

Water Supply

Onewhero Supply Zone

DRINKING WATER SAFETY PLAN

2025



Community Code	ONE004
Source Code	S01045
Treatment Plant Code	TP00754
Zone Code	ONE004ON

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Table 1: Document Control Record.

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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 Onewhero 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 Onewhero 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.

Contents

Executive Summary	3
Contents.....	4
List of Figures	4
List of Tables	4
Amendments	4
1. Assessment of the Onewhero Drinking-Water Supply	5
Onewhero Water Supply System Description.....	6
2. Risk Identification and Preventative Measures	9
3. Compliance Monitoring and Reporting Requirements.....	10
APPENDICES.....	11

List of Figures

Figure 1: Onewhero Water Supply Location.....	7
Figure 2: Onewhero Water Supply Flow Diagram	8

List of Tables

Table 1: Document Control Record	2
Table 2: Document Distribution List	2
Table 3: Water Supply Details.....	5
Table 4: Barriers and Preventative Measures in place at Onewhero WTP	9
Table 5: Monitoring Requirements for Onewhero WTP.....	10

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 Onewhero Drinking-Water Supply

Table 3: Water Supply Details.

Supply Details	
Supply Name	Onewhero
Hinekōrako Community Code	ONE004
Supply Owner	Waikato District Council
Population Served by Supply	27 (based on 2025 active metered connections)
Source Details	
Easting: 1769562	Northing: 5867157
Source	Spring
Hinekōrako Code	S01045
Consent	No active consents. Operating under <i>Permitted Activity Rule – Supplementary Groundwater Takes (3.3.4.12)</i> .
Consent Expiry	N/A
Maximum Consented water take:	N/A
Treatment	
Hinekōrako Code	TP00754
Treatment Processes	Cartridge Filtration, Ultraviolet (UV) Disinfection, Chlorination
Average Daily Volume	7 m ³ /day (2024 - 25)
Peak Daily Volume	16 m ³ /day (2024 - 25)
Distribution	
Hinekōrako Code	ONE004ON
Distribution Zone Population	27 (based on 2025 active metered connections)

Onewhero Water Supply System Description

Located at 299 Kaipo Flats Road, Onewhero WTP supplies treated water to 10 households within the Onewhero community. This small-scale supply system utilises cartridge filtration, UV disinfection, and chlorination to treat water from a local spring.

Raw water is pumped from a spring box located directly beneath the treatment shed via two duty/standby pumps. The water passes through two 1-micron cartridge filters installed in series, which provide physical removal of fine particulates. Differential pressure across the filters is measured to assess for clogging and determine when maintenance or replacement is required. Filtered water undergoes UV disinfection, provided by two VIQUA Pro20 reactors which effectively inactivate protozoa and other microbial pathogens (*Appendix 2*).

Chlorine dosing was introduced in September 2024 in response to sporadic total coliform detections. Sodium hypochlorite (NaOCl) is dosed into the main line via a dosing pump at a level sufficient to maintain a free available chlorine (FAC) residual of >0.2 mg/L within the distribution network. Soda ash (Na_2CO_3) is dosed post chlorination using a single dosing pump to increase pH.

Treated water is pumped directly into the reticulation network. Pump operation is controlled by pressure switches that detect low pressure in the network and automatically activate the pumps. UV disinfection, chlorine dosing and soda ash dosing systems are interlocked with pump operation, ensuring these processes only operate when water is actively being treated.

Final water is continuously monitored for flow, free available chlorine (FAC), and pH. Monitoring data is transmitted to the site's SCADA control system for operational oversight and compliance monitoring.

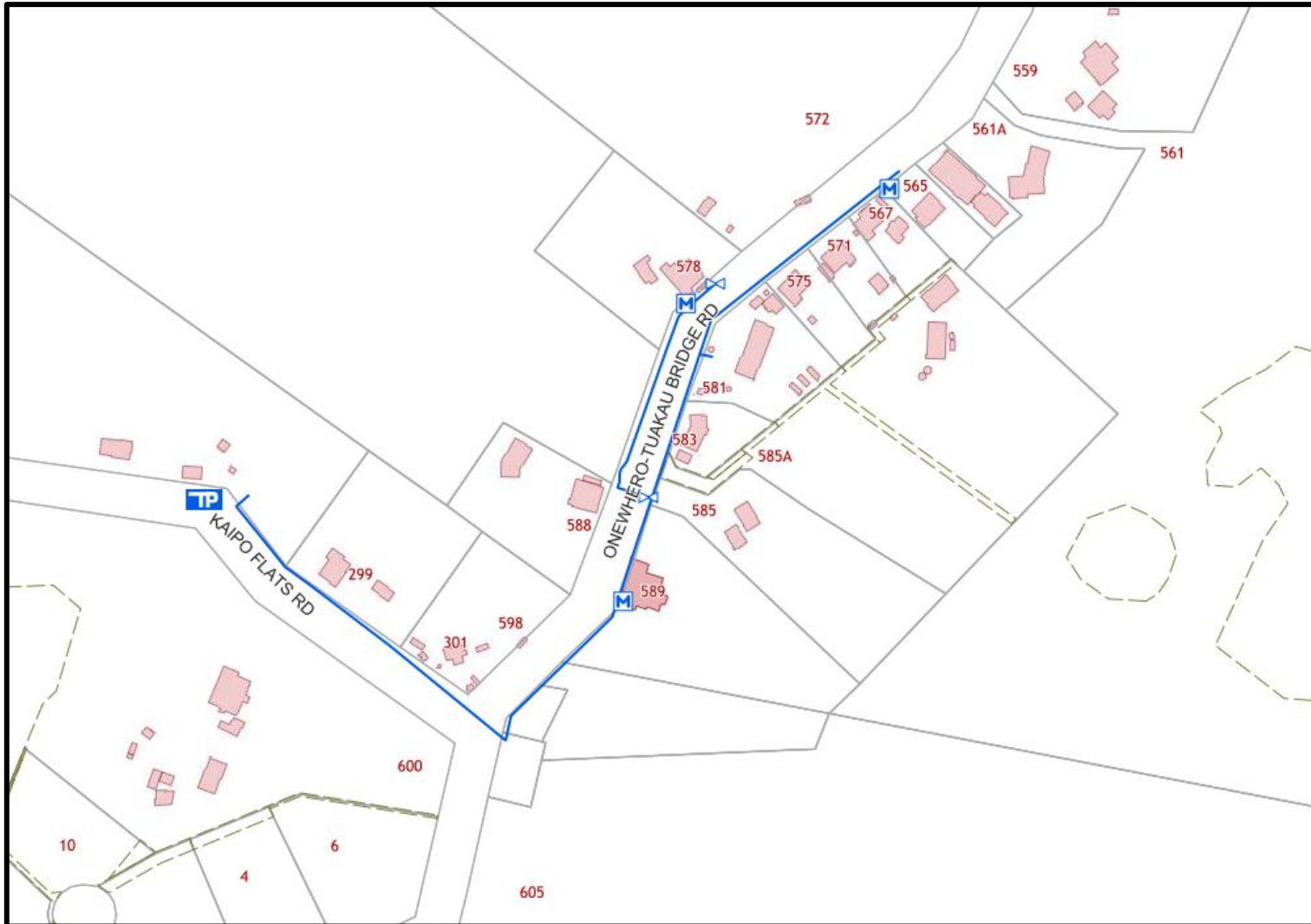


Figure 1: Onewhero Waikato Supply Location.

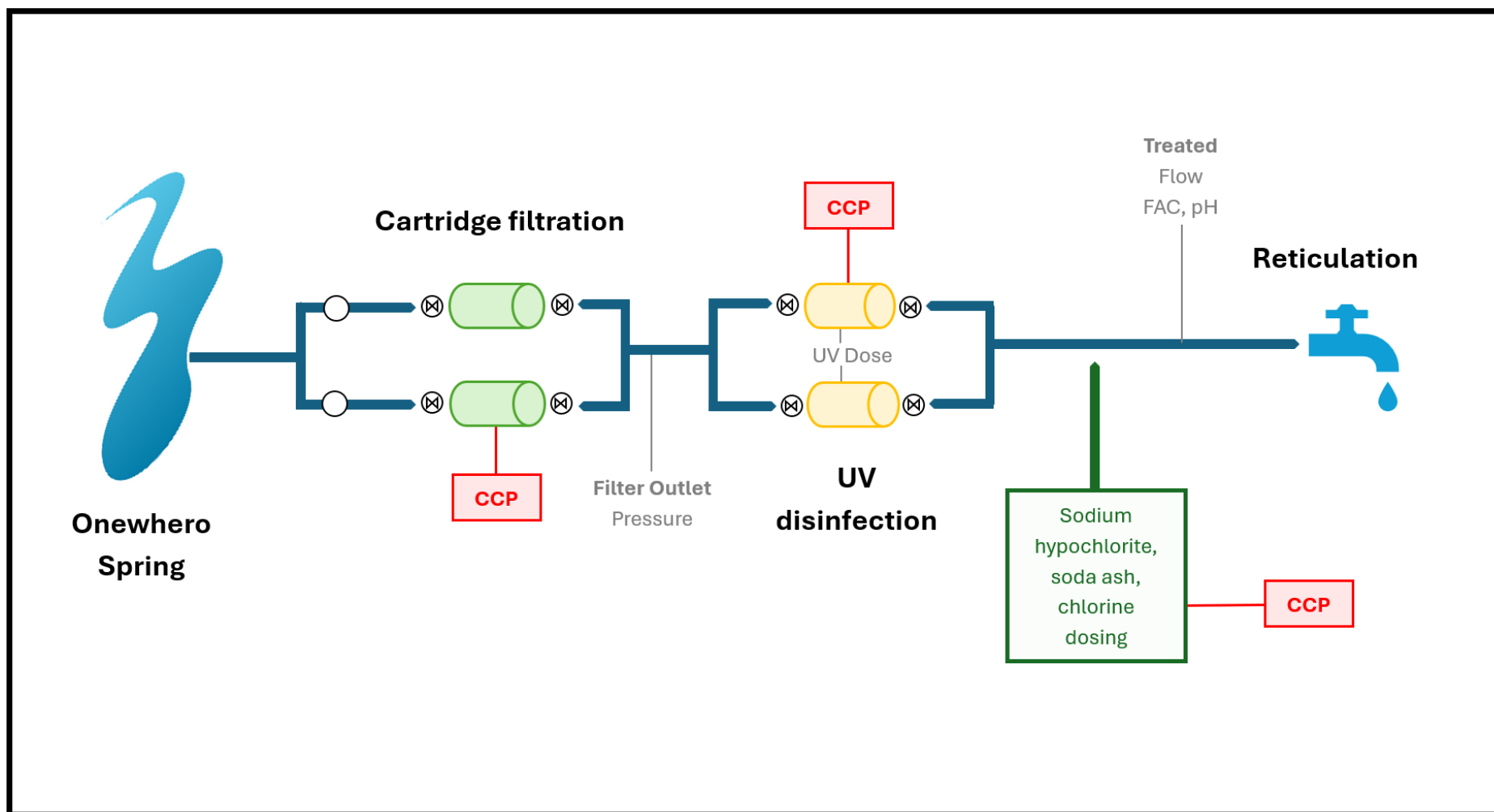


Figure 2: Water Supply Flow Diagram.

2. Risk Identification and Preventive Measures

A Catchment Risk Assessment (CRA) has been completed as part of the overall risk management framework for the Onewhero 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
- 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.

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 Onewhero WTP.

Four Types of Barriers	Existing Preventive Measures Include:
Preventing hazards entering the raw water	<ul style="list-style-type: none">• Spring head covered by treatment building
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 Onewhero 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 Onewhero WTP.

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

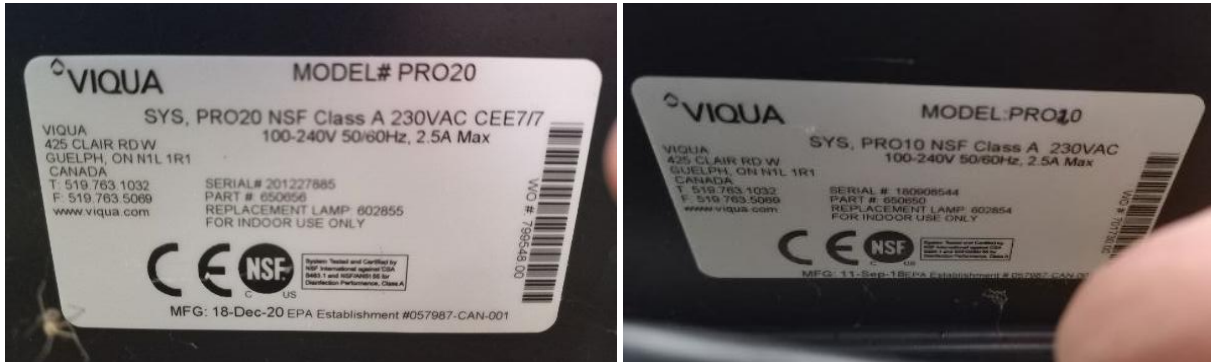
¹ While not required for reporting, DWQAR requires all water passing through a treatment plant to be UV disinfected, with units delivering at least 40 mJ/cm² RED.

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 REACTOR INFORMATION



APPENDIX 3: CATCHMENT RISK ASSESSMENT OF ONEWHERE

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 Onewhero>

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 Onewhero>

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 Onewhero>

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 Onewhero>

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>