

41221**Operate and control fixed growth reactor processes in wastewater treatment**

Kaupae Level	4
Whiwhinga Credit	10
Whāinga Purpose	This standard is for people who work as wastewater treatment operators. People with this skill standard have the skills to operate and control fixed growth reactor processes to meet required treatment standards. This standard aligns with the 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] and 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. Operate fixed growth reactor processes for the treatment of wastewater.	a. Outline fixed growth reactor processes for the treatment of wastewater in terms of purpose, operating principles, and relevant regulations.
	b. Identify the suitability of fixed growth reactor processes for treating wastewater.
	c. Operate fixed growth reactor processes to treat wastewater to meet operational and compliance requirements.
2. Control fixed growth reactor processes.	a. Perform process tests to optimise fixed growth reactor processes to meet operational and compliance requirements.
	b. Interpret monitoring results to identify trends, variations, and emerging process issues.
	c. Record monitoring results and operational adjustments, in accordance with operational requirements.

Hua o te ako Learning outcomes	Paearu aromatawai Assessment criteria
3. Maintain fixed growth reactor processes for wastewater treatment.	a. Maintain plant and equipment in accordance with documented procedures and specifications.
	b. Identify and respond to faults or failures in accordance with operational requirements.
	c. Complete process reporting and record requirements in accordance with compliance and organisational requirements.

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

Assessment specifications:

Ākonga must demonstrate that they can safely, consistently, and competently operate fixed growth reactor processes accordance with operational requirements, and applicable legislative and regulatory requirements.

Assessment for this skill standard must be based on practical performance and supported by evidence that must take place in an operational wastewater treatment environment where fixed growth reactor processes are in use.

Assessment must cover the full range of fixed growth reactor processes relevant to this skill standard that are in use at the candidate's workplace.

Evidence must demonstrate consistent performance over time, not one-off tasks.

Definitions

Candidate's workplace (for assessment purposes) means the operational treatment site(s) nominated by the employer as the workplace for assessment, that includes the full range of processes relevant to this assessment standard and to the candidate's expected duties. Where the employer operates multiple treatment sites, the nominated workplace must not be limited to a site with minimal relevant processes where this would prevent evidence being gathered for the full range of processes relevant to this assessment standard.

Operational requirements refer to the documented and embedded ways of working that govern how activities are planned, performed, monitored, and controlled in the workplace to ensure safe, consistent, and compliant operations.

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

Ngā momo whiwhinga | Grades available

Achieved.

Ihirangi waitohu | Indicative content**Fixed growth reactor processes and principles**

- Purpose and function of fixed growth reactor processes in wastewater treatment.
- Types of fixed growth reactor systems.
- Suitability of fixed growth reactor processes for different wastewater characteristics and treatment objectives.
- Biological stabilisation and reduction of contaminants in fixed growth systems.

Process operation, monitoring and control

- Operation under normal, variable or abnormal loading conditions.
- Routine process tests to monitor process performance.
- Dissolved Oxygen (DO) control and its influence on biological activity.
- Settleability indicators and process stability.
- Interpretation of monitoring results to assess performance and compliance.
- Process adjustments to maintain effective treatment outcomes.

Maintenance and support activities

- Key performance measures.
- Biochemical Oxygen Demand (BOD) as an indicator of treatment effectiveness.
- Total suspended solids and process performance impact.
- Nutrients and nutrient removal considerations.
- Indicator organisms relevant to wastewater compliance monitoring.
- Process failure and incident response procedures.
- Adjustment and verification of plant, instruments, and equipment.
- Routine maintenance of fixed growth reactor plant and equipment. Completion of process records and reports to meet operational and compliance requirements.

Rauemi | Resources

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

- Biosolids Reuse Guidelines - [Guidelines for Beneficial Use of Organic Materials on Productive Land](#) and [Beneficial reuse of biosolids standard | The Water Services Authority - Taumata Arowai](#).
- 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 > Wastewater Treatment
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 standard 29952.		
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.