

COMPANY NAME	Shannon Leigh Trust
ATTENTION	Briar Belgrave
SUBJECT	Outline of Hydrogeological Assessment for Fast Track

1. PROJECT DESCRIPTION

The project for which a fast-track application is being applied for is the consenting and construction of “The Rest” development in Tauwhare, Waikato.

The Rest is a comprehensively planned rural development designed to deliver high-quality lifestyle, education, and retirement living outcomes while supporting the long-term growth and resilience of the Waikato region (Barker and Associates Ltd, 2025). The proposal includes a purpose-built agri-education institute, a series of rural lifestyle lots, a modern retirement village, a small commercial centre, and discreetly located storage sheds integrated to form a cohesive, well-designed development that maintains and enhances Tauwhare’s rural character (Figure 1). Together, The Rest delivers significant social, economic, and educational benefits through a master-planned development that enhances local services, expands housing choice, and strengthens the rural economy (Barker and Associates Ltd, 2025).

2.0 Masterplan

2.1 Conceptual Masterplan

- Legend**
- Subject Site
 - Local Road Connection (20m)
 - Accessway / ROW (5-10m)
 - Farm Track (Agri-Education connection)
 - Walking Track (along riparian margin)
 - Retirement Village (Gross Area = 8.3ha)
 - Retirement Village Villages (indicative)
 - Retirement Village Amenity/Care Building (indicative)
 - Rural Residential (36 x 2500/8500m² lots)
 - Commercial - neighbourhood centre (incl. signage/advertising) (3000m²)
 - Commercial - Farming / Equipment hire (7500m²)
 - Commercial - Storage units (8000m²)
 - Agri-education Institute (boarding facilities, administration, storage, accommodation, practical areas and livestock/farming facilities)
 - Buildings
 - Existing House to remain
 - SW Devices (indicative locations)
 - 2000m² WW treatment
 - Shelterbelts / Vegetated Buffers
 - Contours
 - Waterways / 20m riparian margin
 - Existing vegetation to remain (TBC)
 - Street trees



Figure 1: The Rest Conceptual Masterplan (Barker and Associates Ltd, 2025)

2. HYDROGEOLOGY INTRODUCTION

The hydrogeological assessment is for the following activities at the site:

- The construction and on-going effects of the stormwater management infrastructure.
- General construction activities involving excavations below the water table.
- The construction and operation of production bores to provide water for domestic use, dust suppression and firefighting for the development.
- The construction and on-going effects of wastewater treatment and disposal Infrastructure.

The site has a shallow groundwater table that is connected to existing surface water bodies (i.e., wetlands and streams). Therefore, a detailed assessment is required to ensure that the effects of the proposed development are acceptable. The types of activities required to establish the necessary infrastructure for the development that may result in effects on groundwater and connected wetlands are listed in Table 1.

The proposed activities are relatively standard for land development projects in the Waikato area. Commonly used monitoring and mitigation measures could be used at the site, such as groundwater monitoring bores, changes to drainage methods, reductions in pumping rates and reductions in hydraulic connections to reduce potential effects in sensitive areas.

Table 1: Activities Which Require Resource Consent and Affect Hydrogeology

ACTIVITY	TECHNICAL ASSESSMENTS REQUIRED	CONSENTS
Drinking Water Infrastructure		
Abstraction of Groundwater for domestic water supply.	Groundwater/hydrogeology including effects on surface waterbodies/wetlands, other groundwater users.	Controlled activity under WRP Rule Section 3.
Stormwater Management Infrastructure		
Temporary and permanent diversion of surface water.	Groundwater/hydrogeology including effects on wetlands and settlement.	Discretionary Activity under WRP Rule 3.6.4.13. Discretionary Activity under Regulation 54 of the NESFW.
Permanent damming and diversion of groundwater (changes to groundwater flows resulting from creation of the stormwater infrastructure).	Groundwater/hydrogeology including effects on surface water bodies/wetlands, other groundwater users, mobilisation of contaminants, and settlement. The stormwater infrastructure may permanently lower the local water table, therefore requiring consent for a groundwater diversion.	Discretionary Activity under WRP Rule 3.6.4.13. Discretionary Activity under Regulation 54 of the NESFW.
Temporary water takes during construction for dewatering/lowering of the groundwater table.	Dewatering during construction to lower the groundwater table or maintain a dry environment within excavations may be undertaken using spears. The take will be classified as a groundwater take and will require an assessment of the effects on aquifer sustainability, other bore users, and surface water bodies (including wetlands), mobilisation of contaminants, ecological and cultural effects.	Controlled activity under WRP Rule 3.8.4.7 (drilling). Discretionary Activity under WRP Rule 3.3.4.24 (groundwater take).
Construction of specified infrastructure including earthworks and clean fill disposal.	Groundwater/hydrogeology including effects on wetlands.	Discretionary Activity under Regulation 54 of the NESFW.

ACTIVITY	TECHNICAL ASSESSMENTS REQUIRED	CONSENTS
Geotechnical and groundwater investigations.	There will be a need to facilitate further groundwater and geotechnical investigation and monitoring to obtain additional information and to monitor the impact of the works on groundwater levels. This will occur prior to works, during works, and post-works.	Controlled Activity under WRP Rule 3.8.4.7 (drilling). Discretionary Activity under WRP Rule 3.3.4.24 (groundwater take). Controlled Activity under WRP Rule 3.6.8.2 (well and aquifer testing discharges).
Wastewater Treatment and Disposal Infrastructure		
Permanent damming and diversion of groundwater (changes to groundwater flows resulting from creation of the wastewater treatment and disposal infrastructure).	Groundwater/hydrogeology including effects on surface water bodies/wetlands, other groundwater users, mobilisation of contaminants, and settlement. The stormwater infrastructure may permanently lower the local water table, therefore requiring consent for a groundwater diversion.	Discretionary Activity under WRP Rule 3.6.4.13. Discretionary Activity under Regulation 54 of the NESFW.
Temporary water takes during construction for dewatering/lowering of the groundwater table.	Dewatering during construction to lower the groundwater table or maintain a dry environment within excavations may be undertaken using spears. The take will be classified as a groundwater take and will require an assessment of the effects on aquifer sustainability, other bore users, and surface water bodies (including wetlands), mobilisation of contaminants, ecological and cultural effects.	Controlled activity under WRP Rule 3.8.4.7 (drilling). Discretionary Activity under WRP Rule 3.3.4.24 (groundwater take).
Construction of specified infrastructure including earthworks and clean fill disposal.	Groundwater/hydrogeology including effects on wetlands.	Discretionary Activity under Regulation 54 of the NESFW.
Treatment and disposal of wastewater.	The potential effects of discharging treated wastewater will need to be assessed. This required assessment will need to assess effects on surface water bodies/wetlands and other groundwater users.	Controlled Activity under WRP Rule 3.5.7.5.

3. HYDROGEOLOGICAL BACKGROUND

The proposed development is located within the Hamilton Basin, a large tectonic basin centered on Hamilton City with an area of approximately 2,000 km² and traversed by the Waikato River. The basin is infilled with Tauranga Group alluvial sediments dating from the Pliocene to the middle Holocene, overlain by late Holocene unconsolidated alluvial and colluvial sediments.

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The Tauranga Group sediments include gravels, sands, silt, muds and peats of fluvial, lacustrine and distal ignimbrite origin. Two subgroups are recognised locally within the Tauranga Group, the Walton Sub-group (Late Pliocene to Middle Quaternary) and the Piako Sub-group (Late Quaternary), which together form a sequence up to 300 m thick.

The Piako Sub-group is the youngest unit of the Tauranga Group and has been deposited within the last 20,000 years. The Hinuera Formation and the Taupo Pumice Alluvium are the most widespread formations of this group. The Hinuera Formation underlies much of the Hamilton basin and comprises a variable, discontinuous sequence of rhyolitic and pumiceous gravelly sands, interspersed with pumiceous silt, clay and peat. The Hinuera Formation was deposited by braided river systems of the Waikato River, initiated by volcanism in the Taupo Volcanic zone (Petch, 1987).

The Tauranga Group sediments contain the aquifers used most extensively across the Hamilton Basin. Within these formations, the most productive aquifers consist of well sorted coarse sands and gravels. Lithological variability generally results in a number of zones of higher permeability within each of these formations rather than single, continuous aquifer (Schofield, 1972). The shallow aquifer in the Hinuera Formation is named the Hinuera Aquifer and is used locally as water source by landowners.

Literature values for hydraulic conductivity in the Tauranga Group in the Hamilton Basin range from 0.5 m/day in the silts and peat layers to 13.5 m/day in the coarse gravelly sands. Aquifer transmissivity values derived from pumping tests range from 10 m²/day to 1,000 m²/day but are usually less than 100 m²/day. Aquifer transmissivities tend to be lower in the deeper deposits as they are older, more intensely weathered and have a greater proportion of clays and silts (Marshall & Petch, 1985). Storativity values vary from 0.0001 for deeper, confined or semi-confined aquifers to 0.1 for shallower, unconfined aquifers in the Hamilton Basin (Petch & Marshall 1988). In some areas these discontinuous aquifers may yield up to 30 L/s (Petch, 1987).

The piezometric surface in the Hamilton Basin is closely related to surface topography. Piezometric gradients beneath un-dissected areas of the Hamilton Basin surface have a gentle slope that steepens near incised stream channels. Groundwater is recharged from rainfall, predominantly during the winter when soil moisture deficits are satisfied. The shallow groundwater subsequently discharges to the incised streams and the Waikato River. Isotropic analyses suggest that the groundwater flux is mainly through shallow aquifers. Groundwater in deeper aquifers within the basin is significantly older, having been dated at up to 6,500 years old (Marshall and Petch, 1985).

3.1 Local Hydrogeology

According to the WRC database, there are approximately 19 bores within the general proximity of the proposed development, and the details of these bores are provided in Table 2. Most bores are relatively shallow being less than 20 m deep but there are some deeper bores nearby that are 77.7 and 94.5 m deep. There are two shallow bores currently on site.

The site is within the Hamilton Basin South Aquifer Management Zone for the purposes of consenting groundwater takes.

Table 2: Nearby Bore Details from WRC Database May 2026

BORE NUMBER	DEPTH (m)	STATIC WATER LEVEL (m)	SCREENED DEPTH (m bgl)	SCREENED GEOLOGY
69_838	24			
69_1520	7.5	2	3.5	Sands, Clay, Brown Pumice
69_1809	4.2	2.97	2.2	Sands, gravels
72_28	77.7			
69_1171	8.1	2	6	Sands
69_2182	7.4	2.20	5.4	Sands, Pumice, Gravel
69_597	94.5	21.30		
72_321	7	2.5	5	Sands, Pumice.
72_2045	13.9	8		
72_3674	25	8.20		
72_4603	90	9		

BORE NUMBER	DEPTH (m)	STATIC WATER LEVEL (m)	SCREENED DEPTH (m bgl)	SCREENED GEOLOGY
72_5237	26	9	20	Gravels, Sands and Pumice
72_3415	25			
72_10433	8.5		4.5	
72_8387				
72_8424	6			
72_6491	8			
72_10497	11	4.8	8	
72_11314	11.2	3.3	9	
72_12442	24			

3.2 Surface Water Bodies

Watercourses draining the site are part of the Waikato Central Drainage Scheme and Waitakaruru drainage network managed by Waikato Regional Council. The system generally flows north through the centre of the site and flows into a tributary of the Waitakaruru Stream off site and ultimately to the Piako River catchment, discharging to the Firth of Thames. Ecological Solutions have classified all streams except one as artificial watercourses. One stream has been classified as a modified watercourse which replaced a historically meandering watercourse (Ecological Solutions 2026).

3.3 Wetlands

Ecological Solutions has identified a number of small fragmented areas of punitive wetland within paddocks that could meet the RMA definition of a 'wetland' (Ecological Solutions 2026). The majority of these wetlands appear to be in paddocks and are likely to be perched above the local groundwater table on low permeability sediments. One wetland to the north of the site appears to be a drained watercourse which is likely to be connected to the local groundwater table.

4. KEY HYDROGEOLOGICAL EFFECTS TO BE ASSESSED

The key groundwater effects to be considered in the hydrogeological assessment include:

Earthworks and Stormwater Network

- Groundwater seepage inflows into any temporary work excavations and any associated dewatering activities.
- Groundwater drawdown effects from the works, including potential effects on existing road infrastructure and wetlands (i.e., lowering the water table in the vicinity of a wetland can impact the wetland hydrology).
- Effects from disposal of the pumped groundwater.
- Potential groundwater mounding effects of any soakage system or constructed wetland.

Drinking Water Supply

- Potential exploration drilling for a decentralised water supply system.
- Groundwater drawdown effects from operating the water supply bores on nearby groundwater users', streams and wetlands.

Onsite Wastewater Treatment and Disposal

- Groundwater seepage inflows into any temporary work excavations and dewatering activities
- Effects from the disposal of treated wastewater

5. METHODOLOGY FOR THE GROUNDWATER ASSESSMENT

WGA understands that further geotechnical investigations will be undertaken at the site. WGA proposes close collaboration with geotechnical specialists to ensure geotechnical investigations can also be used to inform understanding of the site's hydrogeology.

WGA have been involved in modelling groundwater effects for the recent excavations for nearby residential developments, Rotokauri Greenway and Gordonton Retirement Village. The information gained at these nearby sites will be applied to the assessment. In addition, WGA staff have been highly involved in reviewing groundwater effects of the Waikato Expressway – Hamilton Section.

5.1 Earthworks and Stormwater Network

WGA proposes collaborating closely with geotechnical specialists and design engineers to build upon current groundwater knowledge and provide guidance for additional testing of the local hydraulic properties. Once the underlying local soil hydraulic properties are ascertained WGA will then be able to assess the potential mounding effects of any planned soakage systems within the stormwater management network. Given the high groundwater levels and expected low permeability of the shallow soils, WGA proposes using the MOUNDSOLV software package developed by HydroSOLVE to assess potential groundwater mounding effects of the planned soakage systems.

Additionally, once local soil hydraulic properties are ascertained the potential dewatering effects of any construction activities that require the excavations below the water table can be assessed. WGA proposes to use a combination of analytical tools such as trench models and pit models to assess temporary and long-term groundwater drawdown as a result of any construction activities that require excavations below the water table. Additionally, WGA can build upon these models to undertake 2D finite element groundwater modelling if deemed required for excavations conducted in sensitive areas.

Once mounding and groundwater drawdown risk has been analyzed, WGA propose that a monitoring plan will be developed to ensure any potential groundwater drawdown or mounding linked to potentially significant impacts can be detected and mitigated before these impacts arise.

Building upon this monitoring plan, mitigation measures will be developed and documented so that they may be put in place to reduce any calculated groundwater drawdown at the site both during the construction period and following completion of the earthworks, including for example:

- Design, installation and monitoring of groundwater level measurement systems.
- Options to modify dewatering systems to reduce the magnitude and extent of groundwater drawdown.
- Optimize pumping rates and incorporate transient adjustments in pumping rates.
- Reduction in hydraulic connections between groundwater and surface water bodies to reduce the effects of drawdown in sensitive areas.

5.2 Drinking Water Supply

In order to construct the required groundwater supply bores for the development WGA proposes to use the following workflow for each of the bores:

Gather Background Site Information

- Carry out a desktop survey of the site to establish local lithological information and identify any factors that may affect, or be affected by, the proposed groundwater take. Whilst there are currently two shallow bores on site, it is unlikely these will provide enough water to supply the new development.

Drill Pilot Bore

- Drill a 75 mm pilot bore to inform the precise depth that the test bore and production bore will target.
- Collect and record underlying lithology.
- Determine from the underlying stratigraphy if the site is suitable or if another location is needed.

Construct Test Bore

- Drill a 100 mm test bore and carry out a production test.
- Collect a water sample during the production test and have it analysed.
- Decide if the target aquifer can provide the desired water volumes and quality or if the bore needs to be drilled into a deeper aquifer.

Construct Production Bore

- Drill and construct a production bore close to the test bore. The diameter of the production bore will be determined based on pump and water requirements.
- Undertake a stepped rate and constant rate pumping test on the production bore.
- Analyse the pumping test data and carry out forward projections to assess the effects of operating the production bore.

5.3 Onsite Wastewater Treatment and Disposal Infrastructure

WGA proposes to assess the effects of the planned wastewater treatment and discharge facilities by undertaking attenuation modelling using microbial removal rates documented in Pang (2009). WGA proposes to use *E. coli* and rotavirus in the attenuation modelling as these are less likely to be removed by natural attenuation compared to other pathogens.

Once the groundwater quality risk from the wastewater treatment and discharge facilities have been assessed, WGA propose that a monitoring plan will be developed to ensure groundwater is not affected by any wastewater discharge.

If excavations below the water table are required for the construction and operation of the wastewater treatment and disposal infrastructure, WGA will assess these using the same methods proposed for the dewatering associated with the stormwater infrastructure and detailed in Section 5.1. WGA propose that a similar groundwater monitoring plan will be developed to ensure any potential groundwater drawdown or mounding linked to potentially significant impacts can be detected and mitigated before these impacts arise.

6. CONCLUSION

Based on WGA's experience and the information available to date, including regional hydrogeological data, site-specific assessments, and comparable nearby developments, there is no indication of any significant constraints that would prevent the proposed development from proceeding under a fast track consenting process.

The potential effects on groundwater, such as drawdown during construction dewatering, mounding from soakage systems, and impacts from on-site wastewater discharge, are generally understood and can be appropriately managed.

WGA considers that the potential adverse effects on the surrounding groundwater and surface water environment can be managed to an acceptable level.

7. QUALIFICATIONS AND EXPERIENCE

7.1 Clare Houlbrooke – Principal Hydrogeologist, Project Director

Clare is a Principal Hydrogeologist (BSc, MSc (Hons) Earth Sciences) with more than 20 years' experience in hydrological resource investigations. Clare's focus is sustainable management of groundwater resources and connected surface water systems. Clare has worked in two regional councils as a Groundwater Scientist over a nine-year period, and as a consultant has continued to support regional councils with the review of groundwater-related resource consent applications, including reviewing the groundwater effects of the recently completed Waikato Expressway. Clare has been based in the Waikato for 11 years and has in-depth knowledge of the local hydrogeological conditions. She has prepared and presented evidence in regional council resource consent hearings and in Environment Court as an expert witness.

7.2 Brett Sinclair – Senior Principal Hydrogeologist, Project Reviewer

Brett is a Principal Hydrogeologist (BSc, MSc Geology) with more than 30 years' experience in hydrogeology, geology, water management, water quality assessment and environmental effects mitigation. He specialises in the evaluation, utilisation, management, and protection of groundwater resources and groundwater-dependent surface water resources. Brett provides specialist hydrogeological support for geotechnical assessments, including major civil infrastructure projects. He has undertaken numerous peer reviews of applications for site dewatering and infrastructure construction projects on behalf of regulatory authorities.

7.3 Catherine Howell – Senior Hydrogeologist, Project Lead/Technical Assessments

Catherine is a Hydrogeologist with a Masters in Groundwater Studies and over 15 years of experience in the United Kingdom, Australia and New Zealand. Catherine has gained experience in hydrogeological investigations through roles in both regulatory bodies and consultancy. Her hydrogeological assessment experience includes pump test analysis, regional-scale water assessments, water quality monitoring, and project management. Catherine has prepared a technical assessment of effects for other nearby construction works within the Rotokauri development area, including effects of dewatering and soakage.

8. REFERENCES

Barker and Associates Limited. (2025). The Rest – 1073 Tauwhare Road Masterplan.

Ecological Solutions. (2026). The Rest Development Fast Track Referral Application – Ecological Assessment. Dated 5 February 2026.

Lowe, D.J. (2010). Introduction to the landscapes and soils of the Hamilton Basin. In: Lowe, D.J.; Neall, V.E., Hedley, M; Clothier, B.; Mackay, A. 2010. Guidebook for Pre-conference North Island, New Zealand "Volcanoes to Oceans" field tour (27-30 July). 19th World Soils Congress, International Union of Soil Sciences, Brisbane. Soil and Earth Sciences Occasional Publication No. 3, Massey University, Palmerston North, pp. 1.24-1.61.

Marshall TW, Petch RA (1985). A study of ground water and surface water resources in the Hamilton Basin. Waikato Valley Authority Technical Publication No. 30.

Pang, L. (2009). Microbial removal rates in subsurface media estimated from published studies of field experiments and large intact soil cores. Journal of Environmental Quality. 38, American Society of Agronomy, Crop Science Society of America, Soil Science Society pp. 1531–1559

Petch RA. (1987). Water Resources of the Manganua Catchment. In: Manganua Catchment Management Plan. Waikato Valley Authority Technical Publication N0.30.

Schofield JC. (1972). Groundwater of the Hamilton Lowland. New Zealand Geological Survey Bulletin No.89.

Yours sincerely,



Catherine Howell
Senior Hydrogeologist
WALLBRIDGE GILBERT AZTEC



CERTIFICATE OF ANALYSIS

Work Order : **NH2600420**

Client : **WGA NZ Ltd**
Contact : Clare Houlbrooke
Address : 10 Bisley Road
Hamilton Waikato New Zealand

Telephone : ----
Project : WGA252148
Order number : ----
C-O-C number : ----
Sampler : Catherine Howell
Site : The Rest Tauwhare
Quote number : EN/000
No. of samples received : 2
No. of samples analysed : 2

Laboratory : Environmental Hamilton
Contact : Customer Services NH
Address : Ruakura Research Centre, 10 Bisley Rd
Hamilton WKO New Zealand 3214
Telephone : +64 7 974 4740
Date Samples Received : 30-Jan-2026 09:25
Date Analysis Commenced : 30-Jan-2026
Issue Date : 09-Feb-2026 16:28



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This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Eva Hu	Sample Reception Technician	Micro, Hamilton, Waikato
Louise Coombridge	Chemist - Inorganics	Inorganics, Hamilton, Waikato
Matt Counsell	Laboratory Manager	Inorganics, Hamilton, Waikato
Nav Robertson	Technical Advisor Microbiology	Micro, Hamilton, Waikato
Rowin Angkico	Chemist - Inorganics	Inorganics, Hamilton, Waikato
Tharanga Samarasinghe	Senior Laboratory Technician	Trace, Hamilton, Waikato



General Comments

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key: CAS Number: CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR: Limit of Reporting (detection limit).

Unit	Description
°C	Degrees Celsius
g CaCO ₃ /m ³	Grams of calcium carbonate per cubic meter
g eqv. CaCO ₃ /m ³	Grams equivalent to calcium carbonate per cubic meter
g/m ³	Grams per cubic metre
MPN/100mL	Most Probable Number per 100 millilitres
NTU	Nephelometric Turbidity Units
pH	pH
uS/cm	uS/cm

>: greater than.

<: less than.

ø: ALS is not IANZ accredited for these tests.

^: This result is computed from individual analyte detections at or above the level of reporting.

~: Indicates an estimated value.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Workorder Comments

Samples were collected by yourselves (or your agent) and analysed as received at ALS NZ (or at the subcontracted laboratories, when applicable). Samples were in acceptable condition unless otherwise noted on this report.



Analytical Results

Sub-Matrix: CLEAN WATER

(Matrix: WATER)

Client Sample ID				BORE F	BORE N			
Client Sampling date / time				30-Jan-2026 09:00	30-Jan-2026 09:05			
Compound	CAS Number	LOR	Unit	NH2600420-001	NH2600420-002			
				Result	Result			
Alk_W: Alkalinity								
Alkalinity	----	1	g CaCO3/m3	71	57	----	----	----
Ani_W: Anions by Ion Chromatography								
Chloride	16887-00-6	0.5	g/m3	26.9	17.2	----	----	----
Sulfate	14808-79-8	0.15	g/m3	70.7	46.0	----	----	----
ATemp_W								
Temperature as Received	----	0.1	°C	21.6	21.6	----	----	----
EC_W: Electrical Conductivity								
Electrical Conductivity	----	10.0	uS/cm	384	333	----	----	----
EcoMPN_W: E.Coli MPN								
E.coli	----	1	MPN/100mL	<1	7	----	----	----
Hardness_Calc: Hardness								
Total Hardness	----	0.05	g eqv. CaCO3/m3	94.3	81.6	----	----	----
HMTR_W: Elements in Water (Total Recoverable)								
Arsenic	7440-38-2	0.0005	g/m3	0.0020	<0.0005	----	----	----
Boron	7440-42-8	0.005	g/m3	0.043	0.023	----	----	----
Calcium	7440-70-2	0.05	g/m3	18.1	17.8	----	----	----
Copper	7440-50-8	0.0002	g/m3	0.0030	0.0030	----	----	----
Iron	7439-89-6	0.005	g/m3	7.00	0.028	----	----	----
Lead	7439-92-1	0.00005	g/m3	0.00036	0.00026	----	----	----
Magnesium	7439-95-4	0.01	g/m3	11.9	9.04	----	----	----
Manganese	7439-96-5	0.0005	g/m3	0.908	0.0128	----	----	----
Potassium	7440-09-7	0.05	g/m3	25.9	32.7	----	----	----
Sodium	7440-23-5	0.01	g/m3	22.4	15.0	----	----	----
Zinc	7440-66-6	0.003	g/m3	0.060	0.012	----	----	----
NO3NFIA_W: Nitrate as N by Calculation								
Nitrate as N	14797-55-8	0.002	g/m3	0.294	6.64	----	----	----
pH_W: pH in Water								
pH	----	0.01	pH	6.84	7.15	----	----	----



Analytical Results

Sub-Matrix: CLEAN WATER
(Matrix: WATER)

				Client Sample ID	BORE F	BORE N			
				Client Sampling date / time	30-Jan-2026 09:00	30-Jan-2026 09:05			
Compound	CAS Number	LOR	Unit	NH2600420-001	NH2600420-002				
				Result	Result				
TCMPN_W: Total Coliforms CFU									
Total Coliforms	----	1	MPN/100mL	<1	340	----	----	----	----
TDS_Calc: Total Dissolved Salts									
∅ Total Dissolved Salts	----	2	g/m3	257	223	----	----	----	----
TDS_W: Total Dissolved Solids									
Total Dissolved Solids	----	3	g/m3	279	239	----	----	----	----
Turb_W: Turbidity									
Turbidity	----	0.05	NTU	51.8	0.16	----	----	----	----



Brief Method Summaries

Analytical Methods	Method	Matrix	Method Descriptions
Alkalinity	Alk_W	WATER	Samples analysed as received by potentiometric titration. (APHA 2320 B Online edition). Calculations calculated from pH and Total Alkalinity. (APHA 4500 CO2 D - Online edition).
Anions in Water	Ani_W	WATER	Analysis by Ion exchange chromatography following sample filtration. (APHA 4110B - Online edition).
E.Coli (MPN)	EcoMPN_W	WATER	Samples analysed by Enzyme substrate E. coli test using Colilert-18 in 97 wells. Incubated at 35°C for 18 hours. APHA 9223 B Online Edition.
Electrical Conductivity in Water	EC_W	WATER	Samples analysed as received using a conventional conductivity electrode. (APHA 2510 B - Modified - Auto-titrator - Online edition). Resistivity is calculated from conductivity, 25°C.
Heavy Metals Total Recoverable in Water	HMTR_W	WATER	Samples were analysed as received by the laboratory using ICP-MS following an acid digestion. In house procedure based on US EPA method 200.8.
Nitrate as Nitrogen via Calculation	NO3N_Calc	WATER	Calculated from oxidised nitrogen and Nitrite-N, measured colourimetrically by flow injection analysis. (APHA NO3- I. Online edition) - Result reported as Nitrate as nitrogen.
pH in Water	pH_W	WATER	Samples measured as received using a conventional pH electrode. (APHA 4500 H+ B. Online edition).
Temperature Upon Arrival	ATemp_W	WATER	Temperature taken upon arrival at sample receipt using an externally calibrated thermometer.
Total Coliforms (MPN)	TCMPN_W	WATER	Samples analysed by Enzyme substrate coliform test using Colilert 18 in 97 wells. Incubated at 35°C for 18 hours. APHA 9223 B Online Edition.
Total Dissolved Salts via Calculation	TDS_Calc	WATER	Samples analysed as received using a conventional conductivity electrode. (APHA 2510 B - Modified - Auto-titrator - Online edition).EC value multiplied by constant of 0.67 to determine TDS (g/m3).
Total Dissolved Solids in Water	TDS_W	WATER	Filtration followed by complete drying at 180°C. (APHA 2540 C - Online edition).
Total Hardness in Water via Calculation	TotalHardness_Calc	WATER	Result calculated from Magnesium and Calcium. (APHA 2340B - Online edition)
Turbidity in Water	Turb_W	WATER	Samples analysed as received using a conventional turbidity meter. (APHA 2130 B Online edition - Modified).