

Karioi Wood Processing

Detailed Site Investigation

for: Winstone Pulp International Limited



Job No: 68095#CIM

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EXECUTIVE SUMMARY

Babbage Consultants Limited (Babbage) has been engaged by Winstone Pulp International Limited (WPI) to undertake a Detailed Site Investigation (DSI) at Karioi Wood Processing site (the site), limited specifically to the area required for the construction of the proposed wetlands (see Figure 1). The proposed wetland area (hereon referred to as the “investigation area”) is located on the southern end of the site. The investigation area consists of the former pulp mill discharge pond and the surrounding grassed area. The findings of this investigation are summarised as follows:

1. The site has been in industrial use as a pulp mill and part of the investigation area has been used as discharge ponds for at least 46 years. Prior to that, the site and investigation area was a forest.
2. The investigation area in the grassed bank area is underlain by a fill layer extending from 0.0 to 0.8 metres below ground level (m bgl). This fill layer transitioned into a fill with wood pulp mixed throughout, which continued to the maximum investigation depth of 2.3 m bgl. In the existing pond, pulp sludge (consisting of pulp and sawdust) was present from the surface to approximately 1.5 m deep (bottom of the pond). Beneath this, heterogeneous silt was encountered, extending to the maximum investigation depth of 1.8 m below the pond bottom.
3. Soil sample analyses reported only arsenic at concentrations above commercial/industrial land use National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (NESCSCS)¹ Soil Contaminant Standard (SCS) at surface which attenuates to below the NESCSCS commercial/industrial land use SCS in the next subsequent sample collected at 1 m bgl. Soil sample analyses reported polycyclic aromatic hydrocarbons (PAHs), organochlorine pesticides (OCPs) and polychlorinated biphenyls (PCBs) below the NESCSCS commercial/industrial land use SCS.
4. Soil samples analysis reported only zinc at concentrations above Soil Guideline Values for the Protection of Ecological Receptors criteria² and Australian and New Zealand Guidelines for the Protection of Fresh and Marine Water Quality³ Freshwater Quality Guidelines (80% level of

¹ Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011

² Landcare Research, 2019. Development of soil guideline values for the protection of ecological receptors, June 2019

³ ANZG, 2018. Fresh and Marine Water Quality Toxicant Default Guideline Values for the Protection of Aquatic Ecosystems

species protection) within the existing pond which attenuates laterally at the same depth within the pond.

5. Asbestos in soil was not detected above the New Zealand Guidelines for Assessing and Managing Asbestos in Soil (NZGAMAS)⁴ human health soil guideline values.
6. Review of historical aerial photographs Ruapehu District Council (RDC) Land Information Memorandum (LIM) site enquiry and subsequent site walkover indicates the site has been subjected to an activity on the HAIL (Item G.3 and G.6), therefore the NESCS applies. Pursuant to regulation 10(2)(b) of the NESCS, as the soil contamination exceeds the applicable standard in regulation 7, a **restricted discretionary** activity consent is required.
7. The proposed activity (new wetland construction) complies with RW-LF-R36 of the Horizons Regional Council (Horizons) One Plan⁵ regarding discharge of contaminants onto or into land that may enter water (specifically arsenic and zinc in soil) due to limited extent of the of these contaminants, depth to groundwater and distance from nearest surface water and therefore is a **permitted activity**.
8. A Remediation Action Plan (RAP) is required to remediate/manage the exceedances of NESCS commercial/industrial land use SCS and ECO-SGV criteria identified on the investigation area. The RAP will outline the remedial method, health, environmental, and safety controls to be adopted by the earthworks contractor during the redevelopment phase.
9. This assessment should be revisited if the final development proposal is not for commercial/industrial land use.

⁴ Building Research Association of New Zealand (BRANZ) 2017. New Zealand Guidelines for Assessing and Managing Asbestos in Soil

⁵ Horizons Regional Council, 2026. Operative One Plan 12 March 2026.

ACKNOWLEDGEMENT OF SUBMISSION

This report was prepared by Charlotte Lucas and reviewed by Hiram Garcia.

Respectfully submitted

Babbage Consultants Limited



Charlotte Lucas

Environmental Consultant



Hiram Garcia

Principal Environmental Consultant

I have assessed the site in accordance with current New Zealand Regulations and guidance documents and reported in accordance with the current edition of Contaminated Land Management Guidelines No 1: Reporting of Contaminated Sites in New Zealand.

I am considered by Babbage Consultants Limited as a suitably qualified and experienced practitioner (SQEP) pursuant to the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011, based on the company's definition of a SQEP as given below.

Name: Hiram Garcia

Signed:



Date: 10/06/2026

Babbage Consultants Limited: SQEP Definition

Babbage Consultants Limited requires that a SQEP has the following Qualifications/Experience:

- Tertiary education in environmental science, engineering, or other relevant field;
- Ten years of relevant post graduate environmental experience;
- A commitment to continuing professional development; and
- Full membership of an appropriate professional body requiring a commitment to operating in accordance with a professional code of ethics.

Date	Version	eTrack No.	Author(s)	Reviewer(s)
23/04/2026	Rev1	200051336	Charlotte Lucas	Hiram Garcia
10/06/2026	Rev2	200051563	Charlotte Lucas	Hiram Garcia

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1 INTRODUCTION AND BACKGROUND

Babbage has been engaged by WPI to undertake a DSI on part of the Karioi Wood Processing site located at 1002 State Highway 49, Tangiwai (the site). WPI proposes to construct a new wetland as part of the resource consent application APP-2006012018.02. The DSI is limited specifically to the area required for the construction of the proposed wetland (hereon referred to as the “investigation area” of the site (refer to Figure 1)).

The key aims of the DSI were to determine:

- Whether historic use is likely to have resulted in ground contamination and verify whether activities detailed on the HAIL, issued by the Ministry for the Environment (MfE)⁶, apply to the site.
- Concentrations of contaminants of concern in the soils investigated on the site.
- Whether resource consents may be required to address ground contamination issues as part of the proposed redevelopment work with respect to the NESCS SCS and Horizon’s Regional Council (Horizons).
- Whether contamination at the site requires remedial work, poses material handling issues and/or off-site disposal/landfill constraints as part of the redevelopment programme.

The site identification details are presented in Table 1.

Table 1. Site identification.

Address	Legal description	Area of site in hectares (ha)	DSI Investigation Area (ha)
1002 State Highway 49	Section 3 Block XI Karioi SD	4.06	1.84

Note: Source – Grip data service website⁷.

⁶ MfE 24 March 2021. Land – Guidance and guidelines on contaminated land. Retrieved from <https://www.mfe.govt.nz/land/hazardous-activities-and-industries-list-hail>

⁷ GRIP, 13 April 2026. Retrieved from <https://app.grip.co.nz/>



68095#CIM **FIGURE 1** **WPI**

Site Layout

22/04/2026

Source:
LINZ

SCALE @ A4 1:3,750

Karioi Wood Processing DSI

SOURCES

Road and Legal data: QuickMap v7.5.185

Aerial Photography: LINZ Online Database

<SOURCES>

Legend

- Site boundary ('the site')
- New Wetland Area ('investigation area')

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This map/plan is illustrative only and all information
should be independently verified on site before
taking any action.

It is understood that WPI intends to redevelop the investigation area into a new wetland area as part of their resource consent application. A cut and fill plan provided by Cheal⁸ indicates approximately 10,500 cubic metres (m³) of soil will be disturbed. Relevant development plans and proposed wetland concept design as outlined in the Cheal Wetland Construction Report and Babbage Wetland Feasibility Memo⁹, are included in Appendix A.

The contamination investigation work performed follows the general reporting and investigation methodology presented in the MfE Contaminated Land Management Guidelines (CLMG) No. 1¹⁰ and CLMG No. 5¹¹. In addition, the requirements outlined in the NZGAMAS have also been followed where appropriate.

⁸ Cheal, 2026. Wetland Construction- Erosion and Sediment Control Plan, 9 April 2026, revised 3 June 2026.

⁹ Babbage 2026, Wetland Feasibility and Basis of Design Memo, 5 February 2026

¹⁰ MfE 2021. Contaminated Land Management Guidelines No. 1. Reporting on Contaminated Sites in New Zealand (Revised 2021)

¹¹ MfE 2021. Contaminated Land Management Guidelines No. 5. Site Investigation and Analysis of Soils (Revised 2021)

2 SITE DESCRIPTION

The site is located north of State Highway 49 in Tangiwai. The site currently contains the infrastructure associated with the now closed Karioi Pulp Mill. The investigation area of 1.84ha contains the existing pond and the grassed bank area. Babbage understands that the material within the existing pond comprises from overflow capture, including wastewater combined with pulp and sawdust from historic pulp mill activities. The surrounding area is understood to have been filled using material scraped from the former raw timber yard (untreated timber from the forest), likely consisting of gravel, wood chips, and soil.

The current surrounding land uses are presented in Table 2.

Table 2. Surrounding property use.

Direction	Observation
North	To the north of the site is a railway line with an industrial operation and a forestry operation beyond.
South	To the south of the site is State Highway 49 with agricultural, forestry land, and pastoral land beyond.
East	To the east of the site a substation and pastoral land with Whangaehu River beyond.
West	To the west of the site is forestry land.

Note: Source – Based on site observations supported with information from Google Maps¹² and Nearmaps website¹³.

The RDC info map¹⁴ website shows the investigation area is relatively flat, with a steep slope descending approximately 5 m into the existing pond located in the southwestern corner. Stormwater surface runoff generated within the investigation area is directed and collected within this pond.

The Horizons local maps¹⁵ shows a bore (ID 725001) located approximately 425 m north west from the area of investigation with a static water level of 11 m bgl and a bore (ID 745004) located approximately 2,900 m east from the area of investigation with a static water level of 10 m bgl. Additional bore information recorded groundwater at 4.6 m bgl from BH1 located on the pulp mill site during construction in 2021.

¹² Google Maps, 13 April 2026. Retrieved from <https://www.google.com/maps>

¹³ Nearmaps, 13 April 2026. Retrieved from <https://www.nearmap.com>

¹⁴ Ruapehu District Council 13 April 2026. Ruapehu District Council Info Maps. Retrieved from <https://maps.ruapehudc.govt.nz/>

¹⁵ Horizons Regional Council, 5 June 2026. Horizons local maps- water. Retrieved from <https://maps.horizons.govt.nz/Viewer/?map>

Published geological information¹⁶ shows the southern portion of the investigation area to be underlain by the Waimarino Formation, consisting of multiple beds of poorly consolidated andesitic conglomerate and sand. The northern portion the investigation area is underlain by the Pakihi Supergroup consisting of moderately weathered undifferentiated poorly sorted gravel, sand, clay and loess.

Babbage performed a site inspection on the 30th and 31st March 2026. A summary of observed conditions is presented in Table 3. A photographic log of the investigation area is presented as Appendix B.

Table 3. Site condition.

Observation	Comment
Surface water	Observed within the existing pond.
Local sensitive environments	Whangaehu River (approximately 400 m east).
Visible signs of plant stress	Not observed on site.
Visible signs of potential contamination sources	Fill consisting of sand silt mixed with pulp, gravel and construction debris (rubber, metal, chunks of concrete) was observed in the grassed bank area investigated to the maximum investigation depth of 2.3mbgl. The existing pond contained a pulp sludge (a mixture of pulp mill processing discharge, pulp and sawdust).

¹⁶ Institute of Geological and Nuclear Sciences (GNS). 13 April 2026. Geology 2.0.0 Webmap NZ 1:250k Geological unit. Retrieved from <https://data.gns.cri.nz/geology/index.html?map=NZ%20Geology>.

3 HISTORICAL SITE USE

Babbage has reviewed historic aerial photographs dating back to 1946 held on the Retrolens website¹⁷ and the LINZ website¹⁸. A summary of selected historic aerial photography is presented in Table 4, and the historical aerial photographs are shown in Appendix C.

Table 4. Summary of historical aerial photographs.

Year	Investigation Area	Surrounding land use
1946	The site and the investigation area appear to be part of forestry land forest.	The site is mostly surrounded by forestry land with some pastoral land to north and east. A rail track runs to the north of the site, and a river is visible to the east. State Highway 49 is established to the south.
1980	The site has been developed into the pulp mill and contains some buildings to the centre of the site and what appears to be a raw timber lay down yard to the south west. The investigation area appears to have four ponds.	The site is still surrounded mostly by forestry land. A substation is now present to the east of the site. Development of forestry operational facilities appear to the north.
2003	The site has undergone further pulp mill development with more buildings and an equipment laydown yard to the north. Within the investigation area , three of the ponds have been infilled.	No significant changes to the surrounding site use. The forestry operational facilities to the north are complete.
2022	No significant changes to the site or investigation area.	No significant changes to the surrounding site use.

3.1 Land Information Memorandum

A Land Information Memorandum (LIM) was requested and reviewed on 13 April 2026. Relevant information from the LIM is summarised below and the document attached in Appendix D:

Wood pulp processing activities may be captured under the Ministry for the Environment's Hazardous Activities and Industries List (October 2011). Relevant classifications include:

¹⁷ Local Government Geospatial Alliance 13 April 2026. Retrolens Historic Image Resource. Retrieved from <http://retrolens.nz/>

¹⁸ LINZ Basemaps 13 April 2026. Retrieved from <https://basemaps.linz.govt.nz>

- *HAIL Item (A.2) – chemical manufacture, formulation, or bulk storage*
- *HAIL Item (A.18) – wood treatment or preservation, including the use of anti-sapstain chemicals during milling or bulk storage of treated timber outside*
- *HAIL Item (G.6) – waste recycling, or waste and wastewater treatment*

These classifications indicate that such activities involve chemical use and storage, timber treatment processes, and the management of waste streams, all of which may present potential environmental risks.

The site has been subjected to HAIL Item A.2, HAIL Item A.4 (Corrosives, including formulation and bulk storage), and HAIL Item G6. The pulp mill used raw timber; therefore, the site has more than likely not been subjected HAIL Item A18. The investigation area (ponded area) has been subjected to HAIL Item G3 (uncharacterised fill) and HAIL Item G6 (discharge pond of former pulp mill). The pulp mill chemical storage areas were bunded and greater 150m away, therefore, the investigation area has more than likely not been subjected HAIL Items A2 and A4.

3.2 Previous Investigations

Babbage has reviewed previous investigations associated with the sites and has summarised the information below:

Source	Summary of relevant information
Babbage 2026, Geotechnical Assessment Report ¹⁹	Five borehole investigations were undertaken at the northern end of the site which observed groundwater ranging between 2.88-8 m bgl. The borehole (BH01) closest to the investigation area recorded groundwater level at 5.7 m bgl.

3.3 Summary

Based on review of historical aerial photographs, RDC LIM and observations of the investigation area, it is concluded that the investigation area has been subjected to the following activities on the HAIL:

- *HAIL Item (G.3) – Landfilling (associated with fill identified in investigation area)*
- *HAIL Item (G.6) – waste recycling, or waste and wastewater treatment (associated with pulp mill activities and overflow pond)*

¹⁹ Babbage 2026, Geotechnical Assessment Report 1002 State Highway 49, Tangiwai, Ohakune, 29 April 2026

4 SAMPLING ANALYSIS PLAN

Soil sampling has been undertaken to determine if there are contaminants of concern from historical pulp mill activities, in particular sodium, chloride, cyanide, sulphate-sulphur, iron, manganese, phosphorus, nitrate nitrogen, ammoniacal-nitrogen, pH, OCPs, metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc) and PCBs. No fluorine containing chemicals were used at the pulp mill.

The soil sampling and analysis plan for the investigation area is provided in Table 5. The CLMG No.5 was used to estimate the soil sampling density for the DSI. A total of 20 soil sample locations were proposed as presented in Figure 2. Samples were taken in general accordance with CLMG No 5.

Table 5. Sampling and analysis plan.

Sample number	Matrix	Sample design	Depths (m below ground level (bgl))	Sample analysis*
WA01 through WA04	Soil	Systematic.	Surface to 0.1 and 1.0 unless refusal encountered.	Metals (8) screen. Pulp mill suite* PCBs (proximity to substation)
WA05 through WA20	Soil	Systematic	Surface to 0.1 and 1.0 unless refusal encountered.	Metals (8) screen. Pulp mill suite*
WA66 WA67	Soil	WA66 a duplicate of WA08 0.1 and WA67 a duplicate of WA14 0.1.	Surface to 0.1.	Metals screen (8).

Note: *Pulp mill suite determined based on chemicals used in processing as well as potential by-products which includes sodium, chloride, cyanide, sulphate-sulphur, iron, manganese, phosphorus, nitrate nitrogen, ammoniacal nitrogen, and OCPs.

The soil investigation was performed by Babbage on 30th and 31st March 2026 in accordance with the sampling analysis plan above with the following deviations:

- Location WA04 was advanced to 2.3 m bgl to determine the base of the fill in the grassed area. Soil samples WA18 and WA20 were collected at 1.5 m below the existing pond bottom (approximately 3 m bgl of surrounding grassed area) to obtain samples of the underlying pond material.
- Additional analysis for PAHs was added to soil samples WA01 and WA04 due to field observations (organics and rubber).

- Additional asbestos semi quantitative analysis was added to WA04 and WA13 due to field observations (construction debris).
- Analysis for chloride could not be completed for samples WA17, WA18 (0.1 m bgl), WA19, and WA20 (0.1 m bgl) due to insufficient sample material after other analyte analysis was completed.
- Synthetic Precipitation Leaching Procedure (SPLP) testing (4.2 pH) was requested on sample WA18 1.5 due to an exceedance of ECO-SGV guideline criteria for zinc.

Soil analyses were carried out by Internationally Accredited New Zealand (IANZ) accredited laboratories using industry standard methods.

4.1 Field Observations

The following field observations were recorded as part of these investigations:

- Perched water was encountered between 0.8 to 1.0 m bgl in four locations only. No groundwater was encountered.
- The soils encountered during excavation of the investigation holes were logged (refer to Appendix E). In general, the grassed area was underlain by a fill layer extending from 0.0 to 0.8 m bgl. This fill layer transitioned into a fill with pulp mixed throughout, which continued to the maximum investigation depth of 2.3 m bgl. In the existing pond, pulp sludge (consisting of pulp and sawdust) was present from the pond surface to approximately 1.5 m deep. Beneath the pond bottom, heterogeneous silt was encountered, extending to the maximum investigation depth of 1.8 m below the pond bottom.

4.2 Data Quality

A quality assurance and quality control (QA/QC) programme was implemented as part of field procedures to confirm data was fit for purpose and included:

- Experienced staff used to undertake the field investigation work.
- Decontamination of sampling equipment between sampling locations.
- Preservation of samples with ice during transport from the field to the laboratory.
- Transportation of samples with accompanying chain of custody documentation.
- Compliance with sample holding times.

Standard laboratory QA/QC reports were not examined as part of this project but are available from the laboratory on request.

In addition to routine quality control procedures (sample handling, chain of custody etc.), a field duplicate sample was collected and submitted for analysis for metals at a one duplicate per 10 soil

samples collected. The duplicate sample results and calculated relative percentage differences (RPDs) are presented in Appendix F, these ranged from approximately 0 to 34% indicating that variability in sample collection, handling and analysis is acceptable.

4.3 Analytical Results

The soil sample results are presented in Table 6, Table 7, Table 8, and Table 9 below and sample locations are presented in Figure 2 below. The laboratory reports are given in Appendix G.

Soil sample results were compared against criteria for the assessment of regulatory requirements, the proposed redevelopment land use and acceptance criteria for local soil disposal sites to meet the objectives of the investigation. The adopted assessment acceptance criteria included:

- Background concentrations^{20 21}.
- Soil guidelines for the protection of ecological receptors (ECO-SGVs)²².
- Commercial/ Industrial land use presented in the NESCS Users' Guide and MfE methodology²³.
- National Environment Protection (Assessment of Site Contamination) Measure 1999 (NEPM)²⁴.
- Australian and New Zealand Guidelines (ANZG) for Fresh Water Quality, 80% Level of Species Protection²⁵.
- Human health soil guideline values presented in the NZGAMAS.
- Acceptance criteria for example, cleanfill, managed fill and landfill sites.

The findings are summarised below:

- 1 Soil samples collected and analysed reported metals (specifically arsenic) concentrations above the NESCS Commercial/ industrial land use SCS at surface in one location WA09. Arsenic attenuates to below the NESCS Commercial/ industrial land use SCS in the

²⁰ Manaaki Whenua Landcare Research, June 2025. PCB- Predicted Background Soil Concentrations, New Zealand (H3 resolution 9) Retrieved 13 April 2026 from <https://iris.scinfo.org.nz/layer/114281-pbc-predicted-background-soil-concentrations-new-zealand-h3-resolution-9/>

²¹ GNS, 2023. Geochemical Atlas of Aotearoa New Zealand.

²² Manaaki Whenua Landcare Research, June 2019. Development of soil guideline values for the protection of ecological receptors (Eco-SGVs).

²³ MfE, 2011, Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health (June 2011)

²⁴ National Environment Protection Council (NEPC), 2013. *National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013)*. Commonwealth of Australia.

²⁵ ANZG, 2018. Fresh and Marine Water Quality Toxicant Default Guideline Values for the Protection of Aquatic Ecosystems (updated 18th July 2023).

- subsequent deeper sample collected at 1 m bgl from WA09 to a concentration of 1.32 milligrams per kilogram (mg/kg).
- 2 Soil samples collected and analysed reported zinc concentrations above the ECO -SGV criteria at one location WA18 at 1.5 m below bottom of pond (approximately 3 m bgl from surrounding grassed area). Synthetic Precipitation Leaching Procedure (SPLP) testing of the sample returned zinc concentrations exceeding the ANZG Freshwater Quality Guidelines (80% level of species protection). Zinc concentrations in soil attenuate laterally at the same depth from sample location WA20 located approximately 50 m to the east.
 - 3 Soil sample pH was reported outside the predicted background values (5.5 to 5.7) with levels within the grassed bank area slightly more acidic between 4.2 to 5.9 and levels within the existing pond more basic between 7.1 to 9.3.
 - 4 Semi-quantitative analysis reported no asbestos in soil below the NZGAMAS human health soil guideline values in sample location WA04 and WA13.
 - 5 Soil samples collected and analysed report concentrations of PCBs, OCPs and PAHs below NESCS commercial/ industrial land use SCS.
 - 6 Other elements analysed and reported from soil samples included chloride (concentrations ranging from 19 to 136 milligrams per kilogram (mg/kg)), iron (concentrations ranging from 1,720 to 32,460 mg/kg), manganese (concentrations ranging from 23.5 to 254 mg/kg), phosphorus (190–1,620 mg/kg), and sodium (228–4,920 mg/kg). Phosphorous concentrations were within Manawatū–Whanganui area background range (114 to 1,823 mg/kg). No Manawatū–Whanganui area background concentration data was available for the other elements.
 - 7 General soil chemistry parameters analysed and reported include ammoniacal nitrogen (4–617 mg N/kg), nitrate nitrogen (1–24 mg N/kg), and sulphate-sulphur (5–200 mg/kg).
 - 8 The existing pond area contained a higher pH and higher cadmium, nickel, sodium, zinc, and ammoniacal nitrogen concentrations than the surrounding grassed area likely attributed to the former pulp mill discharge.

Based on the soil sample results, concentrations of arsenic were detected above NESCS SCS criteria at WA09 at surface and zinc concentrations were identified at WA18 at 1.5 m bgl below pond bottom above ECO-SGV criteria . These areas will be capped with existing surrounding soil and a new wetland with a high density polyethylene (HDPE) liner will be constructed over them as part of the proposed remediation. A separate RAP has been prepared which outlines the remediation methodology.



Legend

- Site boundary
- New wetland area
(‘investigation area’)
- Wetland sampling points

NOTES

Aerial Images: LINZ Basemap

DISCLAIMER:

This map/plan is not an engineering draft.
This map/plan is illustrative only and
all information should be
independently verified on site before
taking any action.

SCALE

1:2,000 @ A3

MAP NO.

Figure 2

Table 6: Soil analytical results - metals and other elements, asbestos, general chemistry

					Asbestos ¹	Metals and other elements- Screen													General Chemistry				SPLP		
					Asbestos Containing Material (ACM) (Presence / absence and type)	Arsenic	Cadmium	Chloride	Chromium	Copper	Cyanide	Iron	Lead	Manganese	Mercury	Nickel	Phosphorus	Sodium	Zinc	pH	Ammoniacal Nitrogen	Nitrate Nitrogen	Sulphate-sulfur	Zinc (pH 4.2)	
					-	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	mg N/kg	mg N/kg	mg/kg	mg/L	
NESCO SCS Soil - Commercial / Industrial ²					N/A	70	1,300	N/A	>10,000	>10,000	1600 ⁶	N/A	3,300	N/A	4,200	6,000 ^{5D}	N/A	N/A	400,000 ^{5D}	N/A	N/A	N/A	N/A	N/A	
ECO-SGVs - Commercial/ Industrial ³					N/A	150	33	N/A	650	320	N/A	N/A	2,500	N/A	N/A	N/A	N/A	N/A	620	N/A	N/A	N/A	N/A	N/A	
Predicted Background Soil Concentrations ⁴					NAD	4.1	0.35	N/A	15.5	23.5	N/A	9,149-68,875 ⁸	11.4	74-1,295 ⁸	N/A	9.5	114-1,823 ⁸	80-2,503 ⁸	62.9	5.5-5.7 ⁷	N/A	N/A	N/A	N/A	
ANZG - Fresh Water (Level of Protection 80%) ⁹					N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.03	
Waste Acceptance Criteria - Cleanfill (Envirofill South) ¹⁰					N/A	12	0.65	N/A	125	90	N/A	N/A	65	N/A	0.45	320	N/A	N/A	1,160	N/A	N/A	N/A	N/A	N/A	
Waste Acceptance Criteria - Managed fill (Ridge Road Quarry) ¹⁰					Presence	140	7.5	N/A	400	280	N/A	N/A	460	N/A	N/A	320	N/A	N/A	1,200	N/A	N/A	N/A	N/A	N/A	
Waste Acceptance Criteria - Hampton Downs landfill ¹⁰					Accepted	100	1.2	N/A	362	200	N/A	N/A	200	N/A	N/A	320	N/A	N/A	500	N/A	N/A	N/A	N/A	N/A	
Property Address	Sample ID	Sample depth (m bgl)	Material Type	Sampled Date																					
WPI Wetland	WA01	0.1	FILL	30/03/2026	-	2.05	0.27	34	39.2	44.1	<5	7,530	7.6	60.8	<0.1	7.7	949	617	51	5.5	7	24	26	-	
	WA02	0.1	FILL	30/03/2026	-	2.47	0.24	35	14.4	63.1	<5	6,130	6.3	23.5	<0.1	4.4	1,300	475	44	4.2	6	1	54	-	
	WA03	0.1	FILL	30/03/2026	-	1.76	0.05	59	65	27	<5	18,300	5.2	254	0.2	13.4	377	791	94	5.5	2	1	7	-	
	WA04	0.1	FILL	30/03/2026	NO ASBESTOS DETECTED	1.76	0.36	89	45.6	35.9	<5	6,330	4.8	46.8	<0.1	7.1	930	589	93	4.6	6	8	81	-	
	WA05	0.1	FILL	30/03/2026	-	0.94	0.58	76	11	47.5	<5	2,480	2.7	26.3	<0.1	3.1	346	228	189	4.4	4	3	26	-	
	WA06	0.1	FILL	30/03/2026	-	1.41	0.4	96	17.5	46.7	<5	5,000	3.5	41.4	<0.1	4.9	838	304	107	4.2	9	7	36	-	
	WA07	0.1	FILL	30/03/2026	-	1.98	0.32	34	28	57.3	<5	11,200	7.5	55.5	<0.1	8.1	1,120	593	122	4.6	179	1	5	-	
	WA08	0.1	FILL	30/03/2026	-	1.35	0.26	62	15	29.7	<5	6,130	18.1	60.8	<0.1	5	770	680	68	4.7	10	11	148	-	
	WA09	0.1	FILL	30/03/2026	-	135	0.19	61	175	104	<5	4,790	29.9	61.8	<0.1	6	615	397	151	4.9	12	4	200	-	
	WA09	1.0	FILL	30/03/2026	-	1.32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	WA10	0.1	FILL	31/03/2026	-	2.81	0.49	77	51	54.3	<5	6,380	5.8	110	<0.1	25.5	1,240	573	139	4.8	9	4	54	-	
	WA11	0.1	FILL	31/03/2026	-	1.26	0.25	64	14.3	35.1	<5	7,400	3.8	141	<0.1	5.8	613	422	75	5.1	5	3	46	-	
	WA12	0.1	FILL	31/03/2026	-	1.53	0.53	37	18.6	55.9	<5	4,500	3.3	80.4	<0.1	6.1	589	528	173	4.9	9	3	28	-	
	WA13	0.1	FILL	31/03/2026	NO ASBESTOS DETECTED	2.2	0.15	47	15.2	39.3	<5	18,200	6.3	228	<0.1	9.3	377	727	100	5.1	5	16	23	-	
	WA14	0.1	FILL	31/03/2026	-	1.88	0.04	57	20.1	40.8	<5	23,900	5.7	214	<0.1	10.4	190	621	34	5.9	4	1	12	-	
	WA15	0.1	Pond sludge	31/03/2026	-	1.3	0.23	40	19.1	52.3	<5	24,400	5.6	127	<0.1	12.2	681	4,280	116	9.3	239	5	84	-	
	WA16	0.1	Pond sludge	31/03/2026	-	1.26	0.28	61	11.2	29	<5	11,500	5.1	121	<0.1	6.8	518	1,390	105	8.1	284	1	124	-	
	WA17	0.1	Pond sludge	31/03/2026	-	1.22	1.38	-	17.3	71.2	<5	1,720	3.4	44.4	<0.1	6.8	958	2,430	416	7.6	265	8	35	-	
	WA18	0.1	Pond sludge	31/03/2026	-	1.51	1.46	-	18.4	81.2	<5	5,370	4.2	98	<0.1	9.6	1,310	4,920	418	7.5	369	9	40	-	
	WA18	1.5	SILT	31/03/2026	-	6.45	4.12	19	112	194	<5	5,300	33.9	95.2	<0.1	38.2	409	2,380	1,340	7.1	308	3	126	2.19	
	WA19	0.1	Pond sludge	31/03/2026	-	1.41	1.51	-	19.4	76.6	<5	1,970	3.9	51.7	<0.1	8.6	982	4,180	470	7.4	617	14	81	-	
	WA20	0.1	Pond sludge	31/03/2026	-	1.44	1.66	-	61.6	84.3	<5	1,910	3.8	57.4	<0.1	32.4	1,210	4,920	482	7.8	398	7	33	-	
	WA20	1.5	SILT	31/03/2026	-	2.87	0.1	136	31.1	64.6	<5	32,500	11.5	252	<0.1	17.1	1,620	4,080	61	8.9	309	1	147	-	
	WA66 (Duplicate of WA08 0.1)	0.1	FILL	31/03/2026	-	1.46	0.34	-	18.7	31.5	-	-	16.3	-	<0.1	5.8	-	-	80	-	-	-	-	-	-
	WA67 (Duplicate of WA14 0.1)	0.1	FILL	31/03/2026	-	1.44	0.03	-	15.1	29.7	-	-	4.4	-	<0.1	7.4	-	-	24	-	-	-	-	-	-

Comments

Results are in milligrams per kilogram (mg/kg) or milligrams per litre (mg/L) unless specified.

1 = BRANZ, 2017. New Zealand Guidelines for Assessing and Managing Asbestos in Soil.

2 = MfE, June 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health.

3 = Landcare Research, 2019. Development of soil guideline values for the protection of ecological receptors, June 2019

4 = Landcare Research, 2025. PCB- Predicted Background Soil Concentrations, New Zealand (H3 Resolution), 11 June 2025

5 = in the absence of available NESCS SCS Soil criterion for nickel and zinc, the criterion has been adopted from Assessment of Site Contamination National Environment Protection Measures (ASC NEPM) Toolbox – <http://www.nepc.gov.au/nepms/assessment-site-contamination/toolbox>. Health-based Investigation Levels (mg/kg) A=low density residential scenario, B=high density residential scenario, C=developed open space scenario, D=commercial/industrial scenario

6= A conservative value has been taken from MfE, August 1997. Guidelines for Assessing and Managing Contaminated Gasworks Sites in New Zealand, Residential criteria, Table 4.2.7.4 due to exceeding industrial/commercial values.

7= Landcare Research, June 2024. Soils Map Viewer. Retrieved from <https://soils-maps.landcareresearch.co.nz/>

8=GNS, 2023. Geochemical Atlas of Aotearoa New Zealand.

9=ANZG, 2023. Australian and New Zealand Guidelines for Fresh and Marine Water Quality

10 = Disposal criteria is based of analytica data and may vary. Verify with disposal facility prior to disposal.

N/A = Not Applicable.

<LoR - below laboratory reporting limits.

BOLD: exceeds background concentrations

BOLD : exceeds applicable NES/CS SCS criteria

BOLD : exceeds ECO-SGV soil acceptance criteria and ANZG water acceptance criteria

BOLD: exceeds applicable NES/CS SCS land use and ECO-SGV soil acceptance criteria

above Cleanfill exceptance criteria for Envirofill South

exceeds Managed Fill acceptance criteria for Ridge Road Quarry

exceeds Landfill acceptance criteria for Hampton Downs landfill

- : not tested for

m bgl: metre below ground level

Table 7: Soil analytical results - PCBs

					PCB - Screen																
					PCB 1	PCB 5	PCB 8	PCB 28	PCB 29	PCB 37	PCB 44	PCB 47	PCB 49	PCB 52	PCB 60	PCB 66	PCB 70	PCB 74	PCB 77	PCB 82	PCB 87
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
NESCS SCS Soil - Commercial / Industrial ¹					N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ECO-SGVs - Commercial/ Industrial ²					N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Predicted Background Soil Concentrations ³					N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Waste Acceptance Criteria - Cleanfill (Envirofill South) ⁵					N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Waste Acceptance Criteria - Managed fill (Ridge Road Quarry) ⁵					N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Waste Acceptance Criteria - Hampton Downs landfill ⁵					N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Property Address	Sample ID	Sample depth (m bgl)	Material Type	Sampled Date																	
WPI Wetland	WA01	0.1	FILL	30/03/2026	<0.01	<0.06	<0.06	<0.02	<0.01	<0.02	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	WA02	0.1	FILL	30/03/2026	<0.01	<0.06	<0.06	<0.02	<0.01	<0.02	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	WA03	0.1	FILL	30/03/2026	<0.01	<0.06	<0.06	<0.02	<0.01	<0.02	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	WA04	0.1	FILL	30/03/2026	<0.01	<0.06	<0.06	<0.02	<0.01	<0.02	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Results are in milligrams per kilogram (mg/kg) unless specified.

1 = MfE, June 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health.

2 = Landcare Research, 2019. Development of soil guideline values for the protection of ecological receptors, June 2019

3 = Landcare Research, 2025. PCB- Predicted Background Soil Concentrations, New Zealand (H3 Resolution), 11 June 2025

4 = NEPC, February 2014. NEMP Toolbox HIL D- Commercial/ Industrial. Retreieved from <https://www.nepc.gov.au/nepms/assessment-site-contamination/toolbox>

5 = Landfill and Managed Fill criteria may vary. Verify with accepting facility prior to disposal.

* Sum of PCBs calculated using lower toxicant equivalent (<LOR=0)

NA = Not Applicable.

<LoR - below laboratory reporting limits

- BOLD:

exceeds background concentrations
- BOLD :

exceeds applicable NES:CS SCS criteria
- BOLD :

exceeds ECO-SGV soil acceptance criteria
- BOLD:

exceeds applicable NES:CS SCS land use and ECO-SGV soil acceptance criteria
- above Cleanfill exceptance criteria for Envirofill South
- exceeds Managed Fill acceptance criteria for Ridge Road Quarry
- exceeds Landfill acceptance criteria for Hampton Downs landfill
- :

not tested for
- m bgl:

metre below ground level

Table 7: Soil analytical results - PCBs cont

					PCB - Screen																							
					PCB 98	PCB 99	PCB 101	PCB 105	PCB 114	PCB 118	PCB 126	PCB 128	PCB 138	PCB 153	PCB 154	PCB 156	PCB 158	PCB 166	PCB 169	PCB 170	PCB 171	PCB 179	PCB 180	PCB 183	PCB 187	PCB 189	PCB 201	Sum of PCBs *
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
NESCS SCS Soil - Commercial / Industrial ¹					N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7 ⁴	
ECO-SGVs - Commercial/ Industrial ²					N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Predicted Background Soil Concentrations ³					N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Auckland Background Concentrations (volcanic range) ³					N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Waste Acceptance Criteria - Cleanfill (Envirofill South) ⁵					N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Waste Acceptance Criteria - Managed fill (Ridge Road Quarry) ⁵					N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Waste Acceptance Criteria - Hampton Downs landfill ⁵					N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Property Address	Sample ID	Sample depth (m bgl)	Material Type	Sampled Date																								
WPI Wetland	WA01	0.1	FILL	30/03/2026	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.06		
	WA02	0.1	FILL	30/03/2026	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.06		
	WA03	0.1	FILL	30/03/2026	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.06		
	WA04	0.1	FILL	30/03/2026	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.06		

Results are in milligrams per kilogram (mg/kg) unless specified.

1 = MfE, June 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health.

2 = Landcare Research, 2019. Development of soil guideline values for the protection of ecological receptors, June 2019

3 = Landcare Research, 2025. PCB- Predicted Background Soil Concentrations, New Zealand (H3 Resolution), 11 June 2025

4 = NEPC, February 2014. NEMP Toolbox HIL D- Commercial/ Industrial. Retrieved from <https://www.nepc.gov.au/nepms/assessment-site-contamination/toolbox>

5 = Landfill and Managed Fill criteria may vary. Verify with accepting facility prior to disposal.

* Sum of PCBs calculated using lower toxicant equivalent (<LOR=0)

NA = Not Applicable.

<LoR - below laboratory reporting limits

BOLD:

BOLD :

BOLD :

BOLD:

- :

m bgl:

exceeds background concentrations
exceeds applicable NES:CS SCS criteria
exceeds ECO-SGV soil acceptance criteria
exceeds applicable NES:CS SCS land use and ECO-SGV soil acceptance criteria
above Cleanfill expectionce criteria for Envirofill South
exceeds Managed Fill acceptance criteria for Ridge Road Quarry
exceeds Landfill acceptance criteria for Hampton Downs landfill
not tested for
metre below ground level

Table 8: Soil analytical results - OCPs

[illegible]

Results are in milligrams per kilogram (mg/kg) unless specified.

1 = MfE, June 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health.

2 = Landcare Research, 2019. Development of soil guideline values for the protection of ecological receptors, June 2019

3 = Landcare Research, 2025. PCB- Predicted Background Soil Concentrations, New Zealand (H3 Resolution), 11 June 2025

4 = Landfill and Managed Fill criteria may vary. Verify with accepting facility prior to disposal.

N/A = Not Applicable.

<LoR - below laboratory reporting limits

BOLD:	exceeds background concentrations
BOLD:	exceeds applicable NES:CS SCS criteria
BOLD:	exceeds ECO-SGV soil acceptance criteria
BOLD:	exceeds applicable NES:CS SCS land use and ECO-SGV soil acceptance criteria
	above Cleanfill acceptance criteria for Envirofill South
	exceeds Managed Fill acceptance criteria for Ridge Road Quarry
	exceeds Landfill acceptance criteria for Hampton Downs landfill
- :	not tested for
m bgl:	metre below ground level

Table 9: Soil analytical results - PAHs

					PAH - Screen														
					Acenaphthene	Acenaphthylene	Anthracene	Benzo[a]anthracene	Benzo[a]pyrene TEQ (lower bound)	Benzo[b+k]fluoranthene	Benzo[g,h,i]perylene	Chrysene	Dibenzo[a,h]anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
NESCS SCS Soil - Commercial / Industrial ¹					N/A	N/A	N/A	refer BAPeq	35	refer BAPeq	N/A	refer BAPeq	refer BAPeq	refer BAPeq	N/A	refer BAPeq	210 ⁵	N/A	NA ⁵
ECO-SGVs - Commercial/ Industrial ²					N/A	N/A	N/A	refer BAPeq	47	refer BAPeq	N/A	refer BAPeq	refer BAPeq	190	N/A	refer BAPeq	N/A	N/A	N/A
Predicted Background Soil Concentrations ³					N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Waste Acceptance Criteria - Cleanfill (Ridge Road Quarry) ⁴					N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0	N/A	N/A
Waste Acceptance Criteria - Managed fill (Ridge Road Quarry) ⁴					N/A	N/A	N/A	N/A	125	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Waste Acceptance Criteria - Hampton Downs landfill ⁴					N/A	N/A	N/A	N/A	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	200	N/A	N/A
Property Address	Sample ID	Sample depth (m bgl)	Material Type	Sampled Date															
WPI Wetland	WA01	0.1	FILL	30/04/2026	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	WA04	0.1	FILL	30/04/2026	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

Comments

Results are in milligrams per kilogram (mg/kg) unless specified.

1 = MfE, June 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health.

2 = Landcare Research, 2019. Development of soil guideline values for the protection of ecological receptors, June 2019

3 = Landcare Research, 2025. PCB- Predicted Background Soil Concentrations, New Zealand (H3 Resolution), 11 June 2025

4 = Landfill and Managed Fill criteria may vary. Verify with accepting facility prior to disposal.

5 = in the absence of available NESCS SCS Soil criterion for Napthalene and Pyrene, the criterion has been adopted from MfE 1999. Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand, Revised 2011. Tier 1 Soil acceptance criteria for residential landuse, ALL PATHWAYS, SANDY

NA = Not Applicable.

<LoR - below laboratory reporting limits

- BOLD:

exceeds background concentrations
- BOLD :

exceeds applicable NES:CS SCS criteria
- BOLD :

exceeds ECO-SGV soil acceptance criteria
- BOLD:

exceeds applicable NES:CS SCS land use and ECO-SGV soil acceptance criteria
- above Cleanfill exceptance criteria for Envirofill South
- exceeds Managed Fill acceptance criteria for Ridge Road Quarry
- exceeds Landfill acceptance criteria for Hampton Downs landfill
- :

not tested for
- m bgl:

metre below ground level

5 REGULATORY REQUIREMENTS

Based on the results from the contaminated site assessment work described above, and given the anticipated redevelopment plans, a summary of the contaminated land regulatory requirements is presented below:

- Review of historical aerial photographs, RDC LIM site enquiry and subsequent site walkover indicates the site has been subjected to an activity on the HAIL (Item G.3 and G.6), therefore the NESCS applies. Pursuant to regulation 10(2)(b) of the NESCS, as the soil contamination exceeds the applicable standard in regulation 7, a **restricted discretionary** activity consent is required.
- Under the One Plan, Rule RP-LF-LW-R36 regulates the discharge of contaminants onto or into land where they may eventually enter water. The rule is a Permitted Activity, provided the discharge complies with the conditions of Rules RP-LF-LW-R34 and RP-LF-LW-R35 (excluding Condition 1), including limits on discharge volume and management of land-based effects. The activity must also ensure that any reduction in groundwater quality is no more than minor and that airborne liquid contaminants do not cross property boundaries. Table 10 below demonstrates the investigation area's compliance with these rules. As the investigation area complies with RW-LF-36 the discharge of contaminants onto or into land that may enter water is considered a **permitted activity**.

Table 10- Discharge of Contaminant Rules

Rule	Condition	Assessment	Complies
RP-LF-LW-R34	(1) Discharge volume (<50 m ³ /day)	No discharge is proposed.	Yes
	(2) Prohibited contents	The proposed activity will not use sewage, stormwater, agricultural waste, cleanfill, landfill leachate, or putrescible matter.	Yes
	(3) Flooding and erosion	The proposed activity will not cause flooding on neighbouring properties or result in scouring or erosion beyond the site boundary.	Yes
	(4) Erosion of land or waterbodies	The proposed activity will not cause erosion on neighbouring properties or result in scouring or erosion of water bodies beyond the site boundary. No modification to any waterbody or its bed is proposed.	Yes
	(5) Alter the natural course of the water body	No modification to any waterbody or its bed is proposed.	Yes
	(6) Exclusion areas	The proposed activity will not discharge into a natural lake, into a rare/threatened/at risk habitat, or into a site of significance.	
	(7–8) Visual, odour and water quality standards	The identified arsenic and zinc exceedances will be capped with an HDPE lined wetland and is not expected to discharge or adversely affect surface water quality.	Yes
RP-LF-LW-R35	(1) Volume limit (<100 m ³ /year)	No discharge is proposed.	Yes
	(2) Prohibited contents	The proposed activity will not use sewage, stormwater, agricultural waste, cleanfill, landfill leachate, or putrescible matter.	Yes
	(3) Location restrictions	The proposed activity will not discharge into a river bed, lake bed, sensitive habitat, sloped land greater than 20° or historic heritage area.	Yes
	(4) Record keeping	Records of soil management and disposal will be maintained during the proposed activity.	Yes
	(5) Stability	The proposed activity will be undertaken and maintained to ensure long-term stability and avoid risk of erosion.	Yes

	(6) Hazardous substances/pathogenic organisms	The proposed activity will not increase in-situ hazardous substance concentrations or pathogenic organisms.	Yes
	(7) Acid producing potential	The proposed activity will not have acid-producing potential.	Yes
RP-LF-LW-R36	(1 and 2) Compliance with RP-LF-LW-R34 and RP-LF-LW-R35	The proposed activity complies with the applicable requirements of Rules RP-LF-LW-R34 and RP-LF-LW-R35.	Yes
	(3) Water table separation	The proposed activity is greater than 600 millimetres (mm) above seasonally highest groundwater table.	Yes
	(4) Water bore and surface waterbody separation distances	The proposed activity is greater than 30m from any bore and 20 m from any surface waterbody.	Yes
	(5) Habitat protection	The proposed activity will not discharge into a rare/threatened/at risk habitat.	Yes
	(6) Run-off and ponding	The proposed activity will cap the arsenic and zinc exceedances with an HDPE liner and wetland on top, therefore, no runoff or surface ponding will be in contact to discharge or mobilise contaminants to a surface waterbody located approximately 540 m from the exceedances.	Yes
	(7) Groundwater quality	The proposed activity is not expected to interact with groundwater and any effects on groundwater quality are expected to be less than minor.	Yes
	(8) Airborne contaminants	No airborne liquid contaminants are expected with the proposed activity.	Yes

6 CONCEPTUAL SITE MODEL

A conceptual site model (CSM) for the investigation area has been developed to assess risk. For a contaminant to present a risk to human health or the environment, the following components are required to be present and connected:

- Sources/Contaminants – the known and potential sources of contamination and contaminants of concern.
- Pathways – likely and complete exposure pathways by which the identified receptors could be exposed to the contaminants, under current or known proposed future land use.
- Receptors – human and ecological receptors.

Based on the data for the investigation area, the potential source, pathway and receptor linkages are presented in Table 11.

Table 11. Conceptual site model.

Source	Exposure pathway	Potential receptor	Risk to current/future land users
Asbestos in soil from infilling.	Inhalation of asbestos fines.	Investigation area development workers. Current investigation area users. Future investigation area users. Receiving environment (in surrounds).	Unlikely Asbestos not detected.
OCPs, PCBs and PAHs from infilling and former pulp mill discharge to existing pond.	Direct contact. Ingestion of soil. Inhalation of airborne dust. Off-site discharge.	Investigation area development workers. Current investigation area users. Future investigation area users. Receiving environment (in surrounds).	Unlikely Concentrations below commercial/industrial NESCS SCS and Eco-SGV criteria.

Metal concentrations in soil from infilling and former pulp mill discharge to the existing pond.	Direct contact. Ingestion of soil. Inhalation of airborne dust. Off-site discharge.	Investigation area development workers. Current investigation area users. Future investigation area users. Receiving environment (in surrounds).	Unlikely Although arsenic and zinc concentrations were reported above the commercial/industrial NESCS SCS and ECO-SGV guidelines, respectively, their extent is limited, they are greater than 1 m from groundwater, greater than 540 m from the nearest surface water, and will be capped with an HDPE lined wetland.
--	--	---	--

Based on the source, pathway and receptor linkage, the construction of the new wetland does not pose a risk to human health or discharge to the environment.

7 CONCLUSIONS

Based on the DSI for the investigation area Babbage concludes the following:

1. Soil sample results reported asbestos and PAHs concentrations below NESCS commercial/industrial land use SCS and NZGAMAS criteria. However, arsenic was reported above NESCS criteria and zinc was reported above ECO-SGV guideline criteria. Therefore, impacted areas require remediation or management.
2. Review of historical aerial photographs, RDC LIM site enquiry and subsequent site walkover indicates the site has been subjected to an activity on the HAIL (Item G.3 and G.6), therefore the NESCS applies. Pursuant to regulation 10(2)(b) of the NESCS, as the soil contamination exceeds the applicable standard in regulation 7, a **restricted discretionary** activity consent is required.
3. The proposed activity complies with RW-LF-R36 regarding discharge of contaminants onto or into land that may enter water and therefore is a permitted activity
4. Prepare a RAP outlining remedial methods, health, environmental and safety controls, mitigation controls to manage unexpected discovery of contaminants, and site soil disposal of excavated material based on available laboratory results.
5. Site earthwork contractors should adopt measures to prevent adverse effects to human health and the environment from the excavation work, including health and safety plans, mitigation measures and erosion and sediment controls meeting the Horizon Regional Council Erosion and Sediment Control Guide for Land Disturbing Activities²⁶.

²⁶ Greater Wellington Council, 2021, Erosion and Sediment Control Guide for Disturbing Activities in the Wellington Regional Council.

APPLICABILITY AND LIMITATIONS

Restrictions of Intended Purpose

This report has been prepared solely for the benefit of Winstone Pulp International Limited as our client with respect to the brief. The reliance by other parties on the information or opinions contained in the report shall, without our prior review and agreement in writing, be at such party's sole risk.

Legal Interpretation

Opinions and judgements expressed herein are based on our understanding and interpretation of current regulatory standards, and should not be construed as legal opinions. Where opinions or judgements are to be relied on they should be independently verified with appropriate legal advice.

Maps and Images

All maps, plans, and figures included in this report are indicative only and are not to be used or interpreted as engineering drafts. Do not scale any of the maps, plans or figures in this report. Any information shown here on maps, plans and figures should be independently verified on site before taking any action. Sources for map and plan compositions include LINZ Data and Map Services and local council GIS services. For further details regarding any maps, plans or figures in this report, please contact Babbage Consultants Limited.

Reliability of Investigation

Babbage has performed the services for this project in accordance with the standard agreement for consulting services and current professional standards for environmental site assessment. No guarantees are either expressed or implied.

Recommendations and opinions in this report are based on discrete sampling data. The nature and continuity of matrix sampled away from the sampling points are inferred and it must be appreciated that actual conditions could vary from the assumed model.

There is no investigation that is thorough enough to preclude the presence of materials at the site that presently, or in the future, may be considered hazardous. Because regulatory evaluation criteria are constantly changing, concentrations of contaminants present and considered to be acceptable may in the future become subject to different regulatory standards, which cause them to become unacceptable and require further remediation for this site to be suitable for the existing or proposed land use activities.

Appendix A

Development Plans

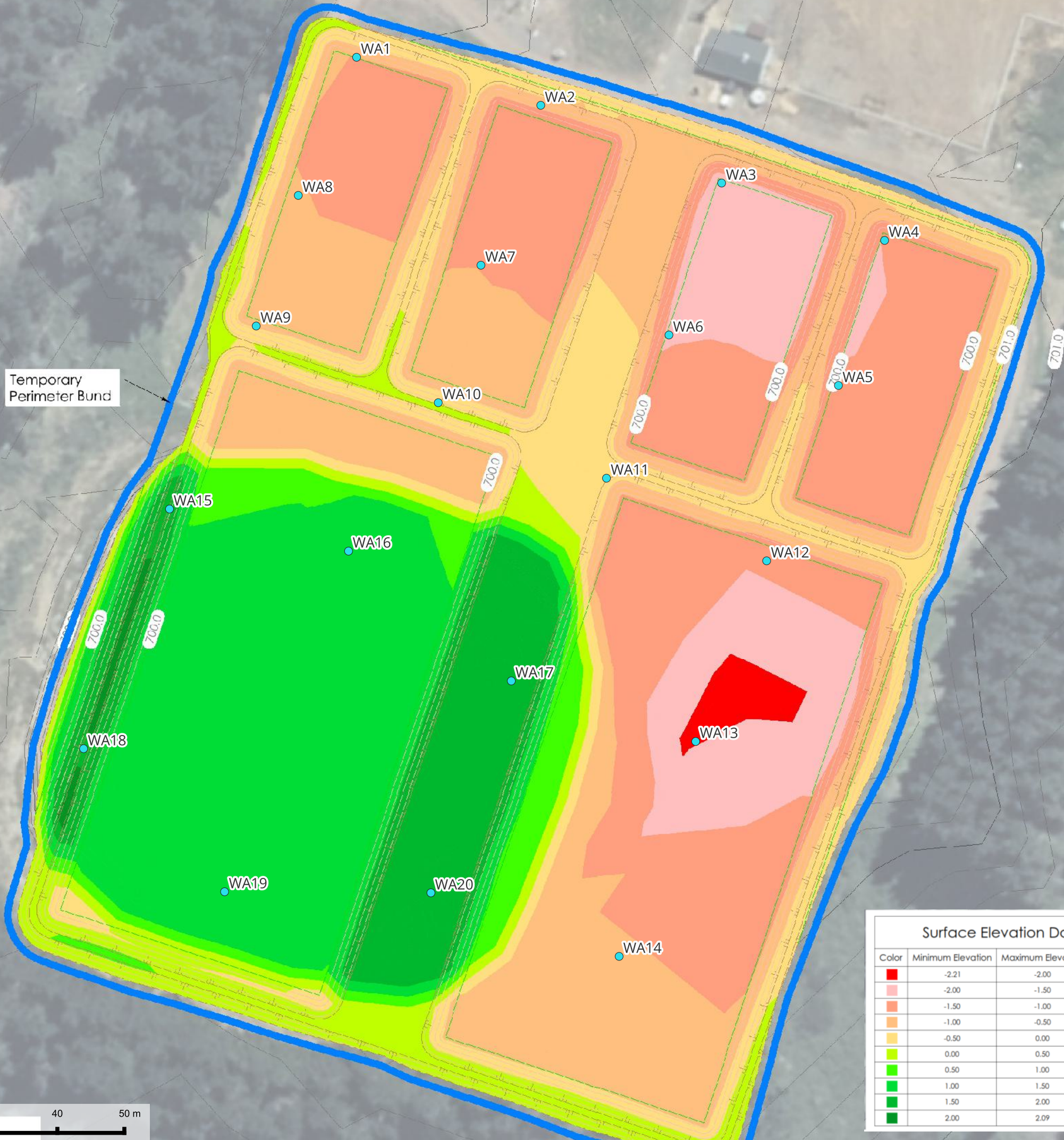


undertaken during a
the duration of the

ea, a temporary
d will act as a
the work area and

pages as the pond
risk of dirty water

Temporary
Perimeter Bund



Legend

- Site boundary ('the site')
- Wetland area ('piece of land')
- Sampling Locations

NOTES

Aerial Images: LINZ Basemap

DISCLAIMER:

This map/plan is not an engineering
draft.

This map/plan is illustrative only and
all information should be
independently verified on site before
taking any action.

SCALE

1:600

@ A3

MAP NO.

FIGURE 2

Surface Elevation Data

Color	Minimum Elevation	Maximum Elevation	Cut / Fill
Red	-2.21	-2.00	Cut
Light Pink	-2.00	-1.50	Cut
Orange	-1.50	-1.00	Cut
Light Orange	-1.00	-0.50	Cut
Yellow	-0.50	0.00	Cut
Light Green	0.00	0.50	Fill
Green	0.50	1.00	Fill
Dark Green	1.00	1.50	Fill
Very Dark Green	1.50	2.00	Fill
Black	2.00	2.09	Fill



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NOTES:

1. All work shall be done in accordance with NZS 4404:2010 Land Development and Subdivision Infrastructure.
2. Heights in terms of NZVD 2016
On site datum: M53
RL: 695.50
Coordinates: NZGD 2000
Circuit: Tuhirangi 2000
Contour Interval = 0.2m
3. Contractor to locate and identify existing utility location and depths prior to construction. The project engineer shall be informed of any discrepancies to the information depicted on these plans immediately for revised drawings.
4. Contractor shall install and maintain all stormwater, dust and erosion control during construction as per earthworks management plan and the Horizon Regional Council Erosion and Sediment Control - "Guidelines for soil disturbing activities".
5. All disturbed areas shall be re-topsoiled and grassed within 30 days upon completion of contract works.
Dust control shall be maintained until grassed areas have become established.

LEGENDS:

- Bottom of Wetland
- Top of Wetland Bund
- Toe of Wetland Bund

A	01/04/26	Issued For Client Review	AC	AT	SP
Rev	Date	Amendment	By	Chk	App

Project Title
Babbage Consultants Limited
1002 State Highway 49
Tangiwai, Ohakune

Drawing Title
Finished Contours Plan

Surveyed	-	-	-
Designed	A. Chand	01/04/26	AC
Drawn	A. Chand	01/04/26	AC
Checked	A. Thomas	01/04/26	AT
Approved	S. Prasad	01/04/26	SP

Status	REVIEW		
Scale	A1	1:500	A1
	A3	1:1000	
Drawing Number	260156-200		Rev
			A

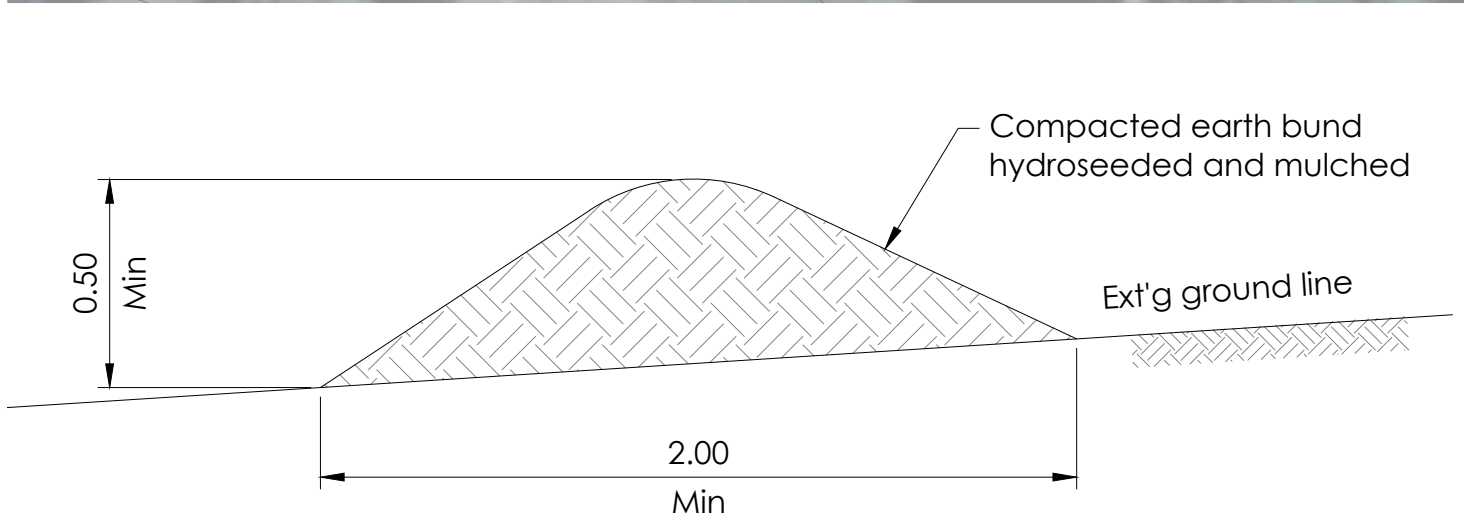


Erosion & Sediment Control Notes:

The earthworks within the wetland are proposed to be undertaken during a favourable weather window, with no rainfall forecast for the duration of the works.

Prior to the commencement of any activity within the area, a temporary perimeter bund will be installed around the site. This bund will act as a precautionary measure to contain any dirty water within the work area and to divert any clean surface water away from the site.

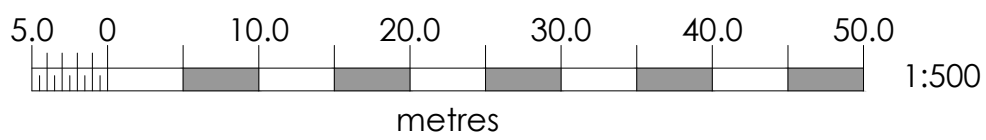
The temporary bund may be progressively removed in stages as the pond excavation is completed and once there is no longer a risk of dirty water leaving the work area.



Temporary Perimeter Bund
Scale: NTS

Volume Summary							
Name	Type	Cut Factor	Fill Factor	2d Area (m²)	Cut (m³)	Fill (m³)	Net (m³)
Cut & Fill Volume	Earthworks	1.00	1.500	17146.53	10447.47	9994.57	452.90 <Cut Excess>

Surface Elevation Data			
Color	Minimum Elevation	Maximum Elevation	Cut / Fill
Red	-2.21	-2.00	Cut
Light Red	-2.00	-1.50	Cut
Orange	-1.50	-1.00	Cut
Yellow	-1.00	-0.50	Cut
Light Green	-0.50	0.00	Cut
Green	0.00	0.50	Fill
Dark Green	0.50	1.00	Fill
Light Blue	1.00	1.50	Fill
Blue	1.50	2.00	Fill
Dark Blue	2.00	2.09	Fill



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NOTES:

- All work shall be done in accordance with NZS 4404:2010 Land Development and Subdivision Infrastructure.
- Heights in terms of NZVD 2016
On site datum: M53
RL: 695.50
Coordinates: NZGD 2000
Circuit: Tuhirangi 2000
Contour Interval = 0.2m
- Contractor to locate and identify existing utility location and depths prior to construction. The project engineer shall be informed of any discrepancies to the information depicted on these plans immediately for revised drawings.
- Contractor shall install and maintain all stormwater, dust and erosion control during construction as per earthworks management plan and the Horizon Regional Council Erosion and Sediment Control - "Guidelines for soil disturbing activities".
- All disturbed areas shall be re-topsoiled and grassed within 30 days upon completion of contract works.
Dust control shall be maintained until grassed areas have become established.

Rev	Date	Amendment	By	Chk	App
A	01/04/26	Issued For Client Review	AC	AT	SP

Project Title
Babbage Consultants Limited
1002 State Highway 49
Tangiwai, Ohakune

Drawing Title
Cut & Fill and
Erosion & Sediment Control Plan

Surveyed	-	-	-
Designed	A. Chand	01/04/26	AC
Drawn	A. Chand	01/04/26	AC
Checked	A. Thomas	01/04/26	AT
Approved	S. Prasad	01/04/26	SP

Status	REVIEW		
Scale	A1 1:500	A1	
	A3 1:1000		
Drawing Number	260156-201		Rev A



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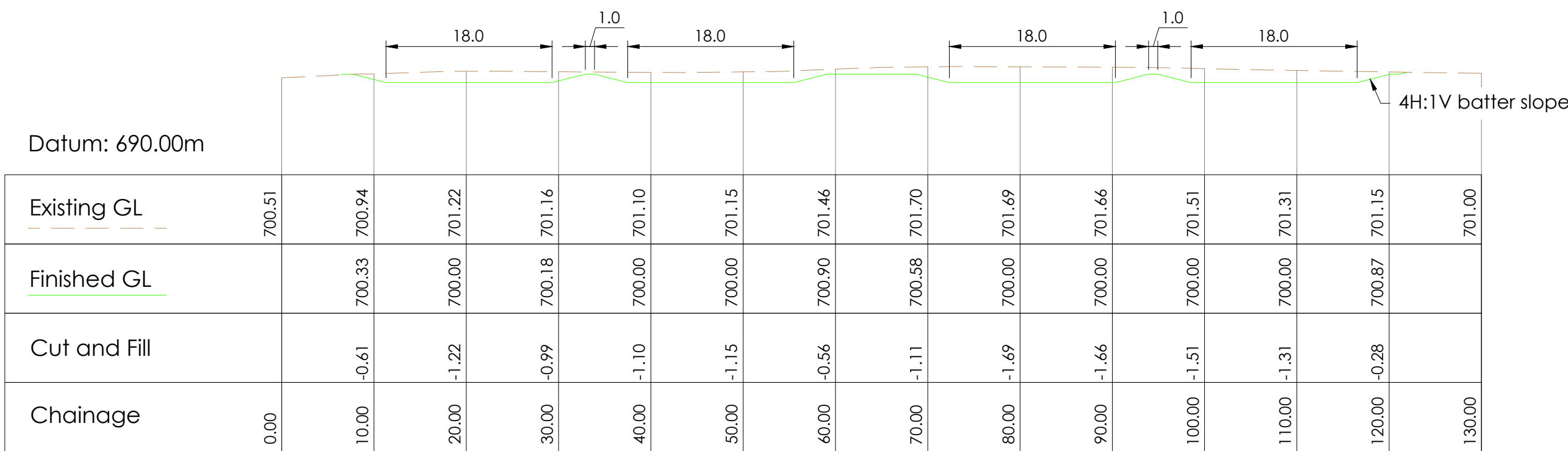
NOTES:

- All work shall be done in accordance with NZS 4404:2010 Land Development and Subdivision Infrastructure.
- Heights in terms of NZVD 2016
On site datum: M53
RL: 695.50
Coordinates: NZGD 2000

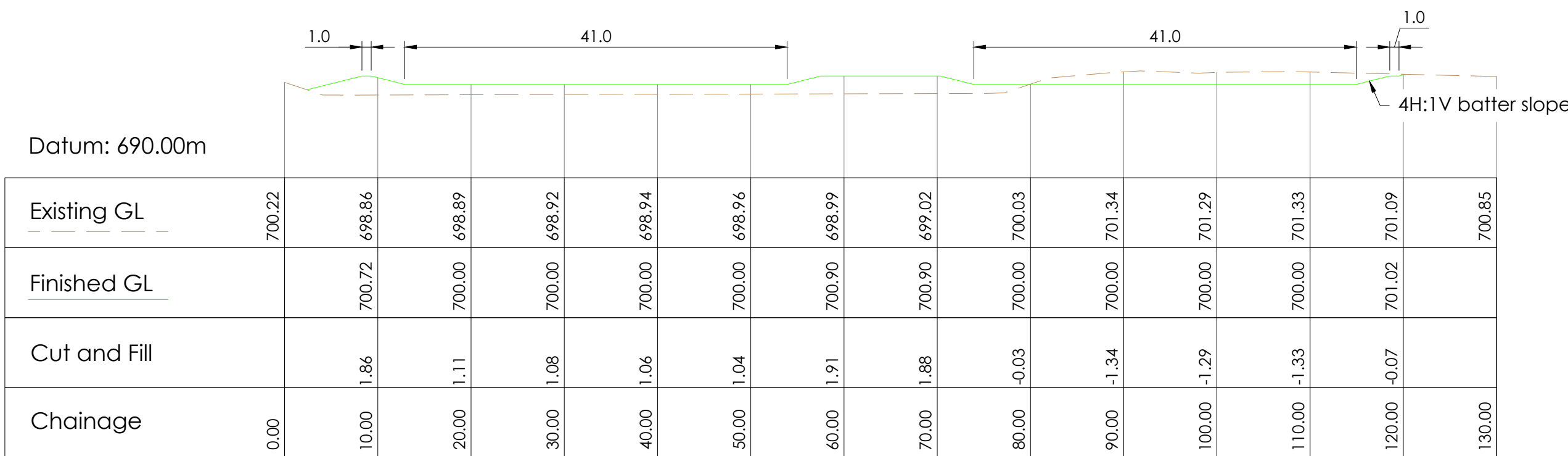
Contour Interval = 0.2m
- Contractor to locate and identify existing utility location and depths prior to construction. The project engineer shall be informed of any discrepancies to the information depicted on these plans immediately for revised drawings.
- Contractor shall install and maintain all stormwater, dust and erosion control during construction as per earthworks management plan and the Horizon Regional Council Erosion and Sediment Control - "Guidelines for soil disturbing activities".
- All disturbed areas shall be re-topsoiled and grassed within 30 days upon completion of contract works.
Dust control shall be maintained until grassed areas have become established.



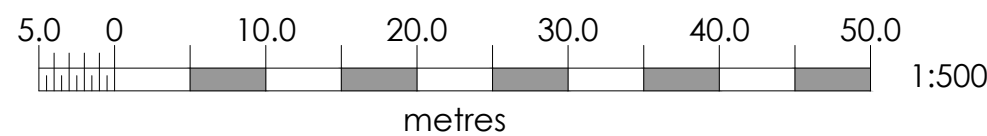
Section A Wetland Section A
Scale: H 1:500
Scale: V 1:500



Section B Wetland Section B
Scale: H 1:500
Scale: V 1:500



Section C Wetland Section C
Scale: H 1:500
Scale: V 1:500



Rev	Date	Amendment	By	Chk	App
A	01/04/26	Issued For Client Review	AC	AT	SP

Project Title
Babbage Consultants Limited
1002 State Highway 49
Tangiwai, Ohakune

Drawing Title

Wetland Cross Sections

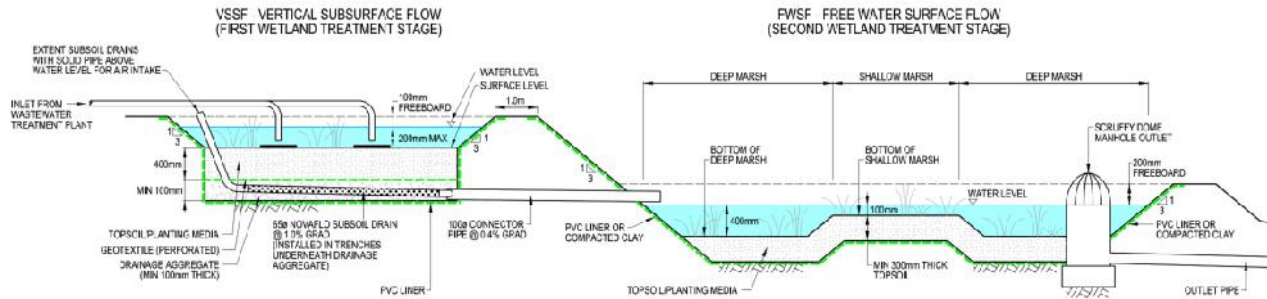
Surveyed	-	-	-
Designed	A. Chand	01/04/26	AC
Drawn	A. Chand	01/04/26	AC
Checked	A. Thomas	01/04/26	AT
Approved	S. Prasad	01/04/26	SP

Status **REVIEW**

Scale	A1	1:500	A1
	A3	1:1000	

Drawing Number	Rev
260156-202	A

Figure 3. Concept cross-section for the proposed constructed wetland system (not to scale).



Appendix B

Site Photographs

Client name: WPI		Site location: Kariori Pulp Mill	Photo dates: 30 th and 31 st March
Photo No.	1.		
Direction Photo Taken: South West			
Description: Photo taken from WA04 showing grassed bank area.			
Photo No.	2.		
Direction Photo Taken: North West			
Description: Photo taken from WA12 showing grassed bank area.			

Client name: WPI		Site location: Kariori Pulp Mill	Photo dates: 30th and 31st March
Photo No.	3.		
Direction Photo Taken: South West			
Description: Photo taken showing existing pond.			
Photo No.	4.		
Direction Photo Taken: N/A			
Description: Photo taken showing WA05 with pulp mixed fill.			

Appendix C

Selected Historical Aerials



Legend

Wetland area

Site boundary

0 100 200 300 400 500 m

Date: 1950 Aerial
Source: Retrolens

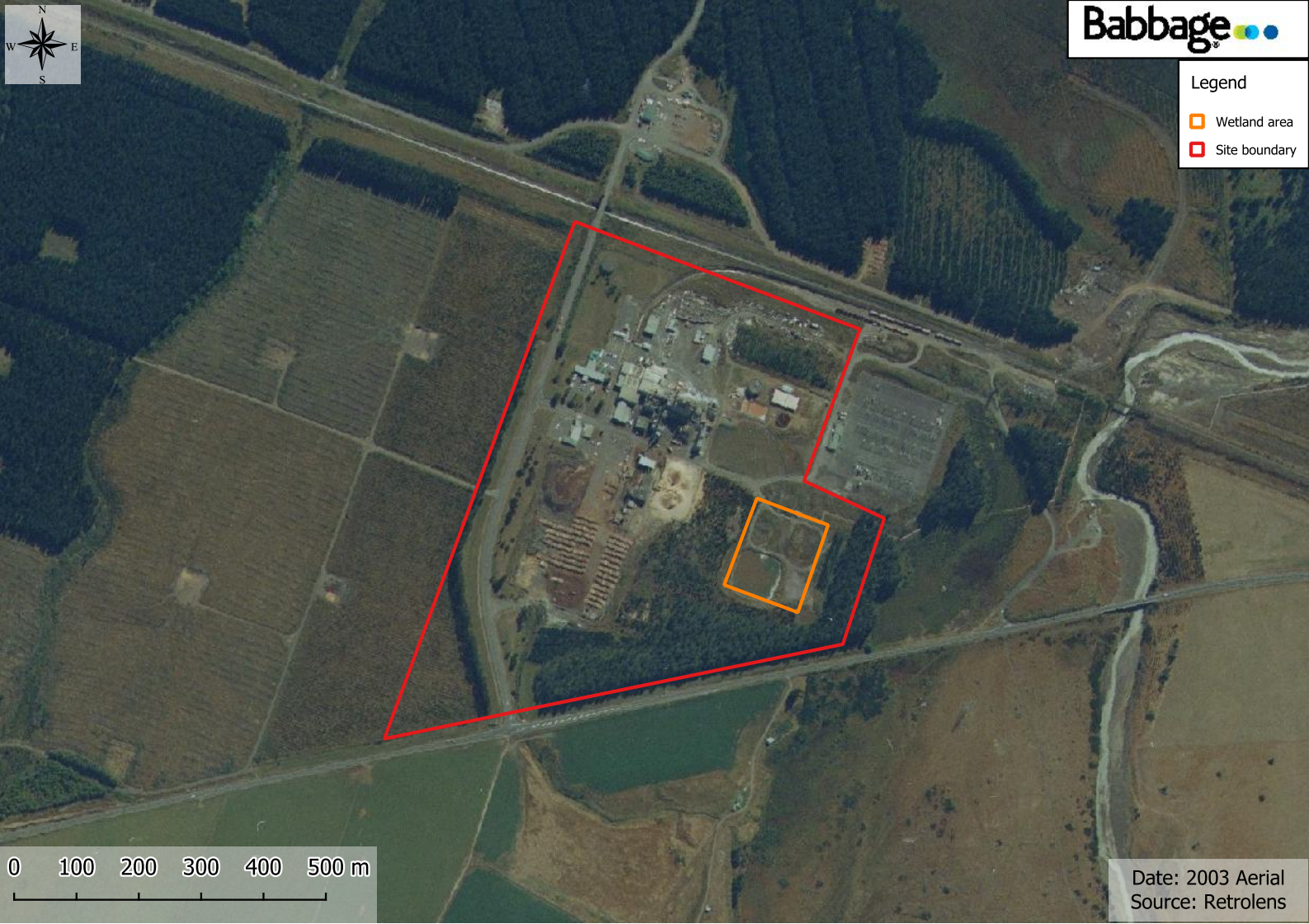


Legend

- Wetland area
- Site boundary

0 100 200 300 400 500 m

Date: 1980 Aerial
Source: Retrolens

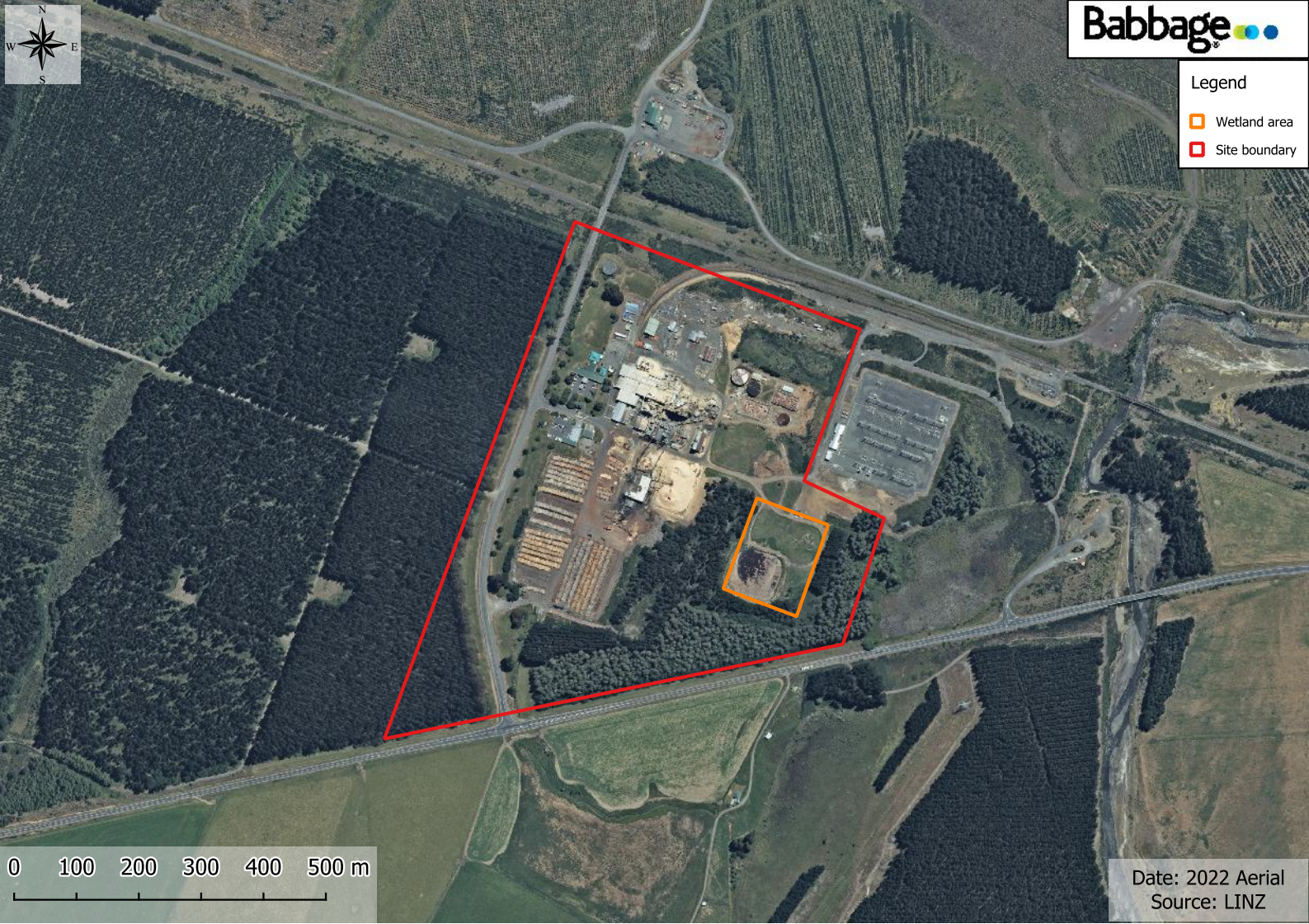


Legend

- Wetland area
- Site boundary

0 100 200 300 400 500 m

Date: 2003 Aerial
Source: Retrolens



Legend

- ▮ Wetland area
- ▮ Site boundary

0 100 200 300 400 500 m

Date: 2022 Aerial
Source: LINZ

Appendix D

Ruapehu District Council LIM

Use to Which the Land May be Put and Any Conditions Attached to that Use

Ruapehu District Plan

The site is located within the Rural Zone under the Ruapehu District Plan (2013).

Relevant District Plan Maps from the District Plan (2013) are part of the maps in Attachment 1.

The maps show the zoning of the site and identify specific features that may be relevant to a specific property, e.g., heritage buildings, designations or outstanding landscapes.

The most relevant rules that apply to this site are the [Rural](#) Zone Rules of the District Plan.

The Ruapehu District Plan is available [here](#).

If you need clarification, please feel free to contact Council.

Hazardous Activities and Industries List (HAIL)

Horizons Regional Council Site's Associated with Selected Land Use Sites (SLUS) database has been checked, and 1002 State Highway 49 (Section 3 BLK XI KARIOI SD) is currently not recorded on their SLUS database. However, Horizons Regional Council has provided the following comments:

The activities, being those associated with wood pulp processing, may include some identified on the Hazardous Activities and Industries List, Ministry for the Environment, October 2011. These are classified as follows:

A2 (A = Chemical manufacture, application or bulk storage; 2 = Chemical manufacture, formulation or bulk storage);

A18 (A = Chemical manufacture, application or bulk storage; 18 = Wood treatment or preservation including the commercial use of anti-sapstain chemicals during milling, or bulk storage of treated timber outside); and

G6 (G = Cemeteries and waste recycling, treatment and disposal; 6 = Waste recycling or waste or wastewater treatment).

Please note Horizons Regional Council holds the information for Ruapehu District Council on their SAHS database, therefore their information is included in the above advice.

Note: The Ministry for the Environment has published a Hazardous Activities and Industries List (HAIL). The HAIL is a compilation of types of activities and industries that have the potential to cause land contamination resulting from hazardous substance use, storage or disposal.

The fact that an activity or industry appears on the list does not mean that hazardous substances were used or stored on all sites occupied by that activity or industry, nor that a site of this sort will have hazardous substances present in the land. The list merely indicates that such activities and



industries are more likely to use or store hazardous substances and therefore there is a greater probability of site contamination occurring than other uses or activities.

Conversely, an activity or industry that does not appear on the list does not guarantee such a site will not be contaminated.

Information about the HAIL is available from the Ministry for the Environment online:
<https://environment.govt.nz/publications/hazardous-activities-and-industries-list-hail/>.



Appendix E

Soil Logging

Soil Logs- Karioi Pulp mill, 1002 State Highway 49

Sample Location	Sample Depth (m bgl)	Depth* (m bgl)	Soil type
Grassed bank area			
WA01	0.1 1.0	0.0 0.8	FILL: Clayey SILT, dark brown, dry to moist, barrel removed at 0.2 mbgl and plastic observed. FILL: Silty CLAY with some gravel, dark brown black, moist, organic material (plant material and small pieces of wood) and woodchips throughout. Termination depth (TD) - 1.0
WA02	0.1 1.0	0.0 0.05	TOPSOIL: Clayey SILT, light brown, dry. FILL: Clayey SILT with boulders, dark brown, dry to moist. Termination depth (TD) - 1.0
WA03	0.1 1.0	0.0 0.8	FILL: Sandy SILT, dark brown, moist, plastic observed. FILL: Pulp with some clay, reddish brown, moist. Termination depth (TD) - 1.0
WA04	0.1 1.0	0.0	FILL: Sandy silt with minor gravel and boulders, reddish brown to blackish brown, dry to wet, minor construction material (small pieces of plastic and rubber) and wood (pulp) observed. Perched water encountered at 1.0mbgl. Termination depth (TD) - 2.3
WA05	0.1 1.0	0.0	FILL: Pulp with sandy silt, reddish brown to blackfish brown, moist. Termination depth (TD) - 1.0
WA06	0.1 1.0	0.0 0.5	FILL: Sandy SILT with rootlets and minor gravel, light brown, dry. FILL: Pulp with sandy silt, reddish brown, moist, piece of fabric at 1m bgl. Termination depth (TD) - 1.0
WA07	0.1 1.0	0.0 0.5	FILL: Sandy SILT with rootlets, dark brown, dry. FILL: Pulp with silt, reddish brown, moist, with minor small pieces of plastic and metal observed, white pulp at 0.3mbgl to 0.5mbgl. Termination depth (TD) - 1.0
WA08	0.1 1.0	0.0 0.2	FILL: Sandy SILT with rootlets, dark brown, dry. FILL: Pulp with silt, reddish brown, moist with minor small pieces of plastic observed. Termination depth (TD) - 1.0

WA09	0.3 1.0	0.0 0.3	FILL: Sandy SILT with rootlets, dark brown, dry, with minor small pieces of plastic tubing observed. FILL: Pulp with silt, reddish brown, moist, with minor logs (approximately 0.3m long) and small pieces of plastic. Termination depth (TD) - 1.0
WA10	0.1 1.0	0.0 0.3	FILL: Sandy SILT with rootlets, dark brown, dry, with minor small pieces of plastic tubing observed. FILL: Pulp with silt, reddish brown, moist, with minor logs (approximately 0.3m long) and small pieces of plastic. Perched water encountered at 1.0 mbgl. Termination depth (TD) - 1.0
WA11	0.1 1.0	0.0 0.3	FILL: Sandy SILT with rootlets, dark brown, dry, with minor small pieces of plastic tubing observed. FILL: Pulp with silt, reddish brown, moist, with minor logs (approximately 0.3m long) and small pieces of plastic. Perched water encountered at 1.0 mbgl. Termination depth (TD) - 1.0
WA12	0.1 1.0	0.0 0.3	FILL: Sandy SILT with rootlets, dark brown, dry, with minor small pieces of plastic tubing observed.. FILL: Pulp with silt, reddish brown, moist, with minor logs (approximately 0.3m long) and small pieces of plastic. Perched water encountered at 0.8 mbgl. Termination depth (TD) - 1.0
WA13	0.1 1.0	0.0	FILL: Silty SAND with boulders,, light brown, dry, with minor construction material (pebble to boulder sized concrete chunks and small pieces of fabric) throughout. Termination depth (TD) - 1.0
WA14	0.1 1.0	0.0 0.4	FILL: Sandy SILT with minor gravel, light brown, dry. FILL: SAND with some gravel and silt, dark greyish blackish brown, wood pieces (approximately 0.05m) throughout. Termination depth (TD) - 1.0
Ponded Area			
WA15	0.1 1.0	0.0	FILL: Pulp sludge (pulp and sawdust mixture), light brown, wet to saturated. Termination depth (TD) - 1.0
WA16	0.1 0.5	0.0	FILL: Pulp sludge, light brown, wet to saturated with some black soil, strong sulphur smell.



			Termination depth (TD) – 0.5
WA17	0.1 1.0	0.0	FILL: Pulp sludge, light brown, wet to saturated. Termination depth (TD) - 1.0
WA18	0.1 1.5	0.0 1.5	FILL: Pulp sludge, light brown, wet to saturated. FILL: Pulp with some silt, greyish black, strong sulphur smell, wet. Termination depth (TD) - 1.8
WA19	0.1 0.5	0.0 0.3	FILL: Pulp sludge, light brown, wet to saturated. FILL: Black organic SILT, wet to moist, strong sulphur smell. Termination depth (TD) – 0.5
WA20	0.1 1.0 1.5	0.0 1.5	FILL: Pulp sludge, light brown, wet to saturated. FILL: Black organic SILT, wet to moist, strong sulphur smell. Termination depth (TD) - 1.8

Appendix F

Quality Assurance and Quality Control

Appendix F: Quality Assurance and Quality Control (duplicate) sample results comparison

Property address	Superlot Reference	Sample ID	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
WPI Wetland		WA08	1.35	0.26	15	29.7	18.1	0.1	5	68
		WA66	1.46	0.34	18.7	31.5	16.3	0.1	5.8	80
		RPD %	8	27	22	6	10	0	15	16

Property address	Superlot Reference	Sample ID	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
WPI Wetland		WA14	1.88	0.04	20.1	40.8	5.7	0.1	10.4	34
		WA67	1.44	0.03	15.1	29.7	4.4	0.1	7.4	24
		RPD %	27	29	28	31	26	0	34	34

Note: Where both results were below the laboratory limit of reporting the RPD has been reported as 0%

Appendix G

Laboratory Reports

Environment Testing NZ

ANALYTICAL REPORT

REPORT CODE **AR-26-NU-058713-01** REPORT DATE **27/05/2026**

Attention Babbage Consultants Limited
Charlotte Lucas
Level 4, 68 Beach Road
1010 Auckland
NEW ZEALAND

Phone

Email charlotte.lucas@babbage.co.nz

Contact for your orders: Frances Gilvray
Contract: Enviro
Reception Date & Time: 25/05/2026 10:30:00am
Submission Reference: 68095 WPI Wetland

Order code: EUNZAU-00914033

SAMPLE CODE: 816-2026-00092218
Sample Name: WA09 1.0
Product Type: Soil
Analysis Started on: 25/05/2026
Analysis Ending Date: 27/05/2026
Date & Time Received 25/05/2026 10:30
Sampled Date & Time 30/03/2026 00:00
Sampled By Charlotte Lucas,
Seung-Hwa Jung
Attempt to Chill was evident Yes
Sample correctly preserved Yes
Appropriate sample containers used Yes

	LOQ	Unit
② NW499 Arsenic - Total	0.05	mg/kg

1.32

HOLDING TIMES
816-2026-00092218 WA09 1.0

Test	Sampling Date	Holding End	Effective Holding (days)	Requirement (days)	Compliance
NW499 Arsenic - Total	30/03/2026	27/05/2026	58	180	Yes

LIST OF METHODS

NW499 **Arsenic - Total:** APHA 24th Edition 3125 B mod.

Signature



Gabriela
Carvalhaes Business Unit Manager
Eurofins ELS Limited

EXPLANATORY NOTE

Environment Testing NZ

- ① Test is not accredited
- ② Test is subcontracted within Eurofins group and is accredited
- ③ Test is subcontracted within Eurofins group and is not accredited
- ④ Test is subcontracted outside Eurofins group and is accredited
- ⑤ Test is subcontracted outside Eurofins group and is not accredited
- ⑥ Test result is provided by the customer and is not accredited
- ⑦ Tested at the sampling point by Eurofins and is not accredited
- ⑧ Tested at the sampling point by Eurofins and is accredited
- ⑨ Test is RLP accredited
- ⑩ Test is subcontracted within Eurofins group and is RLP accredited

N/A means Not Applicable

Not Detected means not detected at or above the Limit of Quantification (LOQ)

LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit

Symbol - in result column means not tested

General

1. Unless otherwise stated, all soil/sediment/solid results are reported on a dry weight basis.
2. Unless otherwise stated, all biota/food results are reported on a wet weight basis on the edible portion.
3. Actual LOQs are matrix dependent. Quoted LOQs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds where annotated.
5. Analysis on waters is performed on homogenised, unfiltered samples unless noted otherwise.
6. Samples were analysed on an 'as received' basis.

Holding Times

Please refer to the 'Sample Preservation and Container Guide' for holding times (QS3001).

If the Laboratory did not receive the information in the required timeframe, and despite any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the sampling date; therefore, compliance with these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether, the holding time is seven days; however, for all other VOCs, such as BTEX or C6-10 TRH, the holding time is 14 days.

Holding times are expressed in days.

Units

mg/kg: milligrams per kilogram
µg/L: micrograms per litre
org/100 mL: Organisms per 100 millilitres
CFU: Colony Forming Unit

mg/L: milligrams per litre
ppb: parts per billion
NTU: Nephelometric Turbidity Units
Colour: Pt-Co Units (CU)

ppm: parts per million
%: Percentage
MPN/100 mL: Most Probable Number of organisms per 100 millilitres

Terms

APHA: American Public Health Association
TCLP: Toxicity Characteristic Leaching Procedure
US EPA: United States Environmental Protection Agency

Quality Controls

All test method Quality Controls including method blanks, reference samples, spikes, surrogates and duplicate sample testing have passed and are within the control limits.

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END OF REPORT

Environment Testing NZ

ANALYTICAL REPORT

REPORT CODE **AR-26-NU-040607-01** REPORT DATE **14/04/2026**

Attention Babbage Consultants Limited
Charlotte Lucas
Level 4, 68 Beach Road
1010 Auckland
NEW ZEALAND

Phone

Email charlotte.lucas@babbage.co.nz

Contact for your orders: Frances Gilvray **Order code:** EUNZAU-00899991
Contract: Built
Submission Reference: 68095, WPI Wetland

Asbestos Summary

Sample Code	Client Sample	Sample Details	Sample Type	Fibre Identification
816-2026-00102462	WA04 0.1		Soil	NAD,ORF
816-2026-00102463	WA13 0.1		Soil	NAD,ORF

Fibre Identification Key

NFD: No Fibres Detected

NAD: No Asbestos Detected

UMF: Unknown Mineral Fibre

ORF: Organic Fibre

SMF: Synthetic Mineral Fibre

AMO: Amosite (Brown / Grey Asbestos)

CHR: Chrysotile (White Asbestos)

CRO: Crocidolite (Blue Asbestos)

SAMPLE CODE **816-2026-00102462**

Sample Name WA04 0.1
Reception Date & Time: 13/04/2026 8:15
Analysis Started on: 14/04/2026
Sampled Date & Time 30/03/2026 00:00
Analysis Ending Date: 14/04/2026
Sampled By Charlotte Lucas, Seung-Hwa Jung

ASBESTOS RESULTS

①NU0K9 Semi-Quantitative Asbestos ID in Soil

Asbestos Not Detected
Organic Fibre Detected

SAMPLE CODE **816-2026-00102463**

Sample Name WA13 0.1
Reception Date & Time: 13/04/2026 8:15
Analysis Started on: 14/04/2026
Sampled Date & Time 30/03/2026 00:00
Analysis Ending Date: 14/04/2026
Sampled By Charlotte Lucas, Seung-Hwa Jung

ASBESTOS RESULTS

①NU0K9 Semi-Quantitative Asbestos ID in Soil

Asbestos Not Detected
Organic Fibre Detected

Environment Testing NZ

Semi-Quantitative Analysis of Asbestos in Soil

#	Sample	As received weight (g)	Dry weight (g)	Moisture (%)	Asbestos product weight (g)	Asbestos product type	Percentage of asbestos in product %	Total mass of Asbestos in sample (g)	Bonded Asbestos containing material in sample (% w/w)	Asbestos as FA (% w/w)	Asbestos as AF (% w/w)	Total Fibrous Asbestos + Asbestos Fines (Friable) (% w/w)
1	816-2026-00102462	386.10	145.70	62.30				0	<0.01	<0.001	<0.001	<0.001
1	DUP (>10mm Fraction)		16.50		0.0000	NAD	-					
1	DUP (10-2mm Fraction)		44.00		0.0000	NAD	-					
1	DUP (<2mm Fraction)		85.20		0.0000	NAD	-					
2	816-2026-00102463	505.30	403.80	20.10				0	<0.01	<0.001	<0.001	<0.001
2	DUP (>10mm Fraction)		92.40		0.0000	NAD	-					
2	DUP (10-2mm Fraction)		72.30		0.0000	NAD	-					
2	DUP (<2mm Fraction)		239.10		0.0000	NAD	-					

SAMPLE COMMENTS

NU0K9

Methodology

Sample Size Requirements
Analysis Method

The minimum sample size of 500 mL is required for quantitative soil analysis.

Samples submitted have been analysed to determine the mass fraction of asbestos in soil using low powered stereo microscopy followed by polarised light microscopy (PLM) including dispersion staining techniques as documented in (AS 4964-2004), Method for the qualitative identification of asbestos in bulk samples, BRANZ, New Zealand Guidelines for Assessing and Managing Asbestos in Soils:2017.

Product Identification Key

BTP	Bituminous Product	LSE	Loose Fill Insulation
CMP	Cement Product	NAD	No Asbestos Detected
COM	Composite	PPR	Paper Product
FFF	Free Fibres	RPL	Reinforced Plastics
FIB	Fibre Board	TXC	Textured Coating
GCP	Gaskets (compressed)	VNP	Vinyl Products
GRW	Gaskets (rope/woven)	VPP	Vinyl with paper backing
INB	Insulating Board	WVP	Woven Product

Interpretation of Key

Asbestos in product (%) is adopted from HSG 264 - 2012, Asbestos the survey guide, Appendix 2, ACMS in buildings and categorized in our internal Technical Procedure (NPM-TP02) for Semi-Quantitative analysis of asbestos in soil. A dash (-) denotes that there was no asbestos found in that fraction.

Total Mass of Asbestos is the sum mass of asbestos-by-asbestos type in product type plus the mass of free fibre asbestos. A dash (-) denotes that there was no total mass of asbestos calculated asbestos found in that fraction.

Bonded Asbestos Containing Material in the greater than 10mm fraction as percentage of the total sample (% w/w). A dash (-) denotes that there was no bonded asbestos containing materials found in that fraction.

Asbestos as Fibrous Asbestos (FA) in less than 10mm fraction as percentage of total sample (% w/w).

Asbestos as Asbestos Fines (AF) in less than 10mm fraction as a percentage of total sample (% w/w).

Total Friable Asbestos combining Fibrous Asbestos and Asbestos Fines as the percentage weight for weight of the total sample (% w/w).

LIST OF METHODS

NU0K9 **Semi-Quantitative Asbestos ID in Soil:** BRANZ New Zealand Guidelines for Assessing and Managing Asbestos in Soils:2017

Signature

Environment Testing NZ



Elsie Xu Laboratory Analyst

EXPLANATORY NOTE

- ① Test is not accredited
- ② Test is subcontracted within Eurofins group and is accredited
- ③ Test is subcontracted within Eurofins group and is not accredited
- ④ Test is subcontracted outside Eurofins group and is accredited
- ⑤ Test is subcontracted outside Eurofins group and is not accredited
- ⑥ Test result is provided by the customer and is not accredited
- ⑦ Tested at the sampling point by Eurofins and is not accredited
- ⑧ Tested at the sampling point by Eurofins and is accredited
- ⑨ Test is RLP accredited
- ⑩ Test is subcontracted within Eurofins group and is RLP accredited

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N/A means Not Applicable

Not Detected means not detected at or above the Limit of Quantification (LOQ)

LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit

✗ (Unsatisfactory) means does not meet the specification

✓ (Satisfactory) means meets the specification

MAV means Maximum Allowable Value

END OF REPORT

Environment Testing NZ

ANALYTICAL REPORT

REPORT CODE **AR-26-NU-041256-01** REPORT DATE **15/04/2026**

Attention Babbage Consultants Limited
Charlotte Lucas
Level 4, 68 Beach Road
1010 Auckland
NEW ZEALAND

Phone
Email charlotte.lucas@babbage.co.nz

Contact for your orders: Frances Gilvray **Order code:** EUNZAU-00898865
Contract: Enviro
Reception Date & Time: 08/04/2026 3:15:00pm
Submission Reference: 68095, WPI Wetland

SAMPLE CODE:	816-2026-00098847	816-2026-00098848	816-2026-00098849	816-2026-00098850
Sample Name:	WA17 0.1	WA18 0.1	WA19 0.1	WA20 0.1
Sample Reference:	816-2026-00092120	816-2026-00092122	816-2026-00092124	816-2026-00092126
Product Type:	Soil	Soil	Soil	Soil
Analysis Started on:	09/04/2026	13/04/2026	13/04/2026	13/04/2026
Analysis Ending Date:	15/04/2026	15/04/2026	15/04/2026	15/04/2026
Date & Time Received	08/04/2026 15:15	08/04/2026 15:15	08/04/2026 15:15	08/04/2026 15:15
Sampled Date & Time	30/03/2026 00:00	30/03/2026 00:00	30/03/2026 00:00	30/03/2026 00:00
Sampled By	Charlotte Lucas, Seung-Hwa Jung	Charlotte Lucas, Seung-Hwa Jung	Charlotte Lucas, Seung-Hwa Jung	Charlotte Lucas, Seung-Hwa Jung
Attempt to Chill was evident	Yes	Yes	Yes	Yes
Sample correctly preserved	Yes	Yes	Yes	Yes
Appropriate sample containers used	Yes	Yes	Yes	Yes
LOQ Unit				
SOIL TEST RESULTS				
① NU388 Volume Weight	0.01 g/ml	0.21	0.29	0.22
ANIONS				
NUD11 Sulfate-Sulfur (SO4-S)	1 mg/kg	35	40	81
NU0MD Sample Weight (Per Order)	1 g	5900	-	-

LIST OF METHODS

NU0MD **Sample Weight (Per Order):** Internal Method, Mechanical
NU388 **Volume Weight:** Internal Method, Gravimetry [Volume weight of air-dried & sieved soil]
NUD11 **Sulfate-Sulfur (SO4-S):** Internal Method, Calculation
[Phosphate Extraction: ICP-OES Determination. Adjusted for Weight Volume]

Signature

Cindy Chen Supervisor Eurofins Food Analytics NZ Ltd

Vikram Pathania Laboratory Manager

Environment Testing NZ

EXPLANATORY NOTE

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General

1. Unless otherwise stated, all soil/sediment/solid results are reported on a dry weight basis.
2. Unless otherwise stated, all biota/food results are reported on a wet weight basis on the edible portion.
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5. Analysis on waters is performed on homogenised, unfiltered samples unless noted otherwise.
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Holding Times

Please refer to the 'Sample Preservation and Container Guide' for holding times (QS3001).

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org/100 mL: Organisms per 100 millilitres
CFU: Colony Forming Unit

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ppb: parts per billion
NTU: Nephelometric Turbidity Units
Colour: Pt-Co Units (CU)

ppm: parts per million
%: Percentage
MPN/100 mL: Most Probable Number of organisms per 100 millilitres

Terms

APHA American Public Health Association
TCLP Toxicity Characteristic Leaching Procedure
US EPA United States Environmental Protection Agency

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END OF REPORT

Environment Testing NZ

ANALYTICAL REPORT

REPORT CODE **AR-26-NU-042193-01** REPORT DATE **17/04/2026**

Attention Babbage Consultants Limited
Charlotte Lucas
Level 4, 68 Beach Road
1010 Auckland
NEW ZEALAND

Phone

Email charlotte.lucas@babbage.co.nz

Contact for your orders: Frances Gilvray **Order code:** EUNZAU-00896597
Contract: Enviro
Reception Date & Time: 01/04/2026 10:00:00AM
Submission Reference: 68095, WPI Wetland
Comments: Report generated

SAMPLE CODE:	816-2026-00092089	816-2026-00092091	816-2026-00092093	816-2026-00092095
Sample Name:	WA01 0.1	WA02 0.1	WA03 0.1	WA04 0.1
Product Type:	Soil	Soil	Soil	Soil
Analysis Started on:	01/04/2026	01/04/2026	01/04/2026	01/04/2026
Analysis Ending Date:	10/04/2026	10/04/2026	10/04/2026	10/04/2026
Sampled Date & Time	30/03/2026 00:00	30/03/2026 00:00	30/03/2026 00:00	30/03/2026 00:00
Sampled By	Charlotte Lucas, Seung-Hwa Jung	Charlotte Lucas, Seung-Hwa Jung	Charlotte Lucas, Seung-Hwa Jung	Charlotte Lucas, Seung-Hwa Jung
Attempt to Chill was evident	Yes	Yes	Yes	Yes
Sample correctly preserved	Yes	Yes	Yes	Yes
Appropriate sample containers used	Yes	Yes	Yes	Yes

	LOQ	Unit				
ORGANICS						
②NW04T Organochlorine Pesticides						
2,3-Diuron	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
2,4'-DDT	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
2,4'-DDD	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
2,4'-DDE	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
a-BHC	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
a-chlordane	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
Aldrin	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
b-BHC	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
Chlordane (total)	0.04	mg/kg	<0.02	<0.02	<0.02	<0.02
cis-Permethrin	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
Dieldrin	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
Endosulfan I	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
Endosulfan II	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
Endosulfan Sulfate	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
Endrin	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
Endrin Aldehyde	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
Endrin ketone	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02

Environment Testing NZ

SAMPLE CODE:			816-2026-00092089	816-2026-00092091	816-2026-00092093	816-2026-00092095
Sample Name:			WA01 0.1	WA02 0.1	WA03 0.1	WA04 0.1
Gamma-Chlordane	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
HCH, delta-	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
Heptachlor	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
Heptachlor Epoxide	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
Hexachlorobenzene	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
Lindane (g-BHC)	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
Methoxychlor	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
p,p'-DDD	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
p,p'DDE	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
p,p'-DDT	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05
Procymidone	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
Propanil	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
Sum of DDT and isomers	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05
Toxaphene	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05
②NWEBH PAH BaP TEQ						
Acenaphthene	0.02	mg/kg	<0.02	-	-	<0.02
Acenaphthylene	0.02	mg/kg	<0.02	-	-	<0.02
Anthracene	0.02	mg/kg	<0.02	-	-	<0.02
benz (a) anthracene	0.02	mg/kg	<0.02	-	-	<0.02
Benzo(a)pyrene	0.02	mg/kg	<0.02	-	-	<0.02
Benzo(a)pyrene TEQ (lower bound)	0.02	mg/kg	<0.02	-	-	<0.02
Benzo(a)pyrene TEQ (medium bound)	0.02	mg/kg	0.02	-	-	0.02
Benzo(a)pyrene TEQ (upper bound)	0.02	mg/kg	0.05	-	-	0.05
Benzo(b+k)fluoranthene	0.02	mg/kg	<0.02	-	-	<0.02
Benzo(g,h,i)perylene	0.02	mg/kg	<0.02	-	-	<0.02
Chrysene	0.02	mg/kg	<0.02	-	-	<0.02
Dibenz(a,h)anthracene	0.02	mg/kg	<0.02	-	-	<0.02
Fluoranthene	0.02	mg/kg	<0.02	-	-	<0.02
Fluorene	0.02	mg/kg	<0.02	-	-	<0.02
Indeno(1,2,3-cd)pyrene	0.02	mg/kg	<0.02	-	-	<0.02
Naphthalene	0.02	mg/kg	<0.02	-	-	<0.02
Phenanthrene	0.02	mg/kg	<0.02	-	-	<0.02
Pyrene	0.02	mg/kg	<0.02	-	-	<0.02
SOIL TEST RESULTS						
① NUE76 Ammoniacal Nitrogen	1	mg N/kg	7	6	2	6
① NUE77 Nitrate Nitrogen	1	mg N/kg	24	1	1	8
① NU227 Moisture Content	1	%	29	40	26	195
① NU388 Volume Weight	0.01	g/ml	0.75	0.67	1.13	0.43
ANIONS						

Environment Testing NZ

SAMPLE CODE:			816-2026-00092089	816-2026-00092091	816-2026-00092093	816-2026-00092095
Sample Name:			WA01 0.1	WA02 0.1	WA03 0.1	WA04 0.1
NUD11 Sulfate-Sulfur (SO4-S)	1	mg/kg	26	54	7	81
TRACE ELEMENTS						
① NU070 Chloride	1	mg/kg	34	35	59	89
NU0MD Sample Weight (Per Order)	1	g	5900	-	-	-
③ NW08E Cyanide in Soil	5	mg/kg	<5	<5	<5	<5
②NW247 PCB in Soil						
PCB 1	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01
PCB 101	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01
PCB 105	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01
PCB 114	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01
PCB 118	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01
PCB 126	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01
PCB 128	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01
PCB 138	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01
PCB 153	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01
PCB 154	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01
PCB 156	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01
PCB 158	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01
PCB 166	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01
PCB 169	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01
PCB 170	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01
PCB 171	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01
PCB 179	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01
PCB 180	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03
PCB 183	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01
PCB 187	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
PCB 189	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
PCB 201	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
PCB 28	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
PCB 29	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01
PCB 37	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
PCB 44	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01
PCB 47	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01
PCB 49	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01
PCB 5	0.06	mg/kg	<0.06	<0.06	<0.06	<0.06
PCB 52	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
PCB 60	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01
PCB 66	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01
PCB 70	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01
PCB 74	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01

Environment Testing NZ

SAMPLE CODE:			816-2026-00092089	816-2026-00092091	816-2026-00092093	816-2026-00092095
Sample Name:			WA01 0.1	WA02 0.1	WA03 0.1	WA04 0.1
PCB 77	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01
PCB 8	0.06	mg/kg	<0.06	<0.06	<0.06	<0.06
PCB 82	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01
PCB 87	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01
PCB 98	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01
PCB 99	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01
③ NW362 pH	0.1		5.5	4.2	5.5	4.6
② NW444 Phosphorus - Total	0.4	mg/kg	949	1300	377	930
② NW499 Arsenic - Total	0.05	mg/kg	2.05	2.47	1.76	1.76
② NW504 Cadmium - Total	0.01	mg/kg	0.27	0.24	0.05	0.36
② NW507 Chromium - Total	0.2	mg/kg	39.2	14.4	65.0	45.6
② NW509 Copper - Total	0.3	mg/kg	44.1	63.1	27.0	35.9
② NW510 Iron - Total	3	mg/kg	7530	6130	18300	6330
② NW511 Lead - Total	0.1	mg/kg	7.6	6.3	5.2	4.8
② NW514 Manganese - Total	0.1	mg/kg	60.8	23.5	254	46.8
② NW515 Mercury - Total	0.1	mg/kg	<0.1	<0.1	0.2	<0.1
② NW517 Nickel - Total	0.2	mg/kg	7.7	4.4	13.4	7.1
② NW522 Sodium - Total	1	mg/kg	617	475	791	589
② NW528 Zinc - Total	1	mg/kg	51	44	94	93

Environment Testing NZ

SAMPLE CODE:	816-2026-00092097	816-2026-00092099	816-2026-00092101	816-2026-00092103
Sample Name:	WA05 0.1	WA06 0.1	WA07 0.1	WA08 0.1
Product Type:	Soil	Soil	Soil	Soil
Analysis Started on:	01/04/2026	01/04/2026	01/04/2026	01/04/2026
Analysis Ending Date:	10/04/2026	10/04/2026	10/04/2026	10/04/2026
Sampled Date & Time	30/03/2026 00:00	30/03/2026 00:00	30/03/2026 00:00	30/03/2026 00:00
Sampled By	Charlotte Lucas, Seung-Hwa Jung	Charlotte Lucas, Seung-Hwa Jung	Charlotte Lucas, Seung-Hwa Jung	Charlotte Lucas, Seung-Hwa Jung
Attempt to Chill was evident	Yes	Yes	Yes	Yes
Sample correctly preserved	Yes	Yes	Yes	Yes
Appropriate sample containers used	Yes	Yes	Yes	Yes

LOQ	Unit				
ORGANICS					
②NW04T Organochlorine Pesticides					
2,3-Diuron	0.02	mg/kg	<0.02	<0.02	<0.02
2,4'-DDT	0.02	mg/kg	<0.02	<0.02	<0.02
2,4'-DDD	0.02	mg/kg	<0.02	<0.02	<0.02
2,4'-DDE	0.02	mg/kg	<0.02	<0.02	<0.02
a-BHC	0.02	mg/kg	<0.02	<0.02	<0.02
a-chlordane	0.02	mg/kg	<0.02	<0.02	<0.02
Aldrin	0.02	mg/kg	<0.02	<0.02	<0.02
b-BHC	0.02	mg/kg	<0.02	<0.02	<0.02
Chlordane (total)	0.04	mg/kg	<0.02	<0.02	<0.02
cis-Permethrin	0.02	mg/kg	<0.02	<0.02	<0.02
Dieldrin	0.02	mg/kg	<0.02	<0.02	<0.02
Endosulfan I	0.02	mg/kg	<0.02	<0.02	<0.02
Endosulfan II	0.02	mg/kg	<0.02	<0.02	<0.02
Endosulfan Sulfate	0.02	mg/kg	<0.02	<0.02	<0.02
Endrin	0.02	mg/kg	<0.02	<0.02	<0.02
Endrin Aldehyde	0.02	mg/kg	<0.02	<0.02	<0.02
Endrin ketone	0.02	mg/kg	<0.02	<0.02	<0.02
Gamma-Chlordane	0.02	mg/kg	<0.02	<0.02	<0.02
HCH, delta-	0.02	mg/kg	<0.02	<0.02	<0.02
Heptachlor	0.02	mg/kg	<0.02	<0.02	<0.02
Heptachlor Epoxide	0.02	mg/kg	<0.02	<0.02	<0.02
Hexachlorobenzene	0.02	mg/kg	<0.02	<0.02	<0.02
Lindane (g-BHC)	0.02	mg/kg	<0.02	<0.02	<0.02
Methoxychlor	0.02	mg/kg	<0.02	<0.02	<0.02
p,p'-DDD	0.02	mg/kg	<0.02	<0.02	<0.02
p,p'DDE	0.02	mg/kg	<0.02	<0.02	<0.02
p,p'-DDT	0.05	mg/kg	0.18	<0.05	<0.05
Procymidone	0.02	mg/kg	<0.02	<0.02	<0.02
Propanil	0.02	mg/kg	<0.02	<0.02	<0.02
Sum of DDT and isomers	0.05	mg/kg	0.18	<0.05	<0.05
Toxaphene	0.05	mg/kg	<0.05	<0.05	<0.05

SOIL TEST RESULTS

Environment Testing NZ

SAMPLE CODE:			816-2026-00092097	816-2026-00092099	816-2026-00092101	816-2026-00092103
Sample Name:			WA05 0.1	WA06 0.1	WA07 0.1	WA08 0.1
① NUE76 Ammoniacal Nitrogen	1	mg N/kg	4	9	179	10
① NUE77 Nitrate Nitrogen	1	mg N/kg	3	7	1	11
① NU227 Moisture Content	1	%	35	72	39	64
① NU388 Volume Weight	0.01	g/ml	0.85	0.66	0.96	0.63
ANIONS						
NUD11 Sulfate-Sulfur (SO ₄ -S)	1	mg/kg	26	36	5	148
TRACE ELEMENTS						
① NU070 Chloride	1	mg/kg	76	96	34	62
③ NW08E Cyanide in Soil	5	mg/kg	<5	<5	<5	<5
③ NW362 pH	0.1		4.4	4.2	4.6	4.7
② NW444 Phosphorus - Total	0.4	mg/kg	346	838	1120	770
② NW499 Arsenic - Total	0.05	mg/kg	0.94	1.41	1.98	1.35
② NW504 Cadmium - Total	0.01	mg/kg	0.58	0.40	0.32	0.26
② NW507 Chromium - Total	0.2	mg/kg	11.0	17.5	28.0	15.0
② NW509 Copper - Total	0.3	mg/kg	47.5	46.7	57.3	29.7
② NW510 Iron - Total	3	mg/kg	2480	5000	11200	6130
② NW511 Lead - Total	0.1	mg/kg	2.7	3.5	7.5	18.1
② NW514 Manganese - Total	0.1	mg/kg	26.3	41.4	55.5	60.8
② NW515 Mercury - Total	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
② NW517 Nickel - Total	0.2	mg/kg	3.1	4.9	8.1	5.0
② NW522 Sodium - Total	1	mg/kg	228	304	593	680
② NW528 Zinc - Total	1	mg/kg	189	107	122	68

Environment Testing NZ

SAMPLE CODE:			816-2026-00092105	816-2026-00092107	816-2026-00092109	816-2026-00092111
Sample Name:			WA09 0.1	WA10 0.1	WA11 0.1	WA12 0.1
Product Type:			Soil	Soil	Soil	Soil
Analysis Started on:			01/04/2026	01/04/2026	01/04/2026	01/04/2026
Analysis Ending Date:			17/04/2026	17/04/2026	17/04/2026	17/04/2026
Sampled Date & Time			30/03/2026 00:00	30/03/2026 00:00	30/03/2026 00:00	30/03/2026 00:00
Sampled By			Charlotte Lucas, Seung-Hwa Jung	Charlotte Lucas, Seung-Hwa Jung	Charlotte Lucas, Seung-Hwa Jung	Charlotte Lucas, Seung-Hwa Jung
Attempt to Chill was evident			Yes	Yes	Yes	Yes
Sample correctly preserved			Yes	Yes	Yes	Yes
Appropriate sample containers used			Yes	Yes	Yes	Yes
LOQ	Unit					
ORGANICS						
②NW04T Organochlorine Pesticides						
2,3-Diuron	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
2,4'-DDT	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
2,4'-DDD	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
2,4'-DDE	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
a-BHC	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
a-chlordane	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
Aldrin	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
b-BHC	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
Chlordane (total)	0.04	mg/kg	<0.02	<0.02	<0.02	<0.02
cis-Permethrin	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
Dieldrin	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
Endosulfan I	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
Endosulfan II	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
Endosulfan Sulfate	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
Endrin	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
Endrin Aldehyde	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
Endrin ketone	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
Gamma-Chlordane	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
HCH, delta-	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
Heptachlor	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
Heptachlor Epoxide	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
Hexachlorobenzene	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
Lindane (g-BHC)	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
Methoxychlor	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
p,p'-DDD	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
p,p'DDE	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
p,p'-DDT	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05
Procymidone	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
Propanil	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
Sum of DDT and isomers	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05
Toxaphene	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05

SOIL TEST RESULTS

Environment Testing NZ

SAMPLE CODE:			816-2026-00092105	816-2026-00092107	816-2026-00092109	816-2026-00092111
Sample Name:			WA09 0.1	WA10 0.1	WA11 0.1	WA12 0.1
① NUE76 Ammoniacal Nitrogen	1	mg N/kg	14	8	6	8
① NUE77 Nitrate Nitrogen	1	mg N/kg	5	3	4	3
① NU227 Moisture Content	1	%	77	133	77	126
① NU388 Volume Weight	0.01	g/ml	0.59	0.45	0.68	0.58
ANIONS						
NUD11 Sulfate-Sulfur (SO ₄ -S)	1	mg/kg	200	53	46	28
TRACE ELEMENTS						
① NU070 Chloride	1	mg/kg	61	77	64	37
③ NW08E Cyanide in Soil	5	mg/kg	<5	<5	<5	<5
③ NW362 pH	0.1		4.9	4.8	5.1	4.9
② NW444 Phosphorus - Total	0.4	mg/kg	615	1240	613	589
② NW499 Arsenic - Total	0.05	mg/kg	135	2.81	1.26	1.53
② NW504 Cadmium - Total	0.01	mg/kg	0.19	0.49	0.25	0.53
② NW507 Chromium - Total	0.2	mg/kg	175	51.0	14.3	18.6
② NW509 Copper - Total	0.3	mg/kg	104	54.3	35.1	55.9
② NW510 Iron - Total	3	mg/kg	4790	6380	7400	4500
② NW511 Lead - Total	0.1	mg/kg	29.9	5.8	3.8	3.3
② NW514 Manganese - Total	0.1	mg/kg	61.8	110	141	80.4
② NW515 Mercury - Total	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
② NW517 Nickel - Total	0.2	mg/kg	6.0	25.5	5.8	6.1
② NW522 Sodium - Total	1	mg/kg	397	573	422	528
② NW528 Zinc - Total	1	mg/kg	151	139	75	173

Environment Testing NZ

SAMPLE CODE:	816-2026-00092113	816-2026-00092115	816-2026-00092117	816-2026-00092119
Sample Name:	WA13 0.1	WA14 0.1	WA15 0.1	WA16 0.1
Product Type:	Soil	Soil	Soil	Soil
Analysis Started on:	01/04/2026	01/04/2026	01/04/2026	01/04/2026
Analysis Ending Date:	17/04/2026	17/04/2026	17/04/2026	17/04/2026
Sampled Date & Time	30/03/2026 00:00	30/03/2026 00:00	30/03/2026 00:00	30/03/2026 00:00
Sampled By	Charlotte Lucas, Seung-Hwa Jung	Charlotte Lucas, Seung-Hwa Jung	Charlotte Lucas, Seung-Hwa Jung	Charlotte Lucas, Seung-Hwa Jung
Attempt to Chill was evident	Yes	Yes	Yes	Yes
Sample correctly preserved	Yes	Yes	Yes	Yes
Appropriate sample containers used	Yes	Yes	Yes	Yes

LOQ	Unit				
ORGANICS					
②NW04T Organochlorine Pesticides					
2,3-Diuron	0.02	mg/kg	<0.02	<0.02	<0.02
2,4'-DDT	0.02	mg/kg	<0.02	<0.02	<0.02
2,4'-DDD	0.02	mg/kg	<0.02	<0.02	<0.02
2,4'-DDE	0.02	mg/kg	<0.02	<0.02	<0.02
a-BHC	0.02	mg/kg	<0.02	<0.02	<0.02
a-chlordane	0.02	mg/kg	<0.02	<0.02	<0.02
Aldrin	0.02	mg/kg	<0.02	<0.02	<0.02
b-BHC	0.02	mg/kg	<0.02	<0.02	<0.02
Chlordane (total)	0.04	mg/kg	<0.02	<0.02	<0.02
cis-Permethrin	0.02	mg/kg	<0.02	<0.02	<0.02
Dieldrin	0.02	mg/kg	<0.02	<0.02	<0.02
Endosulfan I	0.02	mg/kg	<0.02	<0.02	<0.02
Endosulfan II	0.02	mg/kg	<0.02	<0.02	<0.02
Endosulfan Sulfate	0.02	mg/kg	<0.02	<0.02	<0.02
Endrin	0.02	mg/kg	<0.02	<0.02	<0.02
Endrin Aldehyde	0.02	mg/kg	<0.02	<0.02	<0.02
Endrin ketone	0.02	mg/kg	<0.02	<0.02	<0.02
Gamma-Chlordane	0.02	mg/kg	<0.02	<0.02	<0.02
HCH, delta-	0.02	mg/kg	<0.02	<0.02	<0.02
Heptachlor	0.02	mg/kg	<0.02	<0.02	<0.02
Heptachlor Epoxide	0.02	mg/kg	<0.02	<0.02	<0.02
Hexachlorobenzene	0.02	mg/kg	<0.02	<0.02	<0.02
Lindane (g-BHC)	0.02	mg/kg	<0.02	<0.02	<0.02
Methoxychlor	0.02	mg/kg	<0.02	<0.02	<0.02
p,p'-DDD	0.02	mg/kg	<0.02	<0.02	<0.02
p,p'DDE	0.02	mg/kg	<0.02	<0.02	<0.02
p,p'-DDT	0.05	mg/kg	<0.05	<0.05	<0.05
Procymidone	0.02	mg/kg	<0.02	<0.02	<0.02
Propanil	0.02	mg/kg	<0.02	<0.02	<0.02
Sum of DDT and isomers	0.05	mg/kg	<0.05	<0.05	<0.05
Toxaphene	0.05	mg/kg	<0.05	<0.05	<0.05

SOIL TEST RESULTS

Environment Testing NZ

SAMPLE CODE:			816-2026-00092113	816-2026-00092115	816-2026-00092117	816-2026-00092119
Sample Name:			WA13 0.1	WA14 0.1	WA15 0.1	WA16 0.1
① NUE76 Ammoniacal Nitrogen	1	mg N/kg	4	3	242	297
① NUE77 Nitrate Nitrogen	1	mg N/kg	12	1	5	2
① NU227 Moisture Content	1	%	32	29	98	188
① NU388 Volume Weight	0.01	g/ml	0.99	0.99	0.77	0.78
ANIONS						
NUD11 Sulfate-Sulfur (SO ₄ -S)	1	mg/kg	22	12	84	123
TRACE ELEMENTS						
① NU070 Chloride	1	mg/kg	47	57	40	61
③ NW08E Cyanide in Soil	5	mg/kg	<5	<5	<5	<5
③ NW362 pH	0.1		5.1	5.9	9.3	8.1
② NW444 Phosphorus - Total	0.4	mg/kg	377	190	681	518
② NW499 Arsenic - Total	0.05	mg/kg	2.20	1.88	1.30	1.26
② NW504 Cadmium - Total	0.01	mg/kg	0.15	0.04	0.23	0.28
② NW507 Chromium - Total	0.2	mg/kg	15.2	20.1	19.1	11.2
② NW509 Copper - Total	0.3	mg/kg	39.3	40.8	52.3	29.0
② NW510 Iron - Total	3	mg/kg	18200	23900	24400	11500
② NW511 Lead - Total	0.1	mg/kg	6.3	5.7	5.6	5.1
② NW514 Manganese - Total	0.1	mg/kg	228	214	127	121
② NW515 Mercury - Total	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
② NW517 Nickel - Total	0.2	mg/kg	9.3	10.4	12.2	6.8
② NW522 Sodium - Total	1	mg/kg	727	621	4280	1390
② NW528 Zinc - Total	1	mg/kg	100	34	116	105

Environment Testing NZ

SAMPLE CODE:	816-2026-00092120	816-2026-00092122	816-2026-00092123	816-2026-00092124
Sample Name:	WA17 0.1	WA18 0.1	WA18 1.5	WA19 0.1
Product Type:	Soil	Soil	Soil	Soil
Analysis Started on:	01/04/2026	01/04/2026	01/04/2026	01/04/2026
Analysis Ending Date:	17/04/2026	17/04/2026	17/04/2026	17/04/2026
Sampled Date & Time	30/03/2026 00:00	30/03/2026 00:00	30/03/2026 00:00	30/03/2026 00:00
Sampled By	Charlotte Lucas, Seung-Hwa Jung	Charlotte Lucas, Seung-Hwa Jung	Charlotte Lucas, Seung-Hwa Jung	Charlotte Lucas, Seung-Hwa Jung
Attempt to Chill was evident	Yes	Yes	Yes	Yes
Sample correctly preserved	Yes	Yes	Yes	Yes
Appropriate sample containers used	Yes	Yes	Yes	Yes

LOQ	Unit				
ORGANICS					
②NW04T Organochlorine Pesticides					
2,3-Diuron	0.02	mg/kg	<0.02	<0.02	<0.02
2,4'-DDT	0.02	mg/kg	<0.02	<0.02	<0.02
2,4'-DDD	0.02	mg/kg	<0.02	<0.02	<0.02
2,4'-DDE	0.02	mg/kg	<0.02	<0.02	<0.02
a-BHC	0.02	mg/kg	<0.02	<0.02	<0.02
a-chlordane	0.02	mg/kg	<0.02	<0.02	<0.02
Aldrin	0.02	mg/kg	<0.02	<0.02	<0.02
b-BHC	0.02	mg/kg	<0.02	<0.02	<0.02
Chlordane (total)	0.04	mg/kg	<0.02	<0.02	<0.02
cis-Permethrin	0.02	mg/kg	<0.02	<0.02	<0.02
Dieldrin	0.02	mg/kg	<0.02	<0.02	<0.02
Endosulfan I	0.02	mg/kg	<0.02	<0.02	<0.02
Endosulfan II	0.02	mg/kg	<0.02	<0.02	<0.02
Endosulfan Sulfate	0.02	mg/kg	<0.02	<0.02	<0.02
Endrin	0.02	mg/kg	<0.02	<0.02	<0.02
Endrin Aldehyde	0.02	mg/kg	<0.02	<0.02	<0.02
Endrin ketone	0.02	mg/kg	<0.02	<0.02	<0.02
Gamma-Chlordane	0.02	mg/kg	<0.02	<0.02	<0.02
HCH, delta-	0.02	mg/kg	<0.02	<0.02	<0.02
Heptachlor	0.02	mg/kg	<0.02	<0.02	<0.02
Heptachlor Epoxide	0.02	mg/kg	<0.02	<0.02	<0.02
Hexachlorobenzene	0.02	mg/kg	<0.02	<0.02	<0.02
Lindane (g-BHC)	0.02	mg/kg	<0.02	<0.02	<0.02
Methoxychlor	0.02	mg/kg	<0.02	<0.02	<0.02
p,p'-DDD	0.02	mg/kg	<0.02	<0.02	<0.02
p,p'DDE	0.02	mg/kg	<0.02	<0.02	<0.02
p,p'-DDT	0.05	mg/kg	<0.05	<0.05	<0.05
Procymidone	0.02	mg/kg	<0.02	<0.02	<0.02
Propanil	0.02	mg/kg	<0.02	<0.02	<0.02
Sum of DDT and isomers	0.05	mg/kg	<0.05	<0.05	<0.05
Toxaphene	0.05	mg/kg	<0.05	<0.05	<0.05

SOIL TEST RESULTS

Environment Testing NZ

SAMPLE CODE:			816-2026-00092120	816-2026-00092122	816-2026-00092123	816-2026-00092124
Sample Name:			WA17 0.1	WA18 0.1	WA18 1.5	WA19 0.1
① NUE76 Ammoniacal Nitrogen	1	mg N/kg	248	375	351	594
① NUE77 Nitrate Nitrogen	1	mg N/kg	8	9	3	14
① NU227 Moisture Content	1	%	745	1380	164	1050
① NU388 Volume Weight	0.01	g/ml	-	-	0.50	-
ANIONS						
NUD11 Sulfate-Sulfur (SO ₄ -S)	1	mg/kg	-	-	126	-
TRACE ELEMENTS						
① NU070 Chloride	1	mg/kg	-	-	19	-
③ NW08E Cyanide in Soil	5	mg/kg	<5	<5	<5	<5
③ NW362 pH	0.1		7.6	7.5	7.1	7.4
② NW444 Phosphorus - Total	0.4	mg/kg	958	1310	409	982
② NW499 Arsenic - Total	0.05	mg/kg	1.22	1.51	6.45	1.41
② NW504 Cadmium - Total	0.01	mg/kg	1.38	1.46	4.12	1.51
② NW507 Chromium - Total	0.2	mg/kg	17.3	18.4	112	19.4
② NW509 Copper - Total	0.3	mg/kg	71.2	81.2	194	76.6
② NW510 Iron - Total	3	mg/kg	1720	5370	5300	1970
② NW511 Lead - Total	0.1	mg/kg	3.4	4.2	33.9	3.9
② NW514 Manganese - Total	0.1	mg/kg	44.4	98.0	95.2	51.7
② NW515 Mercury - Total	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
② NW517 Nickel - Total	0.2	mg/kg	6.8	9.6	38.2	8.6
② NW522 Sodium - Total	1	mg/kg	2430	4920	2380	4180
② NW528 Zinc - Total	1	mg/kg	416	418	1340	470

Environment Testing NZ

SAMPLE CODE:	816-2026-00092126	816-2026-00092128	816-2026-00092129	816-2026-00092130
Sample Name:	WA20 0.1	WA20 1.5	WA66	WA67
Product Type:	Soil	Soil	Soil	Soil
Analysis Started on:	01/04/2026	01/04/2026	01/04/2026	01/04/2026
Analysis Ending Date:	17/04/2026	17/04/2026	04/04/2026	04/04/2026
Sampled Date & Time	30/03/2026 00:00	30/03/2026 00:00	30/03/2026 00:00	30/03/2026 00:00
Sampled By	Charlotte Lucas, Seung-Hwa Jung	Charlotte Lucas, Seung-Hwa Jung	Charlotte Lucas, Seung-Hwa Jung	Charlotte Lucas, Seung-Hwa Jung
Attempt to Chill was evident	Yes	Yes	Yes	Yes
Sample correctly preserved	Yes	Yes	Yes	Yes
Appropriate sample containers used	Yes	Yes	Yes	Yes

	LOQ	Unit				
ORGANICS						
②NW04T Organochlorine Pesticides						
2,3-Diuron	0.02	mg/kg	<0.02	<0.02	-	-
2,4'-DDT	0.02	mg/kg	<0.02	<0.02	-	-
2,4'-DDD	0.02	mg/kg	<0.02	<0.02	-	-
2,4'-DDE	0.02	mg/kg	<0.02	<0.02	-	-
a-BHC	0.02	mg/kg	<0.02	<0.02	-	-
a-chlordane	0.02	mg/kg	<0.02	<0.02	-	-
Aldrin	0.02	mg/kg	<0.02	<0.02	-	-
b-BHC	0.02	mg/kg	<0.02	<0.02	-	-
Chlordane (total)	0.04	mg/kg	<0.02	<0.02	-	-
cis-Permethrin	0.02	mg/kg	<0.02	<0.02	-	-
Dieldrin	0.02	mg/kg	<0.02	<0.02	-	-
Endosulfan I	0.02	mg/kg	<0.02	<0.02	-	-
Endosulfan II	0.02	mg/kg	<0.02	<0.02	-	-
Endosulfan Sulfate	0.02	mg/kg	<0.02	<0.02	-	-
Endrin	0.02	mg/kg	<0.02	<0.02	-	-
Endrin Aldehyde	0.02	mg/kg	<0.02	<0.02	-	-
Endrin ketone	0.02	mg/kg	<0.02	<0.02	-	-
Gamma-Chlordane	0.02	mg/kg	<0.02	<0.02	-	-
HCH, delta-	0.02	mg/kg	<0.02	<0.02	-	-
Heptachlor	0.02	mg/kg	<0.02	<0.02	-	-
Heptachlor Epoxide	0.02	mg/kg	<0.02	<0.02	-	-
Hexachlorobenzene	0.02	mg/kg	<0.02	<0.02	-	-
Lindane (g-BHC)	0.02	mg/kg	<0.02	<0.02	-	-
Methoxychlor	0.02	mg/kg	<0.02	<0.02	-	-
p,p'-DDD	0.02	mg/kg	<0.02	<0.02	-	-
p,p'DDE	0.02	mg/kg	<0.02	<0.02	-	-
p,p'-DDT	0.05	mg/kg	<0.05	<0.05	-	-
Procymidone	0.02	mg/kg	<0.02	<0.02	-	-
Propanil	0.02	mg/kg	<0.02	<0.02	-	-
Sum of DDT and isomers	0.05	mg/kg	<0.05	<0.05	-	-
Toxaphene	0.05	mg/kg	<0.05	<0.05	-	-

SOIL TEST RESULTS

Environment Testing NZ

SAMPLE CODE:			816-2026-00092126	816-2026-00092128	816-2026-00092129	816-2026-00092130
Sample Name:			WA20 0.1	WA20 1.5	WA66	WA67
① NUE76 Ammoniacal Nitrogen	1	mg N/kg	396	278	-	-
① NUE77 Nitrate Nitrogen	1	mg N/kg	7	1	-	-
① NU227 Moisture Content	1	%	1020	123	-	-
① NU388 Volume Weight	0.01	g/ml	-	0.64	-	-
ANIONS						
NUD11 Sulfate-Sulfur (SO ₄ -S)	1	mg/kg	-	148	-	-
TRACE ELEMENTS						
① NU070 Chloride	1	mg/kg	-	136	-	-
③ NW08E Cyanide in Soil	5	mg/kg	<5	<5	-	-
③ NW362 pH	0.1		7.8	8.9	-	-
② NW444 Phosphorus - Total	0.4	mg/kg	1210	1620	-	-
② NW499 Arsenic - Total	0.05	mg/kg	1.44	2.87	1.46	1.44
② NW504 Cadmium - Total	0.01	mg/kg	1.66	0.10	0.34	0.03
② NW507 Chromium - Total	0.2	mg/kg	61.6	31.1	18.7	15.1
② NW509 Copper - Total	0.3	mg/kg	84.3	64.6	31.5	29.7
② NW510 Iron - Total	3	mg/kg	1910	32500	-	-
② NW511 Lead - Total	0.1	mg/kg	3.8	11.5	16.3	4.4
② NW514 Manganese - Total	0.1	mg/kg	57.4	252	-	-
② NW515 Mercury - Total	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
② NW517 Nickel - Total	0.2	mg/kg	32.4	17.1	5.8	7.4
② NW522 Sodium - Total	1	mg/kg	4920	4080	-	-
② NW528 Zinc - Total	1	mg/kg	482	61	80	24

Environment Testing NZ

HOLDING TIMES

816-2026-00092089 WA01 0.1

Test	Sampling Date	Holding End	Effective Holding (days)	Requirement (days)	Compliance
NW499 Arsenic - Total	30/03/2026	07/04/2026	8	180	Yes
NW504 Cadmium - Total	30/03/2026	07/04/2026	8	180	Yes
NW507 Chromium - Total	30/03/2026	07/04/2026	8	180	Yes
NW509 Copper - Total	30/03/2026	07/04/2026	8	180	Yes
NW510 Iron - Total	30/03/2026	07/04/2026	8	180	Yes
NW511 Lead - Total	30/03/2026	07/04/2026	8	180	Yes
NW514 Manganese - Total	30/03/2026	07/04/2026	8	180	Yes
NW515 Mercury - Total	30/03/2026	07/04/2026	8	28	Yes
NW517 Nickel - Total	30/03/2026	07/04/2026	8	180	Yes
NW04T Organochlorine Pesticides	30/03/2026	04/04/2026	5	14	Yes
NWEBH PAH BaP TEQ	30/03/2026	04/04/2026	5	14	Yes
NW247 PCB in Soil	30/03/2026	07/04/2026	8	14	Yes
NW362 pH	30/03/2026	05/04/2026	6	7	Yes
NW444 Phosphorus - Total	30/03/2026	08/04/2026	9	180	Yes
NW522 Sodium - Total	30/03/2026	07/04/2026	8	180	Yes
NW528 Zinc - Total	30/03/2026	07/04/2026	8	180	Yes

816-2026-00092091 WA02 0.1

Test	Sampling Date	Holding End	Effective Holding (days)	Requirement (days)	Compliance
NW499 Arsenic - Total	30/03/2026	07/04/2026	8	180	Yes
NW504 Cadmium - Total	30/03/2026	07/04/2026	8	180	Yes
NW507 Chromium - Total	30/03/2026	07/04/2026	8	180	Yes
NW509 Copper - Total	30/03/2026	07/04/2026	8	180	Yes
NW510 Iron - Total	30/03/2026	07/04/2026	8	180	Yes
NW511 Lead - Total	30/03/2026	07/04/2026	8	180	Yes
NW514 Manganese - Total	30/03/2026	07/04/2026	8	180	Yes
NW515 Mercury - Total	30/03/2026	07/04/2026	8	28	Yes
NW517 Nickel - Total	30/03/2026	07/04/2026	8	180	Yes
NW04T Organochlorine Pesticides	30/03/2026	07/04/2026	8	14	Yes
NW247 PCB in Soil	30/03/2026	07/04/2026	8	14	Yes
NW362 pH	30/03/2026	05/04/2026	6	7	Yes
NW444 Phosphorus - Total	30/03/2026	08/04/2026	9	180	Yes
NW522 Sodium - Total	30/03/2026	07/04/2026	8	180	Yes
NW528 Zinc - Total	30/03/2026	07/04/2026	8	180	Yes

816-2026-00092093 WA03 0.1

Test	Sampling Date	Holding End	Effective Holding (days)	Requirement (days)	Compliance
NW499 Arsenic - Total	30/03/2026	07/04/2026	8	180	Yes
NW504 Cadmium - Total	30/03/2026	07/04/2026	8	180	Yes
NW507 Chromium - Total	30/03/2026	07/04/2026	8	180	Yes
NW509 Copper - Total	30/03/2026	07/04/2026	8	180	Yes
NW510 Iron - Total	30/03/2026	07/04/2026	8	180	Yes
NW511 Lead - Total	30/03/2026	07/04/2026	8	180	Yes
NW514 Manganese - Total	30/03/2026	07/04/2026	8	180	Yes
NW515 Mercury - Total	30/03/2026	07/04/2026	8	28	Yes
NW517 Nickel - Total	30/03/2026	07/04/2026	8	180	Yes
NW04T Organochlorine Pesticides	30/03/2026	04/04/2026	5	14	Yes
NW247 PCB in Soil	30/03/2026	07/04/2026	8	14	Yes
NW362 pH	30/03/2026	05/04/2026	6	7	Yes
NW444 Phosphorus - Total	30/03/2026	08/04/2026	9	180	Yes
NW522 Sodium - Total	30/03/2026	07/04/2026	8	180	Yes
NW528 Zinc - Total	30/03/2026	07/04/2026	8	180	Yes

Environment Testing NZ

816-2026-00092095 WA04 0.1

Test	Sampling Date	Holding End	Effective Holding (days)	Requirement (days)	Compliance
NW499 Arsenic - Total	30/03/2026	07/04/2026	8	180	Yes
NW504 Cadmium - Total	30/03/2026	07/04/2026	8	180	Yes
NW507 Chromium - Total	30/03/2026	07/04/2026	8	180	Yes
NW509 Copper - Total	30/03/2026	07/04/2026	8	180	Yes
NW510 Iron - Total	30/03/2026	07/04/2026	8	180	Yes
NW511 Lead - Total	30/03/2026	07/04/2026	8	180	Yes
NW514 Manganese - Total	30/03/2026	07/04/2026	8	180	Yes
NW515 Mercury - Total	30/03/2026	07/04/2026	8	28	Yes
NW517 Nickel - Total	30/03/2026	07/04/2026	8	180	Yes
NW04T Organochlorine Pesticides	30/03/2026	04/04/2026	5	14	Yes
NWEBH PAH BaP TEQ	30/03/2026	04/04/2026	5	14	Yes
NW247 PCB in Soil	30/03/2026	07/04/2026	8	14	Yes
NW362 pH	30/03/2026	05/04/2026	6	7	Yes
NW444 Phosphorus - Total	30/03/2026	08/04/2026	9	180	Yes
NW522 Sodium - Total	30/03/2026	07/04/2026	8	180	Yes
NW528 Zinc - Total	30/03/2026	07/04/2026	8	180	Yes

816-2026-00092097 WA05 0.1

Test	Sampling Date	Holding End	Effective Holding (days)	Requirement (days)	Compliance
NW499 Arsenic - Total	30/03/2026	07/04/2026	8	180	Yes
NW504 Cadmium - Total	30/03/2026	07/04/2026	8	180	Yes
NW507 Chromium - Total	30/03/2026	07/04/2026	8	180	Yes
NW509 Copper - Total	30/03/2026	07/04/2026	8	180	Yes
NW510 Iron - Total	30/03/2026	07/04/2026	8	180	Yes
NW511 Lead - Total	30/03/2026	07/04/2026	8	180	Yes
NW514 Manganese - Total	30/03/2026	07/04/2026	8	180	Yes
NW515 Mercury - Total	30/03/2026	07/04/2026	8	28	Yes
NW517 Nickel - Total	30/03/2026	07/04/2026	8	180	Yes
NW04T Organochlorine Pesticides	30/03/2026	04/04/2026	5	14	Yes
NW362 pH	30/03/2026	05/04/2026	6	7	Yes
NW444 Phosphorus - Total	30/03/2026	08/04/2026	9	180	Yes
NW522 Sodium - Total	30/03/2026	07/04/2026	8	180	Yes
NW528 Zinc - Total	30/03/2026	07/04/2026	8	180	Yes

816-2026-00092099 WA06 0.1

Test	Sampling Date	Holding End	Effective Holding (days)	Requirement (days)	Compliance
NW499 Arsenic - Total	30/03/2026	07/04/2026	8	180	Yes
NW504 Cadmium - Total	30/03/2026	07/04/2026	8	180	Yes
NW507 Chromium - Total	30/03/2026	07/04/2026	8	180	Yes
NW509 Copper - Total	30/03/2026	07/04/2026	8	180	Yes
NW510 Iron - Total	30/03/2026	07/04/2026	8	180	Yes
NW511 Lead - Total	30/03/2026	07/04/2026	8	180	Yes
NW514 Manganese - Total	30/03/2026	07/04/2026	8	180	Yes
NW515 Mercury - Total	30/03/2026	07/04/2026	8	28	Yes
NW517 Nickel - Total	30/03/2026	07/04/2026	8	180	Yes
NW04T Organochlorine Pesticides	30/03/2026	07/04/2026	8	14	Yes
NW362 pH	30/03/2026	05/04/2026	6	7	Yes
NW444 Phosphorus - Total	30/03/2026	08/04/2026	9	180	Yes
NW522 Sodium - Total	30/03/2026	07/04/2026	8	180	Yes
NW528 Zinc - Total	30/03/2026	07/04/2026	8	180	Yes

816-2026-00092101 WA07 0.1

Test	Sampling Date	Holding End	Effective Holding (days)	Requirement (days)	Compliance
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Environment Testing NZ

NW499	Arsenic - Total	30/03/2026	07/04/2026	8	180	Yes
NW504	Cadmium - Total	30/03/2026	07/04/2026	8	180	Yes
NW507	Chromium - Total	30/03/2026	07/04/2026	8	180	Yes
NW509	Copper - Total	30/03/2026	07/04/2026	8	180	Yes
NW510	Iron - Total	30/03/2026	07/04/2026	8	180	Yes
NW511	Lead - Total	30/03/2026	07/04/2026	8	180	Yes
NW514	Manganese - Total	30/03/2026	07/04/2026	8	180	Yes
NW515	Mercury - Total	30/03/2026	07/04/2026	8	28	Yes
NW517	Nickel - Total	30/03/2026	07/04/2026	8	180	Yes
NW04T	Organochlorine Pesticides	30/03/2026	04/04/2026	5	14	Yes
NW362	pH	30/03/2026	05/04/2026	6	7	Yes
NW444	Phosphorus - Total	30/03/2026	08/04/2026	9	180	Yes
NW522	Sodium - Total	30/03/2026	07/04/2026	8	180	Yes
NW528	Zinc - Total	30/03/2026	07/04/2026	8	180	Yes

816-2026-00092103 WA08 0.1

Test		Sampling Date	Holding End	Effective Holding (days)	Requirement (days)	Compliance
NW499	Arsenic - Total	30/03/2026	07/04/2026	8	180	Yes
NW504	Cadmium - Total	30/03/2026	07/04/2026	8	180	Yes
NW507	Chromium - Total	30/03/2026	07/04/2026	8	180	Yes
NW509	Copper - Total	30/03/2026	07/04/2026	8	180	Yes
NW510	Iron - Total	30/03/2026	07/04/2026	8	180	Yes
NW511	Lead - Total	30/03/2026	07/04/2026	8	180	Yes
NW514	Manganese - Total	30/03/2026	07/04/2026	8	180	Yes
NW515	Mercury - Total	30/03/2026	07/04/2026	8	28	Yes
NW517	Nickel - Total	30/03/2026	07/04/2026	8	180	Yes
NW04T	Organochlorine Pesticides	30/03/2026	04/04/2026	5	14	Yes
NW362	pH	30/03/2026	05/04/2026	6	7	Yes
NW444	Phosphorus - Total	30/03/2026	08/04/2026	9	180	Yes
NW522	Sodium - Total	30/03/2026	07/04/2026	8	180	Yes
NW528	Zinc - Total	30/03/2026	07/04/2026	8	180	Yes

816-2026-00092105 WA09 0.1

Test		Sampling Date	Holding End	Effective Holding (days)	Requirement (days)	Compliance
NW499	Arsenic - Total	30/03/2026	07/04/2026	8	180	Yes
NW504	Cadmium - Total	30/03/2026	07/04/2026	8	180	Yes
NW507	Chromium - Total	30/03/2026	07/04/2026	8	180	Yes
NW509	Copper - Total	30/03/2026	07/04/2026	8	180	Yes
NW510	Iron - Total	30/03/2026	07/04/2026	8	180	Yes
NW511	Lead - Total	30/03/2026	07/04/2026	8	180	Yes
NW514	Manganese - Total	30/03/2026	07/04/2026	8	180	Yes
NW515	Mercury - Total	30/03/2026	07/04/2026	8	28	Yes
NW517	Nickel - Total	30/03/2026	07/04/2026	8	180	Yes
NW04T	Organochlorine Pesticides	30/03/2026	04/04/2026	5	14	Yes
NW362	pH	30/03/2026	05/04/2026	6	7	Yes
NW444	Phosphorus - Total	30/03/2026	12/04/2026	13	180	Yes
NW522	Sodium - Total	30/03/2026	04/04/2026	5	180	Yes
NW528	Zinc - Total	30/03/2026	07/04/2026	8	180	Yes

816-2026-00092107 WA10 0.1

Test		Sampling Date	Holding End	Effective Holding (days)	Requirement (days)	Compliance
NW499	Arsenic - Total	30/03/2026	07/04/2026	8	180	Yes
NW504	Cadmium - Total	30/03/2026	07/04/2026	8	180	Yes
NW507	Chromium - Total	30/03/2026	07/04/2026	8	180	Yes
NW509	Copper - Total	30/03/2026	07/04/2026	8	180	Yes
NW510	Iron - Total	30/03/2026	07/04/2026	8	180	Yes

Environment Testing NZ

NW511	Lead - Total	30/03/2026	07/04/2026	8	180	Yes
NW514	Manganese - Total	30/03/2026	07/04/2026	8	180	Yes
NW515	Mercury - Total	30/03/2026	07/04/2026	8	28	Yes
NW517	Nickel - Total	30/03/2026	07/04/2026	8	180	Yes
NW04T	Organochlorine Pesticides	30/03/2026	04/04/2026	5	14	Yes
NW362	pH	30/03/2026	05/04/2026	6	7	Yes
NW444	Phosphorus - Total	30/03/2026	12/04/2026	13	180	Yes
NW522	Sodium - Total	30/03/2026	04/04/2026	5	180	Yes
NW528	Zinc - Total	30/03/2026	07/04/2026	8	180	Yes

816-2026-00092109 WA11 0.1

Test		Sampling Date	Holding End	Effective Holding (days)	Requirement (days)	Compliance
NW499	Arsenic - Total	30/03/2026	07/04/2026	8	180	Yes
NW504	Cadmium - Total	30/03/2026	07/04/2026	8	180	Yes
NW507	Chromium - Total	30/03/2026	07/04/2026	8	180	Yes
NW509	Copper - Total	30/03/2026	07/04/2026	8	180	Yes
NW510	Iron - Total	30/03/2026	07/04/2026	8	180	Yes
NW511	Lead - Total	30/03/2026	07/04/2026	8	180	Yes
NW514	Manganese - Total	30/03/2026	04/04/2026	5	180	Yes
NW515	Mercury - Total	30/03/2026	07/04/2026	8	28	Yes
NW517	Nickel - Total	30/03/2026	07/04/2026	8	180	Yes
NW04T	Organochlorine Pesticides	30/03/2026	07/04/2026	8	14	Yes
NW362	pH	30/03/2026	05/04/2026	6	7	Yes
NW444	Phosphorus - Total	30/03/2026	12/04/2026	13	180	Yes
NW522	Sodium - Total	30/03/2026	04/04/2026	5	180	Yes
NW528	Zinc - Total	30/03/2026	07/04/2026	8	180	Yes

816-2026-00092111 WA12 0.1

Test		Sampling Date	Holding End	Effective Holding (days)	Requirement (days)	Compliance
NW499	Arsenic - Total	30/03/2026	07/04/2026	8	180	Yes
NW504	Cadmium - Total	30/03/2026	07/04/2026	8	180	Yes
NW507	Chromium - Total	30/03/2026	04/04/2026	5	180	Yes
NW509	Copper - Total	30/03/2026	07/04/2026	8	180	Yes
NW510	Iron - Total	30/03/2026	07/04/2026	8	180	Yes
NW511	Lead - Total	30/03/2026	07/04/2026	8	180	Yes
NW514	Manganese - Total	30/03/2026	04/04/2026	5	180	Yes
NW515	Mercury - Total	30/03/2026	07/04/2026	8	28	Yes
NW517	Nickel - Total	30/03/2026	07/04/2026	8	180	Yes
NW04T	Organochlorine Pesticides	30/03/2026	07/04/2026	8	14	Yes
NW362	pH	30/03/2026	05/04/2026	6	7	Yes
NW444	Phosphorus - Total	30/03/2026	12/04/2026	13	180	Yes
NW522	Sodium - Total	30/03/2026	04/04/2026	5	180	Yes
NW528	Zinc - Total	30/03/2026	07/04/2026	8	180	Yes

816-2026-00092113 WA13 0.1

Test		Sampling Date	Holding End	Effective Holding (days)	Requirement (days)	Compliance
NW499	Arsenic - Total	30/03/2026	07/04/2026	8	180	Yes
NW504	Cadmium - Total	30/03/2026	07/04/2026	8	180	Yes
NW507	Chromium - Total	30/03/2026	04/04/2026	5	180	Yes
NW509	Copper - Total	30/03/2026	07/04/2026	8	180	Yes
NW510	Iron - Total	30/03/2026	09/04/2026	10	180	Yes
NW511	Lead - Total	30/03/2026	07/04/2026	8	180	Yes
NW514	Manganese - Total	30/03/2026	07/04/2026	8	180	Yes
NW515	Mercury - Total	30/03/2026	07/04/2026	8	28	Yes
NW517	Nickel - Total	30/03/2026	07/04/2026	8	180	Yes
NW04T	Organochlorine Pesticides	30/03/2026	07/04/2026	8	14	Yes

Environment Testing NZ

NW362	pH	30/03/2026	05/04/2026	6	7	Yes
NW444	Phosphorus - Total	30/03/2026	09/04/2026	10	180	Yes
NW522	Sodium - Total	30/03/2026	04/04/2026	5	180	Yes
NW528	Zinc - Total	30/03/2026	07/04/2026	8	180	Yes

816-2026-00092115 WA14 0.1

Test		Sampling Date	Holding End	Effective Holding (days)	Requirement (days)	Compliance
NW499	Arsenic - Total	30/03/2026	07/04/2026	8	180	Yes
NW504	Cadmium - Total	30/03/2026	07/04/2026	8	180	Yes
NW507	Chromium - Total	30/03/2026	07/04/2026	8	180	Yes
NW509	Copper - Total	30/03/2026	07/04/2026	8	180	Yes
NW510	Iron - Total	30/03/2026	09/04/2026	10	180	Yes
NW511	Lead - Total	30/03/2026	07/04/2026	8	180	Yes
NW514	Manganese - Total	30/03/2026	07/04/2026	8	180	Yes
NW515	Mercury - Total	30/03/2026	07/04/2026	8	28	Yes
NW517	Nickel - Total	30/03/2026	07/04/2026	8	180	Yes
NW04T	Organochlorine Pesticides	30/03/2026	04/04/2026	5	14	Yes
NW362	pH	30/03/2026	05/04/2026	6	7	Yes
NW444	Phosphorus - Total	30/03/2026	09/04/2026	10	180	Yes
NW522	Sodium - Total	30/03/2026	07/04/2026	8	180	Yes
NW528	Zinc - Total	30/03/2026	07/04/2026	8	180	Yes

816-2026-00092117 WA15 0.1

Test		Sampling Date	Holding End	Effective Holding (days)	Requirement (days)	Compliance
NW499	Arsenic - Total	30/03/2026	07/04/2026	8	180	Yes
NW504	Cadmium - Total	30/03/2026	07/04/2026	8	180	Yes
NW507	Chromium - Total	30/03/2026	04/04/2026	5	180	Yes
NW509	Copper - Total	30/03/2026	07/04/2026	8	180	Yes
NW510	Iron - Total	30/03/2026	09/04/2026	10	180	Yes
NW511	Lead - Total	30/03/2026	07/04/2026	8	180	Yes
NW514	Manganese - Total	30/03/2026	04/04/2026	5	180	Yes
NW515	Mercury - Total	30/03/2026	07/04/2026	8	28	Yes
NW517	Nickel - Total	30/03/2026	07/04/2026	8	180	Yes
NW04T	Organochlorine Pesticides	30/03/2026	07/04/2026	8	14	Yes
NW362	pH	30/03/2026	05/04/2026	6	7	Yes
NW444	Phosphorus - Total	30/03/2026	09/04/2026	10	180	Yes
NW522	Sodium - Total	30/03/2026	04/04/2026	5	180	Yes
NW528	Zinc - Total	30/03/2026	07/04/2026	8	180	Yes

816-2026-00092119 WA16 0.1

Test		Sampling Date	Holding End	Effective Holding (days)	Requirement (days)	Compliance
NW499	Arsenic - Total	30/03/2026	04/04/2026	5	180	Yes
NW504	Cadmium - Total	30/03/2026	04/04/2026	5	180	Yes
NW507	Chromium - Total	30/03/2026	04/04/2026	5	180	Yes
NW509	Copper - Total	30/03/2026	04/04/2026	5	180	Yes
NW510	Iron - Total	30/03/2026	04/04/2026	5	180	Yes
NW511	Lead - Total	30/03/2026	04/04/2026	5	180	Yes
NW514	Manganese - Total	30/03/2026	04/04/2026	5	180	Yes
NW515	Mercury - Total	30/03/2026	04/04/2026	5	28	Yes
NW517	Nickel - Total	30/03/2026	04/04/2026	5	180	Yes
NW04T	Organochlorine Pesticides	30/03/2026	07/04/2026	8	14	Yes
NW362	pH	30/03/2026	05/04/2026	6	7	Yes
NW444	Phosphorus - Total	30/03/2026	12/04/2026	13	180	Yes
NW522	Sodium - Total	30/03/2026	04/04/2026	5	180	Yes
NW528	Zinc - Total	30/03/2026	04/04/2026	5	180	Yes

Environment Testing NZ

816-2026-00092120 WA17 0.1

Test	Sampling Date	Holding End	Effective Holding (days)	Requirement (days)	Compliance
NW499 Arsenic - Total	30/03/2026	04/04/2026	5	180	Yes
NW504 Cadmium - Total	30/03/2026	04/04/2026	5	180	Yes
NW507 Chromium - Total	30/03/2026	04/04/2026	5	180	Yes
NW509 Copper - Total	30/03/2026	04/04/2026	5	180	Yes
NW510 Iron - Total	30/03/2026	04/04/2026	5	180	Yes
NW511 Lead - Total	30/03/2026	04/04/2026	5	180	Yes
NW514 Manganese - Total	30/03/2026	04/04/2026	5	180	Yes
NW515 Mercury - Total	30/03/2026	04/04/2026	5	28	Yes
NW517 Nickel - Total	30/03/2026	04/04/2026	5	180	Yes
NW04T Organochlorine Pesticides	30/03/2026	07/04/2026	8	14	Yes
NW362 pH	30/03/2026	05/04/2026	6	7	Yes
NW444 Phosphorus - Total	30/03/2026	12/04/2026	13	180	Yes
NW522 Sodium - Total	30/03/2026	04/04/2026	5	180	Yes
NW528 Zinc - Total	30/03/2026	04/04/2026	5	180	Yes

816-2026-00092122 WA18 0.1

Test	Sampling Date	Holding End	Effective Holding (days)	Requirement (days)	Compliance
NW499 Arsenic - Total	30/03/2026	04/04/2026	5	180	Yes
NW504 Cadmium - Total	30/03/2026	04/04/2026	5	180	Yes
NW507 Chromium - Total	30/03/2026	04/04/2026	5	180	Yes
NW509 Copper - Total	30/03/2026	04/04/2026	5	180	Yes
NW510 Iron - Total	30/03/2026	04/04/2026	5	180	Yes
NW511 Lead - Total	30/03/2026	04/04/2026	5	180	Yes
NW514 Manganese - Total	30/03/2026	04/04/2026	5	180	Yes
NW515 Mercury - Total	30/03/2026	04/04/2026	5	28	Yes
NW517 Nickel - Total	30/03/2026	04/04/2026	5	180	Yes
NW04T Organochlorine Pesticides	30/03/2026	07/04/2026	8	14	Yes
NW362 pH	30/03/2026	05/04/2026	6	7	Yes
NW444 Phosphorus - Total	30/03/2026	12/04/2026	13	180	Yes
NW522 Sodium - Total	30/03/2026	04/04/2026	5	180	Yes
NW528 Zinc - Total	30/03/2026	04/04/2026	5	180	Yes

816-2026-00092123 WA18 1.5

Test	Sampling Date	Holding End	Effective Holding (days)	Requirement (days)	Compliance
NW499 Arsenic - Total	30/03/2026	04/04/2026	5	180	Yes
NW504 Cadmium - Total	30/03/2026	04/04/2026	5	180	Yes
NW507 Chromium - Total	30/03/2026	04/04/2026	5	180	Yes
NW509 Copper - Total	30/03/2026	04/04/2026	5	180	Yes
NW510 Iron - Total	30/03/2026	04/04/2026	5	180	Yes
NW511 Lead - Total	30/03/2026	04/04/2026	5	180	Yes
NW514 Manganese - Total	30/03/2026	04/04/2026	5	180	Yes
NW515 Mercury - Total	30/03/2026	04/04/2026	5	28	Yes
NW517 Nickel - Total	30/03/2026	04/04/2026	5	180	Yes
NW04T Organochlorine Pesticides	30/03/2026	04/04/2026	5	14	Yes
NW362 pH	30/03/2026	05/04/2026	6	7	Yes
NW444 Phosphorus - Total	30/03/2026	12/04/2026	13	180	Yes
NW522 Sodium - Total	30/03/2026	04/04/2026	5	180	Yes
NW528 Zinc - Total	30/03/2026	04/04/2026	5	180	Yes

816-2026-00092124 WA19 0.1

Test	Sampling Date	Holding End	Effective Holding (days)	Requirement (days)	Compliance
NW499 Arsenic - Total	30/03/2026	04/04/2026	5	180	Yes
NW504 Cadmium - Total	30/03/2026	04/04/2026	5	180	Yes

Environment Testing NZ

NW507	Chromium - Total	30/03/2026	04/04/2026	5	180	Yes
NW509	Copper - Total	30/03/2026	04/04/2026	5	180	Yes
NW510	Iron - Total	30/03/2026	04/04/2026	5	180	Yes
NW511	Lead - Total	30/03/2026	04/04/2026	5	180	Yes
NW514	Manganese - Total	30/03/2026	04/04/2026	5	180	Yes
NW515	Mercury - Total	30/03/2026	04/04/2026	5	28	Yes
NW517	Nickel - Total	30/03/2026	04/04/2026	5	180	Yes
NW04T	Organochlorine Pesticides	30/03/2026	04/04/2026	5	14	Yes
NW362	pH	30/03/2026	05/04/2026	6	7	Yes
NW444	Phosphorus - Total	30/03/2026	12/04/2026	13	180	Yes
NW522	Sodium - Total	30/03/2026	04/04/2026	5	180	Yes
NW528	Zinc - Total	30/03/2026	04/04/2026	5	180	Yes

816-2026-00092126 WA20 0.1

Test	Sampling Date	Holding End	Effective Holding (days)	Requirement (days)	Compliance
NW499 Arsenic - Total	30/03/2026	04/04/2026	5	180	Yes
NW504 Cadmium - Total	30/03/2026	04/04/2026	5	180	Yes
NW507 Chromium - Total	30/03/2026	04/04/2026	5	180	Yes
NW509 Copper - Total	30/03/2026	04/04/2026	5	180	Yes
NW510 Iron - Total	30/03/2026	04/04/2026	5	180	Yes
NW511 Lead - Total	30/03/2026	04/04/2026	5	180	Yes
NW514 Manganese - Total	30/03/2026	04/04/2026	5	180	Yes
NW515 Mercury - Total	30/03/2026	04/04/2026	5	28	Yes
NW517 Nickel - Total	30/03/2026	04/04/2026	5	180	Yes
NW04T Organochlorine Pesticides	30/03/2026	08/04/2026	9	14	Yes
NW362 pH	30/03/2026	05/04/2026	6	7	Yes
NW444 Phosphorus - Total	30/03/2026	12/04/2026	13	180	Yes
NW522 Sodium - Total	30/03/2026	04/04/2026	5	180	Yes
NW528 Zinc - Total	30/03/2026	04/04/2026	5	180	Yes

816-2026-00092128 WA20 1.5

Test	Sampling Date	Holding End	Effective Holding (days)	Requirement (days)	Compliance
NW499 Arsenic - Total	30/03/2026	04/04/2026	5	180	Yes
NW504 Cadmium - Total	30/03/2026	04/04/2026	5	180	Yes
NW507 Chromium - Total	30/03/2026	04/04/2026	5	180	Yes
NW509 Copper - Total	30/03/2026	04/04/2026	5	180	Yes
NW510 Iron - Total	30/03/2026	07/04/2026	8	180	Yes
NW511 Lead - Total	30/03/2026	04/04/2026	5	180	Yes
NW514 Manganese - Total	30/03/2026	04/04/2026	5	180	Yes
NW515 Mercury - Total	30/03/2026	04/04/2026	5	28	Yes
NW517 Nickel - Total	30/03/2026	04/04/2026	5	180	Yes
NW04T Organochlorine Pesticides	30/03/2026	04/04/2026	5	14	Yes
NW362 pH	30/03/2026	05/04/2026	6	7	Yes
NW444 Phosphorus - Total	30/03/2026	12/04/2026	13	180	Yes
NW522 Sodium - Total	30/03/2026	04/04/2026	5	180	Yes
NW528 Zinc - Total	30/03/2026	04/04/2026	5	180	Yes

816-2026-00092129 WA66

Test	Sampling Date	Holding End	Effective Holding (days)	Requirement (days)	Compliance
NW499 Arsenic - Total	30/03/2026	04/04/2026	5	180	Yes
NW504 Cadmium - Total	30/03/2026	04/04/2026	5	180	Yes
NW507 Chromium - Total	30/03/2026	04/04/2026	5	180	Yes
NW509 Copper - Total	30/03/2026	04/04/2026	5	180	Yes
NW511 Lead - Total	30/03/2026	04/04/2026	5	180	Yes
NW515 Mercury - Total	30/03/2026	04/04/2026	5	28	Yes
NW517 Nickel - Total	30/03/2026	04/04/2026	5	180	Yes

Environment Testing NZ

NW528	Zinc - Total	30/03/2026	04/04/2026	5	180	Yes
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816-2026-00092130 WA67

Test	Sampling Date	Holding End	Effective Holding (days)	Requirement (days)	Compliance
NW499 Arsenic - Total	30/03/2026	04/04/2026	5	180	Yes
NW504 Cadmium - Total	30/03/2026	04/04/2026	5	180	Yes
NW507 Chromium - Total	30/03/2026	04/04/2026	5	180	Yes
NW509 Copper - Total	30/03/2026	04/04/2026	5	180	Yes
NW511 Lead - Total	30/03/2026	04/04/2026	5	180	Yes
NW515 Mercury - Total	30/03/2026	04/04/2026	5	28	Yes
NW517 Nickel - Total	30/03/2026	04/04/2026	5	180	Yes
NW528 Zinc - Total	30/03/2026	04/04/2026	5	180	Yes

LIST OF METHODS

NU070 Chloride: Internal Method, Titrimetry [1:5 water extraction, Titration]	NU0MD Sample Weight (Per Order): Internal Method, Mechanical
NU227 Moisture Content: Internal Method, Gravimetry	NU388 Volume Weight: Internal Method, Gravimetry [Volume weight of air-dried & sieved soil]
NUD11 Sulfate-Sulfur (SO4-S): Internal Method, Calculation [Phosphate Extraction: ICP-OES Determination. Adjusted for Weight Volume]	NUE76 Ammoniacal Nitrogen: Internal Method, Calculation [KCl extraction, FIA colorimetry]
NUE77 Nitrate Nitrogen: Internal Method, Calculation [KCl extraction, FIA colorimetry]	NW04T Organochlorine Pesticides: Internal Method, GC-MS/MS
NW08E Cyanide in Soil: US EPA 335.4 mod.	NW247 PCB in Soil: Internal Method, GC-MS
NW362 pH: ANZECC GUI 624.131.37	NW444 Phosphorus - Total: APHA 24th Edition 3120 B mod.
NW499 Arsenic - Total: APHA 24th Edition 3125 B mod.	NW504 Cadmium - Total: APHA 24th Edition 3125 B mod.
NW507 Chromium - Total: APHA 24th Edition 3125 B mod.	NW509 Copper - Total: APHA 24th Edition 3125 B mod.
NW510 Iron - Total: APHA 24th Edition 3125 B mod.	NW511 Lead - Total: APHA 24th Edition 3125 B mod.
NW514 Manganese - Total: APHA 24th Edition 3125 B mod.	NW515 Mercury - Total: APHA 24th Edition 3125 B mod.
NW517 Nickel - Total: APHA 24th Edition 3125 B mod.	NW522 Sodium - Total: APHA 24th Edition 3125 B mod.
NW528 Zinc - Total: APHA 24th Edition 3125 B mod.	NWEBH PAH BaP TEQ: Internal Method, GC-MS

Signature



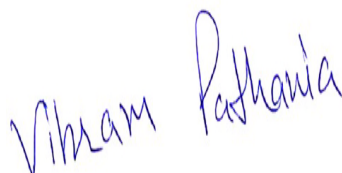
Linda Jhang Technical Specialist



Bella Zhang Team Leader Eurofins Food Analytics NZ Ltd



Cindy Chen Supervisor Eurofins Food Analytics NZ Ltd



Vikram Pathania Laboratory Manager



Gabriela Carvalhaes Business Unit Manager Eurofins ELS Limited

EXPLANATORY NOTE

Environment Testing NZ

- ① Test is not accredited
- ② Test is subcontracted within Eurofins group and is accredited
- ③ Test is subcontracted within Eurofins group and is not accredited
- ④ Test is subcontracted outside Eurofins group and is accredited
- ⑤ Test is subcontracted outside Eurofins group and is not accredited
- ⑥ Test result is provided by the customer and is not accredited
- ⑦ Tested at the sampling point by Eurofins and is not accredited
- ⑧ Tested at the sampling point by Eurofins and is accredited
- ⑨ Test is RLP accredited
- ⑩ Test is subcontracted within Eurofins group and is RLP accredited

N/A means Not Applicable

Not Detected means not detected at or above the Limit of Quantification (LOQ)

LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit

Symbol - in result column means not tested

General

1. Unless otherwise stated, all soil/sediment/solid results are reported on a dry weight basis.
2. Unless otherwise stated, all biota/food results are reported on a wet weight basis on the edible portion.
3. Actual LOQs are matrix dependent. Quoted LOQs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds where annotated.
5. Analysis on waters is performed on homogenised, unfiltered samples unless noted otherwise.
6. Samples were analysed on an 'as received' basis.

Holding Times

Please refer to the 'Sample Preservation and Container Guide' for holding times (QS3001).

If the Laboratory did not receive the information in the required timeframe, and despite any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the sampling date; therefore, compliance with these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether, the holding time is seven days; however, for all other VOCs, such as BTEX or C6-10 TRH, the holding time is 14 days.

Holding times are expressed in days.

Units

mg/kg: milligrams per kilogram
µg/L: micrograms per litre
org/100 mL: Organisms per 100 millilitres
CFU: Colony Forming Unit

mg/L: milligrams per litre
ppb: parts per billion
NTU: Nephelometric Turbidity Units
Colour: Pt-Co Units (CU)

ppm: parts per million
%: Percentage
MPN/100 mL: Most Probable Number of organisms per 100 millilitres

Terms

APHA: American Public Health Association
TCLP: Toxicity Characteristic Leaching Procedure
US EPA: United States Environmental Protection Agency

Quality Controls

All test method Quality Controls including method blanks, reference samples, spikes, surrogates and duplicate sample testing have passed and are within the control limits.

This report applies exclusively to the samples provided by the Customer and does not represent the entire lot or batch from which the samples were drawn.

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Tests are identified by a unique five-digit code; detailed descriptions are available upon request. Accreditation applies only to the specific tests listed in this report and does not extend to comments, interpretations, or graphical representations.

Eurofins may subcontract part or all of the services to an approved third party. The Customer authorises the release of all necessary information for this purpose.

All samples become the property of Eurofins to the extent necessary for service delivery. Eurofins is not obliged to store samples and may dispose of them after analysis unless storage has been agreed upon in writing. If storage is arranged, Eurofins will take commercially reasonable steps to maintain samples for the agreed period.

The Customer is solely responsible for the sampling process and warrants that samples provided are representative of the lot or batch. Eurofins accepts no liability regarding the Customer's production process or sample homogeneity. Where Eurofins provides sampling services, IANZ-approved methodologies and/or best practices are used; however, Eurofins shall not be liable if the collected sample is not representative of the source or if the Customer's instructions to Eurofins are followed and require testing of part of the sample only or testing of a certain type.

Services are provided using current technology and standard methods applied by Eurofins. Eurofins exercises reasonable care in performing services but does not guarantee fitness for any specific purpose.

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Unless otherwise stated, all tests (except subcontracted tests) are performed at 35 O'rorke Road, Penrose, Auckland, New Zealand.

END OF REPORT

Environment Testing NZ

ANALYTICAL REPORT

REPORT CODE

AR-26-NU-042542-01

REPORT DATE

18/04/2026

Attention Babbage Consultants Limited
Charlotte Lucas
Level 4, 68 Beach Road
1010 Auckland
NEW ZEALAND

Phone

Email charlotte.lucas@babbage.co.nz

Contact for your orders: Frances Gilvray

Contract: Enviro

Reception Date & Time: 14/04/2026 10:00:00am

Submission Reference: 68095, WPI Wetland

Order code:

EUNZAU-00900530

SAMPLE CODE:

816-2026-00104130

Sample Name:

WA18 1.5

Sample Reference:

816-2026-00092123

Product Type:

Leachate

Analysis Started on:

14/04/2026

Analysis Ending Date:

18/04/2026

Date & Time Received

14/04/2026 10:00

Sampled Date & Time

30/03/2026 00:00

Sampled By

Charlotte Lucas,
Seung-Hwa Jung

Attempt to Chill was evident

Yes

Sample correctly preserved

Yes

Appropriate sample containers used

Yes

LOQ Unit
METALS (LEACHATE)

③ NW611 Zinc - Leachate

0.001

mg/l

2.19

NU0MD Sample Weight

1

g

71

(Per Order)

HOLDING TIMES

816-2026-00104130 WA18 1.5, 816-2026-00092123

Test

NW611

Zinc - Leachate

Sampling Date

30/03/2026

Holding End

18/04/2026

Effective Holding (days)

19

Requirement (days)

180

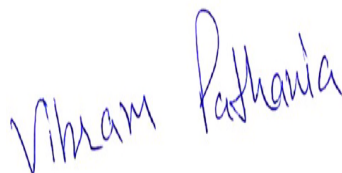
Compliance

Yes

LIST OF METHODS

NU0MD **Sample Weight (Per Order):** Internal Method, Mechanical

NW611 **Zinc - Leachate:** APHA 24th Edition 3125 B mod.

Signature


Vikram Pathania Laboratory Manager



Gabriela
Carvalhaes

Business Unit Manager
Eurofins ELS Limited

Environment Testing NZ

EXPLANATORY NOTE

- ① Test is not accredited
- ② Test is subcontracted within Eurofins group and is accredited
- ③ Test is subcontracted within Eurofins group and is not accredited
- ④ Test is subcontracted outside Eurofins group and is accredited
- ⑤ Test is subcontracted outside Eurofins group and is not accredited
- ⑥ Test result is provided by the customer and is not accredited
- ⑦ Tested at the sampling point by Eurofins and is not accredited
- ⑧ Tested at the sampling point by Eurofins and is accredited
- ⑨ Test is RLP accredited
- ⑩ Test is subcontracted within Eurofins group and is RLP accredited

N/A means Not Applicable

Not Detected means not detected at or above the Limit of Quantification (LOQ)

LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit

Symbol - in result column means not tested

General

1. Unless otherwise stated, all soil/sediment/solid results are reported on a dry weight basis.
2. Unless otherwise stated, all biota/food results are reported on a wet weight basis on the edible portion.
3. Actual LOQs are matrix dependent. Quoted LOQs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds where annotated.
5. Analysis on waters is performed on homogenised, unfiltered samples unless noted otherwise.
6. Samples were analysed on an 'as received' basis.

Holding Times

Please refer to the 'Sample Preservation and Container Guide' for holding times (QS3001).

If the Laboratory did not receive the information in the required timeframe, and despite any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the sampling date; therefore, compliance with these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether, the holding time is seven days; however, for all other VOCs, such as BTEX or C6-10 TRH, the holding time is 14 days.

Holding times are expressed in days.

Units

mg/kg: milligrams per kilogram
µg/L: micrograms per litre
org/100 mL: Organisms per 100 millilitres
CFU: Colony Forming Unit

mg/L: milligrams per litre
ppb: parts per billion
NTU: Nephelometric Turbidity Units
Colour: Pt-Co Units (CU)

ppm: parts per million
%: Percentage
MPN/100 mL: Most Probable Number of organisms per 100 millilitres

Terms

APHA: American Public Health Association
TCLP: Toxicity Characteristic Leaching Procedure
US EPA: United States Environmental Protection Agency

Quality Controls

All test method Quality Controls including method blanks, reference samples, spikes, surrogates and duplicate sample testing have passed and are within the control limits.

This report applies exclusively to the samples provided by the Customer and does not represent the entire lot or batch from which the samples were drawn.

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Tests are identified by a unique five-digit code; detailed descriptions are available upon request. Accreditation applies only to the specific tests listed in this report and does not extend to comments, interpretations, or graphical representations.

Eurofins may subcontract part or all of the services to an approved third party. The Customer authorises the release of all necessary information for this purpose.

All samples become the property of Eurofins to the extent necessary for service delivery. Eurofins is not obliged to store samples and may dispose of them after analysis unless storage has been agreed upon in writing. If storage is arranged, Eurofins will take commercially reasonable steps to maintain samples for the agreed period.

The Customer is solely responsible for the sampling process and warrants that samples provided are representative of the lot or batch. Eurofins accepts no liability regarding the Customer's production process or sample homogeneity. Where Eurofins provides sampling services, IANZ-approved methodologies and/or best practices are used; however, Eurofins shall not be liable if the collected sample is not representative of the source or if the Customer's instructions to Eurofins are followed and require testing of part of the sample only or testing of a certain type.

Services are provided using current technology and standard methods applied by Eurofins. Eurofins exercises reasonable care in performing services but does not guarantee fitness for any specific purpose.

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Unless otherwise stated, all tests (except subcontracted tests) are performed at 35 O'rorke Road, Penrose, Auckland, New Zealand.

END OF REPORT

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