Drinking Water Test Report

WM New Zealand

To:	Dairy Flat School
From:	Waste Management-Redvale
Sampling Date:	22 April 2026
Sampling Locations:	Staff Room (Figure 1), Health Room (Figure 2), Hall Kitchen (Figure 3)
Sampling Source:	Water Tap
Analytical Institution:	Hill Laboratories

Executive Summary

April 2026 drinking water results confirm that all tested parameters comply with the New Zealand Drinking Water Standards. Escherichia coli was not detected at any sampling location, and there is no evidence of chemical contamination. Overall, the water quality remains stable, compliant, and suitable for consumption.

Measured pH values were slightly below the aesthetic guideline range. This is attributed to the naturally low mineral content of the water and local plumbing conditions. As pH is an aesthetic (non-health-based) parameter, the observed values do not pose a risk to drinking water safety.

Sampling Method

Routine water quality and E. coli samples were collected in accordance with Hill Laboratories' guidelines. Samples were taken using laboratory-supplied containers without pre-rinsing.

For tap sampling, three locations were sampled (Figures 1–3). The tap outlets were disinfected using alcohol wipes and flushed for 2–3 minutes prior to sample collection. Samples were then collected directly into the containers and securely capped.

For microbiological analysis, sterile containers were used and aseptic techniques were followed. The inside of the containers and lids were not touched, and samples were filled to within approximately 1 cm of the top.

Following collection, samples were refrigerated (not frozen) and stored in a chilled, dark container with ice packs to maintain temperatures below 10°C. All samples were labelled with the date and time of collection and transported to the laboratory within 24 hours.

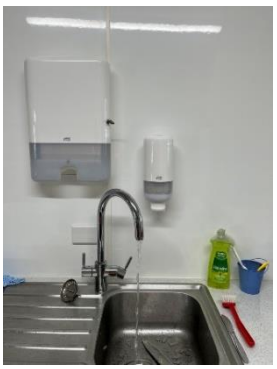

Figure1. Staff Room

Figure 2. Health Room

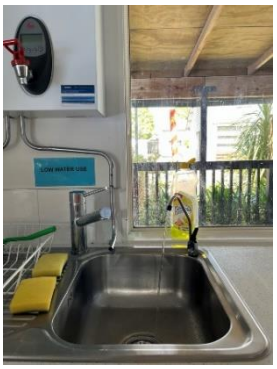

Figure 3. Hall Kitchen

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Analysis of Results

A summary of the April 2026 test results, together with comparisons to results from October–December 2025 and February–March 2026, and relevant New Zealand, WHO, and US EPA drinking water standards, is presented in Tables 1 and 2. The original Hill Laboratories reports are appended at the end of this report.

The April 2026 laboratory results indicate that all samples were microbiologically safe, with Escherichia coli not detected (<1 MPN/100 mL) at any location. This confirms the absence of faecal contamination and indicates effective treatment.

Turbidity values ranged from 0.17 to 0.22 NTU, which are well below the aesthetic guideline of 5 NTU, indicating low levels of suspended particles and good water clarity.

General water chemistry parameters, including electrical conductivity (approximately 2.3–2.5 mS/m) and total dissolved solids (approximately 15–16 mg/L), indicate very low dissolved mineral content. Alkalinity and hardness were also low, reflecting limited buffering capacity.

All analysed metals, including arsenic, lead, copper, iron, and manganese, were either below detection limits or present at very low concentrations, well within applicable guideline values. Similarly, major ions such as chloride, nitrate, and sulphate were detected at low levels, with no indication of contamination.

Trend analysis of pH from October 2025 to April 2026 indicates modest variability over time, which is characteristic of low-mineral water systems. In April 2026, pH values ranged from 6.0 to 6.1, which are slightly below the aesthetic guideline range of 7.0–8.5 (Figure 4).

This behaviour is consistent with the observed low alkalinity and low dissolved mineral content, which provide limited buffering capacity and allow for greater pH variability.

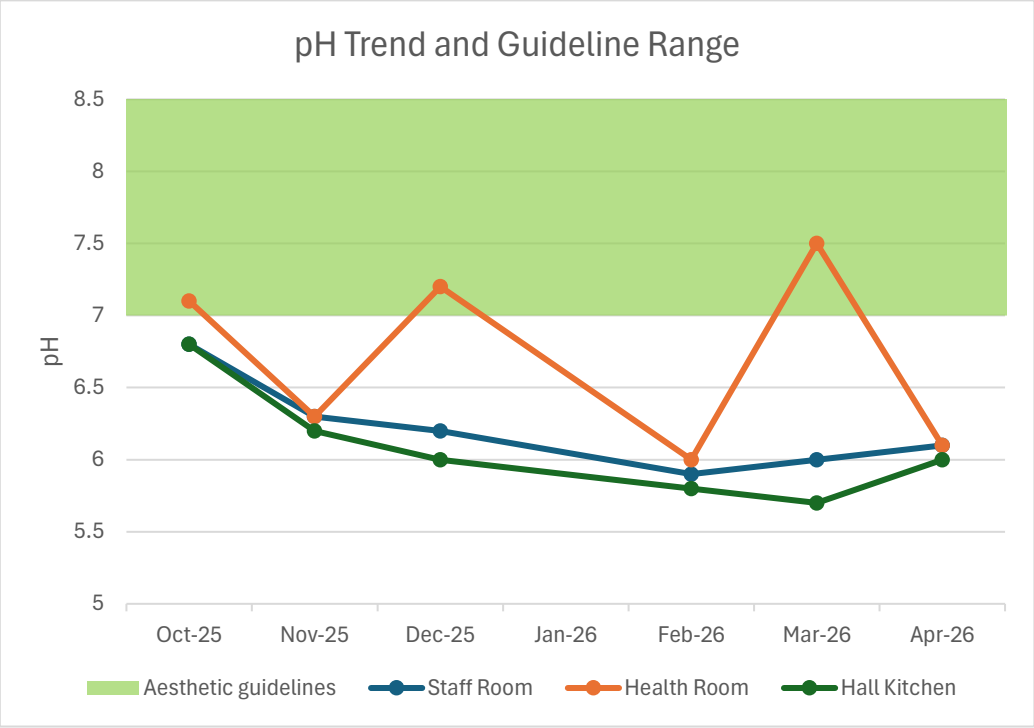

Figure 4. pH Trend with Aesthetic Guideline Range (Oct 2025 – Apr 2026)

No abrupt or abnormal changes in pH were observed, and the variations are considered typical of low-mineral water systems (such as rainwater-derived supplies). While recent pH values are slightly below the aesthetic guideline range, pH is not a health-based parameter and the results do not pose a risk to drinking water safety. Continued routine monitoring is recommended to track pH stability over time.

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Overall, the results confirm that the drinking water quality remains compliant and suitable for consumption, with no evidence of contamination.

Thanks,

Dr. Na Zhang (she/her)

Environmental Engineer Redvale Landfill – Operational and Technical Services

WM New Zealand Limited
Landfill Access Road, RD4 Albany 0794

P.O. Box 228, Silverdale, Auckland 0944

M: +64 21 225 3226 E: NZhang@wm.nz

www.wm.nz

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Table 1. Summary of Tap Water Quality Results for October–December 2025 with Comparison to New Zealand, WHO, and US EPA Drinking Water Standards

Parameters	Sample Name:	Oct-25			Nov-25			Dec-25			Drinking Water Standards		
		Staff Room	Health Room	Hall Kitchen	Staff Room	Health Room	Hall Kitchen	Staff Room	Health Room	Hall Kitchen	NZ Maximum Acceptable Value (MAV)[a]	WHO Limit	US EPA Limit
	Lab Number:	4010395.1	4010401.1	4010402.1	4042267.1	4042271.1	4042265.1	4058529	4058516	4058517			
Escherichia coli	MPN / 100mL	< 1	<1	< 1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Turbidity	NTU	0.37	0.41	0.12	0.20	0.21	0.11	0.230	0.277	0.128	≤5 (aesthetic)[b]	<5	<1 (recommended)
pH	pH Units	6.8	7.1	6.8	6.3	6.3	6.2	6.2	7.2	6.0	7.0–8.5 (aesthetic)[b]	6.5–8.5	6.5–8.5
Total Alkalinity	g/m3 as CaCO3	11	13.9	10.6	3.6	3.6	3.4	3.58	6.96	3.18	-	-	-
Free Carbon Dioxide	g/m3 at 25°C	3.3	2.1	3.4	4.0	3.8	4.2	4.9	<1.0	6.1	-	-	-
Total Hardness	g/m3 as CaCO3	14.5	16	14.5	2.3	2.5	3.2	1.79	1.79	2.20	≤200 (aesthetic)[b]	<500	<500
Electrical Conductivity (EC)	mS/m	6.4	7.5	6.3	1.6	1.8	1.6	1.0	1.7	1.0	-		
Electrical Conductivity (EC)	µS/cm	64	75	63	16	18	16	10	17	10	-	<1500	<2500
Approx Total Dissolved Salts	g/m3	43	50	42	11	12	11	6.84	11.69	6.93	≤1000 (aesthetic)[b]	<1000	<500 (aesthetic)[b]
Total Arsenic	g/m3	< 0.0011	<0.0011	< 0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.01	<0.01	<0.01
Total Boron	g/m3	< 0.053	<0.053	< 0.053	<0.053	<0.053	<0.053	<0.053	<0.053	<0.053	<2.4	<2.4	-
Total Calcium	g/m3	4.4	4.6	4.4	0.57	0.60	0.91	0.438	0.43	0.613	-	-	-
Total Copper	g/m3	0.037	0.121	0.0038	0.061	0.141	0.0037	0.0694	0.128	0.00424	<2	<2	<1.3
Total Iron	g/m3	< 0.021	0.023	< 0.021	<0.021	<0.021	<0.021	<0.021	<0.021	<0.021	≤0.3 (aesthetic)[b]	<0.3	<0.3
Total Lead	g/m3	0.00062	0.00118	0.00028	0.00083	0.00088	0.00061	0.000966	0.001078	0.000604	<0.01	<0.01	<0.015
Total Magnesium	g/m3	0.87	1.12	0.86	0.22	0.23	0.21	0.170	0.173	0.163	-	-	-
Total Manganese	g/m3	0.0023	0.0035	0.0012	0.00161	0.00157	0.00093	0.00196	0.00183	0.00151	0.04 (Staining); ≤0.1(Taste)	<0.4	<0.05 (aesthetic)[b]
Total Potassium	g/m3	0.53	0.53	0.53	0.187	0.187	0.172	0.137	0.138	0.144	-	-	-
Total Sodium	g/m3	5.6	5.7	5.6	1.62	1.59	1.52	1.290	1.278	1.298	≤200 (aesthetic[b]	<200	<20 (health advisory)[c]

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Total Zinc	g/m3	0.21	0.189	0.154	0.49	0.48	0.175	0.335	0.320	0.189	≤1.5 (aesthetic)[b]	<3	<5
Chloride	g/m3	9	9.6	9	2.6	2.6	2.7	2.53	2.29	2.16	≤250 (aesthetic)[b]	<250	<250
Nitrate-N	g/m3	0.07	0.07	0.08	0.09	0.09	0.11	0.147	0.126	0.171	<11.3	<11.3	<10
Sulphate	g/m3	4.3	4.6	4.3	0.8	0.8	0.8	0.76	0.77	0.69	≤250 (aesthetic)[b]	<250	<250

a Taken from the 'Water Services (Drinking Water Standards for New Zealand) Regulations 2022'.
b Taken from 'Aesthetic Value for Drinking Water Notice 2022' issued by the Water Services Regulator ("Taumata Arowai")
c Refer to non-health-related parameters — things that affect the taste, smell, colour, or appearance of water but don't pose a health risk.

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Table 2. Summary of Tap Water Quality Results for February and March 2026, with Comparison to New Zealand, WHO, and US EPA Drinking Water Standards

Parameters	Sample Name:	Feb-26			March-26			April 2026			Drinking Water Standards		
		Staff Room	Health Room	Hall Kitchen	Staff Room	Health Room	Hall Kitchen	Staff Room	Health Room	Hall Kitchen	NZ Maximum Acceptable Value (MAV)[a]	WHO Limit	US EPA Limit
	Lab Number:	4111982	4111989	4111983	4158554	4158560	4158556	4189986	4190015	4189991			
Escherichia coli	MPN / 100mL	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Turbidity	NTU	0.22	0.19	0.09	0.21	0.29	0.10	0.22	0.19	0.17	≤5 (aesthetic)[b]	<5	<1 (recommended)
pH	pH Units	5.9	6.0	5.8	6.0	7.5	5.7	6.1	6.1	6.0	7.0–8.5 (aesthetic)[b]	6.5–8.5	6.5–8.5
Total Alkalinity	g/m3 as CaCO3	2.6	2.6	2.4	2.20	6.6	2.0	2.2	3.2	1.8	-	-	-
Free Carbon Dioxide	g/m3 at 25°C	7	5.7	7.7	4.8	<1.0	7.2	3.4	4.6	3.7	-	-	-
Total Hardness	g/m3 as CaCO3	2.70	2.60	2.90	2.71	2.78	2.8	2.04	2.09	2.07	≤200 (aesthetic)[b]	<500	<500
Electrical Conductivity (EC)	mS/m	2.6	2.8	2.7	2.5	3.2	2.6	2.3	2.3	2.5	-		
Electrical Conductivity (EC)	µS/cm	26	28	27	25	32	26	23	23	25	-	<1500	<2500
Approx Total Dissolved Salts	g/m3	17	18	18	16.75	21.33	18	15.61	15.48	16.43	≤1000 (aesthetic)[b]	<1000	<500 (aesthetic)[b]
Total Arsenic	g/m3	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.01	<0.01	<0.01
Total Boron	g/m3	<0.053	<0.053	<0.053	<0.053	<0.053	<0.053	<0.053	<0.053	<0.053	<2.4	<2.4	-
Total Calcium	g/m3	0.36	0.36	0.49	0.427	0.446	0.49	0.272	0.293	0.325	-	-	-
Total Copper	g/m3	0.078	0.130	0.0044	0.0663	0.0875	0.0063	0.0582	0.0874	0.00643	<2	<2	<1.3
Total Iron	g/m3	<0.021	<0.021	<0.021	<0.021	<0.021	<0.021	<0.021	<0.021	<0.021	≤0.3 (aesthetic)[b]	<0.3	<0.3
Total Lead	g/m3	0.001280	0.001330	0.00046	0.001027	0.00092	0.00074	0.00130	0.00137	0.00103	<0.01	<0.01	<0.015
Total Magnesium	g/m3	0.43	0.42	0.42	0.40	0.405	0.38	0.330	0.329	0.306	-	-	-
Total Manganese	g/m3	0.00174	0.00198	0.0026	0.00176	0.00177	0.0028	0.00076	0.00087	0.00167	0.04 (Staining); ≤0.1(Taste)	<0.4	<0.05 (aesthetic)[b]
Total Potassium	g/m3	0.25	0.23	0.24	0.237	0.24	0.23	0.168	0.173	0.170	-	-	-
Total Sodium	g/m3	3.6	3.4	3.6	3.20	3.22	3.2	3.36	3.46	3.45	≤200 (aesthetic[b]	<200	<20 (health advisory)[c]

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Total Zinc	g/m3	0.44	0.45	0.36	0.387	0.399	0.35	0.382	0.371	0.310	≤1.5 (aesthetic)[b]	<3	<5
Chloride	g/m3	6.0	5.6	6.0	5.62	5.6	5.8	5.48	5.18	5.51	≤250 (aesthetic)[b]	<250	<250
Nitrate-N	g/m3	0.15	0.15	0.16	0.170	0.17	0.2	0.091	0.085	0.092	<11.3	<11.3	<10
Sulphate	g/m3	1.2	1.2	1.2	1.12	1.08	1.1	0.88	0.85	0.88	≤250 (aesthetic)[b]	<250	<250

a Taken from the 'Water Services (Drinking Water Standards for New Zealand) Regulations 2022'.
b Taken from 'Aesthetic Value for Drinking Water Notice 2022' issued by the Water Services Regulator ("Taumata Arowai")
c Refer to non-health-related parameters — things that affect the taste, smell, colour, or appearance of water but don't pose a health risk.

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

0508 HILL LAB (44 555 22)
+64 7 858 2000
mail@hill-labs.co.nz
www.hill-labs.co.nz

Certificate of Analysis

Client:	Waste Management NZ Limited	**Lab No:**	4189986 DWAUPv1
Contact:	Na Zhang	**Date Received:**	23-Apr-2026
	C/- Waste Management NZ Limited	**Date Reported:**	30-Apr-2026
	PO Box 228	**Quote No:**	141146
	Silverdale	**Order No:**	3880411
	Auckland 0944	**Client Reference:**	Drinking Water - DFS - SR (April 2026)
		Add. Client Ref:	Routine Water + E. coli
		Submitted By:	Na Zhang

Sample Type: Drinking Water for DWSNZ Compliance

		Sample Name:	DrinkingWater - DFS - SR 22-Apr-2026 1:25 pm	**Aesthetic Values**	**Maximum Acceptable Values (MAV)**
		Lab Number:	4189986.1		
Routine Water + E.coli profile Kit					
Escherichia coli	MPN / 100mL		< 1	-	< 1
Routine Water Profile					
Turbidity	NTU		0.215 ± 0.040	≤ 5	-
pH	pH Units		6.1 ± 0.2	7.0 - 8.5	-
Total Alkalinity	g/m³ as $CaCO_3$		2.20 ± 0.67	-	-
Free Carbon Dioxide	g/m³ at 25°C		3.4 ± 2.1	-	-
Total Hardness	g/m³ as $CaCO_3$		2.04 ± 0.16	≤ 200	-
Electrical Conductivity (EC)	mS/m		2.3 ± 0.1	-	-
Electrical Conductivity (EC)	µS/cm		23 ± 1	-	-
Approx Total Dissolved Salts	g/m³		15.61 ± 0.51	≤ 1000	-
Total Arsenic	g/m³		< 0.0011 ± 0.00074	-	0.01
Total Boron	g/m³		< 0.053 ± 0.036	-	2.4
Total Calcium	g/m³		0.272 ± 0.037	-	-
Total Copper	g/m³		0.0582 ± 0.0059	≤ 1	2
Total Iron	g/m³		< 0.021 ± 0.014	≤ 0.3	-
Total Lead	g/m³		0.00130 ± 0.00011	-	0.01
Total Magnesium	g/m³		0.330 ± 0.030	-	-
Total Manganese	g/m³		0.00076 ± 0.00036	≤ 0.04 (Staining) ≤ 0.10 (Taste)	0.4
Total Potassium	g/m³		0.168 ± 0.037	-	-
Total Sodium	g/m³		3.36 ± 0.21	≤ 200	-
Total Zinc	g/m³		0.382 ± 0.031	≤ 1.5	-
Chloride	g/m³		5.48 ± 0.48	≤ 250	-
Nitrate-N	g/m³		0.091 ± 0.042	-	11.3
Sulphate	g/m³		0.88 ± 0.35	≤ 250	-

Note: The Maximum Acceptable Values (MAV) are taken from the 'Water Services (Drinking Water Standards for New Zealand) Regulations 2022', published under the authority of the New Zealand Government-2022. Copies of this publication are available from: https://www.legislation.govt.nz/regulation/public/2022/0168/latest/whole.html

The standards set limits for the concentration of determinands in drinking water. The Maximum Acceptable Values (MAVs) for any determinand must not be exceeded at any time.

The Aesthetic Values are taken the publication, 'Aesthetic Values for Drinking Water Notice 2022' issued by the Water Services Regulator ("Taumata Arowai"). Aesthetic values specify or provide minimum or maximum values for substances and other characteristics that relate to the acceptability of drinking water to consumers (such as appearance, taste or odour).

The reported uncertainty is an expanded uncertainty with a level of confidence of approximately 95 percent (i.e. two standard deviations, calculated using a coverage factor of 2). Reported uncertainties are calculated from the performance of typical matrices, and do not include variation due to sampling. For further information on uncertainty of measurement at Hill Laboratories, refer to the technical note on our website: www.hill-laboratories.com/files/Intro_To_UOM.pdf, or contact the laboratory.

Note that the units: g/m^3 are the same as mg/L and ppm.

Routine Water Assessment for Sample No 4189986.1 - DrinkingWater - DFS - SR

pH/Alkalinity and Corrosiveness Assessment
The pH of a water sample is a measure of its acidity or basicity. Waters with a low pH can be corrosive and those with a high pH can promote scale formation in pipes and hot water cylinders.
The guideline level for pH in drinking water is 7.0-8.5. Below this range the water will be corrosive and may cause problems with disinfection if such treatment is used.

The alkalinity of a water is a measure of its acid neutralising capacity and is usually related to the concentration of carbonate, bicarbonate and hydroxide. Low alkalinities (25 g/m^3) promote corrosion and high alkalinities can cause problems with scale formation in metal pipes and tanks.

With the pH and alkalinity levels found, this water could be corrosive towards metal piping and fixtures.

Hardness/Total Dissolved Salts Assessment
The water contains a very low amount of dissolved solids and would be regarded as being very soft.

Nitrate Assessment
Nitrate-nitrogen at elevated levels is considered undesirable in natural waters as this element can cause a health disorder called methaemaglobinaemia. Very young infants (less than six months old) are especially vulnerable. The 'Water Services (Drinking Water Standards for New Zealand) Regulations 2022' sets a maximum permissible level of 11.3 g/m^3 as Nitrate-nitrogen (50 g/m^3 as Nitrate).

Nitrate-nitrogen was detected in this water but at such a low level to not be of concern.

Boron Assessment
Boron may be present in natural waters and if present at high concentrations can be toxic to plants.
Boron was not detected in this water.

Metals Assessment
Iron and manganese are two problem elements that commonly occur in natural waters. These elements may cause unsightly stains and produce a brown/black precipitate. Iron is not toxic but manganese, at concentrations above 0.5 g/m^3, may adversely affect health. At concentrations below this it may cause stains on clothing and sanitary ware.

Iron was not detected in the water
Manganese was found in this water at a low level.
Treatment to remove iron and/or manganese should not be necessary.

Bacteriological Tests
The Drinking Water Standards for NZ state that there should be no Escherichia coli (E coli) in water used for human consumption. The presence of these organisms would indicate that other pathogens of faecal origin may be present. Results obtained for Total Coliforms are only significant if the sample has not also been tested for E coli.

Escherichia coli was not detected in this sample.

Final Assessment
The parameter pH did NOT meet the guidelines laid down in the 'Water Services (Drinking Water Standards for New Zealand) Regulations 2022' and the 'Aesthetic Values for Drinking Water Notice 2022' issued by the Water Services Regulator ("Taumata Arowai") for water which is suitable for drinking purposes.

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request. Unless otherwise indicated, analyses were performed at Hill Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Drinking Water for DWSNZ Compliance

Test	Method Description	Default Detection Limit	Sample No
Routine Water Profile		-	1
Filtration, Unpreserved	Sample filtration through 0.45µm membrane filter.	-	1
Total Digestion	Nitric acid digestion. APHA 3030 E (modified) : Online Edition.	-	1
Turbidity	Analysis by Turbidity meter. APHA 2130 B (modified) : Online Edition.	0.05 NTU	1
pH	pH meter. APHA 4500-H^+ B (modified) : Online Edition. Note: It is not possible to achieve the APHA Maximum Storage Recommendation for this test (15 min) when samples are analysed upon receipt at the laboratory, and not in the field. Samples and Standards are analysed at an equivalent laboratory temperature (typically 18 to 22 °C). Temperature compensation is used.	0.1 pH Units	1
Total Alkalinity	Titration to pH 4.5 (M-alkalinity), autotitrator. APHA 2320 B (modified for Alkalinity <20) : Online Edition.	1.0 g/m^3 as $CaCO_3$	1
Free Carbon Dioxide	Calculation: from alkalinity and pH, valid where TDS is not >500 mg/L and alkalinity is almost entirely due to hydroxides, carbonates or bicarbonates. APHA 4500-CO_2 D : Online Edition.	1.0 g/m^3 at 25°C	1
Total Hardness	Calculation from Total Calcium and Total Magnesium. APHA 2340 B : Online Edition.	1.0 g/m^3 as $CaCO_3$	1
Electrical Conductivity (EC)	Conductivity meter, 25°C. APHA 2510 B : Online Edition.	0.1 mS/m	1
Electrical Conductivity (EC)	Conductivity meter, 25°C. APHA 2510 B : Online Edition.	1 µS/cm	1
Approx Total Dissolved Salts	Calculation: from Electrical Conductivity.	2 g/m^3	1
Total Arsenic	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.0011 g/m^3	1
Total Boron	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.053 g/m^3	1
Total Calcium	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.053 g/m^3	1
Total Copper	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.00053 g/m^3	1
Total Iron	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.021 g/m^3	1
Total Lead	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.00011 g/m^3	1
Total Magnesium	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.021 g/m^3	1
Total Manganese	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.00053 g/m^3	1
Total Potassium	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.053 g/m^3	1
Total Sodium	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.021 g/m^3	1
Total Zinc	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.0011 g/m^3	1
Chloride	Filtered sample. Ion Chromatography. APHA 4110 B (modified) : Online Edition.	0.5 g/m^3	1
Nitrate-N	Filtered sample. Ion Chromatography. APHA 4110 B (modified) : Online Edition.	0.05 g/m^3	1
Sulphate	Filtered sample. Ion Chromatography. APHA 4110 B (modified) : Online Edition.	0.5 g/m^3	1
Escherichia coli	MPN count using Colilert (Incubated at 35°C for 24 hours) and 97 wells. APHA 9223 B : Online Edition.	1 MPN / 100mL	1

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 23-Apr-2026 and 30-Apr-2026. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

This certificate of analysis must not be reproduced, except in full, without the written consent of the signatory.

Ara Heron BSc (Tech)
Client Services Manager - Environmental

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

0508 HILL LAB (44 555 22)
+64 7 858 2000
mail@hill-labs.co.nz
www.hill-labs.co.nz

Certificate of Analysis

Client:	Waste Management NZ Limited	**Lab No:**	4190015 DWAUPv1
Contact:	Na Zhang	**Date Received:**	23-Apr-2026
	C/- Waste Management NZ Limited	**Date Reported:**	29-Apr-2026
	PO Box 228	**Quote No:**	141146
	Silverdale	**Order No:**	3880413
	Auckland 0944	**Client Reference:**	DWSNZ Compliance – Roof/Rain 023
		Add. Client Ref:	Routine Water + E. coli
		Submitted By:	Na Zhang

Sample Type: Drinking Water for DWSNZ Compliance

		Sample Name:	DrinkingWater- DFS-HR 22-Apr-2026 1:40 pm	**Aesthetic Values**	**Maximum Acceptable Values (MAV)**
		Lab Number:	4190015.1		
Routine Water + E.coli profile Kit					
Escherichia coli	MPN / 100mL		< 1	-	< 1
Routine Water Profile					
Turbidity	NTU		0.187 ± 0.038	≤ 5	-
pH	pH Units		6.1 ± 0.2	7.0 - 8.5	-
Total Alkalinity	g/m³ as $CaCO_3$		3.20 ± 0.68	-	-
Free Carbon Dioxide	g/m³ at 25°C		4.6 ± 2.5	-	-
Total Hardness	g/m³ as $CaCO_3$		2.09 ± 0.16	≤ 200	-
Electrical Conductivity (EC)	mS/m		2.3 ± 0.1	-	-
Electrical Conductivity (EC)	µS/cm		23 ± 1	-	-
Approx Total Dissolved Salts	g/m³		15.48 ± 0.51	≤ 1000	-
Total Arsenic	g/m³		< 0.0011 ± 0.00074	-	0.01
Total Boron	g/m³		< 0.053 ± 0.036	-	2.4
Total Calcium	g/m³		0.293 ± 0.038	-	-
Total Copper	g/m³		0.0874 ± 0.0088	≤ 1	2
Total Iron	g/m³		< 0.021 ± 0.014	≤ 0.3	-
Total Lead	g/m³		0.00137 ± 0.00011	-	0.01
Total Magnesium	g/m³		0.329 ± 0.030	-	-
Total Manganese	g/m³		0.00087 ± 0.00037	≤ 0.04 (Staining) ≤ 0.10 (Taste)	0.4
Total Potassium	g/m³		0.173 ± 0.037	-	-
Total Sodium	g/m³		3.46 ± 0.21	≤ 200	-
Total Zinc	g/m³		0.371 ± 0.030	≤ 1.5	-
Chloride	g/m³		5.18 ± 0.47	≤ 250	-
Nitrate-N	g/m³		0.085 ± 0.042	-	11.3
Sulphate	g/m³		0.85 ± 0.35	≤ 250	-

Note: The Maximum Acceptable Values (MAV) are taken from the 'Water Services (Drinking Water Standards for New Zealand) Regulations 2022', published under the authority of the New Zealand Government-2022. Copies of this publication are available from: https://www.legislation.govt.nz/regulation/public/2022/0168/latest/whole.html

The standards set limits for the concentration of determinands in drinking water. The Maximum Acceptable Values (MAVs) for any determinand must not be exceeded at any time.

The Aesthetic Values are taken the publication, 'Aesthetic Values for Drinking Water Notice 2022' issued by the Water Services Regulator ("Taumata Arowai"). Aesthetic values specify or provide minimum or maximum values for substances and other characteristics that relate to the acceptability of drinking water to consumers (such as appearance, taste or odour).

The reported uncertainty is an expanded uncertainty with a level of confidence of approximately 95 percent (i.e. two standard deviations, calculated using a coverage factor of 2). Reported uncertainties are calculated from the performance of typical matrices, and do not include variation due to sampling. For further information on uncertainty of measurement at Hill Laboratories, refer to the technical note on our website: www.hill-laboratories.com/files/Intro_To_UOM.pdf, or contact the laboratory.

Note that the units: g/m^3 are the same as mg/L and ppm.

Routine Water Assessment for Sample No 4190015.1 - DrinkingWater- DFS-HR

pH/Alkalinity and Corrosiveness Assessment
The pH of a water sample is a measure of its acidity or basicity. Waters with a low pH can be corrosive and those with a high pH can promote scale formation in pipes and hot water cylinders.
The guideline level for pH in drinking water is 7.0-8.5. Below this range the water will be corrosive and may cause problems with disinfection if such treatment is used.

The alkalinity of a water is a measure of its acid neutralising capacity and is usually related to the concentration of carbonate, bicarbonate and hydroxide. Low alkalinities (25 g/m^3) promote corrosion and high alkalinities can cause problems with scale formation in metal pipes and tanks.

With the pH and alkalinity levels found, this water could be corrosive towards metal piping and fixtures.

Hardness/Total Dissolved Salts Assessment
The water contains a very low amount of dissolved solids and would be regarded as being very soft.

Nitrate Assessment
Nitrate-nitrogen at elevated levels is considered undesirable in natural waters as this element can cause a health disorder called methaemaglobinaemia. Very young infants (less than six months old) are especially vulnerable. The 'Water Services (Drinking Water Standards for New Zealand) Regulations 2022' sets a maximum permissible level of 11.3 g/m^3 as Nitrate-nitrogen (50 g/m^3 as Nitrate).

Nitrate-nitrogen was detected in this water but at such a low level to not be of concern.

Boron Assessment
Boron may be present in natural waters and if present at high concentrations can be toxic to plants.
Boron was not detected in this water.

Metals Assessment
Iron and manganese are two problem elements that commonly occur in natural waters. These elements may cause unsightly stains and produce a brown/black precipitate. Iron is not toxic but manganese, at concentrations above 0.5 g/m^3, may adversely affect health. At concentrations below this it may cause stains on clothing and sanitary ware.

Iron was not detected in the water
Manganese was found in this water at a low level.
Treatment to remove iron and/or manganese should not be necessary.

Bacteriological Tests
The Drinking Water Standards for NZ state that there should be no Escherichia coli (E coli) in water used for human consumption. The presence of these organisms would indicate that other pathogens of faecal origin may be present. Results obtained for Total Coliforms are only significant if the sample has not also been tested for E coli.

Escherichia coli was not detected in this sample.

Final Assessment
The parameter pH did NOT meet the guidelines laid down in the 'Water Services (Drinking Water Standards for New Zealand) Regulations 2022' and the 'Aesthetic Values for Drinking Water Notice 2022' issued by the Water Services Regulator ("Taumata Arowai") for water which is suitable for drinking purposes.

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request. Unless otherwise indicated, analyses were performed at Hill Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Drinking Water for DWSNZ Compliance

Test	Method Description	Default Detection Limit	Sample No
Routine Water Profile		-	1
Filtration, Unpreserved	Sample filtration through 0.45µm membrane filter.	-	1
Total Digestion	Nitric acid digestion. APHA 3030 E (modified) : Online Edition.	-	1
Turbidity	Analysis by Turbidity meter. APHA 2130 B (modified) : Online Edition.	0.05 NTU	1
pH	pH meter. APHA 4500-H^+ B (modified) : Online Edition. Note: It is not possible to achieve the APHA Maximum Storage Recommendation for this test (15 min) when samples are analysed upon receipt at the laboratory, and not in the field. Samples and Standards are analysed at an equivalent laboratory temperature (typically 18 to 22 °C). Temperature compensation is used.	0.1 pH Units	1
Total Alkalinity	Titration to pH 4.5 (M-alkalinity), autotitrator. APHA 2320 B (modified for Alkalinity <20) : Online Edition.	1.0 g/m^3 as $CaCO_3$	1
Free Carbon Dioxide	Calculation: from alkalinity and pH, valid where TDS is not >500 mg/L and alkalinity is almost entirely due to hydroxides, carbonates or bicarbonates. APHA 4500-CO_2 D : Online Edition.	1.0 g/m^3 at 25°C	1
Total Hardness	Calculation from Total Calcium and Total Magnesium. APHA 2340 B : Online Edition.	1.0 g/m^3 as $CaCO_3$	1
Electrical Conductivity (EC)	Conductivity meter, 25°C. APHA 2510 B : Online Edition.	0.1 mS/m	1
Electrical Conductivity (EC)	Conductivity meter, 25°C. APHA 2510 B : Online Edition.	1 µS/cm	1
Approx Total Dissolved Salts	Calculation: from Electrical Conductivity.	2 g/m^3	1
Total Arsenic	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.0011 g/m^3	1
Total Boron	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.053 g/m^3	1
Total Calcium	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.053 g/m^3	1
Total Copper	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.00053 g/m^3	1
Total Iron	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.021 g/m^3	1
Total Lead	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.00011 g/m^3	1
Total Magnesium	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.021 g/m^3	1
Total Manganese	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.00053 g/m^3	1
Total Potassium	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.053 g/m^3	1
Total Sodium	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.021 g/m^3	1
Total Zinc	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.0011 g/m^3	1
Chloride	Filtered sample. Ion Chromatography. APHA 4110 B (modified) : Online Edition.	0.5 g/m^3	1
Nitrate-N	Filtered sample. Ion Chromatography. APHA 4110 B (modified) : Online Edition.	0.05 g/m^3	1
Sulphate	Filtered sample. Ion Chromatography. APHA 4110 B (modified) : Online Edition.	0.5 g/m^3	1
Escherichia coli	MPN count using Colilert (Incubated at 35°C for 24 hours) and 97 wells. APHA 9223 B : Online Edition.	1 MPN / 100mL	1

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 23-Apr-2026 and 29-Apr-2026. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

This certificate of analysis must not be reproduced, except in full, without the written consent of the signatory.

Martin Cowell - BSc
Client Services Manager - Environmental

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

0508 HILL LAB (44 555 22)
+64 7 858 2000
mail@hill-labs.co.nz
www.hill-labs.co.nz

Certificate of Analysis

Client:	Waste Management NZ Limited	**Lab No:**	4189991 DWAUPv1
Contact:	Na Zhang C/- Waste Management NZ Limited PO Box 228 Silverdale Auckland 0944	**Date Received:**	23-Apr-2026
		Date Reported:	30-Apr-2026
		Quote No:	141146
		Order No:	3880415
		Client Reference:	DWSNZ Compliance – Roof/Rain - DrinkingWater - DFS - HK 2026
		Add. Client Ref:	Routine Water + E. coli
		Submitted By:	Na Zhang

Sample Type: Drinking Water for DWSNZ Compliance

		Sample Name:	DrinkingWater - DFS - HK 22-Apr-2026 1:50 pm	**Aesthetic Values**	**Maximum Acceptable Values (MAV)**
		Lab Number:	4189991.1		
Routine Water + E.coli profile Kit					
Escherichia coli	MPN / 100mL		< 1	-	< 1
Routine Water Profile					
Turbidity	NTU		0.174 ± 0.038	≤ 5	-
pH	pH Units		6.0 ± 0.2	7.0 - 8.5	-
Total Alkalinity	g/m³ as $CaCO_3$		1.80 ± 0.67	-	-
Free Carbon Dioxide	g/m³ at 25°C		3.7 ± 2.4	-	-
Total Hardness	g/m³ as $CaCO_3$		2.07 ± 0.15	≤ 200	-
Electrical Conductivity (EC)	mS/m		2.5 ± 0.1	-	-
Electrical Conductivity (EC)	µS/cm		25 ± 1	-	-
Approx Total Dissolved Salts	g/m³		16.43 ± 0.52	≤ 1000	-
Total Arsenic	g/m³		< 0.0011 ± 0.00074	-	0.01
Total Boron	g/m³		< 0.053 ± 0.036	-	2.4
Total Calcium	g/m³		0.325 ± 0.038	-	-
Total Copper	g/m³		0.00643 ± 0.00074	≤ 1	2
Total Iron	g/m³		< 0.021 ± 0.014	≤ 0.3	-
Total Lead	g/m³		0.001033 ± 0.000096	-	0.01
Total Magnesium	g/m³		0.306 ± 0.029	-	-
Total Manganese	g/m³		0.00167 ± 0.00039	≤ 0.04 (Staining) ≤ 0.10 (Taste)	0.4
Total Potassium	g/m³		0.170 ± 0.037	-	-
Total Sodium	g/m³		3.45 ± 0.21	≤ 200	-
Total Zinc	g/m³		0.310 ± 0.025	≤ 1.5	-
Chloride	g/m³		5.51 ± 0.48	≤ 250	-
Nitrate-N	g/m³		0.092 ± 0.042	-	11.3
Sulphate	g/m³		0.88 ± 0.35	≤ 250	-

Note: The Maximum Acceptable Values (MAV) are taken from the 'Water Services (Drinking Water Standards for New Zealand) Regulations 2022', published under the authority of the New Zealand Government-2022. Copies of this publication are available from: https://www.legislation.govt.nz/regulation/public/2022/0168/latest/whole.html

The standards set limits for the concentration of determinands in drinking water. The Maximum Acceptable Values (MAVs) for any determinand must not be exceeded at any time.

The Aesthetic Values are taken the publication, 'Aesthetic Values for Drinking Water Notice 2022' issued by the Water Services Regulator ("Taumata Arowai"). Aesthetic values specify or provide minimum or maximum values for substances and other characteristics that relate to the acceptability of drinking water to consumers (such as appearance, taste or odour).

The reported uncertainty is an expanded uncertainty with a level of confidence of approximately 95 percent (i.e. two standard deviations, calculated using a coverage factor of 2). Reported uncertainties are calculated from the performance of typical matrices, and do not include variation due to sampling. For further information on uncertainty of measurement at Hill Laboratories, refer to the technical note on our website: www.hill-laboratories.com/files/Intro_To_UOM.pdf, or contact the laboratory.

Note that the units: g/m^3 are the same as mg/L and ppm.

Routine Water Assessment for Sample No 4189991.1 - DrinkingWater - DFS - HK

pH/Alkalinity and Corrosiveness Assessment
The pH of a water sample is a measure of its acidity or basicity. Waters with a low pH can be corrosive and those with a high pH can promote scale formation in pipes and hot water cylinders.
The guideline level for pH in drinking water is 7.0-8.5. Below this range the water will be corrosive and may cause problems with disinfection if such treatment is used.

The alkalinity of a water is a measure of its acid neutralising capacity and is usually related to the concentration of carbonate, bicarbonate and hydroxide. Low alkalinities (25 g/m^3) promote corrosion and high alkalinities can cause problems with scale formation in metal pipes and tanks.

With the pH and alkalinity levels found it is likely this water will be quite corrosive towards metal piping and fixtures.

Hardness/Total Dissolved Salts Assessment
The water contains a very low amount of dissolved solids and would be regarded as being very soft.

Nitrate Assessment
Nitrate-nitrogen at elevated levels is considered undesirable in natural waters as this element can cause a health disorder called methaemaglobinaemia. Very young infants (less than six months old) are especially vulnerable. The 'Water Services (Drinking Water Standards for New Zealand) Regulations 2022' sets a maximum permissible level of 11.3 g/m^3 as Nitrate-nitrogen (50 g/m^3 as Nitrate).

Nitrate-nitrogen was detected in this water but at such a low level to not be of concern.

Boron Assessment
Boron may be present in natural waters and if present at high concentrations can be toxic to plants.
Boron was not detected in this water.

Metals Assessment
Iron and manganese are two problem elements that commonly occur in natural waters. These elements may cause unsightly stains and produce a brown/black precipitate. Iron is not toxic but manganese, at concentrations above 0.5 g/m^3, may adversely affect health. At concentrations below this it may cause stains on clothing and sanitary ware.

Iron was not detected in the water
Manganese was found in this water at a low level.
Treatment to remove iron and/or manganese should not be necessary.

Bacteriological Tests
The Drinking Water Standards for NZ state that there should be no Escherichia coli (E coli) in water used for human consumption. The presence of these organisms would indicate that other pathogens of faecal origin may be present. Results obtained for Total Coliforms are only significant if the sample has not also been tested for E coli.

Escherichia coli was not detected in this sample.

Final Assessment
The parameter pH did NOT meet the guidelines laid down in the 'Water Services (Drinking Water Standards for New Zealand) Regulations 2022' and the 'Aesthetic Values for Drinking Water Notice 2022' issued by the Water Services Regulator ("Taumata Arowai") for water which is suitable for drinking purposes.

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request. Unless otherwise indicated, analyses were performed at Hill Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Drinking Water for DWSNZ Compliance

Test	Method Description	Default Detection Limit	Sample No
Routine Water Profile		-	1
Filtration, Unpreserved	Sample filtration through 0.45µm membrane filter.	-	1
Total Digestion	Nitric acid digestion. APHA 3030 E (modified) : Online Edition.	-	1
Turbidity	Analysis by Turbidity meter. APHA 2130 B (modified) : Online Edition.	0.05 NTU	1
pH	pH meter. APHA 4500-H^+ B (modified) : Online Edition. Note: It is not possible to achieve the APHA Maximum Storage Recommendation for this test (15 min) when samples are analysed upon receipt at the laboratory, and not in the field. Samples and Standards are analysed at an equivalent laboratory temperature (typically 18 to 22 °C). Temperature compensation is used.	0.1 pH Units	1
Total Alkalinity	Titration to pH 4.5 (M-alkalinity), autotitrator. APHA 2320 B (modified for Alkalinity <20) : Online Edition.	1.0 g/m^3 as $CaCO_3$	1
Free Carbon Dioxide	Calculation: from alkalinity and pH, valid where TDS is not >500 mg/L and alkalinity is almost entirely due to hydroxides, carbonates or bicarbonates. APHA 4500-CO_2 D : Online Edition.	1.0 g/m^3 at 25°C	1
Total Hardness	Calculation from Total Calcium and Total Magnesium. APHA 2340 B : Online Edition.	1.0 g/m^3 as $CaCO_3$	1
Electrical Conductivity (EC)	Conductivity meter, 25°C. APHA 2510 B : Online Edition.	0.1 mS/m	1
Electrical Conductivity (EC)	Conductivity meter, 25°C. APHA 2510 B : Online Edition.	1 µS/cm	1
Approx Total Dissolved Salts	Calculation: from Electrical Conductivity.	2 g/m^3	1
Total Arsenic	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.0011 g/m^3	1
Total Boron	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.053 g/m^3	1
Total Calcium	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.053 g/m^3	1
Total Copper	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.00053 g/m^3	1
Total Iron	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.021 g/m^3	1
Total Lead	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.00011 g/m^3	1
Total Magnesium	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.021 g/m^3	1
Total Manganese	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.00053 g/m^3	1
Total Potassium	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.053 g/m^3	1
Total Sodium	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.021 g/m^3	1
Total Zinc	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.0011 g/m^3	1
Chloride	Filtered sample. Ion Chromatography. APHA 4110 B (modified) : Online Edition.	0.5 g/m^3	1
Nitrate-N	Filtered sample. Ion Chromatography. APHA 4110 B (modified) : Online Edition.	0.05 g/m^3	1
Sulphate	Filtered sample. Ion Chromatography. APHA 4110 B (modified) : Online Edition.	0.5 g/m^3	1
Escherichia coli	MPN count using Colilert (Incubated at 35°C for 24 hours) and 97 wells. APHA 9223 B : Online Edition.	1 MPN / 100mL	1

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 23-Apr-2026 and 30-Apr-2026. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

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Ara Heron BSc (Tech)
Client Services Manager - Environmental