Water Supply

Port Waikato Supply Zone

DRINKING WATER SAFETY PLAN

2025

Community Code	**POR005**
Source Code	**S00920**
Treatment Plant Code	**TP00698**
Zone Code	**POR005PW**

Watercare

An Auckland Council Organisation

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Table 1: Document Control Record.

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1.0	Drinking Water Safety Plan 2022 update	Grant King **Water Quality Scientist**	Bliss Pappachan **Water Quality Scientist** Tatiana Derevianko **Water Quality & Science Manager**	October 2022	Mathew Telfer **Operations Manager Waikato District**
2.0	Drinking Water Safety Plan 2023 update	Bliss Pappachan, **Water Quality Scientist**	Marieka van der Lee **Water Quality Scientist** Tatiana Derevianko **Water Quality & Science Manager**	November 2023	Mathew Telfer **Operations Manager Waikato District**
3.0	Drinking Water Safety Plan 2024 update	Mitchell Adams **Water Quality Scientist**	Tatiana Derevianko **Water Quality Compliance & Science Manager**	November 2024	Anin Nama **Head of Service Delivery – Waikato**
4.0	Drinking Water Safety Plan 2025 update	Cara Dreyer **Water Quality Scientist**	Tatiana Derevianko **Water Quality Compliance & Science Manager**	November 2025	Anin Nama **Head of Service Delivery – Waikato**

Table 2: Document Distribution List.

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Executive Summary

This Drinking Water Safety Plan (DWSP) has been developed using the *New Zealand Drinking Water Safety Plan Framework* and provides a comprehensive review of the Port Waikato water supply system It outlines how public health risks within these zones are managed and summarises compliance requirements necessary to ensure the delivery of safe and reliable drinking water.

The Port Waikato supply is owned by Waikato District Council (WDC) and operated by Watercare Services Limited (Watercare). This DWSP satisfies the legislative requirements of the *Water Services Act 2021* and must be viewed alongside the *Watercare Waikato General DWSP (Version 1.0; Appendix 1).*

WDC and Watercare adhere to the six principles of drinking-water safety, which are embedded into all systems, processes, and behaviours:

1) Embrace a high standard of care
2) Protect source water
3) Maintain multiple barriers against contamination
4) Change precedes contamination
5) Suppliers must own the safety of drinking-water
6) Apply a preventive risk management approach.

This DWSP will be reviewed and updated regularly to reflect changes in infrastructure, operations, or risk profiles, ensuring ongoing compliance and continuous improvement in drinking water safety.

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Amendments

Requests for amendments or revisions of the manual are submitted to the document controller, who is responsibility of reviewing requests and implementing changes to the document. Amendments and updates are documented in the *Table 1: Document Control Record.* Amendments or revisions of the document will result in a new version number and updated date in the footer.

1. Assessment of the Port Waikato Drinking-Water Supply

Table 3: Water Supply Details.

Supply Details	
Supply Name	Port Waikato
Hinekōrako Community Code	POR005
Supply Owner	Waikato District Council
Population Served by Supply	350 (2022 estimate based on connection data and Stats NZ Statistical area population count)
Source Details	
Easting: 1753308	**Northing**: 5859580
Source	Maraetai Stream
Hinekōrako Code	S00920
Consent	136297 - To take water from the Maraetai Stream.
Consent Expiry	30-April-51
Maximum Consented water take	80 m^3/day
Treatment	
Hinekōrako Code	TP00698
Treatment Processes	Coagulation, Filtration, Ultraviolet (UV) Disinfection, Chlorination
Average Daily Volume	47 m^3/day (2024 - 25)
Peak Daily Volume	77 m^3/day (2024 - 25)
Distribution	
Hinekōrako Code	POR005PW
Distribution Zone Population	350 (2022 estimate based on connection data and Stats NZ Statistical area population count)

Port Waikato Water Supply System Description

The Port Waikato WTP, located on Port Waikato–Waikaretu Road, serves only 19 connections, none of which are residential. Treated water is supplied exclusively to public facilities including toilets, the campground, marae, fire station, surf club, and Council buildings. The treatment facility employs clarification, filtration, UV disinfection, and chlorination. Treated water is gravity-fed to the township.

Intake:

Raw water is abstracted from the Maraetai Stream via a wet well adjacent to the stream intake. Intake screens prevent debris and aquatic life from entering the system. Flow and pH are continuously monitored, and backup power is available through a portable generator connection. Although no generator is kept on site, a mobile unit can be delivered when required and is capable of operating the entire plant for the duration of an outage.

Coagulation and Clarification:

Incoming water is dosed with soda ash (sodium carbonate, Na_2CO_3) for pH correction prior to coagulation, with a pH meter continuously monitoring pH. Polyaluminium chloride (PACl) is added as the primary coagulant, followed by a polyelectrolyte to enhance floc formation. Dosing of both coagulant and flocculant occurs in an in-line mixer at a fixed dose rate able to be manually adjusted. Jar testing is conducted periodically to optimise dosing rates and ensure effective treatment performance.

Water enters a clarifier where flocculated particulates are allowed to settle. Sludge from the clarifier is periodically drained to a holding tank. From here, a sucker truck will transport the sludge to Huntly Wastewater Treatment Plant (WWTP).

Filtration and UV Disinfection:

Clarified water is pumped via a lift pump into a rapid sand filter. Filters are backwashed by an operator once a week. Backwash water is drawn from the clear water tank and discharged to a holding tank, alongside clarifier sludge, where it is transported off site for disposal.

Filtered water turbidity is measured prior to disinfection. A WEDECO Spektron 15 UV reactor provides UV disinfection, validated to ÖNORM standards. The unit is equipped with a control panel that monitors intensity and operational status. Any deviation from the required dose triggers an alarm. Validation certificates are listed in *Appendix 2.*

Chemical Dosing and Post-Treatment Monitoring:

Chlorine gas is dosed using a single chlorinator to assist with iron and manganese removal. Dose rates are fixed and can be manually adjusted according to treatment requirements. Water enters a chlorine contact tank where a minimum 30 minutes of contact time is provided. Treated water is transferred to two 25 m^3 storage reservoirs on Cobourne Place via a duty/standby pump. A description of reservoirs is included the Reservoir Register listed *Appendix 3.* From there, it is distributed to the village by gravity.

Final water is continuously monitored for flow and chlorine. Data is telemetered to WDC, with monitoring equipment calibrated weekly and validated quarterly. The abstraction pump is triggered based on the water level in the storage reservoirs; once activated, the remaining treatment processes start automatically.

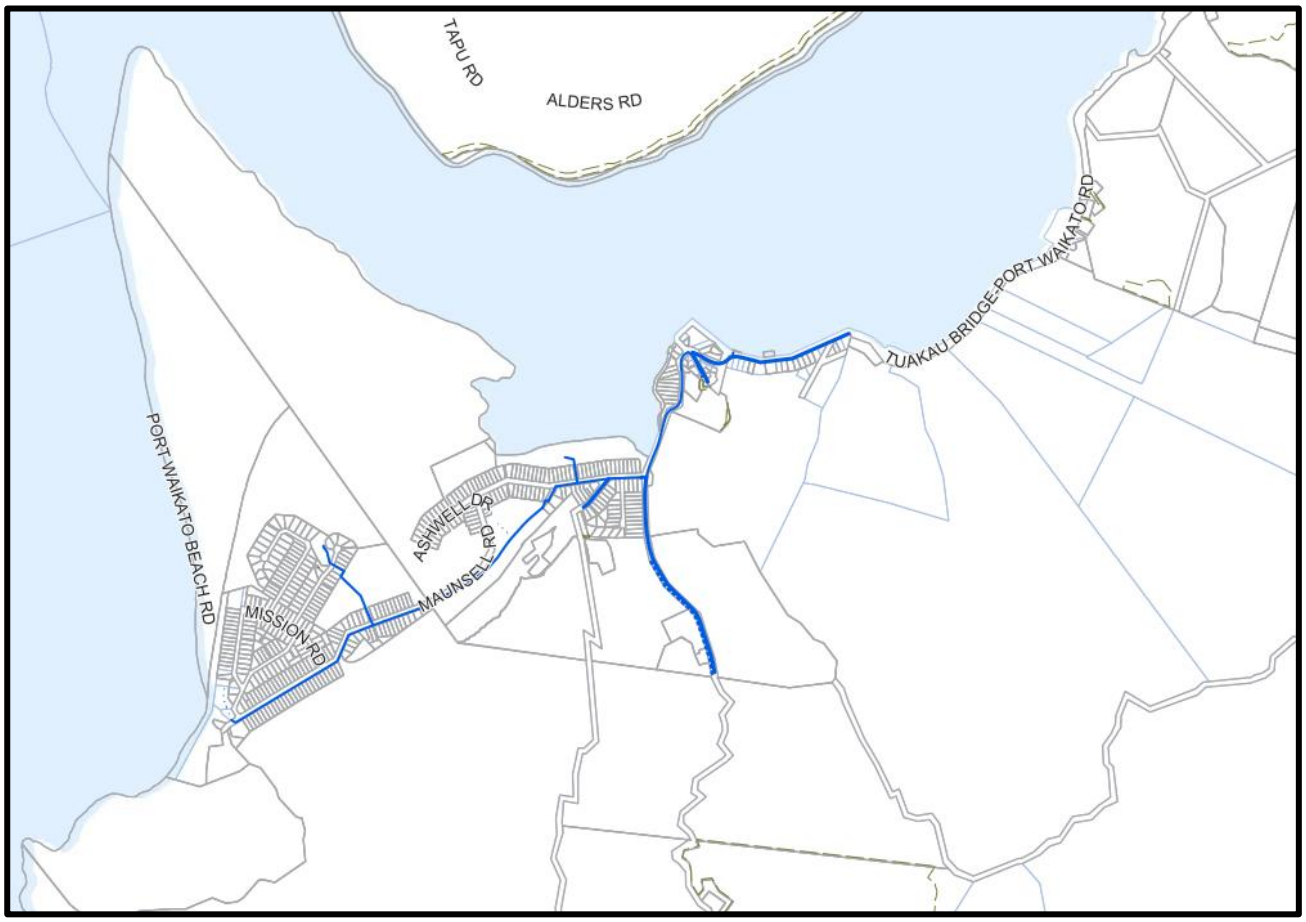

Figure 1: Port Waikato Supply Location.

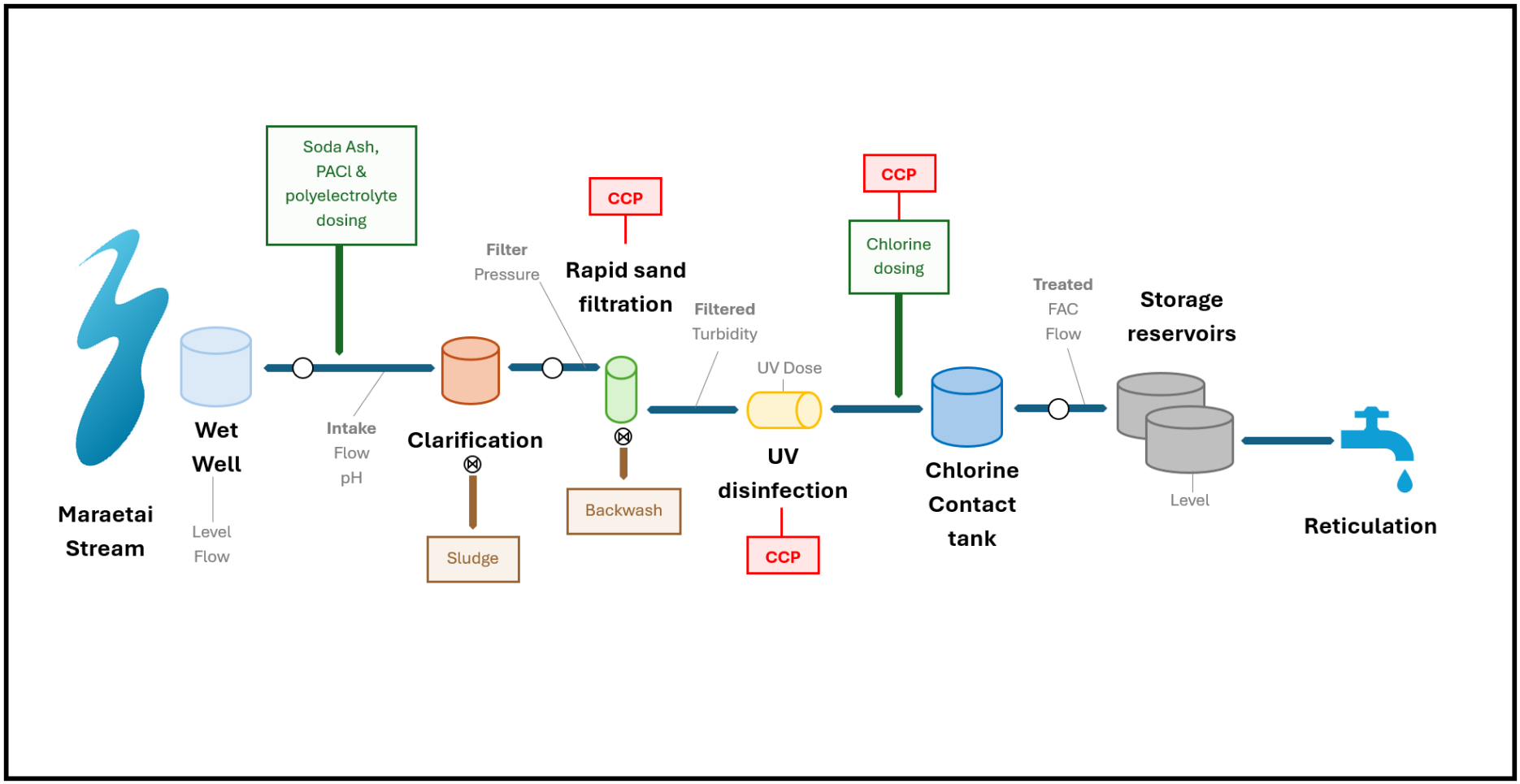

Figure 2: Port Waikato Water Supply Flow Diagram.

2. Risk Identification and Preventive Measures

A Catchment Risk Assessment (CRA) has been completed as part of the overall risk management framework for the Port Waikato water supply system (*Appendix 4*). It identifies and addresses potential source-water contamination risks and outlines the microbiological treatment requirements as specified in the *Drinking Water Quality Assurance Rules (2022), revised 29 November 2024 (DWQAR).*

This forms part of the wider risk assessment framework, which is detailed in the *Water Supply Risk Table (Appendix 5)*. The table identify potential public health risks across the entire supply system, with each hazardous event assessed based on its likelihood and consequence, and includes the following components:

- Catchment
- Intake
- Coagulation, Flocculation, PACl Dosing
- Filtration
- UV Disinfection
- Clear Water Tank and Lift Pumps
- pH Correction
- Chlorination
- Storage Reservoirs
- Reticulation
- Other

A multiple barrier approach is used to manage these risks. This approach ensures that if one barrier fails, others remain in place to maintain the safety and reliability of the supply. Key barriers include physical treatment processes, chemical dosing, operational monitoring, and system redundancies.

As part of this approach, Critical Control Points (CCPs) are established at key stages of the treatment process. These are process barriers and monitoring points designed to detect and respond to deviations that could compromise water safety. Each CCP has defined operational limits and is monitored at a frequency that ensures timely detection of any failures (*Appendix 5*).

The location of CCPs are shown in the supply flow diagram and further details are included in *Critical Control Points (Appendix 6).*

Table 4: Barriers and Preventative Measures in place at the Port Waikato WTP.

Four Types of Barriers	Existing Preventive Measures Include:
Preventing hazards entering the raw water	• Intake screen
Removing particles and hazardous chemicals from the water by physical treatment	• Coagulation, Flocculation • Rapid sand filtration – CCP
Killing or inactivating pathogens in the water by disinfection	• UV disinfection – CCP • Chlorination with contact time – CCP
Maintaining the quality of the water in the distribution system	• Residual disinfection maintained • Hygiene and construction codes of practice • Adequate network pressures maintained • Backflow prevention programme • Reservoirs protected from ingress • Online continuous SCADA monitoring and alarms

3. Compliance Monitoring and Reporting Requirements

The Port Waikato WTP is required to demonstrate compliance with Level 2 of the DWQAR. The reporting period is quarterly, with compliance data submitted to Taumata Arowai within 20 working days following the end of each quarter. Determinands listed in Table 3 are reported via API transfers from Water Outlook to Taumata Arowai's compliance database, Hinekorako. The sampling plan is detailed in *Appendix 7*.

Table 5: Monitoring Requirements for Port Waikato WTP.

Population	Determinands	Compliance Limit	Hazard	DWQAR	Sampling Frequency	Compliance Period
350	*E. coli*	< 1.0/100mL	Bacteria	4.7 – T2.1 (a)	Monthly	1 Month
350	Total Coliforms	<1.0/100mL	Bacteria	4.7 – T2.1 (b)	Monthly	1 Month
350	Aluminium, antimony, cadmium, copper, chromium, lead, mercury, nickel	DWSNZ	PACl	4.7 – T2.1 (c)	Monthly	1 Month
350	Chlorate	0.8 mg/L	Sodium hypochlorite	4.7 – T2.1 (c)	Monthly	1 Month
350	Bromate	0.01 mg/L	Sodium hypochlorite	4.7 – T2.1 (c)	Monthly	1 Month
350	Turbidity	< 5.0 NTU	Bacteria	4.7 – T2.2 (a)	Twice weekly	1 Month
350	FAC	> 0.2 – 1.75 mg/L	Bacteria	4.7 – T2.2 (b)	Twice weekly	1 Month
350	pH	6.5 – 8.0	Bacteria	4.7 – T2.2 (c)	Twice weekly	1 Month
350	Chlorate	0.8 mg/L	Chemical	4.7 – T2.4	Quarterly	1 Month
350	Turbidity	< 5.0 NTU	Bacteria	4.7 – T2.6 (a)	Continuous	1 Day
350	FAC	>= 0.5 mg/L	Bacteria	4.7 – T2.6 (b)	Continuous	1 Day
350	pH	6.5 – 8.0	Bacteria	4.7 – T2.6 (c)	Continuous	1 Day
350	UV dose	40 mJ/cm^2	Protozoa	4.7 – T2.10	Continuous	1 Day

APPENDIX 1: GENERAL WATER SAFETY PLAN (VERSION 1.0)

Addresses the ten fundamental components for the provision of safe and secure drinking water across all WDC-owned water supplies in alignment with the *New Zealand Drinking Water Safety Plan Framework.*
Available at: O:\Ops\Watercare Waikato\Water Safety Plans\1. DWSP General

APPENDIX 2: UV VALIDATION CERTIFICATE

Confirms that the WEDECO Spektron 250e UV reactor at Port Waikato WTP is validated to ÖNORM standards.
Available at: O:\Ops\Watercare Waikato\Water Safety Plans\1. DWSP Port Waikato

APPENDIX 3: RESERVOIR STORAGE MANAGEMENT PLAN

Details operational parameters and maintenance requirements for drinking water storage facilities, aligned with the *DWQAR D3.12*.
Available at: O:\Ops\Watercare Waikato\Water Safety Plans\1. DWSP Port Waikato

APPENDIX 4: CATCHMENT RISK ASSESSMENT OF PORT WAIKATO

Identifies potential sources of contamination within the water supply catchment and assess risks to drinking water quality. Supports proactive risk management and informs mitigation strategies.
Available at: O:\Ops\Watercare Waikato\Water Safety Plans\Catchment Risk Assessment

APPENDIX 5: WATER SUPPLY RISK TABLES

Summarises potential risks to drinking water quality for the Port Waikato supply, supporting control prioritisation and improvement planning. Available at: O:\Ops\Watercare Waikato\Water Safety Plans\1. DWSP Port Waikato

APPENDIX 6: CRITICAL CONTROL POINTS

Outlines key process barriers and monitoring points to manage drinking water quality risks with defined limits and response protocols to mitigate public health risks.
Available at: O:\Ops\Watercare Waikato\Water Safety Plans\1. DWSP Port Waikato

APPENDIX 7: DISTRIBUTION NETWORK SAMPLING PLAN

Outlines WDC's distribution network compliance monitoring schedule, reviewed annually per DWQAR D3.18 and D3.28. Available at: O:\Ops\Watercare Waikato\Water Safety Plans\1. DWSP Port Waikato

APPENDIX 8: OPERATOR MONITORING AND MAINTENANCE SCHEDULE

Outlines a defined set of performance criteria used to assess and verify the functionality of key components within the water supply system. The Operator Monitoring and Maintenance Schedule is included in the General Drinking Water Safety Plan.
Available at: O:\Ops\Watercare Waikato\Water Safety Plans\1. DWSP Port Waikato

APPENDIX 9: STANDARD OPERATING PROCEDURES (SOPS)

Step-by-step instructions for routine tasks, maintenance activities, and incident response, ensuring compliance with regulatory requirements and best practice standards.
Available at: O:\Ops\Watercare Waikato\1. CONTROL of WORKS\CONTROL OF WORKS\SOPs\Production\Water