Drinking Water Test Report

WM New Zealand

To:	Dairy Flat School
From:	Waste Management-Redvale
Sampling Date:	16 October 2025
Sampling Locations:	Staff Room (Location1), Health Room (Location2), Hall Kitchen (Location3)
Sampling Source:	Water Tap
Analysis Institution	Hill Laboratories

Analysis of Results

Three tap water samples were collected from the Staff Room, Health Room, and Hall Kitchen at Dairy Flat School on the afternoon of 16 October 2025. Each sample was sealed immediately after collection, stored with ice packs, and couriered to a third-party laboratory — Hill Laboratories — on the same day. Hill Labs received the samples the following morning (17 October 2025) and conducted testing using the Routine Water and E. coli Profile Kit in accordance with the Drinking Water Standards for New Zealand (DWSNZ). The results were released on 21 October 2025. A summary of the test results and a comparison with New Zealand, WHO, and US EPA drinking water standards are provided in Table 1, with the original Hill Labs report attached at the end.

According to the laboratory results, all three water samples demonstrated excellent overall quality and are safe for drinking and general use. Escherichia coli was not detected in any sample (<1 MPN/100 mL), confirming the absence of microbiological contamination and compliance with DWSNZ microbiological criteria. All measured chemical and metal concentrations were well below the limits set by New Zealand, WHO, and US EPA standards, indicating that the water is free from harmful substances.

Physically and chemically, the water was clear and low in mineral content, with turbidity levels between 0.12 and 0.41 NTU, well below the 1 NTU clarity guideline. The pH ranged from 6.8 to 7.1, with the slightly lower values observed in the Staff Room and Hall Kitchen suggesting mild acidity, which is common for treated rainwater systems. While not a health concern, the combination of softness (hardness 14.5–16 g/m³ as $CaCO_3$) and low alkalinity (10.6–13.9 g/m³ as $CaCO_3$) may make the water mildly corrosive to metal plumbing over time. Slightly higher copper concentrations at the Health Room (0.121 g/m³) could reflect localized contact with copper pipes but remain well within acceptable limits.

Electrical conductivity, total dissolved solids, and chloride were all low, confirming that the water has not been influenced by landfill leachate, saltwater intrusion, or other external contaminants. The sample from the Hall Kitchen, which showed the lowest turbidity (0.12 NTU), likely reflects the benefit of an additional filtration stage that enhances water clarity.

In conclusion, the test results indicate that the tap water at Dairy Flat School is clean, safe, and compliant with all relevant drinking water standards. There is no evidence of microbiological or chemical contamination, and all parameters fall well within acceptable health and aesthetic limits.

Thanks,

Dr. Na Zhang (she/her)

Environmental Engineer Redvale Landfill – Operational and Technical Services

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Table 1. Summary of Tap Water Test Results and Comparison with Drinking Water Standards (NZ, WHO, US EPA)

	Sample Name:	Dairy Flat School-Staff Room	Dairy Flat School-Health Room	Dairy Flat School-Hall Kitchen	Maximum Acceptable Value (MAV)[a]	WHO Limit	US EPA Limit
	Lab Number:	4010395.1	4010401.1	4010402.1			
Routine Water + E.coli profile Kit							
Escherichia coli	MPN / 100mL	< 1	<1	< 1	<1	<1	<1
Routine Water Profile							
Turbidity	NTU	0.37	0.41	0.12	≤5 (aesthetic)[b]	<5	<1 (recommended)
pH	pH Units	6.8	7.1	6.8	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	-	-	-
Free Carbon Dioxide	g/m3 at 25°C	3.3	2.1	3.4	-	-	-
Total Hardness	g/m3 as CaCO3	14.5	16	14.5	≤200 (aesthetic)[b]	<500	<500
Electrical Conductivity (EC)	mS/m	6.4	7.5	6.3	-		
Electrical Conductivity (EC)	µS/cm	64	75	63	-	<1500	<2500
Approx Total Dissolved Salts	g/m3	43	50	42	≤1000 (aethetic)[b]	<1000	<500 (aesthetic)[c]
Total Arsenic	g/m3	< 0.0011	<0.0011	< 0.0011	<0.01	<0.01	<0.01
Total Boron	g/m3	< 0.053	<0.053	< 0.053	<2.4	<2.4	-
Total Calcium	g/m3	4.4	4.6	4.4	-	-	-
Total Copper	g/m3	0.037	0.121	0.0038	<2	<2	<1.3
Total Iron	g/m3	< 0.021	0.023	< 0.021	≤0.3 (aesthetic)[b]	<0.3	<0.3
Total Lead	g/m3	0.00062	0.00118	0.00028	<0.01	<0.01	<0.015
Total Magnesium	g/m3	0.87	1.12	0.86	-	-	-
Total Manganese	g/m3	0.0023	0.0035	0.0012	0.04 (Staining); ≤0.1(Taste)	<0.4	<0.05 (aesthetic)
Total Potassium	g/m3	0.53	0.53	0.53	-	-	-
Total Sodium	g/m3	5.6	5.7	5.6	≤200 (aesthetic)[b]	<200	<20 (health advisory)

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Total Zinc	g/m3	0.21	0.189	0.154	≤1.5 (aesthetic)	<3	<5
Chloride	g/m3	9	9.6	9	≤250 (aethetic)	<250	<250
Nitrate-N	g/m3	0.07	0.07	0.08	<11.3	<11.3	<10
Sulphate	g/m3	4.3	4.6	4.3	≤250 (aethetic)	<250	<250

a Taken from the 'Water Services (Drinking Water Standards for New Zealand) Regulations 2022'.
b Taken from 'Aesthrtic 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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Certificate of Analysis

Client:	Waste Management NZ Limited	**Lab No:**	4010395	DWAPv1
Contact:	Na Zhang	**Date Received:**	17-Oct-2025	
	C/- Waste Management NZ Limited	**Date Reported:**	21-Oct-2025	
	PO Box 228	**Quote No:**	141146	
	Silverdale	**Order No:**	3839359	
	Auckland 0944	**Client Reference:**	Dairy Flat School- DW-1	
		Submitted By:	Na Zhang	

Sample Type: Drinking Water for DWSNZ Compliance

		Sample Name:	Dairy Flat School- DW-1 16-Oct-2025 1:20 pm	Aesthetic Values	Maximum Acceptable Values (MAV)
		Lab Number:	4010395.1		
Routine Water + E.coli profile Kit					
Escherichia coli	MPN / 100mL		< 1	-	< 1
Routine Water Profile					
Turbidity	NTU		0.37	≤ 5	-
pH	pH Units		6.8	7.0 - 8.5	-
Total Alkalinity	g/m³ as $CaCO_3$		11.0	-	-
Free Carbon Dioxide	g/m³ at 25°C		3.3	-	-
Total Hardness	g/m³ as $CaCO_3$		14.5	≤ 200	-
Electrical Conductivity (EC)	mS/m		6.4	-	-
Electrical Conductivity (EC)	µS/cm		64	-	-
Approx Total Dissolved Salts	g/m³		43	≤ 1000	-
Total Arsenic	g/m³		< 0.0011	-	0.01
Total Boron	g/m³		< 0.053	-	2.4
Total Calcium	g/m³		4.4	-	-
Total Copper	g/m³		0.037	≤ 1	2
Total Iron	g/m³		< 0.021	≤ 0.3	-
Total Lead	g/m³		0.00062	-	0.01
Total Magnesium	g/m³		0.87	-	-
Total Manganese	g/m³		0.0023	≤ 0.04 (Staining) ≤ 0.10 (Taste)	0.4
Total Potassium	g/m³		0.53	-	-
Total Sodium	g/m³		5.6	≤ 200	-
Total Zinc	g/m³		0.21	≤ 1.5	-
Chloride	g/m³		9.0	≤ 250	-
Nitrate-N	g/m³		0.07	-	11.3
Sulphate	g/m³		4.3	≤ 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).

Note that the units: g/m³ are the same as mg/L and ppm.

Routine Water Assessment for Sample No 4010395.1 - Dairy Flat School- DW-1

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 17-Oct-2025 and 21-Oct-2025. 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

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Certificate of Analysis

Client:	Waste Management NZ Limited	**Lab No:**	4010401 DWAPv1
Contact:	Na Zhang	**Date Received:**	17-Oct-2025
	C/- Waste Management NZ Limited	**Date Reported:**	22-Oct-2025
	PO Box 228	**Quote No:**	141146
	Silverdale	**Order No:**	3839359
	Auckland 0944	**Client Reference:**	DairyFlatSchool-1DW-2
		Add. Client Ref:	Routine Water + E. coli
		Submitted By:	Na Zhang

Sample Type: Drinking Water for DWSNZ Compliance

		Sample Name:	DairyFlatSchool-DW-2 16-Oct-2025 1:25 pm	**Aesthetic Values**	**Maximum Acceptable Values (MAV)**
		Lab Number:	4010401.1		
Routine Water + E.coli profile Kit					
Escherichia coli	MPN / 100mL		< 1	-	< 1
Routine Water Profile					
Turbidity	NTU		0.41	≤ 5	-
pH	pH Units		7.1	7.0 - 8.5	-
Total Alkalinity	g/m³ as $CaCO_3$		13.9	-	-
Free Carbon Dioxide	g/m³ at 25°C		2.1	-	-
Total Hardness	g/m³ as $CaCO_3$		16.0	≤ 200	-
Electrical Conductivity (EC)	mS/m		7.5	-	-
Electrical Conductivity (EC)	µS/cm		75	-	-
Approx Total Dissolved Salts	g/m³		50	≤ 1000	-
Total Arsenic	g/m³		< 0.0011	-	0.01
Total Boron	g/m³		< 0.053	-	2.4
Total Calcium	g/m³		4.6	-	-
Total Copper	g/m³		0.121	≤ 1	2
Total Iron	g/m³		0.023	≤ 0.3	-
Total Lead	g/m³		0.00118	-	0.01
Total Magnesium	g/m³		1.12	-	-
Total Manganese	g/m³		0.0035	≤ 0.04 (Staining) ≤ 0.10 (Taste)	0.4
Total Potassium	g/m³		0.53	-	-
Total Sodium	g/m³		5.7	≤ 200	-
Total Zinc	g/m³		0.189	≤ 1.5	-
Chloride	g/m³		9.6	≤ 250	-
Nitrate-N	g/m³		0.07	-	11.3
Sulphate	g/m³		4.6	≤ 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).

Note that the units: g/m³ are the same as mg/L and ppm.

Routine Water Assessment for Sample No 4010401.1 - DairyFlatSchool-DW-2

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.

The pH of this water is within the NZ Drinking Water Guidelines, the ideal range being 7.0 to 8.0.

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 found in this water at a low level.
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
All parameters tested for 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 17-Oct-2025 and 22-Oct-2025. 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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Client Services Manager - Environmental

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Certificate of Analysis

Client:	Waste Management NZ Limited	**Lab No:**	4010402 DWAPv1
Contact:	Na Zhang	**Date Received:**	17-Oct-2025
	C/- Waste Management NZ Limited	**Date Reported:**	21-Oct-2025
	PO Box 228	**Quote No:**	141146
	Silverdale	**Order No:**	3839359
	Auckland 0944	**Client Reference:**	Dairy Flat School - DW-3
		Add. Client Ref:	Routine Water + E. coli
		Submitted By:	Na Zhang

Sample Type: Drinking Water for DWSNZ Compliance

		Sample Name:	DairyFlatSchool-DW-3 16-Oct-2025 1:30 pm	**Aesthetic Values**	**Maximum Acceptable Values (MAV)**
		Lab Number:	4010402.1		
Routine Water + E.coli profile Kit					
Escherichia coli	MPN / 100mL		< 1	-	< 1
Routine Water Profile					
Turbidity	NTU		0.12	≤ 5	-
pH	pH Units		6.8	7.0 - 8.5	-
Total Alkalinity	g/m³ as $CaCO_3$		10.6	-	-
Free Carbon Dioxide	g/m³ at 25°C		3.4	-	-
Total Hardness	g/m³ as $CaCO_3$		14.5	≤ 200	-
Electrical Conductivity (EC)	mS/m		6.3	-	-
Electrical Conductivity (EC)	µS/cm		63	-	-
Approx Total Dissolved Salts	g/m³		42	≤ 1000	-
Total Arsenic	g/m³		< 0.0011	-	0.01
Total Boron	g/m³		< 0.053	-	2.4
Total Calcium	g/m³		4.4	-	-
Total Copper	g/m³		0.0038	≤ 1	2
Total Iron	g/m³		< 0.021	≤ 0.3	-
Total Lead	g/m³		0.00028	-	0.01
Total Magnesium	g/m³		0.86	-	-
Total Manganese	g/m³		0.00120	≤ 0.04 (Staining) ≤ 0.10 (Taste)	0.4
Total Potassium	g/m³		0.53	-	-
Total Sodium	g/m³		5.6	≤ 200	-
Total Zinc	g/m³		0.154	≤ 1.5	-
Chloride	g/m³		9.0	≤ 250	-
Nitrate-N	g/m³		0.08	-	11.3
Sulphate	g/m³		4.3	≤ 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).

Note that the units: g/m³ are the same as mg/L and ppm.

Routine Water Assessment for Sample No 4010402.1 - DairyFlatSchool-DW-3

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 17-Oct-2025 and 21-Oct-2025. 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.

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Client Services Manager - Environmental