

Water Supply

Te Aakau Supply Zone

DRINKING WATER SAFETY PLAN

2025



Community Code	TEA009
Source Code	G11278
Treatment Plant Code	TP100452
Zone Code	TEA009TE

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Table 1: Document Control Record.

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4.0	Drinking Water Safety Plan 2025 update	Cara Dreyer Water Quality Scientist	Tatiana Derevianko Water Quality Compliance & Science Manager	October 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 Te Aakau water supply system. It outlines how public health risks associated with these supplies are managed and summarises compliance requirements needed to ensure the delivery of safe and reliable drinking water.

The Te Aakau 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 responsible for 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 Te Aakau Drinking-Water Supply

Table 3: Water Supply Details.

Supply Details	
Supply Name	Te Aakau
Hinekōrako Community Code	TEA009
Supply Owner	Waikato District Council
Population Served by Supply	73 (based on 2025 active metered connections)
Source Details	
Latitude: -37.788803	Longitude: 174.868032
Source	Bore
Depth of Bore	150 m
Hinekōrako Code	G11278
Consent	147895 - To take groundwater for the Te Akau South municipal community.
Consent Expiry	4-Aug-60
Maximum Consented Water Take	20.5 m ³ /day
Treatment	
Hinekōrako Code	TP100452
Treatment Processes	Cartridge Filtration, Ultraviolet (UV) Disinfection, Chlorination
Average Daily Volume	<i>Previously tankered supply from Raglan.</i>
Peak Daily Volume	<i>Previously tankered supply from Raglan.</i>
Distribution	
Hinekōrako Code	TEA009TE
Distribution Zone Population	73 (based on 2025 active metered connections)

History of Source Water Quality

The Te Aakau water supply was first established in October 1994 and consisted of a single bore, small treatment plant, and timber storage tank.

Since August 2020, the Te Aakau WTP has struggled to maintain chemical compliance with the *Drinking-water Standards for New Zealand 2005 (Revised 2018)*. Investigations revealed that the bore was in poor condition and posed a risk of collapse and supply failure.

To ensure the continued supply of safe drinking water to the Te Aakau community, WDC and WSL, in consultation with the Waikato Public Health Unit (WPHU) and Wai Comply, implemented an interim solution by changing the source of supply. In April 2021, registered water carrier Allens United Waikato Ltd began delivering treated water by tanker from a dedicated hydrant in Raglan to a receiving tank at Te Aakau WTP.

As a long-term solution, a new bore was drilled in December 2024. The pre-existing treatment plant was upgraded, and a new pump station installed in June 2025. These upgrades provide the Te Aakau South community with a dedicated and compliant water source.

Te Aakau Water Supply System Description

The Te Aakau South community is located on the northern side of Whaingaroa Harbour, opposite Raglan Town (Figure 3). The supply bore and treatment plant are located at the southern end of the settlement on Te Aakau Wharf Road, directly opposite Ryan Road, and supplies treated water to 27 households.

Raw water is abstracted from a 150 m deep supply bore via a single bore pump, with abstraction triggered by the water level in the chlorine contact tank. Turbidity, conductivity and pH are continuously monitored to assess incoming water conditions. For pH correction, hydrochloric acid (HCl) is dosed in a flow-paced manner via an inline static mixer. Flow and pressure meters provide real-time abstraction data. While no generator is permanently installed on site, a mobile unit can be deployed when needed and is capable of running the entire treatment plant for extended durations.

Water passes through a duplex cartridge filter system, comprising of two coarse cartridge filters (5 microns nominal) and two fine cartridge filters (1 micron absolute). Differential pressure across the filters is measured to assess for clogging and determine when maintenance or replacement is required. The filters operate in a duty/standby arrangement with remote changeover capability. A turbidimeter allows for continuous monitoring of filtered water turbidity.

Following filtration, the water undergoes UV disinfection via two WEDECO Spektron 2.1e UV reactors (duty/manual standby), validated to UVDGM standards (*Appendix 2*). Each unit is equipped with a control panel that monitors UV intensity and operational status. UV dose is calculated based on UV Intensity (UVI) and UV Transmissivity (UVT). If any parameters fall outside the acceptable range, alarms will trigger, and the duty unit will shut down. Outflow meters monitor flow exiting the UV units.

Post-UV disinfection, water is dosed with a sodium hypochlorite (NaOCl) solution in a flow-paced manner via static mixer before entering a 15m³ chlorine contact tank, providing a minimum contact time of 30 minutes. Treated water is pumped to the onsite reservoir for storage.

Treated water is distributed by gravity through the reticulation network, at a constant pressure (3–5 bar[g]) and flow to meet diurnal demand. Chlorine, pH, and turbidity are measured at the reservoir outlet to provide feedback to operators on water quality.

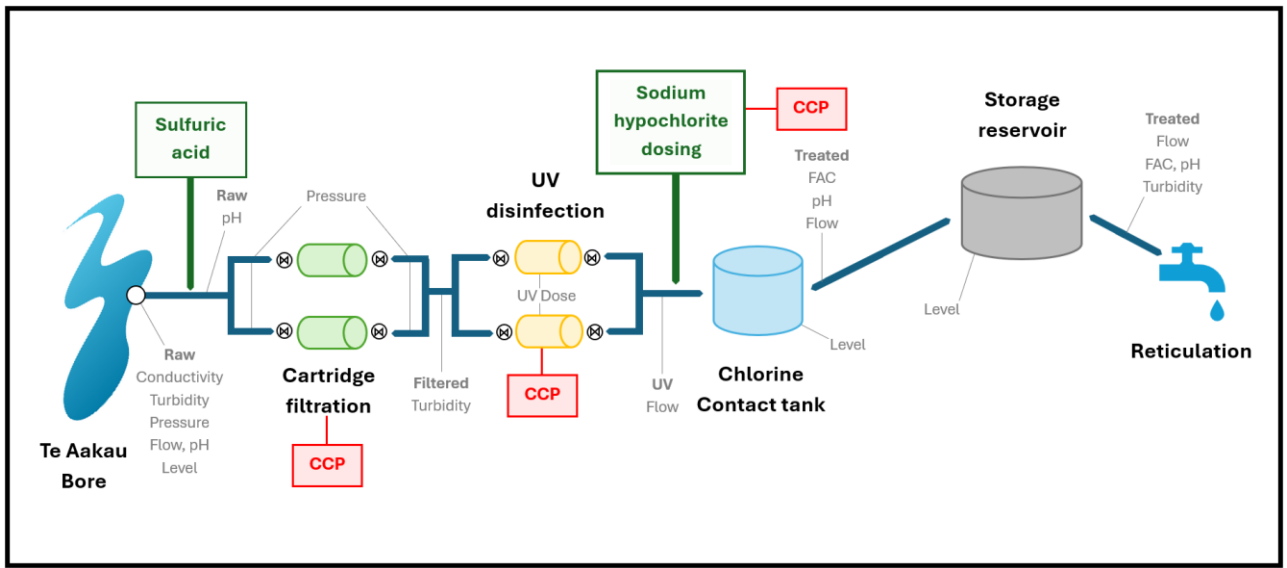


Figure 1: Te Aakau Water Supply Flow Diagram.

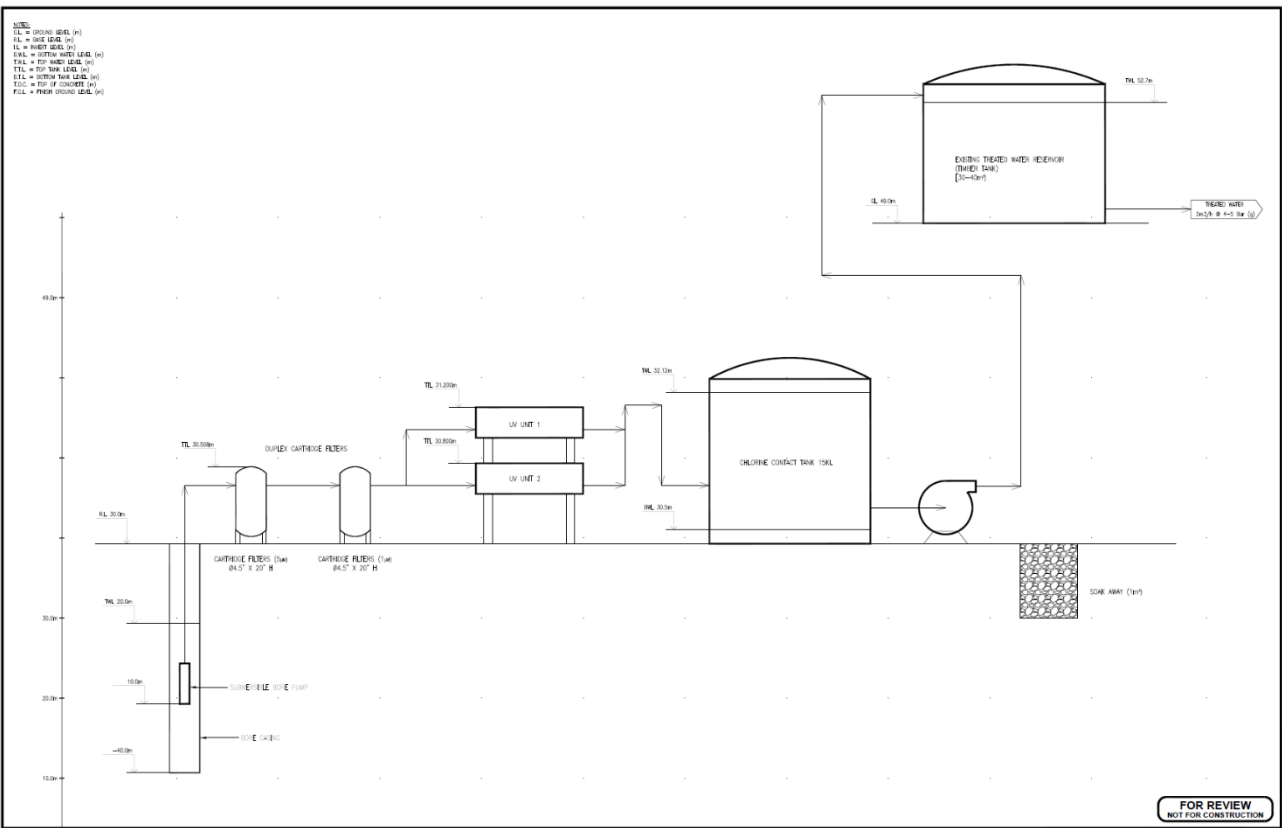


Figure 3: Te Aakau Water Supply Schematic Diagram.



Figure 2: Te Aakau Water Supply Location.

2. Risk Identification and Preventive Measures

A Catchment Risk Assessment (CRA) has been completed as part of the overall risk management framework for the Te Aakau water supply system (*Appendix 3*). 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 4)*. 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
- Cartridge Filtration
- UV Disinfection
- pH Correction
- Reticulation
- Storage Reservoirs
- Others

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.

The location of CCPs are shown in the supply flow diagram and further details are included in *Critical Control Points (Appendix 5)*.

Table 4: Barriers and Preventative Measures in place at the Te Aakau WTP.

Four Types of Barriers	Existing Preventive Measures Include:
Preventing hazards entering the raw water	<ul style="list-style-type: none"> • Bore Head construction followed sanitary bore head requirements. • 150m deep
Removing particles and hazardous chemicals from the water by physical treatment	<ul style="list-style-type: none"> • Cartridge filtration – CCP
Killing or inactivating pathogens in the water by disinfection	<ul style="list-style-type: none"> • UV disinfection – CCP • Chlorination with contact time – CCP
Maintaining the quality of the water in the distribution system	<ul style="list-style-type: none"> • 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 Te Aakau WTP is required to demonstrate compliance with Level 1 of the DWQAR. Compliance is assessed annually, with data submitted to Taumata Arowai within 40 working days following the end of each calendar year. Determinands listed in Table 5 are reported via API transfers from Water Outlook to Taumata Arowai's compliance database, Hinekorako. The sampling plan is detailed in *Appendix 6*.

Table 5: Monitoring Requirements for Te Aakau WTP.

Population	Determinands	Compliance Limit	Hazard	DWQAR	Sampling Frequency	Compliance Period
73	<i>E. coli</i>	< 1.0/100 mL	Microbiological	4.4 – T1.1 (a)	3 Months	3 Months
73	Total Coliforms	< 1.0/100 mL	Microbiological	4.4 – T1.1 (b)	3 Months	3 Months
73	Turbidity	< 5.0 NTU	Microbiological	4.4 – T1.1 (c)	3 Months	3 Months
73	UV dose	40 mJ/cm ²	Microbiological	4.4 – T1.5	Non-reporting	Non-reporting ¹

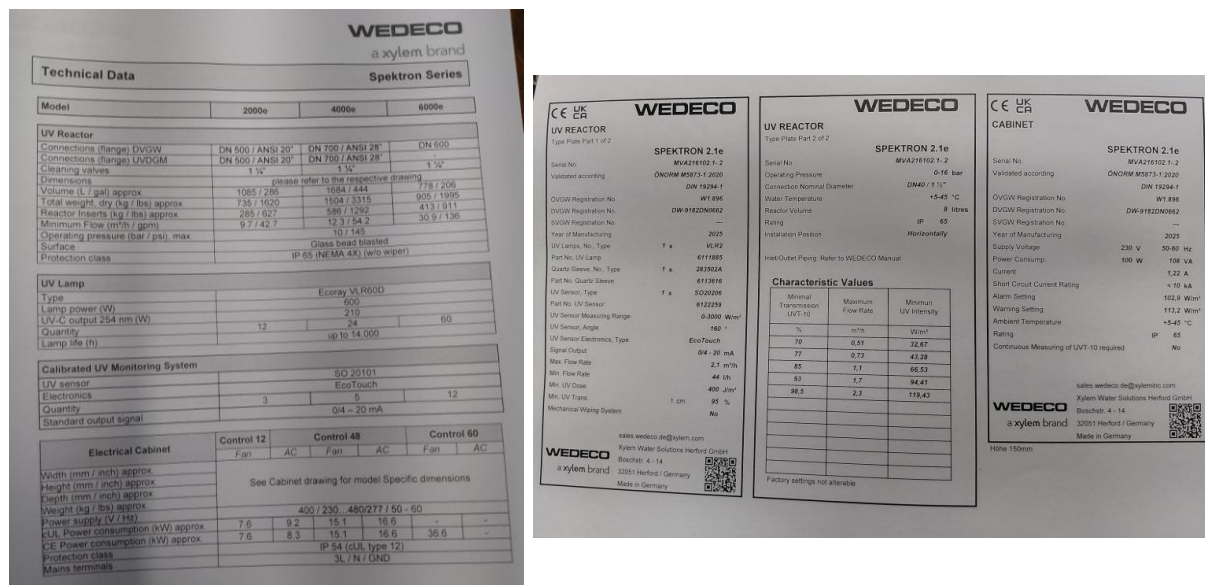
¹ While not required for reporting, DWQAR requires all water passing through a treatment plant to be UV disinfected, with units delivering at least 40 mJ/cm² RED.

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



APPENDIX 3: CATCHMENT RISK ASSESSMENT OF TE AKAU

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 4: WATER SUPPLY RISK TABLES

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

APPENDIX 5: 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 Te Aakau>

APPENDIX 6: 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 Te Aakau>

APPENDIX 7: 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 Te Aakau>

APPENDIX 8: 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>