

41237**Apply mathematical techniques to operate and control water services treatment operations**

Kaupae Level	4
Whiwhinga Credit	5
Whāinga Purpose	This skill standard is for people who work as operators in drinking water and wastewater treatment environments. People with this skill standard can select and apply context-specific mathematical techniques to interpret operational conditions and support routine decision-making when operating and controlling water services treatment processes. This skill standard aligns with the: • New Zealand Certificate in Drinking Water Treatment Operations (Level 4) with optional strands in Pre-Treatment, Clarification, Coagulation and Flocculation, Non-Chlorine Disinfection, Fluoridation, and Filtration [Ref: 5672] • New Zealand Certificate in Wastewater Treatment Operations (Level 4) with optional strands in Activated Sludge, Effluent Disinfection, Fixed Growth Reactor, Separation, Sludge Treatment, and Ponds [Ref: 5673]. 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. Apply mathematical techniques to operate and control water services treatment operations.	a. Select and apply mathematical calculations including rates, volumes, levels and retention times, to support routine operational decisions in water services operations.
	b. Interpret operational data, using mathematical techniques, to monitor performance and inform control actions for water services treatment processes.

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

Assessment focuses on the practical application of mathematical techniques and interpretation of that data to support operational decision-making, monitoring and control of water treatment processes.

Definitions

Mathematical techniques refer to mathematical concepts and methods applied within the context of water services operations, including calculations and data interpretation required for operational decision-making. These principles do not include abstract or theoretical mathematics beyond workplace application.

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

Operational mathematical techniques

- Units of measurements used in water services operations, including concentration, level, mass, area, volume
- Calculations related to operational water services processes, including
 - flow rates e.g. litres per second, cubic metres per hour, megalitres per day
 - volumes and hydraulic retention times
 - water levels and system capacities
- Use of averages for operational and compliance monitoring
- Interpretation of variability and accuracy, including standard deviation and margin of error, in monitoring results
- Use of graphs and trend analysis to support operational decision-making (e.g. turbidity trends)

Rauemi | Resources

- 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 Kounga | 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	N/A.		
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.