

# Drinking Water Test Report

|                                |                                                                        |
|--------------------------------|------------------------------------------------------------------------|
| <b>To:</b>                     | Dairy Flat School                                                      |
| <b>From:</b>                   | Waste Management–Redvale                                               |
| <b>Sampling Date:</b>          | 24 July 2026                                                           |
| <b>Sampling Locations:</b>     | Staff Room (Figure 1), Health Room (Figure 2), Hall Kitchen (Figure 3) |
| <b>Sampling Source:</b>        | Water Tap                                                              |
| <b>Analytical Institution:</b> | Hill Laboratories                                                      |

## Executive Summary

July 2026 monitoring indicated that the drinking water quality remained satisfactory across all three sampling locations. No *E. coli* was detected, turbidity was below 0.05 NTU at all locations, and all chemical parameters were within the relevant New Zealand Drinking Water Standards.

The pH remained below the aesthetic guideline range, consistent with previous monitoring results. However, pH is an aesthetic parameter and does not indicate a public health concern. Overall, the results demonstrate stable drinking water quality with no evidence of microbiological or chemical contamination.

## 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.

Three tap locations were sampled: the Staff Room, Health Room and Hall Kitchen, as shown in Figures 1–3. The tap outlets were disinfected using alcohol wipes and flushed for approximately 2–3 minutes before sample collection. Samples were then collected directly into the laboratory-supplied 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.



Figure 1. Staff Room



Figure 2. Health Room



Figure 3. Hall Kitchen

# Drinking Water Test Report

## Analysis of Results

A summary of the July 2026 test results, together with comparisons against monitoring results from October 2025 to June 2026, and relevant New Zealand, WHO, and US EPA drinking water standards, is presented in Tables 1, 2 and 3. The original Hill Laboratories reports are appended to this report.

The July 2026 laboratory results indicate that no *Escherichia coli* (*E. coli*) was detected in any of the samples, with results of <1 MPN/100 mL. This confirms that there was no microbiological evidence of faecal contamination in the samples collected and indicates that the water treatment and distribution system continued to operate effectively at the time of sampling.

Turbidity was below 0.05 NTU at all sampling locations, indicating excellent water clarity and remaining well below the aesthetic guideline value of 5 NTU.

Electrical conductivity remained low (2.5–2.6 mS/m) in July, with corresponding total dissolved salts concentration of approximately 17–18 mg/L, indicating a low mineral content and no evidence of saline contamination. Total hardness was 2.6 mg/L as CaCO<sub>3</sub> at all three locations, while alkalinity ranged from 2.4 to 2.6 mg/L as CaCO<sub>3</sub>. These low values confirm the very soft nature of the rainwater supply.

Concentrations of the analysed metals, including arsenic, boron, copper, iron, lead, manganese and zinc, remained well below the relevant New Zealand Drinking Water Standards and international guideline values. Similarly, chloride, nitrate-nitrogen and sulphate concentrations were all significantly below their respective guideline limits.

The measured pH ranged from 5.9 to 6.0, which is below the aesthetic guideline range of 7.0–8.5. This result is consistent with previous monitoring results (Figure 4) and is typical of rainwater supplies. Although the pH was below the aesthetic range, pH is an aesthetic parameter and the result does not indicate a public health concern. The main potential implication of persistently low pH is increased long-term corrosivity towards plumbing materials.

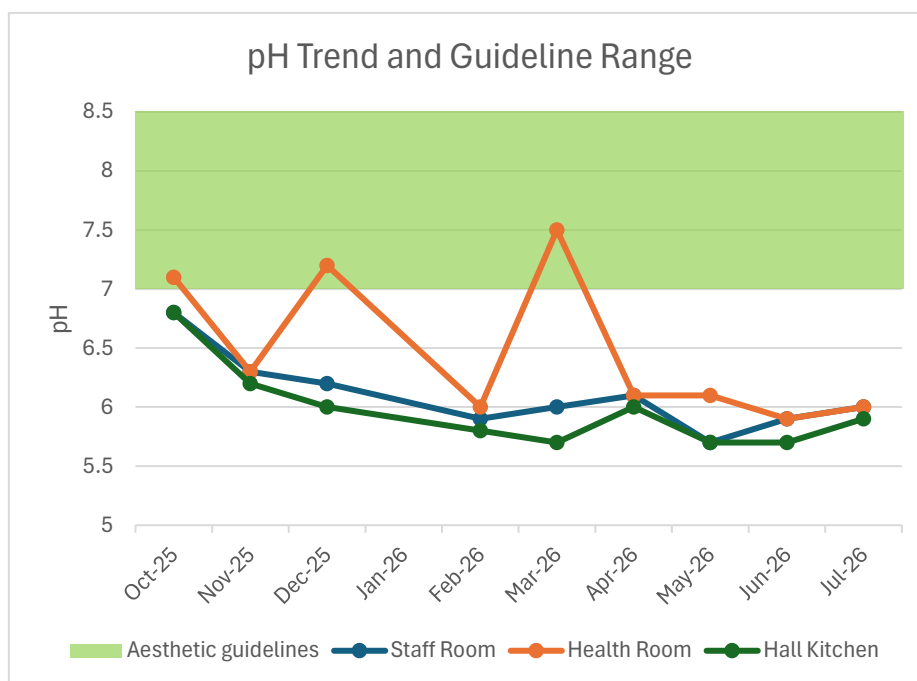


Figure 4. pH Trend with Aesthetic Guideline Range (Oct 2025 – July 2026)

Overall, the July 2026 monitoring results demonstrate that drinking water quality remained stable across all three sampling locations, with no evidence of microbiological and chemical contamination. No corrective actions are required at this time, and routine monitoring should continue.

Thanks,

# Drinking Water Test Report



**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](mailto:NZhang@wm.nz)

[www.wm.nz](http://www.wm.nz)



# Drinking Water Test Report



**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:<br>Lab Number:           | October 2025          |                        |                         | November 2025         |                        |                         | December 2025         |                        |                         | Drinking Water Standards                       |           |                                    |
|------------------------------|---------------------------------------|-----------------------|------------------------|-------------------------|-----------------------|------------------------|-------------------------|-----------------------|------------------------|-------------------------|------------------------------------------------|-----------|------------------------------------|
|                              |                                       | Staff Room<br>4010395 | Health Room<br>4010401 | Hall Kitchen<br>4010402 | Staff Room<br>4042267 | Health Room<br>4042271 | Hall Kitchen<br>4042265 | Staff Room<br>4058529 | Health Room<br>4058516 | Hall Kitchen<br>4058517 | NZ Maximum Acceptable Value (MAV) <sup>a</sup> | WHO Limit | US EPA Limit                       |
| 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) <sup>b</sup>                    | <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) <sup>b</sup>               | 6.5–8.5   | 6.5–8.5                            |
| Total Alkalinity             | g/m <sup>3</sup> as CaCO <sub>3</sub> | 11                    | 13.9                   | 10.6                    | 3.6                   | 3.6                    | 3.4                     | 3.58                  | 6.96                   | 3.18                    | -                                              | -         | -                                  |
| Free Carbon Dioxide          | g/m <sup>3</sup> at 25°C              | 3.3                   | 2.1                    | 3.4                     | 4.0                   | 3.8                    | 4.2                     | 4.9                   | <1.0                   | 6.1                     | -                                              | -         | -                                  |
| Total Hardness               | g/m <sup>3</sup> as CaCO <sub>3</sub> | 14.5                  | 16                     | 14.5                    | 2.3                   | 2.5                    | 3.2                     | 1.79                  | 1.79                   | 2.20                    | ≤200 (aesthetic) <sup>b</sup>                  | <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/m <sup>3</sup>                      | 43                    | 50                     | 42                      | 11                    | 12                     | 11                      | 6.84                  | 11.69                  | 6.93                    | ≤1000 (aesthetic) <sup>b</sup>                 | <1000     | <500 (aesthetic) <sup>b</sup>      |
| Total Arsenic                | g/m <sup>3</sup>                      | < 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/m <sup>3</sup>                      | < 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/m <sup>3</sup>                      | 4.4                   | 4.6                    | 4.4                     | 0.57                  | 0.60                   | 0.91                    | 0.438                 | 0.43                   | 0.613                   | -                                              | -         | -                                  |
| Total Copper                 | g/m <sup>3</sup>                      | 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/m <sup>3</sup>                      | < 0.021               | 0.023                  | < 0.021                 | <0.021                | <0.021                 | <0.021                  | <0.021                | <0.021                 | <0.021                  | ≤0.3 (aesthetic) <sup>b</sup>                  | <0.3      | <0.3                               |
| Total Lead                   | g/m <sup>3</sup>                      | 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/m <sup>3</sup>                      | 0.87                  | 1.12                   | 0.86                    | 0.22                  | 0.23                   | 0.21                    | 0.170                 | 0.173                  | 0.163                   | -                                              | -         | -                                  |
| Total Manganese              | g/m <sup>3</sup>                      | 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) <sup>b</sup>     |
| Total Potassium              | g/m <sup>3</sup>                      | 0.53                  | 0.53                   | 0.53                    | 0.187                 | 0.187                  | 0.172                   | 0.137                 | 0.138                  | 0.144                   | -                                              | -         | -                                  |
| Total Sodium                 | g/m <sup>3</sup>                      | 5.6                   | 5.7                    | 5.6                     | 1.62                  | 1.59                   | 1.52                    | 1.290                 | 1.278                  | 1.298                   | ≤200 (aesthetic) <sup>b</sup>                  | <200      | <20 (health advisory) <sup>c</sup> |

# Drinking Water Test Report



WM New Zealand

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

<sup>a</sup> Taken from the 'Water Services (Drinking Water Standards for New Zealand) Regulations 2022'.

<sup>b</sup> Taken from 'Aesthetic Value for Drinking Water Notice 2022' issued by the Water Services Regulator ("Taumata Arowai")

<sup>c</sup> Refer to non-health-related parameters — things that affect the taste, smell, colour, or appearance of water but don't pose a health risk.

# Drinking Water Test Report



WM New Zealand

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

| Parameters                          | Sample Name:<br><br>Lab Number:       | February 2026 |              |              | March 2026   |             |            | April 2026 |             |              | Drinking Water Standards                       |           |                                    |
|-------------------------------------|---------------------------------------|---------------|--------------|--------------|--------------|-------------|------------|------------|-------------|--------------|------------------------------------------------|-----------|------------------------------------|
|                                     |                                       | Staff Room    | Health Room  | Hall Kitchen | Staff Room   | Health Room | Staff Room | Staff Room | Health Room | Hall Kitchen | NZ Maximum Acceptable Value (MAV) <sup>a</sup> | WHO Limit | US EPA Limit                       |
| <b>Escherichia coli</b>             | MPN / 100mL                           | <1            | <1           | <1           | <1           | <1          | <1         | <1         | <1          | <1           | <1                                             | <1        | <1                                 |
| <b>Turbidity</b>                    | NTU                                   | 0.22          | 0.19         | 0.09         | 0.21         | 0.29        | 0.10       | 0.22       | 0.19        | 0.17         | ≤5 (aesthetic) <sup>b</sup>                    | <5        | <1 (recommended)                   |
| <b>pH</b>                           | 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) <sup>b</sup>               | 6.5–8.5   | 6.5–8.5                            |
| <b>Total Alkalinity</b>             | g/m <sup>3</sup> as CaCO <sub>3</sub> | 2.6           | 2.6          | 2.4          | 2.20         | 6.6         | 2.0        | 2.2        | 3.2         | 1.8          | -                                              | -         | -                                  |
| <b>Free Carbon Dioxide</b>          | g/m <sup>3</sup> at 25°C              | 7             | 5.7          | 7.7          | 4.8          | <1.0        | 7.2        | 3.4        | 4.6         | 3.7          | -                                              | -         | -                                  |
| <b>Total Hardness</b>               | g/m <sup>3</sup> as CaCO <sub>3</sub> | 2.70          | 2.60         | 2.90         | 2.71         | 2.78        | 2.8        | 2.04       | 2.09        | 2.07         | ≤200 (aesthetic) <sup>b</sup>                  | <500      | <500                               |
| <b>Electrical Conductivity (EC)</b> | mS/m                                  | 2.6           | 2.8          | 2.7          | 2.5          | 3.2         | 2.6        | 2.3        | 2.3         | 2.5          | -                                              | -         | -                                  |
| <b>Electrical Conductivity (EC)</b> | μS/cm                                 | 26            | 28           | 27           | 25           | 32          | 26         | 23         | 23          | 25           | -                                              | <1500     | <2500                              |
| <b>Approx Total Dissolved Salts</b> | g/m <sup>3</sup>                      | 17            | 18           | 18           | 16.75        | 21.33       | 18         | 15.61      | 15.48       | 16.43        | ≤1000 (aesthetic) <sup>b</sup>                 | <1000     | <500 (aesthetic) <sup>b</sup>      |
| <b>Total Arsenic</b>                | g/m <sup>3</sup>                      | <0.0011       | <0.0011      | <0.0011      | <0.0011      | <0.0011     | <0.0011    | <0.0011    | <0.0011     | <0.0011      | <0.01                                          | <0.01     | <0.01                              |
| <b>Total Boron</b>                  | g/m <sup>3</sup>                      | <0.053        | <0.053       | <0.053       | <0.053       | <0.053      | <0.053     | <0.053     | <0.053      | <0.053       | <2.4                                           | <2.4      | -                                  |
| <b>Total Calcium</b>                | g/m <sup>3</sup>                      | 0.36          | 0.36         | 0.49         | 0.427        | 0.446       | 0.49       | 0.272      | 0.293       | 0.325        | -                                              | -         | -                                  |
| <b>Total Copper</b>                 | g/m <sup>3</sup>                      | 0.078         | 0.130        | 0.0044       | 0.0663       | 0.0875      | 0.0063     | 0.0582     | 0.0874      | 0.00643      | <2                                             | <2        | <1.3                               |
| <b>Total Iron</b>                   | g/m <sup>3</sup>                      | <0.021        | <0.021       | <0.021       | <0.021       | <0.021      | <0.021     | <0.021     | <0.021      | <0.021       | ≤0.3 (aesthetic) <sup>b</sup>                  | <0.3      | <0.3                               |
| <b>Total Lead</b>                   | g/m <sup>3</sup>                      | 0.00128<br>0  | 0.00133<br>0 | 0.00046      | 0.00102<br>7 | 0.00092     | 0.00074    | 0.00130    | 0.00137     | 0.00103      | <0.01                                          | <0.01     | <0.015                             |
| <b>Total Magnesium</b>              | g/m <sup>3</sup>                      | 0.43          | 0.42         | 0.42         | 0.40         | 0.405       | 0.38       | 0.330      | 0.329       | 0.306        | -                                              | -         | -                                  |
| <b>Total Manganese</b>              | g/m <sup>3</sup>                      | 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) <sup>b</sup>     |
| <b>Total Potassium</b>              | g/m <sup>3</sup>                      | 0.25          | 0.23         | 0.24         | 0.237        | 0.24        | 0.23       | 0.168      | 0.173       | 0.170        | -                                              | -         | -                                  |
| <b>Total Sodium</b>                 | g/m <sup>3</sup>                      | 3.6           | 3.4          | 3.6          | 3.20         | 3.22        | 3.2        | 3.36       | 3.46        | 3.45         | ≤200 (aesthetic) <sup>b</sup>                  | <200      | <20 (health advisory) <sup>c</sup> |

# Drinking Water Test Report



WM New Zealand

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

<sup>a</sup> Taken from the 'Water Services (Drinking Water Standards for New Zealand) Regulations 2022'.

<sup>b</sup> Taken from 'Aesthetic Value for Drinking Water Notice 2022' issued by the Water Services Regulator ("Taumata Arowai")

<sup>c</sup> Refer to non-health-related parameters — things that affect the taste, smell, colour, or appearance of water but don't pose a health risk.

# Drinking Water Test Report



WM New Zealand

**Table 3. Summary of Tap Water Quality Results for May–July 2026, with Comparison to New Zealand, WHO, and US EPA Drinking Water Standards**

| Parameters                   | Sample Name:<br><br>Lab Number:       | May 2026   |             |              | June 2026  |            |            | July 2026  |             |              | Drinking Water Standards                       |           |                                    |
|------------------------------|---------------------------------------|------------|-------------|--------------|------------|------------|------------|------------|-------------|--------------|------------------------------------------------|-----------|------------------------------------|
|                              |                                       | Staff Room | Health Room | Hall Kitchen | Staff Room | Staff Room | Staff Room | Staff Room | Health Room | Hall Kitchen | NZ Maximum Acceptable Value (MAV) <sup>a</sup> | WHO Limit | US EPA Limit                       |
| Escherichia coli             | MPN / 100mL                           | 4228748    | 4228755     | 4228765      | 4254466    | 4254468    | 4254473    | 4272960    | 4272954     | 4272959      | <1                                             | <1        | <1                                 |
| Turbidity                    | NTU                                   | 0.15       | 0.17        | 0.073        | <0.05      | 0.329      | <0.05      | <0.05      | <0.05       | <0.05        | ≤5 (aesthetic) <sup>b</sup>                    | <5        | <1 (recommended)                   |
| pH                           | pH Units                              | 5.7        | 6.1         | 5.7          | 5.9        | 5.9        | 5.7        | 6.0        | 6.0         | 5.9          | 7.0–8.5 (aesthetic) <sup>b</sup>               | 6.5–8.5   | 6.5–8.5                            |
| Total Alkalinity             | g/m <sup>3</sup> as CaCO <sub>3</sub> | 2.2        | 2.8         | 2.2          | 2.40       | 2.40       | 2.20       | 2.60       | 2.60        | 2.40         | -                                              | -         | -                                  |
| Free Carbon Dioxide          | g/m <sup>3</sup> at 25°C              | 8.1        | 4.1         | 8.7          | 5.6        | 6.1        | 8.3        | 5.3        | 5.4         | 5.4          | -                                              | -         | -                                  |
| Total Hardness               | g/m <sup>3</sup> as CaCO <sub>3</sub> | 1.70       | 1.70        | 1.74         | 2.97       | 2.86       | 2.95       | 2.60       | 2.60        | 2.60         | ≤200 (aesthetic) <sup>b</sup>                  | <500      | <500                               |
| Electrical Conductivity (EC) | mS/m                                  | 1.5        | 1.6         | 1.5          | 3.2        | 3.2        | 3.2        | 2.6        | 2.5         | 2.6          | -                                              | -         | -                                  |
| Electrical Conductivity (EC) | μS/cm                                 | 15         | 16          | 15           | 32         | 32         | 32         | 26         | 25          | 26           | -                                              | <1500     | <2500                              |
| Approx Total Dissolved Salts | g/m <sup>3</sup>                      | 10         | 10          | 9.83         | 21.49      | 21.18      | 21.49      | 17         | 17          | 18           | ≤1000 (aesthetic) <sup>b</sup>                 | <1000     | <500 (aesthetic) <sup>b</sup>      |
| Total Arsenic                | g/m <sup>3</sup>                      | <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/m <sup>3</sup>                      | <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/m <sup>3</sup>                      | 0.26       | 0.27        | 0.298        | 0.377      | 0.359      | 0.401      | 0.36       | 0.37        | 0.37         | -                                              | -         | -                                  |
| Total Copper                 | g/m <sup>3</sup>                      | 0.052      | 0.060       | 0.00365      | 0.0430     | 0.0538     | 0.00399    | 0.0470     | 0.0570      | 0.0038       | <2                                             | <2        | <1.3                               |
| Total Iron                   | g/m <sup>3</sup>                      | <0.021     | <0.021      | <0.021       | <0.021     | <0.021     | <0.021     | <0.021     | <0.021      | <0.021       | ≤0.3 (aesthetic) <sup>b</sup>                  | <0.3      | <0.3                               |
| Total Lead                   | g/m <sup>3</sup>                      | 0.00096    | 0.00084     | 0.00033      | 0.00106    | 0.00100    | 0.00055    | 0.00102    | 0.00090     | 0.00072      | <0.01                                          | <0.01     | <0.015                             |
| Total Magnesium              | g/m <sup>3</sup>                      | 0.25       | 0.26        | 0.241        | 0.492      | 0.476      | 0.472      | 0.41       | 0.42        | 0.40         | -                                              | -         | -                                  |
| Total Manganese              | g/m <sup>3</sup>                      | 0.00088    | 0.00108     | 0.00146      | 0.00080    | 0.00073    | 0.00173    | 0.00063    | 0.00058     | 0.00140      | 0.04 (Staining); ≤0.1 (Taste)                  | <0.4      | <0.05 (aesthetic) <sup>b</sup>     |
| Total Potassium              | g/m <sup>3</sup>                      | 0.117      | 0.118       | 0.118        | 0.187      | 0.193      | 0.192      | 0.162      | 0.165       | 0.170        | -                                              | -         | -                                  |
| Total Sodium                 | g/m <sup>3</sup>                      | 2.0        | 1.98        | 2.01         | 3.96       | 3.93       | 3.98       | 3.4        | 3.3         | 3.4          | ≤200 (aesthetic) <sup>b</sup>                  | <200      | <20 (health advisory) <sup>c</sup> |
| Total Zinc                   | g/m <sup>3</sup>                      | 0.28       | 0.29        | 0.274        | 0.661      | 0.656      | 0.563      | 0.660      | 0.670       | 0.550        | ≤1.5 (aesthetic) <sup>b</sup>                  | <3        | <5                                 |

# Drinking Water Test Report



WM New Zealand

|                  |                  |      |      |      |       |       |       |      |      |      |                                  |       |      |
|------------------|------------------|------|------|------|-------|-------|-------|------|------|------|----------------------------------|-------|------|
| <b>Chloride</b>  | g/m <sup>3</sup> | 3.4  | 3.4  | 3.37 | 7.01  | 6.99  | 7.04  | 5.90 | 5.70 | 5.90 | ≤250<br>(aesthetic) <sup>b</sup> | <250  | <250 |
| <b>Nitrate-N</b> | g/m <sup>3</sup> | 0.13 | 0.13 | 0.12 | 0.125 | 0.125 | 0.128 | 0.11 | 0.11 | 0.12 | <11.3                            | <11.3 | <10  |
| <b>Sulphate</b>  | g/m <sup>3</sup> | 0.80 | 0.80 | 0.74 | 1.20  | 1.19  | 1.20  | 1.10 | 1.10 | 1.10 | ≤250<br>(aesthetic) <sup>b</sup> | <250  | <250 |

<sup>a</sup> Taken from the 'Water Services (Drinking Water Standards for New Zealand) Regulations 2022'.

<sup>b</sup> Taken from 'Aesthetic Value for Drinking Water Notice 2022' issued by the Water Services Regulator ("Taumata Arowai")

<sup>c</sup> Refer to non-health-related parameters — things that affect the taste, smell, colour, or appearance of water but don't pose a health risk.

## Certificate of Analysis

Page 1 of 4

|                 |                                 |                          |                                       |        |
|-----------------|---------------------------------|--------------------------|---------------------------------------|--------|
| <b>Client:</b>  | Waste Management NZ Limited     | <b>Lab No:</b>           | 4272960                               | DWAPv1 |
| <b>Contact:</b> | Na Zhang                        | <b>Date Received:</b>    | 25-Jul-2026                           |        |
|                 | C/- Waste Management NZ Limited | <b>Date Reported:</b>    | 03-Aug-2026                           |        |
|                 | PO Box 228                      | <b>Quote No:</b>         | 141146                                |        |
|                 | Silverdale                      | <b>Order No:</b>         | 3900901                               |        |
|                 | Auckland 0944                   | <b>Client Reference:</b> | 035 Drinking Water-DFS-SR (July 2026) |        |
|                 |                                 | <b>Add. Client Ref:</b>  | Routine Water + E. coli               |        |
|                 |                                 | <b>Submitted By:</b>     | Na Zhang                              |        |

### Sample Type: Drinking Water for DWSNZ Compliance

| Sample Name:                       |                                       | Drinking water-DFS-SR 24-Jul-2026 1:30 pm | Aesthetic Values                    | Maximum Acceptable Values (MAV) |
|------------------------------------|---------------------------------------|-------------------------------------------|-------------------------------------|---------------------------------|
| Lab Number:                        |                                       | 4272960.1                                 |                                     |                                 |
| Routine Water + E.coli profile Kit |                                       |                                           |                                     |                                 |
| Escherichia coli                   | MPN / 100mL                           | < 1                                       | -                                   | < 1                             |
| Routine Water Profile              |                                       |                                           |                                     |                                 |
| Turbidity                          | NTU                                   | < 0.05                                    | ≤ 5                                 | -                               |
| pH                                 | pH Units                              | 6.0                                       | 7.0 - 8.5                           | -                               |
| Total Alkalinity                   | g/m <sup>3</sup> as CaCO <sub>3</sub> | 2.6                                       | -                                   | -                               |
| Free Carbon Dioxide                | g/m <sup>3</sup> at 25°C              | 5.3                                       | -                                   | -                               |
| Total Hardness                     | g/m <sup>3</sup> as CaCO <sub>3</sub> | 2.6                                       | ≤ 200                               | -                               |
| Electrical Conductivity (EC)       | mS/m                                  | 2.6                                       | -                                   | -                               |
| Electrical Conductivity (EC)       | µS/cm                                 | 26                                        | -                                   | -                               |
| Approx Total Dissolved Salts       | g/m <sup>3</sup>                      | 17                                        | ≤ 1000                              | -                               |
| Total Arsenic                      | g/m <sup>3</sup>                      | < 0.0011                                  | -                                   | 0.01                            |
| Total Boron                        | g/m <sup>3</sup>                      | < 0.053                                   | -                                   | 2.4                             |
| Total Calcium                      | g/m <sup>3</sup>                      | 0.36                                      | -                                   | -                               |
| Total Copper                       | g/m <sup>3</sup>                      | 0.047                                     | ≤ 1                                 | 2                               |
| Total Iron                         | g/m <sup>3</sup>                      | < 0.021                                   | ≤ 0.3                               | -                               |
| Total Lead                         | g/m <sup>3</sup>                      | 0.00102                                   | -                                   | 0.01                            |
| Total Magnesium                    | g/m <sup>3</sup>                      | 0.41                                      | -                                   | -                               |
| Total Manganese                    | g/m <sup>3</sup>                      | 0.00063                                   | ≤ 0.04 (Staining)<br>≤ 0.10 (Taste) | 0.4                             |
| Total Potassium                    | g/m <sup>3</sup>                      | 0.162                                     | -                                   | -                               |
| Total Sodium                       | g/m <sup>3</sup>                      | 3.4                                       | ≤ 200                               | -                               |
| Total Zinc                         | g/m <sup>3</sup>                      | 0.66                                      | ≤ 1.5                               | -                               |
| Chloride                           | g/m <sup>3</sup>                      | 5.9                                       | ≤ 250                               | -                               |
| Nitrate-N                          | g/m <sup>3</sup>                      | 0.11                                      | -                                   | 11.3                            |
| Sulphate                           | g/m <sup>3</sup>                      | 1.1                                       | ≤ 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/m<sup>3</sup> are the same as mg/L and ppm.

### **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<sup>3</sup>) 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<sup>3</sup> as Nitrate-nitrogen (50 g/m<sup>3</sup> 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<sup>3</sup>, 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 Arowāi") 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 Mantech PC-1000-1118 Turbidity meter. APHA 2130 B (modified) : Online Edition.                                                                                                                                                                                                                                                                                                 | 0.05 NTU                                  | 1         |
| pH                                               | pH meter. APHA 4500-H <sup>+</sup> 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 <sup>3</sup> as CaCO <sub>3</sub> | 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 <sub>2</sub> D : Online Edition.                                                                                                                                                                                       | 1.0 g/m <sup>3</sup> at 25°C              | 1         |
| Total Hardness                                   | Calculation from Total Calcium and Total Magnesium. APHA 2340 B : Online Edition.                                                                                                                                                                                                                                                                                                          | 1.0 g/m <sup>3</sup> as CaCO <sub>3</sub> | 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 <sup>3</sup>                        | 1         |
| Total Arsenic                                    | Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.                                                                                                                                                                                                                                                                                                                  | 0.0011 g/m <sup>3</sup>                   | 1         |
| Total Boron                                      | Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.                                                                                                                                                                                                                                                                                                                  | 0.053 g/m <sup>3</sup>                    | 1         |
| Total Calcium                                    | Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.                                                                                                                                                                                                                                                                                                                  | 0.053 g/m <sup>3</sup>                    | 1         |
| Total Copper                                     | Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.                                                                                                                                                                                                                                                                                                                  | 0.00053 g/m <sup>3</sup>                  | 1         |
| Total Iron                                       | Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.                                                                                                                                                                                                                                                                                                                  | 0.021 g/m <sup>3</sup>                    | 1         |
| Total Lead                                       | Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.                                                                                                                                                                                                                                                                                                                  | 0.00011 g/m <sup>3</sup>                  | 1         |
| Total Magnesium                                  | Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.                                                                                                                                                                                                                                                                                                                  | 0.021 g/m <sup>3</sup>                    | 1         |
| Total Manganese                                  | Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.                                                                                                                                                                                                                                                                                                                  | 0.00053 g/m <sup>3</sup>                  | 1         |
| Total Potassium                                  | Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.                                                                                                                                                                                                                                                                                                                  | 0.053 g/m <sup>3</sup>                    | 1         |
| Total Sodium                                     | Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.                                                                                                                                                                                                                                                                                                                  | 0.021 g/m <sup>3</sup>                    | 1         |
| Total Zinc                                       | Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.                                                                                                                                                                                                                                                                                                                  | 0.0011 g/m <sup>3</sup>                   | 1         |
| Chloride                                         | Filtered sample. Ion Chromatography. APHA 4110 B (modified) : Online Edition.                                                                                                                                                                                                                                                                                                              | 0.5 g/m <sup>3</sup>                      | 1         |
| Nitrate-N                                        | Filtered sample. Ion Chromatography. APHA 4110 B (modified) : Online Edition.                                                                                                                                                                                                                                                                                                              | 0.05 g/m <sup>3</sup>                     | 1         |
| Sulphate                                         | Filtered sample. Ion Chromatography. APHA 4110 B (modified) : Online Edition.                                                                                                                                                                                                                                                                                                              | 0.5 g/m <sup>3</sup>                      | 1         |
| Escherichia coli                                 | MPN count using Colilert (Incubated at 35°C for 24 hours) and 51 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 26-Jul-2026 and 31-Jul-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

## Certificate of Analysis

Page 1 of 4

|                 |                                 |                          |                                     |        |
|-----------------|---------------------------------|--------------------------|-------------------------------------|--------|
| <b>Client:</b>  | Waste Management NZ Limited     | <b>Lab No:</b>           | 4272954                             | DWAPv1 |
| <b>Contact:</b> | Na Zhang                        | <b>Date Received:</b>    | 25-Jul-2026                         |        |
|                 | C/- Waste Management NZ Limited | <b>Date Reported:</b>    | 03-Aug-2026                         |        |
|                 | PO Box 228                      | <b>Quote No:</b>         | 141146                              |        |
|                 | Silverdale                      | <b>Order No:</b>         | 3900902                             |        |
|                 | Auckland 0944                   | <b>Client Reference:</b> | DWSNZ Compliance – Roof/Rain        |        |
|                 |                                 | <b>Add. Client Ref:</b>  | 036 DrinkingWater-DFS-HR (July2026) |        |
|                 |                                 | <b>Submitted By:</b>     | Na Zhang                            |        |

### Sample Type: Drinking Water for DWSNZ Compliance

| Sample Name:                       |                                       | DrinkingWater-DFS-HR 24-Jul-2026 1:40 pm | Aesthetic Values                    | Maximum Acceptable Values (MAV) |
|------------------------------------|---------------------------------------|------------------------------------------|-------------------------------------|---------------------------------|
| Lab Number:                        |                                       | 4272954.1                                |                                     |                                 |
| Routine Water + E.coli profile Kit |                                       |                                          |                                     |                                 |
| Escherichia coli                   | MPN / 100mL                           | < 1                                      | -                                   | < 1                             |
| Routine Water Profile              |                                       |                                          |                                     |                                 |
| Turbidity                          | NTU                                   | < 0.05                                   | ≤ 5                                 | -                               |
| pH                                 | pH Units                              | 6.0                                      | 7.0 - 8.5                           | -                               |
| Total Alkalinity                   | g/m <sup>3</sup> as CaCO <sub>3</sub> | 2.6                                      | -                                   | -                               |
| Free Carbon Dioxide                | g/m <sup>3</sup> at 25°C              | 5.4                                      | -                                   | -                               |
| Total Hardness                     | g/m <sup>3</sup> as CaCO <sub>3</sub> | 2.6                                      | ≤ 200                               | -                               |
| Electrical Conductivity (EC)       | mS/m                                  | 2.5                                      | -                                   | -                               |
| Electrical Conductivity (EC)       | µS/cm                                 | 25                                       | -                                   | -                               |
| Approx Total Dissolved Salts       | g/m <sup>3</sup>                      | 17                                       | ≤ 1000                              | -                               |
| Total Arsenic                      | g/m <sup>3</sup>                      | < 0.0011                                 | -                                   | 0.01                            |
| Total Boron                        | g/m <sup>3</sup>                      | < 0.053                                  | -                                   | 2.4                             |
| Total Calcium                      | g/m <sup>3</sup>                      | 0.37                                     | -                                   | -                               |
| Total Copper                       | g/m <sup>3</sup>                      | 0.057                                    | ≤ 1                                 | 2                               |
| Total Iron                         | g/m <sup>3</sup>                      | < 0.021                                  | ≤ 0.3                               | -                               |
| Total Lead                         | g/m <sup>3</sup>                      | 0.00090                                  | -                                   | 0.01                            |
| Total Magnesium                    | g/m <sup>3</sup>                      | 0.42                                     | -                                   | -                               |
| Total Manganese                    | g/m <sup>3</sup>                      | 0.00058                                  | ≤ 0.04 (Staining)<br>≤ 0.10 (Taste) | 0.4                             |
| Total Potassium                    | g/m <sup>3</sup>                      | 0.165                                    | -                                   | -                               |
| Total Sodium                       | g/m <sup>3</sup>                      | 3.3                                      | ≤ 200                               | -                               |
| Total Zinc                         | g/m <sup>3</sup>                      | 0.67                                     | ≤ 1.5                               | -                               |
| Chloride                           | g/m <sup>3</sup>                      | 5.7                                      | ≤ 250                               | -                               |
| Nitrate-N                          | g/m <sup>3</sup>                      | 0.11                                     | -                                   | 11.3                            |
| Sulphate                           | g/m <sup>3</sup>                      | 1.1                                      | ≤ 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/m<sup>3</sup> are the same as mg/L and ppm.



This Laboratory is accredited by International Accreditation New Zealand (IANZ), which represents New Zealand in the International Laboratory Accreditation Cooperation (ILAC). Through the ILAC Mutual Recognition Arrangement (ILAC-MRA) this accreditation is internationally recognised. The tests reported herein have been performed in accordance with the terms of accreditation, with the exception of tests marked \* or any comments and interpretations, which are not accredited.

### **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<sup>3</sup>) 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<sup>3</sup> as Nitrate-nitrogen (50 g/m<sup>3</sup> 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<sup>3</sup>, 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 Arowāi") 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 Mantech PC-1000-1118 Turbidity meter. APHA 2130 B (modified) : Online Edition.                                                                                                                                                                                                                                                                                                 | 0.05 NTU                                  | 1         |
| pH                                               | pH meter. APHA 4500-H <sup>+</sup> 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 <sup>3</sup> as CaCO <sub>3</sub> | 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 <sub>2</sub> D : Online Edition.                                                                                                                                                                                       | 1.0 g/m <sup>3</sup> at 25°C              | 1         |
| Total Hardness                                   | Calculation from Total Calcium and Total Magnesium. APHA 2340 B : Online Edition.                                                                                                                                                                                                                                                                                                          | 1.0 g/m <sup>3</sup> as CaCO <sub>3</sub> | 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 <sup>3</sup>                        | 1         |
| Total Arsenic                                    | Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.                                                                                                                                                                                                                                                                                                                  | 0.0011 g/m <sup>3</sup>                   | 1         |
| Total Boron                                      | Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.                                                                                                                                                                                                                                                                                                                  | 0.053 g/m <sup>3</sup>                    | 1         |
| Total Calcium                                    | Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.                                                                                                                                                                                                                                                                                                                  | 0.053 g/m <sup>3</sup>                    | 1         |
| Total Copper                                     | Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.                                                                                                                                                                                                                                                                                                                  | 0.00053 g/m <sup>3</sup>                  | 1         |
| Total Iron                                       | Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.                                                                                                                                                                                                                                                                                                                  | 0.021 g/m <sup>3</sup>                    | 1         |
| Total Lead                                       | Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.                                                                                                                                                                                                                                                                                                                  | 0.00011 g/m <sup>3</sup>                  | 1         |
| Total Magnesium                                  | Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.                                                                                                                                                                                                                                                                                                                  | 0.021 g/m <sup>3</sup>                    | 1         |
| Total Manganese                                  | Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.                                                                                                                                                                                                                                                                                                                  | 0.00053 g/m <sup>3</sup>                  | 1         |
| Total Potassium                                  | Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.                                                                                                                                                                                                                                                                                                                  | 0.053 g/m <sup>3</sup>                    | 1         |
| Total Sodium                                     | Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.                                                                                                                                                                                                                                                                                                                  | 0.021 g/m <sup>3</sup>                    | 1         |
| Total Zinc                                       | Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.                                                                                                                                                                                                                                                                                                                  | 0.0011 g/m <sup>3</sup>                   | 1         |
| Chloride                                         | Filtered sample. Ion Chromatography. APHA 4110 B (modified) : Online Edition.                                                                                                                                                                                                                                                                                                              | 0.5 g/m <sup>3</sup>                      | 1         |
| Nitrate-N                                        | Filtered sample. Ion Chromatography. APHA 4110 B (modified) : Online Edition.                                                                                                                                                                                                                                                                                                              | 0.05 g/m <sup>3</sup>                     | 1         |
| Sulphate                                         | Filtered sample. Ion Chromatography. APHA 4110 B (modified) : Online Edition.                                                                                                                                                                                                                                                                                                              | 0.5 g/m <sup>3</sup>                      | 1         |
| Escherichia coli                                 | MPN count using Colilert (Incubated at 35°C for 24 hours) and 51 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 26-Jul-2026 and 31-Jul-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

## Certificate of Analysis

Page 1 of 4

|                 |                                 |                          |                                      |        |
|-----------------|---------------------------------|--------------------------|--------------------------------------|--------|
| <b>Client:</b>  | Waste Management NZ Limited     | <b>Lab No:</b>           | 4272959                              | DWAPv1 |
| <b>Contact:</b> | Na Zhang                        | <b>Date Received:</b>    | 25-Jul-2026                          |        |
|                 | C/- Waste Management NZ Limited | <b>Date Reported:</b>    | 03-Aug-2026                          |        |
|                 | PO Box 228                      | <b>Quote No:</b>         | 141146                               |        |
|                 | Silverdale                      | <b>Order No:</b>         | 3900903                              |        |
|                 | Auckland 0944                   | <b>Client Reference:</b> | DWSNZ Compliance – Roof/Rain         |        |
|                 |                                 | <b>Add. Client Ref:</b>  | 037 Drinkingwater-DFS-HK (July 2026) |        |
|                 |                                 | <b>Submitted By:</b>     | Na Zhang                             |        |

### Sample Type: Drinking Water for DWSNZ Compliance

| Sample Name:                       |                                       | Drinkingwater-DFS-HK 24-Jul-2026 1:45 pm | Aesthetic Values                    | Maximum Acceptable Values (MAV) |
|------------------------------------|---------------------------------------|------------------------------------------|-------------------------------------|---------------------------------|
| Lab Number:                        |                                       | 4272959.1                                |                                     |                                 |
| Routine Water + E.coli profile Kit |                                       |                                          |                                     |                                 |
| Escherichia coli                   | MPN / 100mL                           | < 1                                      | -                                   | < 1                             |
| Routine Water Profile              |                                       |                                          |                                     |                                 |
| Turbidity                          | NTU                                   | < 0.05                                   | ≤ 5                                 | -                               |
| pH                                 | pH Units                              | 5.9                                      | 7.0 - 8.5                           | -                               |
| Total Alkalinity                   | g/m <sup>3</sup> as CaCO <sub>3</sub> | 2.4                                      | -                                   | -                               |
| Free Carbon Dioxide                | g/m <sup>3</sup> at 25°C              | 5.4                                      | -                                   | -                               |
| Total Hardness                     | g/m <sup>3</sup> as CaCO <sub>3</sub> | 2.6                                      | ≤ 200                               | -                               |
| Electrical Conductivity (EC)       | mS/m                                  | 2.6                                      | -                                   | -                               |
| Electrical Conductivity (EC)       | µS/cm                                 | 26                                       | -                                   | -                               |
| Approx Total Dissolved Salts       | g/m <sup>3</sup>                      | 18                                       | ≤ 1000                              | -                               |
| Total Arsenic                      | g/m <sup>3</sup>                      | < 0.0011                                 | -                                   | 0.01                            |
| Total Boron                        | g/m <sup>3</sup>                      | < 0.053                                  | -                                   | 2.4                             |
| Total Calcium                      | g/m <sup>3</sup>                      | 0.37                                     | -                                   | -                               |
| Total Copper                       | g/m <sup>3</sup>                      | 0.0038                                   | ≤ 1                                 | 2                               |
| Total Iron                         | g/m <sup>3</sup>                      | < 0.021                                  | ≤ 0.3                               | -                               |
| Total Lead                         | g/m <sup>3</sup>                      | 0.00072                                  | -                                   | 0.01                            |
| Total Magnesium                    | g/m <sup>3</sup>                      | 0.40                                     | -                                   | -                               |
| Total Manganese                    | g/m <sup>3</sup>                      | 0.00140                                  | ≤ 0.04 (Staining)<br>≤ 0.10 (Taste) | 0.4                             |
| Total Potassium                    | g/m <sup>3</sup>                      | 0.170                                    | -                                   | -                               |
| Total Sodium                       | g/m <sup>3</sup>                      | 3.4                                      | ≤ 200                               | -                               |
| Total Zinc                         | g/m <sup>3</sup>                      | 0.55                                     | ≤ 1.5                               | -                               |
| Chloride                           | g/m <sup>3</sup>                      | 5.9                                      | ≤ 250                               | -                               |
| Nitrate-N                          | g/m <sup>3</sup>                      | 0.12                                     | -                                   | 11.3                            |
| Sulphate                           | g/m <sup>3</sup>                      | 1.1                                      | ≤ 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/m<sup>3</sup> are the same as mg/L and ppm.



This Laboratory is accredited by International Accreditation New Zealand (IANZ), which represents New Zealand in the International Laboratory Accreditation Cooperation (ILAC). Through the ILAC Mutual Recognition Arrangement (ILAC-MRA) this accreditation is internationally recognised. The tests reported herein have been performed in accordance with the terms of accreditation, with the exception of tests marked \* or any comments and interpretations, which are not accredited.

### **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<sup>3</sup>) 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<sup>3</sup> as Nitrate-nitrogen (50 g/m<sup>3</sup> 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<sup>3</sup>, 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 Arowāi") 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 Mantech PC-1000-1118 Turbidity meter. APHA 2130 B (modified) : Online Edition.                                                                                                                                                                                                                                                                                                 | 0.05 NTU                                  | 1         |
| pH                                               | pH meter. APHA 4500-H <sup>+</sup> 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 <sup>3</sup> as CaCO <sub>3</sub> | 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 <sub>2</sub> D : Online Edition.                                                                                                                                                                                       | 1.0 g/m <sup>3</sup> at 25°C              | 1         |
| Total Hardness                                   | Calculation from Total Calcium and Total Magnesium. APHA 2340 B : Online Edition.                                                                                                                                                                                                                                                                                                          | 1.0 g/m <sup>3</sup> as CaCO <sub>3</sub> | 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 <sup>3</sup>                        | 1         |
| Total Arsenic                                    | Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.                                                                                                                                                                                                                                                                                                                  | 0.0011 g/m <sup>3</sup>                   | 1         |
| Total Boron                                      | Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.                                                                                                                                                                                                                                                                                                                  | 0.053 g/m <sup>3</sup>                    | 1         |
| Total Calcium                                    | Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.                                                                                                                                                                                                                                                                                                                  | 0.053 g/m <sup>3</sup>                    | 1         |
| Total Copper                                     | Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.                                                                                                                                                                                                                                                                                                                  | 0.00053 g/m <sup>3</sup>                  | 1         |
| Total Iron                                       | Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.                                                                                                                                                                                                                                                                                                                  | 0.021 g/m <sup>3</sup>                    | 1         |
| Total Lead                                       | Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.                                                                                                                                                                                                                                                                                                                  | 0.00011 g/m <sup>3</sup>                  | 1         |
| Total Magnesium                                  | Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.                                                                                                                                                                                                                                                                                                                  | 0.021 g/m <sup>3</sup>                    | 1         |
| Total Manganese                                  | Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.                                                                                                                                                                                                                                                                                                                  | 0.00053 g/m <sup>3</sup>                  | 1         |
| Total Potassium                                  | Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.                                                                                                                                                                                                                                                                                                                  | 0.053 g/m <sup>3</sup>                    | 1         |
| Total Sodium                                     | Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.                                                                                                                                                                                                                                                                                                                  | 0.021 g/m <sup>3</sup>                    | 1         |
| Total Zinc                                       | Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.                                                                                                                                                                                                                                                                                                                  | 0.0011 g/m <sup>3</sup>                   | 1         |
| Chloride                                         | Filtered sample. Ion Chromatography. APHA 4110 B (modified) : Online Edition.                                                                                                                                                                                                                                                                                                              | 0.5 g/m <sup>3</sup>                      | 1         |
| Nitrate-N                                        | Filtered sample. Ion Chromatography. APHA 4110 B (modified) : Online Edition.                                                                                                                                                                                                                                                                                                              | 0.05 g/m <sup>3</sup>                     | 1         |
| Sulphate                                         | Filtered sample. Ion Chromatography. APHA 4110 B (modified) : Online Edition.                                                                                                                                                                                                                                                                                                              | 0.5 g/m <sup>3</sup>                      | 1         |
| Escherichia coli                                 | MPN count using Colilert (Incubated at 35°C for 24 hours) and 51 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 26-Jul-2026 and 31-Jul-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