydraulics, states of matter.
- Microbiological properties: bacteria, cyanobacteria, pathogens, diseases, contaminants, public health and environmental impacts.

Mathematics

- Fundamental numeracy.
- Units of measurement.
- Calculation of length, area, volume, and mass relevant to water services context.

Rauemi | Resources

Legislation, regulations and/or industry standards relevant to this skill standard include, but are not limited to:

- Drinking Water Quality Assurance Rules - [Drinking Water Quality Assurance Rules](#).
- Drinking Water Standards for New Zealand) - [Water Services \(Drinking Water Standards for New Zealand\) Regulations 2022 \(SL 2022/168\) – New Zealand Legislation](#).
- Wastewater Standards - [Wastewater standards | The Water Services Authority - Taumata Arowai](#).

Pārongo Whakaū Kouna | Quality assurance information

Ngā rōpū whakatau-paerewa Standard Setting Body	Energy and Infrastructure Industry Skills Board
Whakaritenga Rārangi Paetae Aromatawai DASS classification	Engineering and Technology > Water Industry > Water - Generic
Ko te tohutoro ki ngā Whakaritenga i te Whakamanatanga me te Whakaōritenga CMR	0120

Hātepe Process	Putanga Version	Rā whakaputa Review Date	Rā whakamutunga mō te aromatawai Last date for assessment
Rēhitatanga Registration	1	28 May 2026	N/A
Kōrero whakakapinga Replacement information	This skill standard replaced unit standards 17874 and 19200.		
Rā arotake Planned review date	31 December 2032		

Please contact Energy and Infrastructure Industry Skills Board at qualifications@energyinfra-skills.nz if you wish to suggest changes to the content of this skill standard.