

**41243****Operate and control chlorination processes for drinking water**

|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Kaupae   Level</b>     | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Whiwhinga   Credit</b> | 15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Whāinga   Purpose</b>  | <p>This skill standard is for people who work as drinking water treatment operators.</p> <p>People with this skill standard have the skills to operate, control and maintain chlorination processes to meet required drinking water quality outcomes and compliance with regulatory requirements.</p> <p>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], and may also contribute to other water services industry credentials.</p> |

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

| <b>Hua o te ako   Learning outcomes</b>               | <b>Paearu aromatawai   Assessment criteria</b>                                                                                                                     |
|-------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Operate chlorination processes for drinking water. | a. Describe chlorination processes for drinking water treatment, in terms of purpose, operating principles, and relevant regulations.                              |
|                                                       | b. Outline the suitability of chlorination processes for treating drinking water.                                                                                  |
|                                                       | c. Operate chlorination processes to prepare drinking water for further treatment and to meet compliance requirements                                              |
| 2. Control chlorination processes for drinking water. | a. Perform process tests and measures, and undertake operational observations, to optimise chlorination 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 chlorination treatment plant and equipment. | a. Maintain plant and equipment to ensure optimal process functionality.                   |
|                                                         | b. Identify and respond to faults or failures in accordance with operational requirements. |
|                                                         | c. Record maintenance in accordance with operational 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 and control chlorination processes in 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 drinking water treatment environment where chlorination treatment processes are in use.

Assessment must cover the full range of chlorination 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****Chlorination principles and treatment intent**

- Purpose of chlorination within a multi-barrier treatment approach.
- Disinfection objectives and factors affecting process performance.
- Relevant legislation, drinking water standards, and quality requirements applicable to chlorination.
- Drinking Water Safety Plan (DWSP) context for chlorination-related hazards, critical control points, and verification.

**Chlorination process configuration and chemicals**

- Typical chlorination process components and where they sit in the treatment process (upstream/downstream dependencies).
- Chlorine chemicals used in drinking water treatment and their key characteristics (workplace-specific).
- Critical control points and failure modes e.g. under-dose/over-dose, loss of dosing, pump failure, leaks, blocked lines, incorrect setpoints.

**Operating parameters and process control**

- Key operating parameters relevant to chlorination e.g. dose rate, flow pacing, chemical strength, contact time, residual targets where applicable.
- Process control actions to maintain performance and protect downstream treatment.

**Monitoring and instrumentation**

- Online instrumentation and alarms/interlocks relevant to chlorination processes.
- Routine testing/sampling checks and performance confirmation.
- Interpreting monitoring results to identify trends, variation, and emerging process issues (trend analysis).

**Maintenance and supporting activities**

- Adjustment and verification of plant, instruments, and monitoring equipment.
- Routine and corrective maintenance of treatment assets.
- Operational adjustments in response to monitoring results.
- Consequences of failure and response actions including escalation and reporting requirements.
- Recordkeeping required to demonstrate compliance and process control.

## Rauemi | Resources

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

- Drinking Water Safety Planning (DWSP) - <https://www.taumataarowai.govt.nz/drinking-water-suppliers-and-operators/for-drinking-water-suppliers/how-to-guidance/preparing-a-drinking-water-safety-plan>.
- 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](#).
- Water Services Act 2021 - [Water Services Act 2021, Public Act Contents – New Zealand Legislation](#).
- Hazardous Substances and New Organisms Act 1996 - [Hazardous Substances and New Organisms Act 1996 No 30 \(as at 05 April 2025\), Public Act Contents – New Zealand Legislation](#).

## Pārongo Whakaū Kouna | Quality assurance information

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

| <b>Hātepe   Process</b>                              | <b>Putanga   Version</b>                          | <b>Rā whakaputa   Review Date</b> | <b>Rā whakamutunga mō te aromatawai   Last date for assessment</b> |
|------------------------------------------------------|---------------------------------------------------|-----------------------------------|--------------------------------------------------------------------|
| <b>Rēhitatanga   Registration</b>                    | 1                                                 | 28 May 2026                       | N/A                                                                |
| <b>Kōrero whakakapinga   Replacement information</b> | This skill standard replaced unit standard 29982. |                                   |                                                                    |
| <b>Rā arotake   Planned review date</b>              | 31 December 2032                                  |                                   |                                                                    |

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