# DETAILED SITE INVESTIGATION (DSI)

73 TRIG ROAD, WHENUAPAI, AUCKLAND



REFERENCE NUMBER: REP-1732A/DSI/JUL22 PREPARED FOR: NEIL CONSTRUCTION LIMITED DATE ISSUED: 29 JULY 2022



# Auckland

47 Clyde Road, Browns Bay, Auckland PO Box 35-366, Browns Bay, Auckland (09) 475 0222

#### Hawkes Bay

73 Bridge Street, Ahuriri, Napier (06) 281 2454

#### Disclaimer

This report is provided on the condition that Geosciences Ltd disclaims all liability to any person or entity other than the client and Auckland Council in respect of anything done or omitted to be done and of the consequence of anything done or omitted to be done by any such person in reliance, whether in whole or in part, on the contents of this report. Furthermore, Geosciences Ltd disclaims all liability in respect of anything done or omitted to be done and of the consequence of anything done or omitted to be done by the client, or any such person in reliance, whether in whole or any part of the contents of this report of all matters not stated in the brief outlined in our proposal and according to our general terms and conditions and special terms and conditions for contaminated sites.

#### Statement

This site investigation has been prepared in accordance with the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011. It has been managed by a suitably qualified and experienced practitioner (SQEP); and reported on in accordance with the current edition of the Ministry for the Environment's *Contaminated Land Management Guidelines No.1 – Reporting on Contaminated Sites in New Zealand*.

Report prepared on behalf of GSL by:

Report reviewed and authorised on behalf of GSL by:

Krysten Walker Environmental Scientist Geosciences Ltd

Johan Faurie Principal Geosciences Ltd

Thank you for the opportunity to carry out this investigation. Should you have any queries regarding this report please do not hesitate to contact us on 09 475 0222 or 06 281 2454.

# TABLE OF CONTENTS

EXI	EXECUTIVE SUMMARYV					
1	INTRODUCTION	1				
2	PROPERTY DETAILS	1				
2	2.1       ENVIRONMENTAL CONTEXT         2.1.1       Geology & Geohydrology         2.1.2       Topography and Drainage	1 1 1				
3	PROPOSED CHANGE IN LANDUSE, SUBDIVISION AND DEVELOPMENT	2				
4	STANDARDS AND REGULATIONS	2				
4	<ul> <li>1.1 NATIONAL ENVIRONMENTAL STANDARD (NES)</li> <li>1.2 AUCKLAND UNITARY PLAN (OPERATIVE IN PART) (AUP(OP))</li> </ul>	2 2				
5	OBJECTIVES AND PROJECT DESIGN	3				
6	SITE HISTORY	3				
e e	<ul> <li>5.1 RECORDS OF TITLE</li></ul>	3 4 5 5 5 6				
7	SITE INSPECTION AND WALKOVER	6				
8	PRELIMINARY CONCEPTUAL SITE MODEL FOR POTENTIAL CONTAMINATION	7				
8	<ul> <li>POTENTIAL SOURCES OF CONTAMINATION</li></ul>	7 7				
9	SOIL SAMPLING AND ANALYSIS	8				
10	LABORATORY ANALYSIS AND ACCREDITATION	9				
1	LO.1 QUALITY ASSURANCE AND QUALITY CONTROL	9				
1	IO.2         Acceptance Criteria and Relevant Guidelines	9				
11	11 ANALYTICAL RESULTS					
1 1 1 1	11.1       Heavy Metals       1         11.2       Total DDT (ΣDDT)       1         11.3       Polyaromatic Hydrocarbons (PAH's)       1         11.4       Total Petroleum Hydrocarbons (TPH's)       1	1 2 2 2				
12	RECOMMENDATIONS1	2				
13	CONCLUSIONS 1	2				
1	13.1 THE NATIONAL ENVIRONMENTAL STANDARDS (NES)	2				
14		ر ۸				
14	NEFENEINCES	4				

15	LIMITATIONS 15	

## LIST OF TABLES

TABLE 1	PROPERTY DETAILS
TABLE 2	ANALYTICAL RESULTS – HEAVY METALS
TABLE 3	ANALYTICAL RESULTS – OCP, DDT, PAH

#### LIST OF FIGURES

Figure 1	SITE LOCATION
Figure 2	SOIL SAMPLES

#### APPENDICES

Appendix A	RECORDS OF TITLE
Appendix B	HISTORICAL AERIAL PHOTOGRAPHS
Appendix C	PROPERTY FILE EXTRACTS
Appendix D	Site Photographs
Appendix E	LABORATORY RESULTS

# **EXECUTIVE SUMMARY**

The property located at 73 Trig Road, Whenuapai, was predominantly vacant pasture for its discernible history up to the late-1980's. The currently residential dwelling and associated sheds were constricted on site in between the 1980-1988. From 1988 the site appeared to be utilised for horticultural activities. Horticultural activities are listed as item A.10 under the MfE Hazardous Activities and Industries List (HAIL) and as a result Neil Constriction Ltd, engaged Geosciences Ltd (GSL) to conduct a detailed site investigation (DSI) at the site to determine the soil quality at the site.

The DSI was carried out in accordance with the MfE contaminated land management guidelines. As part of the DSI, GSL conducted a historical investigation into the former land uses at the site and developed a conceptual site model for soil contamination as a result of such activities occurring. Based on the conceptual site model GSL collected 5 composite soil samples from formed cultivated land and 9 discrete soil samples from areas of potential hotspot contamination. All but one soil sample returned concentrations of contaminants that complies with the NES criteria for the proposed landuse and the Auckland Council permitted activity criteria. However, the residential yard area of the site where one soil sample revealed concentrations of PAHs marginally in excess of the laboratory detection limits is covered with refuse and rubbish and once cleared and the soil surface scraped clean, all soil samples collected from site will contain concentrations of contaminants of concern that are within the background ranges of soil from the Auckland Region.

As a result the NES will not apply to the proposed development. As no soil sample returned concentrations of any contaminant of concern in excess of the AUP(OP) permitted activity soil acceptance criteria, the piece of land does not meet the Auckland Council definition of *"land containing elevated levels of contaminants"*, consequently, the contaminated land rules of Chapter E.30 of the AUP(OP) will not be applicable to the proposed development.

# **1** INTRODUCTION

Geosciences Ltd (GSL) has prepared the following report for Neil Construction Limited in accordance with GSL's standard terms and conditions and associated correspondence with Neil Construction Ltd

This report has been prepared in accordance with the Ministry for the Environment (MfE) Contaminated Land Management Guidelines (CLMG): No. 1 - "Guidelines for Reporting on Contaminated Sites in New Zealand", and No. 5 – "Site Investigation and Analysis of Soils" (References 1 and 2).

# 2 **PROPERTY DETAILS**

Location:	73 Trig Road, Whenuapai, Auckland
Legal Description:	Lot 1 DP 117364
Size:	2.6085 Ha
Zoning:	Future Urban Zone

The property at the above identifier, hereafter referred to as 'the site' in this report, is currently a rural residential lot comprising a residential dwelling in the northwest corner of the site alongside vacant pasture interspersed with some residual features relating to relatively modern horticultural landuses.

The landuse is consistent with the surrounding area, which has a mixture of rural and ruralresidential properties nestled in and around the Whenuapai NZ Air Force base located approximately 50 m to the north of the site.

## 2.1 ENVIRONMENTAL CONTEXT

## 2.1.1 GEOLOGY & GEOHYDROLOGY

The local geology is described by Edbrooke (Reference 3) as pumiceous mud, sand and gravel with muddy peat and lignite from the Late Pliocene to Middle Pleistocene pumiceous river deposits of the Puketoka Formation, Tauranga Group.

The site lies within the footprint of the Kumeu East Aquifer as defined in the Auckland Council GEOMaps website groundwater overlay. The Kumeu East Aquifer is listed in the High Use Aquifer Management Areas while not listed on the Quality Sensitive Aquifer Management Areas on the Auckland Council Natural Resources GIS overlay

#### 2.1.2 TOPOGRAPHY AND DRAINAGE

The property is moderate to steep hill land with an elevation of approximately 40m above sea level (asl) along the south-western boundary of the site which slopes down to approximately 32 m asl in the towards the northern end of the property.

Drainage is via overland flow paths and soakage. Three modest overland flow paths are noted in the northern portion of the site which merge into one flowing eastwards, to merge with the Waiaroha Stream which flows into the Waiaroha Inlet of the Waitemata Harbour.

A review of the floodplains, flood prone, or flood sensitive areas of the Auckland Region (available on the Auckland Council GEOMaps) revealed that the site is not located on a flood prone nor flood sensitive areas. However, four limited areas along the northern boundary of the site fall within a flood plain area.

# 3 PROPOSED CHANGE IN LANDUSE, SUBDIVISION AND DEVELOPMENT

GSL understands that the site has been identified for future commercial development as an extension of Neil Construction Ltd's ongoing commercial / industrial development on the adjacent land at 69-71 Trig Road, corresponding to a business park.

The proposed development therefore involves the subdivision of an existing title, the change in landuse from rural residential land to commercial and / or residential land, while the construction of the structures will involve the disturbance of a significant amount of soil.

# 4 STANDARDS AND REGULATIONS

As a result of the proposed change in landuse, subdivision and development outlined above, it will be necessary to address the requirements of the following applicable standards and regulations for the site.

# 4.1 NATIONAL ENVIRONMENTAL STANDARD (NES)

The National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (NES) (MfE, 2012), which came into effect on 1 January 2012, ensures that land affected by contaminants in soil is appropriately identified and assessed when soil disturbance and/or land development activities take place and, if necessary, remediated or the contaminants contained to make the land safe for human use.

Under the NES, land is considered actually or potentially contaminated if an activity or industry on the MfE Hazardous Activities and Industries List (HAIL) has been, is, or is more likely than not to have been, undertaken on the land. Consequently, a subdivision or development on HAIL land requires a detailed site investigation (DSI) of the piece of land to determine if there is a risk to human health as a result because of any current or former activities that are occurring, or may have occurred, on the land under investigation.

# 4.2 AUCKLAND UNITARY PLAN (OPERATIVE IN PART) (AUP(OP))

Section 30(1)(f) of the RMA provides the Auckland Council with a statutory duty to investigate land for the purposes of identifying and monitoring contaminated land and for the control of discharges of contaminants into or onto land or water and discharges of water into water.

The Auckland Unitary Plan (Operative in Part) (AUP(OP)), which was formally notified on 30 September 2013, is a combined regional policy statement, regional coastal plan, regional plan and

district plan. Auckland Council notified an operative in part version of the plan on 15 November 2016 (Reference 5).

Chapter E.30 of the AUP(OP) deals specifically with contaminated land and maintains that Council is required to manage both the use of land containing elevated levels of contaminants and the discharge of contaminants from land containing elevated levels of contaminants. As no appeals have been lodged on Chapter E.30, the provisions of that section can be considered operative under Section 87 of the Resource Management Act 1991. For all purposes of this investigation, the relevant provisions of the AUP(OP) relating to soil contamination have legal jurisdiction and those provision have been considered where they may have an impact on the proposed development

# **5 OBJECTIVES AND PROJECT DESIGN**

The primary objective of this investigation is to provide an assessment of whether any actual or potential soil contamination exists within the piece of land for the purposes of regulatory assessment under the Resource Management Act 1991.

In competing the primary objective GSL has;

- undertaken a desktop study of publicly available historical information to ascertain current and historic landuse activities;
- conducted a visual inspection of the site extent;
- developed a preliminary conceptual site model for potential soil contamination;
- carried out an intrusive investigation of the site based on the preliminary conceptual model to determine the soil quality and any associated risk to human health and / or the environment arising from actual or potential soil contamination on site;
- determine what, if any, contaminated land rules of the AUP(OP) or regulations of the NES apply to the land or the proposed subdivision and development; and
- prepared this Detailed Site Investigation report in accordance with contaminated land management guideline No.1 – "Reporting on contaminated sites in New Zealand" (Ministry for the Environment, 2011) detailing the findings of this investigation and the recommendations, if any, for further work.

# 6 SITE HISTORY

A desktop study of publicly available files and photographs was undertaken to determine the history of the site with respect to any current or historic potentially contaminating landuses.

#### 6.1 RECORDS OF TITLE

GSL has reviewed copies of the current and historic Certificates of Title for the property under investigation, including any instruments on the title which detail relevant property information such as: current ownership, registered interests, easements, covenants, lease restrictions and transmissions, to determine if pre-existing consent notices or other restrictions / notifications which may be relevant to historic uses of or potential soil contamination are held against the property.

The title was first issued in August 1987 with the original owner listed as Mary Bain Petley of Te Puke. Further transfers of the title noted on the historical records indicate that the title was subsequently transferred to Joe Kee Tong, Verbena Tong and Brian Yinglan Tong, commercial gardeners, in 1989. A further transfer of the title in 1992 was made to Grantley Peter Hall and Heather Charlotte Hall, share farmers.

The previous transfers of the title indicate that the site may have been utilised for horticultural or agricultural activities from the late 1980s, while horticulture and agriculture are not explicitly included on the MfE HAIL, the bulk storage and use of persistent pesticides associated with historical farming practises are encompassed by Item A.10 on the MfE HAIL, while other activities such as storage of fuels, oils, and machinery are common on farms and horticultural sites. Copies of the certificates are attached in Appendix A.

#### 6.2 HISTORIC AERIAL PHOTOGRAPHS

Historic aerial photographs from 1940, 1950, 1958, 1963, 1969, 1980, and 1988 are available from the Retrolens website while images from 1996, 2006, 2008, 2010, and 2017 are available on the Auckland Council GEOMaps website (GIS). The findings of the historic aerial photograph review are summarised below, while copies of the aerial photographs have been attached in Appendix B.

1940- The 1940 plate is the earliest available image of the site and shows the full extent of the site under vacant pastoral landuse with no discernible structures noted within the site. A mature shelter belt is present running east-west across the approximate centre of the site, while a faint farm track is noted crossing the northern portion of the site from Trig Road and traverses the site in a north-easterly direction towards a farmhouse / shed situated approximately 60 m to the northeast of the site boundaries. Trig Road has been formed as a dirt road by the time of the image while Brigham Creek Road is noted to the north of the site.

Aside from the removal of the shelter belt and realignment of farm fences / paddocks on the site there are few discernible developments to the site through the images from 1950, 1963, 1969, and 1980. The only item of note is the establishment of horticultural activities on the piece of land immediately to the north of the site in the 1980 plate. The site itself remains under vacant pasture through the images.

1988- The 1988 plate shows the first discernible development of the site with the establishment
 1996 of a group of structures / sheds / dwellings in the northwest portion of the site with a small yard formed adjacent to the site entrance from Trig Road. The site appears to have recently been divided into smaller blocks under cultivation similar to the clearly defined cultivated blocks noted on 71 Trig Road along the eastern border of the site.

While the 1996 image is of poor quality, it is the first available colour image of the site and clearly indicates that horticultural activity is ongoing in two discrete portions of the site. The southern portion of the site consist of elongated blocks of broad acre crops while a portion of the northeast corner of the site also being cultivated.

- **2006** By the time of the 2006 plate the cropping activity in the northeast corner has ceased and the northern half of the site, apart from the dwelling and shed in the northwest, are returned to pasture. The southern half appears to remain under horticultural landuse with the cultivated beds still evident. Two small shelters/sheds have been established in the growing areas along the western boundary of the site.
- **2008** The 2008 plate shows limited cropping remaining in the southwest quadrant of the site, while the southeast quadrant appears to have been returned to pasture. In the northeast quadrant of the site, a rectangular paddock has been established with a small pile of refuse noted on the surface within the paddock. Two areas of potential cropping are noted in the northeast corner of the site as well as to the immediate south of the new paddock.
- **2010** The only discernible development noted in the 2010 plate is the establishment of cropping activities in the northeast paddock as well as in the northwest corner of the south.
- **2017** By the time of the 2017 plate all cropping activities appear to have ceased on site, however, overgrown cultivation marks and scars are still signs of the former horticultural activities that occurred on site.

#### 6.2.1 SUMMARY OF HISTORIC AERIAL PHOTOGRAPHS

GSL has reviewed the available historic aerial images of the site and concludes that the site remained predominantly vacant pasture for its discernible history up to the late-1980s. From the 1988 plate onwards areas of the site appear to be utilised for horticultural activity. The sheds noted in the northwest portion of the site are identified as the potential location of the storage and mixing of agrichemicals, while portions of the wider site area was used for marker gardening and therefore potentially exposed to the application of spraying chemicals.

The current residential dwelling and sheds were constructed between 1980 and 1988 in the northwest most portion of the site. Consequently, it is considered unlikely that the dwelling or sheds are of an age where lead-based paints will have been applied or asbestos containing products used during construction of the buildings.

## 6.3 AUCKLAND COUNCIL INFORMATION

Neil Construction Ltd provided GSL with the following documentation held by Auckland Council for review of historical activities noting the potential for site contamination.

#### 6.3.1 LAND INFORMATION MEMORANDUM (LIM)

The LIM confirms that the dwelling on site is serviced by a septic tank and onsite effluent disposal system. However, with respect to the status of septic tanks systems encompassed under the HAIL, recent discussions with Auckland Council revealed that septic such systems are evaluated on a case by case basis but that a single house septic systems are generally not considered to be a HAIL activity.

Additionally, the LIM states that the site may have previously been used for horticultural purposes; however, Auckland Council does not currently have information confirming whether the site is contaminated as a result of any previous horticultural use.

## 6.3.2 PROPERTY FILE

Correspondence held on the property file confirmed the location and design of the septic tank as being a standard 2,700 L concrete tank located on the southern elevation of the dwelling.

Aside from the confirmation of the septic tank specifications, the following items of note were also no file:

- **1985** Plans for a relocated residence to be established on the site. The plans indicate the drainage and effluent disposal field location and extents. The plans indicate that the house is sited on piled foundations and has a galvanised long run iron roof and the external walls cladded in "Hurricane Home" standard wall panels.
- **1985** Plans for the construction of a small glasshouse are held on the file listed as a "propagating house" to the northeast of the dwelling. The plans also indicate that "stock plants", grapes, and kiwi fruit are grown in the growing areas in the southern portion of the site. The plans relate to the sites parent lot, which includes the area of 71 Trig Road to the east of the site. Further correspondence in the file indicates that the propagation house was relocated from Te Puke noting they were Fletcher Brown built 8m Tunnel Houses, approximately 7 years old at the time and were in good order.
- **1986** Documents relating to a boundary adjustment of 71-73 Trig Road identifies Lot 1 (being 71 Trig Road) as the location of a nursey, while the remaining area is identified as suitable for market gardening. The Application for a notified consent to adjust the boundaries describes the following landuse with relation to Lot 1 (71 Trig Road):

"Mrs Petley has owned the property for under 2 years, but has already established a sizeable nursery, propagating and growing small ornamentals, perennials, roses and kiwifruit plants. Table grape vines are being grown for plant sales, and also for permanent establishment on the site. The ornamentals are container grown, but the stock plants used for their propagation are planted in the open ground. The kiwifruit and grape plants are also largely grown in the open ground. There is a 100 m<sup>2</sup> propagating house on the property together with an 80 m<sup>2</sup> storage / packing shed and a dwellinghouse."

- **2000** Building permits for an extension to the existing dwelling are held on file, confirming the observations made in the historic aerials of an extension being constructed between the 1996 and 2006 aerials.
- **2004** Code of Compliance is issued for the additions to the dwelling.

The property file did not reveal any information regarding the potential for soil contamination on site other than that the farming activities on site that included cultivating of fruit (grapes and kiwi fruit) as well as propagating of nursery plants.

## 7 SITE INSPECTION AND WALKOVER

GSL conducted a site inspection of the property on April 2022 as part of a pre-sale due diligence investigation when only the southern portion of the site was accessible and a second inspection in July 2022 during the fieldwork phase of this detailed site investigation.

At the time of the April inspection, vegetation clearance and mulching were in progress in the southern half of the site and the site surface was covered grass and mulch. Minor pieces of plastic irrigation pipe were noted running down the slope within the former nursery planting areas. It was noted that the nursery infrastructure in the northern half of the site was still present.

There was no evidence of any HAIL activity currently ongoing on the southern portion of the site, all horticultural / nursery activities have ceased and the infrastructure removed. Site photographs are included in Appendix D.

During the site inspection on 13 July 2022, vegetation clearance and mulching in the southern portion of the site were still in progress and the residence in the northern portion of the property was occupied. The sheds, out buildings and garage were in neglect and crammed with cars, equipment, broken furniture etc wile cars bodies, broken household furniture/appliances, timber and general rubbish were scattered in the yard area. Noticeable timber skeleton Structures including timber frames, posts and concrete slabs in the northern portion of the site are the remaining evidence of former horticultural activities occurring in this portion of the site.

## 8 PRELIMINARY CONCEPTUAL SITE MODEL FOR POTENTIAL CONTAMINATION

Based on the findings of the DSI, GSL has developed the following preliminary conceptual site model for potential soil contamination at the site. The following sections outline the potential sources of contaminants, the contaminants of concern, the expected spatial distribution of those contaminants and the required intrusive investigation.

## 8.1 POTENTIAL SOURCES OF CONTAMINATION

The desktop study and site inspections documented in the sections above revealed that the site has been used for cropping/market gardening since the mid 1980s. As such the use of persistent pesticides on site, that is generally associated with historical horticultural activities, cannot be ruled out. The storage or use of persistent pesticides is encompassed by Item A.10 of the HAIL.

The residential dwelling and sheds were constructed between 1980 and 1988 and it is considered unlikely that that lead based paint was applied or asbestos containing products were used during construction and maintenance of the buildings.

The application and storage of persistent pesticides are therefore considered the major source of contamination to have occurred onsite while the stockpiling of timber and refuse in the yard area was also considered a minor concern.

# 8.2 POTENTIAL CONTAMINANTS AND IT'S SPATIAL DISTRIBUTION

The contaminants of concern relating to historical horticultural activity are arsenic, copper, lead, and organochlorine pesticides (OCPs).

Pattle Delamore Partners (Reference 10) has demonstrated that the historical application of persistent pesticide sprays, have generally result in a low-level and uniformly contamination of the uppermost topsoil horizon that attenuate rapidly with depth while hotspot contamination is likely in areas where spraying chemicals were stored or mixed.

Localised areas of refuse or stockpiles of timber are of relative recent origin and resultant soil contamination from such sources, if any, is likely to be very localised and shallow.

#### **9** SOIL SAMPLING AND ANALYSIS

As a result of the desktop investigation and site walkover GSL implemented a targeted soil sampling methodology consisting of composite samples and point surface samples where potential contamination on site was identified.

Surface soil samples were collected from the uppermost 0-75 mm of topsoil using a stainless steel foot corer. Samples were placed directly into glass jars and/or resealable plastic zipper bags with the date, sample identification number, sample depth, and initials of the sampler noted on the jar or bag.

Soil sampling equipment was decontaminated in between samples using a soft soap solution in accordance with GSL internal quality control procedures. The sampling protocol followed was in accordance with the CLMG No. 5 *Site Investigation and Analysis of Soils*.

Soil sample locations are shown in Figure 2 and the soil sample location strategy provided below.

Sample No.	Location	Analytes
Comp-1	Former horticultural cultivation fields	As, Cu. Pb, OCPs
Comp-2	Former horticultural cultivation fields	As, Cu, Pb, OCPs
Comp-3	Suspected former horticultural cultivation fields	As, Cu, Pb, OCPs
Comp-4	Former horticultural cultivation fields	As, Cu, Pb, OCPs
Comp-5	Former horticultural cultivation fields	As, Cu, Pb, OCPs
SS1	Adjacent to pile of treated timber / building materials and a concrete slab with general household waste	Heavy metals / PAH's
SS2	Small burn area containing some green waste, treated timber, and possible refuse	Heavy metals / PAH's
SS5	Just inside door of propagating house turned car workshop	М7, РАН, ТРН, ОСР
SS6	Amongst large pile of household rubbish (furniture, treated timber, fire extinguishers etc.) in partly walled area adjacent to propagating shed, with a lean to that was partly dismantled	М7, РАН, ОСР
SS8	Large burn pile with mostly treated timber (some painted) and refuse	М7, РАН
SS9	Adjacent to pile of treated timber, general household rubbish	M7, PAH
SS10	Adjacent to pile of old lawnmowers and general household rubbish at northern exit from propagating house	М7, РАН, ТРН, ОСР
SS11	Beneath pile of refuse dumped in furrows	M7, PAH
SS12	Beneath pile of refuse dumped in furrows	M7/PAH

Noes:

<sup>1.</sup> PAH = Polyaromatic Hydrocarbons; TPHs = Total petroleum hydrocarbons; OCPs = Organochlorine pesticides

<sup>2.</sup> M7 = Arsenic, Cadmium, Chromium, Copper, lead, nickel, zinc

# **10** LABORATORY ANALYSIS AND ACCREDITATION

Sample bags and jars were placed in the fridge upon returning to GSL offices. The following day all samples were packed in a chilly bin with ice and a chain of custody document (COC) indicating the analysis to be performed and dispatched to Eurofins Laboratories in Auckland for analysis.

Eurofins Laboratories are accredited by International Accreditation New Zealand for the analysis undertaken.

#### **10.1** QUALITY ASSURANCE AND QUALITY CONTROL

GSL field staff are appropriately qualified, suitably trained and experienced in undertaking contaminated land assessments. Personnel are cognisant of the requirements for sample handling and storage, and equipment decontamination procedures alongside completion of field assessments, notes and record keeping and documentation.

During this assessment, appropriate sample handling and storage protocols were followed to ensure sample integrity was maintained during sampling and transport while laboratory analysis has been undertaken at an IANZ accredited laboratory.

Consequently, it is considered that appropriate QA/QC has been met for this investigation

#### **10.2** ACCEPTANCE CRITERIA AND RELEVANT GUIDELINES

The NES mandates fourteen soil contaminant standards (SCS) for the protection of human health for organic compounds and inorganic elements for various landuse criteria. The NES human health SCS criteria for a commercial/industrial outdoor worker/ maintenance has been applied to the proposed change in landuse, subdivision, and development.

The NES has no specific soil contaminant standard for total petroleum hydrocarbon concentrations but instead acknowledges the Tier 1 criteria as specified in the MfE document, 'Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand' (Reference 9). Where applicable, TPH results have been compared against these criteria.

The AUP(OP) also set permitted activity environmental discharge and soil acceptance criteria for potentially contaminated land.

Results are also compared to the background concentration ranges of inorganic elements in soils in the Auckland Region non-volcanic soils.

## **11 ANALYTICAL RESULTS**

A comparison of the analytical results with the relevant guideline criteria is provided in Tables 2 and 3 below. Copies of the laboratory chain of custody document (COC) and analytical transcripts are attached in Appendix E, while a discussion of the results is provided below.

	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc
Comp-1	5.5			14	12		
Comp-2	1.8			9.4	9.3		
Comp-3	3.5			11	15		
Comp-4	2.9			15	16		
Comp-5	3.2			18	18		
SS1 0-75mm	5.2	0.31	10	11	24	5.2	41
SS2 0-75mm	6.3	0.17	9.5	8.3	12	5.3	16
SS5 0-75mm	2.2	0.28	11	11	15	8.4	17
SS6 0-75mm	10	0.25	16	22	16	12	62
SS8 0-75mm	9	0.4	24	21	24	7.4	23
SS9 0-75mm	3.6	0.37	14	12	27	10	84
SS10 0-75mm	6.6	0.61	16	28	27	17	68
SS11 0-75mm	3.5	0.36	12	17	19	8.9	40
SS12 0-75mm	2.6	0.11	9.6	8.1	15	8.7	33
NES <sup>2</sup>	70	1,300	>10,000	>10,000	3,300	NL	NL
AUP(OP) <sup>3</sup>	100	7.5	400	325	250	105	400
Background <sup>4</sup>	0.4 - 12	< 0.1 - 0.65	2 - 55	1 - 45	<1.5 - 65	0.9 - 35	9 - 180

#### TABLE 1: ANALYTICAL RESULTS – HEAVY METALS<sup>1</sup>

Notes:

1. All metal concentrations measured in mg/kg.

- 2. National Environmental Standards (NES) for assessing and managing contaminants in soil to protect human health commercial/industrial outdoor worker (Reference 1).
- Auckland Regional Council (2007) Auckland Council Regional Plan: Air, Land and Water, Chapter 5, Contaminated Land, Auckland (Reference 5).
- 4. Auckland Regional Council Technical Publication No.153 (2001) (Reference 7).
- 5. Auckland Council (2013) Proposed Auckland Unitary Plan, Auckland, New Zealand.
- 6. Values in **BOLD** exceed the NES criteria, values in **BOLD** exceed the AUP(OP) criteria, Values in **BOLD** exceed the Background Ranges.
- 7. NA = Not applicable / NL = No Limit / ND= not detected

#### TABLE 3: ANALYTICAL RESULTS- ORGANICS<sup>1</sup>

	∑DDT <sup>4</sup>	BaP	ТРН
Comp-1	<0.1	-	-
Comp-2	<0.1	-	-
Comp-3	<0.1	-	-
Comp-4	<0.1	-	-
Comp-5	<0.1	-	-
SS1 0-75mm	-	<0.03	-
SS2 0-75mm	-	<0.03	-
SS5 0-75mm	0.01	<0.03	<35
SS6 0-75mm	<0.01	<0.03	-
SS8 0-75mm	-	<0.03	-
SS9 0-75mm	-	<0.03	-
SS10 0-75mm	<0.01	0.07	<35
SS11 0-75mm	-	<0.03	-
SS12 0-75mm	-	<0.03	-
NES <sup>2</sup>	1000	35	1,900 <sup>6</sup>
AUP(OP) <sup>3</sup>	12	20	NV
Background <sup>5</sup>	0.07 <sup>7</sup>	ND	ND

Notes:

1. All metal concentrations measured in mg/kg.

- 2. National Environmental Standards (NES) for assessing and managing contaminants in soil to protect human health commercial/industrial outdoor worker (Reference 1).
- Auckland Regional Council (2007) Auckland Council Regional Plan: Air, Land and Water, Chapter 5, Contaminated Land, Auckland (Reference 5).
- 4. Total ΣDDT includes the sum of DDT, DDD and DDE isomers. (Reference 5).
- 5. Auckland Council (2013) Proposed Auckland Unitary Plan, Auckland, New Zealand.
- The NES contains no specific value for TPH concentrations but instead acknowledges the Tier 1 criteria as specified in the MfE document, 'Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand' Silty clay at Surface.
- 7. MfE Ambient concentrations of DDT for provincial soils in New Zealand (Reference 11)
- 8. Values in **BOLD** exceed the NES criteria, values in **BOLD** exceed the AUP(OP) criteria, Values in **BOLD** exceed the Background Ranges.
- 9. NA = Not applicable / NL = No Limit / ND= not detected/ NV= no value.

#### **11.1 HEAVY METALS**

All samples returned concentrations of heavy metals which were compliant with the applicable NES criteria for the proposed landuse, the AUP(OP) permitted activity criteria and background concentrations for non-volcanic soil from the Auckland Region.

# **11.2** TOTAL DDT (∑DDT)

All samples tested with the exception of SS5 (0-75mm) returned concentrations of DDT which were compliant with the NES, AUP(OP) and Background concentrations. Sample SS5 0-75mm returned trace detections of DDT but within the Auckland Council accepted ambient concentration for provincial soil in New Zealand.

#### **11.3** POLYAROMATIC HYDROCARBONS (PAH'S)

All samples tested with the exception of SS10 (0-75mm) returned concentrations of BAP's which were compliant with the NES criteria for the proposed landuse, the AUP(OP) permitted activity criteria and background concentrations for non-volcanic soil from the Auckland Region. Sample SS10 0-75mm returned trace detections (0.07mg/kg) of BaP. This concentration is marginally above the laboratory detection limit of 0.03mg/kg.

## **11.4 TOTAL PETROLEUM HYDROCARBONS (TPH'S)**

Both samples tested for TPH returned concentrations of THP below the laboratory detection limit of 35mg/kg TPH.

#### **12 RECOMMENDATIONS**

As noted before, the yard area is covered with scattered refuse that will have to be cleared prior to site development earthworks commencing. It is recommended that during the clearing process the top 100mm of soil from the location od SS10 comprising the pile of old lawnmowers and general household rubbish at northern exit from propagating house (representing a relative small area of very mildly affected soil) be scraped off and removed to landfill along with the stockpiled rubbish matyerials.

## **13** CONCLUSIONS

The desktop study phase of the detailed site investigation revealed that plant nursery and horticultural activities on site commenced in the mid to late 1980s when the use of most persistent pesticides like DDT, Dieldrin and Lead-Arsenate were already banned from use in New Zealand.

Analytical results from soil samples collected during this DSI further confirmed that it is highly unlikely that persistent pesticides were used during horticultural activities at the property.

## **13.1** THE NATIONAL ENVIRONMENTAL STANDARDS (NES)

Under the NES, land is considered to be actually or potentially contaminated if an activity or industry on the Hazardous Activities and Industries List (HAIL) has been, is, or is more likely than not to have been, undertaken on the land.

Removal of the soil below the stockpile at the location of SS10 will render all soil samples collected and analysed from site to encompass concentrations of contaminants within the background ranges of non-volcanic soil from the Auckland Region, and as a result, the NES will not apply to the site and the proposed development.

# **13.2** THE AUCKLAND UNITARY PLAN (OPERATIVE IN PART) (AUP(OP))

As no soil sample returned concentrations of any contaminant of concern in excess of the AUP(OP) permitted activity soil acceptance criteria, the piece of land does not meet the Auckland Council definition of *"land containing elevated levels of contaminants"*, consequently, the contaminated land rules of Chapter E.30 of the AUP(OP) will not be applicable to the proposed development.

# **14 REFERENCES**

- Ministry for the Environment (2003) Contaminated Land Management Guidelines No.1: Reporting on contaminated Sites in New Zealand. Ministry for the Environment, Wellington, New Zealand.
- 2. Ministry for the Environment (2003) *Contaminated Land Management Guidelines No.5: Site Investigation and Analysis of Soils*. Ministry for the Environment, Wellington, New Zealand.
- 3. Edbrooke, S.W (2001) *Geology of the Auckland Urban Area,* Institute of Geological and Nuclear Sciences Geological Map 3, Lower Hutt, New Zealand.
- 4. Ministry for the Environment (2012) Users Guide National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health. Ministry for the Environment, Wellington, New Zealand.
- 5. Auckland Council (2013) Auckland Unitary Plan (Operative in Part), Auckland, New Zealand.
- 6. Auckland Regional Council (2001) *Background Concentrations of Inorganic Elements in Soils from the Auckland region (TP153)* Auckland.
- 7. Ministry for the Environment (2011) *Methodology for Deriving Standards for contaminants in Soil to Protect Human Health.* Ministry for the Environment, Wellington, New Zealand.
- 8. Auckland Council (2011) *Auckland Council GEOMAPS*. http://geomapspublic.aucklandcouncil.govt.nz/viewer/index.html
- 9. Ministry for the Environment (rev 2011) *Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand.* Ministry for the Environment, Wellington, New Zealand.
- 10. Pattle Delamore Partners Ltd (2004) *Agrichemical Use and Residential Development*, Hastings District Council. Rep Ref WJ414 R001.
- Ministry for the Environment (1998) Ambient Concentrations of Selected Organochlorines in Soils. MfE Organochlorine Programm3, Wellington. ISBN 0 478 09034.

#### **15** LIMITATIONS

The conclusions and all information in this Report are given strictly in accordance with and subject to the following limitations and recommendations:

- 1. The assessment undertaken to form this conclusion is limited to the scope of work agreed between GSL and the client, or the client's agent as outlined in this Report. This report has been prepared for the sole benefit of the client and neither the whole nor any part of this report may be used or relied upon by any other party except for Regional and Territorial authorities in their duties under the Resource Management Act 1991.
- 2. The investigations carried out for the purposes of the report have been undertaken, and the report has been prepared, in accordance with normal prudent practice and by reference to applicable environmental regulatory authority and industry standards, guidelines and assessment criteria in existence at the date of this report.
- 3. This report should be read in full and no excerpts are to be taken as representative of the findings. No responsibility is accepted by GSL for use of any part of this report in any other context.
- 4. This Report was prepared on the dates and times as referenced in the report and is based on the conditions encountered on the site and information reviewed during the time of preparation. GSL accepts no responsibility for any changes in site conditions or in the information reviewed that have occurred after this period of time.
- 5. Where this report indicates that information has been provided to GSL by third parties, GSL has made no independent verification of this information except as expressly stated in the report. GSL assumes no liability for any inaccuracies in or omissions to that information.
- 6. Given the limited Scope of Works, GSL has only assessed the potential for contamination resulting from past and current known uses of the site.
- 7. Environmental studies identify actual sub-surface conditions only at those points where samples are taken and when they are taken. Actual conditions between sampling locations or differ from those inferred. The actual interface between materials may be far more gradual or abrupt than an assessment indicates. Actual conditions in areas not sampled may differ from that predicted. Nothing can be done to prevent the unanticipated and GSL does not guarantee that contamination does not exist at the site.
- 8. Except as otherwise specifically stated in this report, GSL makes no warranty or representation as to the presence or otherwise of asbestos and/or asbestos containing materials ("ACM") on the site. If fill has been imported on to the site at any time, or if any buildings constructed prior to 1 January 2000 have been demolished on the site or materials from such buildings disposed of on the site, the site may contain asbestos or ACM.
- 9. No investigations have been undertaken into any off-site conditions, or whether any adjoining sites may have been impacted by contamination or other conditions originating from this site. The conclusion set out above is based solely on the information and findings contained in this report.
- 10. Except as specifically stated above, GSL makes no warranty, statement or representation of any kind concerning the suitability of the site for any purpose or the permissibility of any use, development or re-development of the site.
- 11. The investigation and remediation of contaminated sites is a field in which legislation and interpretation of legislation is changing rapidly. Our interpretation of the investigation findings should not be taken to be that of any other party. When approval from a statutory authority is required for a project, that approval should be directly sought by the client.
- 12. Use, development or re-development of the site for any purpose may require planning and other approvals and, in some cases, environmental regulatory authority and accredited site auditor approvals. GSL offers no opinion as to whether the current use has any or all approvals required, is operating in accordance with any approvals, the likelihood of obtaining any approvals, or the conditions and obligations which such approvals may impose, which may include the requirement for additional environmental works.
- 13. GSL makes no determination or recommendation regarding a decision to provide or not to provide financing with respect to the site. The on-going use of the site and/or use of the site for any different purpose may require the owner/user to manage and/or remediate site conditions, such as contamination and other conditions, including but not limited to conditions referred to in this report.
- 14. Except as required by law or for the purposes of Regional & Territorial Authorities discharging their duties under the Resource Management Act 1991, no third party may use, or rely on, this report unless otherwise agreed by GSL in writing. Where such agreement is provided, GSL will provide a letter of reliance to the agreed third party in the form required by GSL.
- 15. To the extent permitted by law, GSL expressly disclaims and excludes liability for any loss, damage, cost or expenses suffered by any third party relating to or resulting from the use of, or reliance on, any information contained in this Report. GSL does not admit that any action, liability or claim may exist or be available to any third party.
- 16. Except as specifically stated in this section regarding Regional and Territorial Authorities, GSL does not authorise the use of this report by any other third party.



# **FIGURES**





**Geosciences** Itd ENVIRONMENTAL Level 1, 47 Clyde Road, Browns Bay, 0630 Tel: (09) 475 0222

Figure 2 - Sample location plan 73 Trig Road, Whenuapai Reference: J1732a Date: 28/07/2022 Drawn: KW Approved: COB



# APPENDIX A RECORDS OF TITLE



# RECORD OF TITLE UNDER LAND TRANSFER ACT 2017 FREEHOLD





Constituted as a Record of Title pursuant to Sections 7 and 12 of the Land Transfer Act 2017 - 12 November 2018

Identifier	NA66D/174		
Land Registration District	North Auckland		
Date Issued	05 August 1987		

**Prior References** NA55D/1226

EstateFee SimpleArea2.6085 hectares more or lessLegal DescriptionLot 1 Deposited Plan 117365Original Registered Original Registered UnitedUnited

#### Interests

Subject to Section 59 Land Act 1948

Subject to Section 8 Coal Mines Amendment Act 1950

C838223.3 Mortgage to Bank of New Zealand - 3.5.1995 at 2.24 pm

5976637.1 Discharge of Mortgage C838223.3 - 22.4.2004 at 9:00 am

5976637.2 Transfer to Jian Deng and Lei Shi - 22.4.2004 at 9:00 am

5976637.3 Mortgage to Bank of New Zealand - 22.4.2004 at 9:00 am

6700899.1 Discharge of Mortgage 5976637.3 - 21.12.2005 at 9:00 am

6700899.2 Transfer to Jian Zhong (1/3 share), Lihua Chen (1/3 share) and Yanqing Tang (1/3 share) - 21.12.2005 at 9:00 am

6700899.3 Mortgage to ASB Bank Limited - 21.12.2005 at 9:00 am

#### NA66D/174









# RECORD OF TITLE UNDER LAND TRANSFER ACT 2017 FREEHOLD

Search Copy



R.W. Muir Registrar-General of Land

IdentifierNA66D/174Land Registration DistrictNorth AucklandDate Issued05 August 1987

**Prior References** NA55D/1226

EstateFee SimpleArea2.6085 hectares more or lessLegal DescriptionLot 1 Deposited Plan 117365Registered OwnersJian Zhong as to a 1/3 shareLihua Chen as to a 1/3 shareYanqing Tang as to a 1/3 share

#### Interests

Subject to Section 59 Land Act 1948 Subject to Section 8 Coal Mines Amendment Act 1950 6700899.3 Mortgage to ASB Bank Limited - 21.12.2005 at 9:00 am





# APPENDIX B HISTORICAL AERIAL PHOTOGRAPHS













73 Trig Road, Whenuapai

Date: 28/07/2022 Drawn: KW Approved: COB


### APPENDIX C PROPERTY FILE EXTRACTS

### Building

### 73 Trig Road Whenuapai

Application No.	Description	Issue Date	Status
BPM-1985-29250	Glasshouse	31/12/1985	Issued (See Note 1)
BPM-1985-29431	Shed	31/12/1985	Issued (See Note 1)
BPM-1985-29342	Relocated dwelling	31/12/1985	Issued (See Note 1)
COM-2000-135	Additions to dwelling	15/02/2000	CCC Issued 01/03/2004 (See Note 2)

Note	Description
1	Permit issued prior to the Building Act 1991 taking effect. Code Compliance Certificates (CCC) were not required.
2	Code Compliance Certificate (CCC) for this consent was issued.

Please note that prior to the Building Act 1991; Councils were not required to maintain full records of building consents [etc] issued under the Building Act. While Auckland Council has always endeavoured to maintain full records of pre-Building Act 1991 matters, not all records for this period have survived and in other cases where building work is documented, information may be incomplete. Council does not accept responsibility for any omission.

It is recommended that the Council property file is viewed and compared with the actual building and activities on site to identify any illegal or unauthorised building works or activities.

### **Compliance Schedules (Building Warrant of Fitness)**

The Council has no record of a Compliance Schedule for this property/building.

If it is evident that any specified systems such as lifts or commercial fire alarms are present in the building, the owner must ensure there is a current compliance schedule or building warrant of fitness.

### Swimming/Spa Pool Barriers

The Council has no record of a swimming pool or spa pool being registered on this property. Swimming pools and spa pools must have a barrier that complies with the Building Act 2004.

Pool barrier information is available for viewing at http://www.aucklandcouncil.govt.nz







### APPENDIX D SITE PHOTOGRAPHS







PLATE 3: Dwelling



PLATE 4: Storage shed



### APPENDIX E LABORATORY RESULTS





All tests reported herein have been performed in accordance with the laboratory's scope of accreditation

Geosciences Ltd					
First Floor, 47 Clyde Road					
Browns Bay					
Auckland	NZ 0630				

Atter	tion:
-------	-------

Carl O'Brien

Report
Project name
Project ID
Received Date

877977-S 73 TRIG ROAD J1732 Apr 07, 2022

Client Sample ID			COMP1
Sample Matrix			Soil
			K22-
Eurofins Sample No.			Ap0013784
Date Sampled			Apr 06, 2022
Test/Reference	LOR	Unit	
Organochlorine Pesticides (NZ MfE)		_	
2.4'-DDD	0.01	mg/kg	< 0.01
2.4'-DDE	0.01	mg/kg	< 0.01
2.4'-DDT	0.01	mg/kg	< 0.01
4.4'-DDD	0.01	mg/kg	< 0.01
4.4'-DDE	0.01	mg/kg	< 0.01
4.4'-DDT	0.01	mg/kg	< 0.01
DDT + DDE + DDD (Total)*	0.01	mg/kg	< 0.01
a-HCH	0.01	mg/kg	< 0.01
Aldrin	0.01	mg/kg	< 0.01
b-HCH	0.01	mg/kg	< 0.01
Chlordanes - Total	0.01	mg/kg	< 0.01
cis-Chlordane	0.01	mg/kg	< 0.01
d-HCH	0.01	mg/kg	< 0.01
Dieldrin	0.01	mg/kg	< 0.01
Endosulfan I	0.01	mg/kg	< 0.01
Endosulfan II	0.01	mg/kg	< 0.01
Endosulfan sulphate	0.01	mg/kg	< 0.01
Endrin	0.01	mg/kg	< 0.01
Endrin aldehyde	0.01	mg/kg	< 0.01
Endrin ketone	0.01	mg/kg	< 0.01
g-HCH (Lindane)	0.01	mg/kg	< 0.01
Heptachlor	0.01	mg/kg	< 0.01
Heptachlor epoxide	0.01	mg/kg	< 0.01
Hexachlorobenzene	0.01	mg/kg	< 0.01
Methoxychlor	0.01	mg/kg	< 0.01
Toxaphene	0.5	mg/kg	< 0.5
trans-Chlordane	0.01	mg/kg	< 0.01
Dibutylchlorendate (surr.)	1	%	118
Tetrachloro-m-xylene (surr.)	1	%	121
Heavy Metals			
Copper	0.1	mg/kg	14
Metals M8 (NZ MfE)			
Arsenic	0.1	mg/kg	5.5
Lead	0.1	mg/kg	12
% Moisture	1	%	18



### Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Organochlorine Pesticides (NZ MfE)	Auckland	Apr 08, 2022	14 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water by GCMSMS			
Heavy Metals	Auckland	Apr 07, 2022	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Metals M8 (NZ MfE)	Auckland	Apr 07, 2022	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
% Moisture	Auckland	Apr 07, 2022	14 Days
- Method: LTM-GEN-7080 Moisture Content in Soil by Gravimetry			

Date Reported: Apr 14, 2022

Eurofins Environ			<b>Eurofins Environme</b>	ment Testing NZ Limited			Eurofins Environment Testing Australia Pty Ltd	Eurofins ARL Pty Ltd		
eurofins 📔 🐘			NZBN: 9429046024954				ABN: 50 005 085 521	ABN: 91 05 0159 898		
web: wy email: E	ww.eurofins.com.au	.com	ronment	Testing	Auckland 35 O'Rorke Road Penrose, Auckland 1061 Phone : +64 9 526 45 51 IANZ # 1327	C 4: R P I	hristch 3 Detroi ollestor hone : ( NZ # 1	it Drive n, Christ 0800 85 290	Melbourne         Sydney         Brisbane         Newcastle           6 Monterey Road         179 Magowar Road         1/21 Smallwood Place         4/52 Industrial Drive           675 Dandenong South VIC 3175         Girraween NSW 2066         Murarrie QLD 4172         Mayfield East NSW 2304           Phone : +61 3 8564 5000         Phone : +61 2 9900 8400         Phone : +61 7 3902 4600         PO Box 60 Wickham 2293           NATA # 1261 Site # 1254         NATA # 1261 Site # 18217         NATA # 1261 Site # 20794         Phone : +61 2 4968 8448	Perth 46-48 Banksia Road Welshpool WA 6106 Phone : +61 8 6253 4444 NATA # 2377 Site # 2370
Cor Ade	mpany Name: dress:	Geosciences First Floor, 4 Browns Bay Auckland	Ltd 7 Clyde Road NZ 0630	I			O R Pl Fa	rder I eport hone: ax:	Received:         Apr 7, 2022 11:00 /           877977         Due:         Apr 14, 2022           0011 64 9 4760 454         Priority:         5 Day           Contact Name:         Carl O'Brien	M
Pro Pro	ject Name: ject ID:	73 TRIG RO/ J1732	AD						Eurofins Analytical Services Manager : Kar	shma Patel
		Sa	mple Detail			HOLD	Moisture Set	Eurofins Suite B22-NZ: OCP, Metals (As,Cu,Pb) (NZ MfE)		
Auck	land Laborator	y - IANZ# 1327				Х	Х	х		
Chris	stchurch Labor	atory - IANZ# 12	290							
Exte	rnal Laboratory	,								
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID					
1	COMP1	Apr 06, 2022		Soil	K22- Ap0013784		х	х		
2	COMP 1A	Apr 06, 2022		Soil	K22- Ap0013785	х				
3	COMP 1B	Apr 06, 2022		Soil	K22- Ap0013786	х				
4	COMP 1C	Apr 06, 2022		Soil	K22- Ap0013787	х				
5	COMP 1D	Apr 06, 2022		Soil	K22- Ap0013788	х				
Test	Counts					4	1	1		



#### Internal Quality Control Review and Glossary

#### General

- 1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
- 2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
- 3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
- 4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- 5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
- 6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- 7. Samples were analysed on an 'as received' basis.
- 8. Information identified on this report with blue colour, indicates data provided by customer that may have an impact on the results.
- 9. This report replaces any interim results previously issued.

#### **Holding Times**

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

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA. If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

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

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

#### Units

mg/kg: milligrams per kilogram	mg/L: milligrams per litre	μg/L: micrograms per litre
ppm: parts per million	ppb: parts per billion	%: Percentage
org/100 mL: Organisms per 100 millilitres	NTU: Nephelometric Turbidity Units	MPN/100 mL: Most Probable Number of organisms per 100 millilitres

#### Terms

APHA	American Public Health Association
coc	Chain of Custody
СР	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
твто	Tributyltin oxide ( <i>bis</i> -tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment however free tributyltin was measured and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

#### **QC** - Acceptance Criteria

The acceptance criteria should be used as a guide only and may be different when site specific Sampling Analysis and Quality Plan (SAQP) have been implemented RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR: No Limit

Results between 10-20 times the LOR: RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.4 where no positive PFAS results have been reported have been reviewed and no data was affected.

### **QC Data General Comments**

- 1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- 2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- 3. pH and Free Chlorine analysed in the laboratory Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- 4. Recovery Data (Spikes & Surrogates) where chromatographic interference does not allow the determination of recovery the term "INT" appears against that analyte.
- 5. For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
- 6. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.



### **Quality Control Results**

Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Method Blank			 -		
Organochlorine Pesticides (NZ MfE)					
2.4'-DDD	mg/kg	< 0.01	0.01	Pass	
2.4'-DDE	mg/kg	< 0.01	0.01	Pass	
2.4'-DDT	mg/kg	< 0.01	0.01	Pass	
4.4'-DDD	mg/kg	< 0.01	0.01	Pass	
4.4'-DDE	mg/kg	< 0.01	0.01	Pass	
4.4'-DDT	mg/kg	< 0.01	0.01	Pass	
a-HCH	mg/kg	< 0.01	0.01	Pass	
Aldrin	mg/kg	< 0.01	0.01	Pass	
b-HCH	mg/kg	< 0.01	0.01	Pass	
Chlordanes - Total	mg/kg	< 0.01	0.01	Pass	
cis-Chlordane	mg/kg	< 0.01	0.01	Pass	
d-HCH	mg/kg	< 0.01	0.01	Pass	
Dieldrin	mg/kg	< 0.01	0.01	Pass	
Endosulfan I	mg/kg	< 0.01	0.01	Pass	
Endosulfan II	mg/kg	< 0.01	0.01	Pass	
Endosulfan sulphate	mg/kg	< 0.01	0.01	Pass	
Endrin	mg/kg	< 0.01	0.01	Pass	
Endrin aldehyde	mg/kg	< 0.01	0.01	Pass	
Endrin ketone	mg/kg	< 0.01	0.01	Pass	
g-HCH (Lindane)	mg/kg	< 0.01	0.01	Pass	
Heptachlor	mg/kg	< 0.01	0.01	Pass	
Heptachlor epoxide	mg/kg	< 0.01	0.01	Pass	
Hexachlorobenzene	mg/kg	< 0.01	0.01	Pass	
Methoxychlor	mg/kg	< 0.01	0.01	Pass	
Toxaphene	mg/kg	< 0.5	0.5	Pass	
trans-Chlordane	mg/kg	< 0.01	0.01	Pass	
Method Blank					
Heavy Metals					
Copper	mg/kg	< 0.1	0.1	Pass	
Method Blank					
Metals M8 (NZ MfE)					
Arsenic	mg/kg	< 0.1	0.1	Pass	
Lead	mg/kg	< 0.1	0.1	Pass	
LCS - % Recovery					
Organochlorine Pesticides (NZ MfE)					
2.4'-DDD	%	102	70-130	Pass	
2.4'-DDE	%	123	70-130	Pass	
2.4'-DDT	%	73	70-130	Pass	
4.4'-DDD	%	90	70-130	Pass	
4.4'-DDE	%	126	70-130	Pass	
4.4'-DDT	%	87	70-130	Pass	
a-HCH	%	103	70-130	Pass	
Aldrin	%	108	70-130	Pass	
b-HCH	%	125	70-130	Pass	
Chlordanes - Total	%	115	70-130	Pass	
cis-Chlordane	%	84	70-130	Pass	
d-HCH	%	88	70-130	Pass	
Dieldrin	%	111	70-130	Pass	
Endosulfan I	%	118	70-130	Pass	
Endosulfan II	%	122	70-130	Pass	



Endoulina subplate         %         %         %         %         70-130         Pass           Endrin subplate          108         70-130         Pass            Endrin subplate         %         121         70-130         Pass            Endrin subplate         %         121         70-130         Pass            Endrin subplate         %         85         70-130         Pass            Heptachlor epocide          %         80         70-130         Pass           Hexachlorobenzone         %         93         70-130         Pass            Methoxychlo          %         93         70-130         Pass           Cosper         %         93         70-130         Pass            LCS -% Recovery         %         107         80-120         Pass            LCS -% Recovery         %         100         80-120         Pass            Ledd          Surfame         McD         %         100         80-120         Pass           Ledd         Ledd         Surfame         McD         %	Test			Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Endin         Image         Total and Pass         Pass           Endin lakanne	Endosulfan sulphate			%	95		70-130	Pass	
Endin latelyde%.1.27%.<	Endrin			%	108		70-130	Pass	
Endin skanne         j.v.         121         70         70         70         88           Heptachlor	Endrin aldehyde			%	127		70-130	Pass	
gHcH (Lindane)         Figuration         %         85         70.103         Pass           Heptachlor epoxide          %         80         70.130         Pass           Hexachlorobenzene         %         93         70.130         Pass           Methoxychor         %         93         70.130         Pass           Urans-Chiordane         %         93         70.130         Pass           Copper         %         75         70.130         Pass           Copper          %         75         70.130         Pass           Copper          %         107         80.120         Pass           Copper          %         107         80.120         Pass           Lead          %         100         80.120         Pass           Lead         Source         %         100         80.120         Pass           Carsenic         Lab Sample ID         %         100         80.120         Pass           Solice : McCovery          Result 1         80.120         Pass         Carlines           Carlo DD         Z22-Ap0017134         NCP         % <td< td=""><td>Endrin ketone</td><td></td><td></td><td>%</td><td>121</td><td></td><td>70-130</td><td>Pass</td><td></td></td<>	Endrin ketone			%	121		70-130	Pass	
Heptachlor opoide         Ys.         95         70.103         Pass           Heptachlor opoide         Ys.         80         70.130         Pass           Hexachlorobenzene         Ys.         93         70.130         Pass           Methoxychlor         Ys.         75         70.130         Pass           Inan-Chlordane         Ys.         75         70.130         Pass           ICS -X Recovery         Ys.         75         70.130         Pass           Copper         Vs. Recovery         Ys.         75         70.130         Pass           COS -X Recovery         Ys.         107         80.120         Pass         Cass           Copper         Test         Lab Sample D         Source         Ys.         100         80.120         Pass           Spike -X Recovery         Ys.         100         80.120         Pass         Cass           Cyrganchforin Pesticides (NZ MHE)         Korp Ys.         100         70.130         Pass           2.4'DDE         222-Ap0017134         NCP Ys.         103         70.130         Pass           2.4'DDE         222-Ap017134         NCP Ys.         113         70.130         Pass           <	g-HCH (Lindane)			%	85		70-130	Pass	
Heptachlor opoxide         File         80         70         983         983           Hexachlorobenzene         %         93         70130         Pass           Methacychor         %         75         70130         Pass           Irans-Chindana         %         75         70130         Pass           Irans-Chindana         %         75         70130         Pass           Copper         *         *         1         80120         Pass           Copper         *         %         100         80120         Pass           Lesd         *         %         100         80120         Pass           Spice *: Recovery         *         100         80120         Pass           Lead         Test         Lab Sample D         QA         %         100         80120         Pass           2.4*DD1         Z2±Ap0017134         NCP         %         103         70130         Pass           2.4*DD1         Z2±Ap0017134         NCP         %         113         70130         Pass           2.4*DD1         Z2±Ap0017134         NCP         %         113         70130         Pass           4.4*DD2 </td <td>Heptachlor</td> <td></td> <td></td> <td>%</td> <td>95</td> <td></td> <td>70-130</td> <td>Pass</td> <td></td>	Heptachlor			%	95		70-130	Pass	
Heschicobancene         %         93         70-130         Pass           Methoxychlor         %         93         70-130         Pass           Itans-Chlordane         %         75         70-130         Pass           Itans-Chlordane         %         75         70-130         Pass           Itans-Chlordane         %         107         80-120         Pass           Copper         %         107         80-120         Pass           Itans (Nicz ME)         %         104         80-120         Pass           Lesd         Test         Lab Sample ID         %         104         80-120         Pass           CygnochOrine Pesticides (NZ ME)         Kecovery         Wits         Result 1         Acceptance         Pass           Z4-DDD         Z22-Ap0017134         NCP         %         100         70-130         Pass           Z4-DDT         Z22-Ap0017134         NCP         %         103         70-130         Pass           Z4-DDT         Z22-Ap0017134         NCP         %         113         70-130         Pass           Ad-DDD         Z22-Ap0017134         NCP         %         113         70-130         Pass <td>Heptachlor epoxide</td> <td></td> <td></td> <td>%</td> <td>80</td> <td></td> <td>70-130</td> <td>Pass</td> <td></td>	Heptachlor epoxide			%	80		70-130	Pass	
Nethoxychlor         N         93         75         70-130         Pass           Ltans-Chlordane         %         75         70-130         Pass           LCS -% Recovery          107         80-120         Pass           Copper         %         107         80-120         Pass           LCS -% Recovery         %         104         80-120         Pass           Lest & Kecovery         %         104         80-120         Pass           Lead         %         100         80-120         Pass           Splice -% Recovery          %         100         80-120         Pass           Carbotonic Pesticides (NZ MF)         Kesult 1         Kesult 1         Keceptance Pass         Cullifying Code           2.4'-DD1         Z22-Ap0017134         NCP         %         100         70-130         Pass           2.4'-DD1         Z22-Ap0017134         NCP         %         103         70-130         Pass           2.4'-DD1         Z22-Ap0017134         NCP         %         113         70-130         Pass           4.4'-DD2         Z22-Ap0017134         NCP         %         113         70-130         Pass	Hexachlorobenzene			%	93		70-130	Pass	
trans-Chloridane         Time	Methoxychlor			%	93		70-130	Pass	
Image of the second se	trans-Chlordane			%	75		70-130	Pass	
Heavy Metals         V         I         I         I         I         I         I           Copper         US<*% Recovery	LCS - % Recovery								
Copper%10780-120PassLCS * % Recovery </td <td>Heavy Metals</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	Heavy Metals								
UCS - % Recovery           Metals MB (NZ MFE)           Arsenic           %         104           Result 1           Test         Lab Sample ID Spike - % Recovery         %         100         Result 1           Corregation of the system of the syste	Copper			%	107		80-120	Pass	
Metals M8 (NZ MFE)         v         /         /         /         /         /           Arsenic	LCS - % Recovery					· · ·			
Arsenic         %         104         80-120         Pass           Lead         %         100         80-120         Pass         Calling           Test         Lab Sample ID         QA Source         Units         Result 1         Acceptance Acceptance         Pass         Calling         Pass         Calling         Calling         Calling         Pass         Calling         Pass         Calling         Calling         Calling         Pass         Calling         Pass         Calling         Calling         Pass         Calling         Pass         Calling         Calling         Calling         Pass         Calling         Calling         Pass         Calling         Calling         Pass         Calling         Calling         Pass         Calling         Calling         Calling         Calling         Pass         Calling         Calling <thcalling< th="">         Calling         <thcalling< th=""></thcalling<></thcalling<>	Metals M8 (NZ MfE)								
Lead         Test         Lab Sample ID         QA Source         Units         Result 1         Acceptance Acceptance Units         Pass Acceptance Color         Qualifying Color           Spike -% Recovery	Arsenic			%	104		80-120	Pass	
Test         Lab Sample ID         QA Source         Units         Result 1         Acceptance Limits         Qualifying Code           Spike - % Recovery         V         V         NCP         %         100         70-130         Pass         2           2.4-DDD         Z22-Ap0017134         NCP         %         100         70-130         Pass         2           2.4-DDT         Z22-Ap0017134         NCP         %         103         70-130         Pass         2           4.4-DDT         Z22-Ap0017134         NCP         %         104         70-130         Pass         2           4.4-DDT         Z22-Ap0017134         NCP         %         113         70-130         Pass         2           4.4-DDT         Z22-Ap0017134         NCP         %         111         70-130         Pass         2           ALdrin         K22-Ap0017134         NCP         %         117         70-130         Pass         2           ALdrin         K22-Ap0017134         NCP         %         88         70-130         Pass         2           Chlordanes         Total         K22-Ap0017134         NCP         %         108         70-130         Pass	Lead			%	100		80-120	Pass	
Spike - % Recovery         Resourt         Result 1         Image: constraint of the system	Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Organochlorine Pesticides (NZ MFE)         Result 1         Image: Constraint of the second s	Spike - % Recovery								
2.4-DDD         222-Ap0017134         NCP         %         100         70-130         Pass           2.4-DDE         Z22-Ap0017134         NCP         %         105         70-130         Pass           2.4-DDT         Z22-Ap0017134         NCP         %         104         70-130         Pass           4.4-DDD         Z22-Ap017134         NCP         %         104         70-130         Pass           4.4-DDE         Z22-Ap017134         NCP         %         113         70-130         Pass           -4.4-DDT         Z22-Ap0017134         NCP         %         113         70-130         Pass           -Aldrin         K22-Ap0017134         NCP         %         117         70-130         Pass           -Aldrin         K22-Ap0017134         NCP         %         117         70-130         Pass           -Chlordanes - Total         K22-Ap0017134         NCP         %         122         70-130         Pass           -Chlordane         Z22-Ap0017134         NCP         %         108         70-130         Pass           -Chlordane         Z22-Ap0017134         NCP         %         171         70-130         Pass           Endo	Organochlorine Pesticides (NZ MfE	E)			Result 1				
2.4-DDE         222-Ap0017134         NCP         %         105         70-130         Pass           2.4-DDT         Z22-Ap0017134         NCP         %         103         70-130         Pass           4.4-DDD         Z22-Ap017134         NCP         %         104         70-130         Pass           4.4-DDT         Z22-Ap017134         NCP         %         71         70-130         Pass           4.4-DDT         Z22-Ap0017134         NCP         %         117         70-130         Pass           a-HCH         Z22-Ap0017134         NCP         %         117         70-130         Pass           b-HCH         Z22-Ap0017134         NCP         %         70         70-130         Pass           cis-Chlordanes - Total         K22-Ap0016327         NCP         %         94         70-130         Pass           cis-Chlordane         Z22-Ap0017134         NCP         %         108         70-130         Pass           cids-Chlordane         Z22-Ap0017134         NCP         %         17         70-130         Pass           Endosulfan I         Z22-Ap0017134         NCP         %         17         70-130         Pass <td< td=""><td>2.4'-DDD</td><td>Z22-Ap0017134</td><td>NCP</td><td>%</td><td>100</td><td></td><td>70-130</td><td>Pass</td><td></td></td<>	2.4'-DDD	Z22-Ap0017134	NCP	%	100		70-130	Pass	
2.4·DDT         Z22-Ap0017134         NCP         %         103         70-130         Pass           4.4·DDD         Z22-Ap0017134         NCP         %         104         70-130         Pass           4.4·DDE         Z22-Ap0017134         NCP         %         113         70-130         Pass           a-HCH         Z22-Ap0017134         NCP         %         113         70-130         Pass           a-HCH         Z22-Ap0017134         NCP         %         117         70-130         Pass           b-HCH         Z22-Ap0016828         NCP         %         70         70-130         Pass           b-HCH         Z22-Ap0017134         NCP         %         88         70-130         Pass           cis-Chlordane         Z22-Ap0017134         NCP         %         94         70-130         Pass           cis-Chlordane         Z22-Ap0017134         NCP         %         108         70-130         Pass           cis-Chlordane         Z22-Ap0017134         NCP         %         17         70-130         Pass           Endosulfan I         Z22-Ap0017134         NCP         %         107         70-130         Pass           Endrin ali	2.4'-DDE	Z22-Ap0017134	NCP	%	105		70-130	Pass	
4.4·DDD         Z22-Ap0017134         NCP         %         104         70-130         Pass           4.4·DDE         Z22-Ap0017134         NCP         %         71         70-130         Pass           4.4·DDT         Z22-Ap0017134         NCP         %         113         70-130         Pass           A.4·DT         Z22-Ap0017134         NCP         %         117         70-130         Pass           Aldrin         K22-Ap0017134         NCP         %         117         70-130         Pass           Aldrin         K22-Ap0017134         NCP         %         88         70-130         Pass           Chlordanes - Total         K22-Ap0017134         NCP         %         94         70-130         Pass           cis-Chlordane         Z22-Ap0017134         NCP         %         108         70-130         Pass           cis-Chlordane         Z22-Ap0017134         NCP         %         107         70-130         Pass           Endosulfan I         Z22-Ap0017134         NCP         %         107         70-130         Pass           Endosulfan II         Z22-Ap0017134         NCP         %         89         70-130         Pass	2.4'-DDT	Z22-Ap0017134	NCP	%	103		70-130	Pass	
4.4·DDE         Z22.Ap0017134         NCP         %         71         70-130         Pass           4.4·DDT         Z22.Ap0017134         NCP         %         113         70-130         Pass           a-HCH         Z22.Ap0017134         NCP         %         117         70-130         Pass           b-HCH         Z22.Ap0017134         NCP         %         117         70-130         Pass           b-HCH         Z22.Ap0017134         NCP         %         88         70-130         Pass           chordanes - Total         K22.Ap0016347         NCP         %         94         70-130         Pass           chordane         Z22.Ap0017134         NCP         %         108         70-130         Pass           chordane         Z22.Ap0017134         NCP         %         108         70-130         Pass           Dieldrin         Z22.Ap0017134         NCP         %         87         70-130         Pass           Endosulfan II         Z22.Ap0017134         NCP         %         107         70-130         Pass           Endrin aldehyde         Z22.Ap0017134         NCP         %         89         70-130         Pass           Endri	4.4'-DDD	Z22-Ap0017134	NCP	%	104		70-130	Pass	
4.4-DDT         Z22-Ap0017134         NCP         %         113         70-130         Pass           a-HCH         Z22-Ap0017134         NCP         %         117         70-130         Pass           Aldrin         K22-Ap0017134         NCP         %         117         70-130         Pass           b-HCH         Z22-Ap001782         NCP         %         88         70-130         Pass           cis-Chlordane         Z22-Ap0017134         NCP         %         94         70-130         Pass           cis-Chlordane         Z22-Ap0017134         NCP         %         122         70-130         Pass           cis-Chlordane         Z22-Ap0017134         NCP         %         108         70-130         Pass           Dieldrin         Z22-Ap0017134         NCP         %         71         70-130         Pass           Endosulfan I         Z22-Ap0017134         NCP         %         87         70-130         Pass           Endosulfan sulphate         Z22-Ap0017134         NCP         %         107         70-130         Pass           Endrin idehyde         Z22-Ap0017134         NCP         %         127         70-130         Pass      E	4.4'-DDE	Z22-Ap0017134	NCP	%	71		70-130	Pass	
a-HCH         Z22-Ap0017134         NCP         %         117         70-130         Pass           Aldrin         K22-Ap0016828         NCP         %         70         70-130         Pass           b-HCH         Z22-Ap0017134         NCP         %         88         70-130         Pass           cb-HCH         Z22-Ap0017134         NCP         %         88         70-130         Pass           cis-Chlordane         Z22-Ap0017134         NCP         %         122         70-130         Pass           d-HCH         Z22-Ap0017134         NCP         %         108         70-130         Pass           d-HCH         Z22-Ap0017134         NCP         %         77         70-130         Pass           Endosulfan I         Z22-Ap0017134         NCP         %         71         70-130         Pass           Endosulfan II         Z22-Ap0017134         NCP         %         107         70-130         Pass           Endosulfan sulphate         Z22-Ap0017134         NCP         %         107         70-130         Pass           Endrin idebnyde         Z22-Ap0017134         NCP         %         89         70-130         Pass	4.4'-DDT	Z22-Ap0017134	NCP	%	113		70-130	Pass	
Aldrin         K22-Ap0016828         NCP         %         70         70-130         Pass           b-HCH         Z22-Ap0017134         NCP         %         88         70-130         Pass           cis-Chlordanes - Total         K22-Ap0016347         NCP         %         94         70-130         Pass           cis-Chlordane         Z22-Ap0017134         NCP         %         122         70-130         Pass           dis-Chlordane         Z22-Ap0017134         NCP         %         108         70-130         Pass           di-HCH         Z22-Ap0017134         NCP         %         108         70-130         Pass           bieldrin         Z22-Ap0017134         NCP         %         77         70-130         Pass           Endosulfan II         Z22-Ap017134         NCP         %         107         70-130         Pass           Endosulfan sulphate         Z22-Ap0017134         NCP         %         107         70-130         Pass           Endrin         Z22-Ap0017134         NCP         %         89         70-130         Pass           Endrin ketone         K22-Ap0017134         NCP         %         89         70-130         Pass	a-HCH	Z22-Ap0017134	NCP	%	117		70-130	Pass	
b-HCH         Z22-Ap0017134         NCP         %         88         70-130         Pass           Chlordanes - Total         K22-Ap0016347         NCP         %         94         70-130         Pass           cis-Chlordane         Z22-Ap0017134         NCP         %         122         70-130         Pass           d-HCH         Z22-Ap0017134         NCP         %         108         70-130         Pass           Dieldrin         Z22-Ap0017134         NCP         %         108         70-130         Pass           Endosulfan I         Z22-Ap0017134         NCP         %         87         70-130         Pass           Endosulfan II         Z22-Ap0017134         NCP         %         87         70-130         Pass           Endosulfan subpate         Z22-Ap0017134         NCP         %         107         70-130         Pass           Endrin         Z22-Ap0017134         NCP         %         89         70-130         Pass           Endrin aldehyde         Z22-Ap0017134         NCP         %         89         70-130         Pass           Endrin ketone         K22-Ap0017134         NCP         %         89         70-130         Pass	Aldrin	K22-Ap0016828	NCP	%	70		70-130	Pass	
Chlordanes - Total         K22-Ap0016347         NCP         %         94         70-130         Pass           cis-Chlordane         Z22-Ap0017134         NCP         %         122         70-130         Pass           d-HCH         Z22-Ap0017134         NCP         %         108         70-130         Pass           Dieldrin         Z22-Ap0017134         NCP         %         77         70-130         Pass           Endosulfan I         Z22-Ap0017134         NCP         %         77         70-130         Pass           Endosulfan II         Z22-Ap0017134         NCP         %         71         70-130         Pass           Endosulfan sulphate         Z22-Ap0017134         NCP         %         107         70-130         Pass           Endrin         Z22-Ap0017134         NCP         %         89         70-130         Pass           Endrin ladehyde         Z22-Ap0017134         NCP         %         89         70-130         Pass           endrin ketone         K22-Ap001828         NCP         %         72         70-130         Pass           endrin ketone         K22-Ap001828         NCP         %         109         70-130         Pass	b-HCH	Z22-Ap0017134	NCP	%	88		70-130	Pass	
cis-Chlordane         Z22-Ap0017134         NCP         %         122         70-130         Pass           d-HCH         Z22-Ap0017134         NCP         %         108         70-130         Pass           Dieldrin         Z22-Ap0017134         NCP         %         108         70-130         Pass           Endosulfan I         Z22-Ap0017134         NCP         %         87         70-130         Pass           Endosulfan II         Z22-Ap0017134         NCP         %         87         70-130         Pass           Endosulfan sulphate         Z22-Ap0017134         NCP         %         71         70-130         Pass           Endosulfan sulphate         Z22-Ap0017134         NCP         %         107         70-130         Pass           Endrin         Z22-Ap0017134         NCP         %         89         70-130         Pass           Endrin aldehyde         Z22-Ap0017134         NCP         %         89         70-130         Pass           Endrin ketone         K22-Ap0017134         NCP         %         89         70-130         Pass           Heptachlor         K22-Ap016828         NCP         %         72         70-130         Pass	Chlordanes - Total	K22-Ap0016347	NCP	%	94		70-130	Pass	
d-HCH         Z22-Ap0017134         NCP         %         108         70-130         Pass           Dieldrin         Z22-Ap0017134         NCP         %         77         70-130         Pass           Endosulfan I         Z22-Ap0017134         NCP         %         87         70-130         Pass           Endosulfan II         Z22-Ap0017134         NCP         %         87         70-130         Pass           Endosulfan sulphate         Z22-Ap0017134         NCP         %         107         70-130         Pass           Endosulfan I         Z22-Ap0017134         NCP         %         107         70-130         Pass           Endrin aldehyde         Z22-Ap0017134         NCP         %         89         70-130         Pass           Endrin aldehyde         Z22-Ap0017134         NCP         %         127         70-130         Pass           Endrin ketone         K22-Ap0017134         NCP         %         89         70-130         Pass           endrin ketone         K22-Ap0017134         NCP         %         89         70-130         Pass           g-HCH (Lindane)         Z22-Ap0017134         NCP         %         109         70-130         Pass<	cis-Chlordane	Z22-Ap0017134	NCP	%	122		70-130	Pass	
Dieldrin         Z22-Ap0017134         NCP         %         77         70-130         Pass           Endosulfan I         Z22-Ap0017134         NCP         %         87         70-130         Pass           Endosulfan II         Z22-Ap0017134         NCP         %         71         70-130         Pass           Endosulfan sulphate         Z22-Ap0017134         NCP         %         107         70-130         Pass           Endrin         Z22-Ap0017134         NCP         %         107         70-130         Pass           Endrin         Z22-Ap0017134         NCP         %         89         70-130         Pass           Endrin aldehyde         Z22-Ap0017134         NCP         %         127         70-130         Pass           Endrin ketone         K22-Ap0017134         NCP         %         127         70-130         Pass           g-HCH (Lindane)         Z22-Ap0017134         NCP         %         72         70-130         Pass           Heptachlor         K22-Ap0016828         NCP         %         109         70-130         Pass           Heptachlor epoxide         Z22-Ap0017134         NCP         %         97         70-130         Pass	d-HCH	Z22-Ap0017134	NCP	%	108		70-130	Pass	
Endosulfan I         Z22-Ap0017134         NCP         %         87         70-130         Pass           Endosulfan II         Z22-Ap0017134         NCP         %         71         70-130         Pass           Endosulfan sulphate         Z22-Ap0017134         NCP         %         107         70-130         Pass           Endosulfan sulphate         Z22-Ap0017134         NCP         %         89         70-130         Pass           Endrin         Z22-Ap0017134         NCP         %         89         70-130         Pass           Endrin aldehyde         Z22-Ap0017134         NCP         %         89         70-130         Pass           Endrin ketone         K22-Ap0017134         NCP         %         89         70-130         Pass           g-HCH (Lindane)         Z22-Ap0017134         NCP         %         89         70-130         Pass           Heptachlor         K22-Ap0016828         NCP         %         72         70-130         Pass           Heptachlor epoxide         Z22-Ap017134         NCP         %         109         70-130         Pass           Hexachlorobenzene         Z22-Ap017134         NCP         %         97         70-130	Dieldrin	Z22-Ap0017134	NCP	%	77		70-130	Pass	
Endosulfan II         Z22-Ap0017134         NCP         %         71         70-130         Pass           Endosulfan sulphate         Z22-Ap0017134         NCP         %         107         70-130         Pass           Endrin         Z22-Ap0017134         NCP         %         89         70-130         Pass           Endrin         Z22-Ap0017134         NCP         %         89         70-130         Pass           Endrin aldehyde         Z22-Ap0017134         NCP         %         127         70-130         Pass           Endrin ketone         K22-Ap0017134         NCP         %         75         70-130         Pass           g-HCH (Lindane)         Z22-Ap0017134         NCP         %         89         70-130         Pass           Heptachlor         K22-Ap0016828         NCP         %         72         70-130         Pass           Heptachlor epoxide         Z22-Ap0017134         NCP         %         109         70-130         Pass           Hexachlorobenzene         Z22-Ap0017134         NCP         %         97         70-130         Pass           trans-Chlordane         K22-Ap0016347         NCP         %         98         70-130	Endosulfan I	Z22-Ap0017134	NCP	%	87		70-130	Pass	
Endosulfan sulphate         Z22-Ap0017134         NCP         %         107         70-130         Pass           Endrin         Z22-Ap0017134         NCP         %         89         70-130         Pass           Endrin aldehyde         Z22-Ap0017134         NCP         %         89         70-130         Pass           Endrin aldehyde         Z22-Ap0017134         NCP         %         127         70-130         Pass           Endrin ketone         K22-Ap0021993         NCP         %         75         70-130         Pass           g-HCH (Lindane)         Z22-Ap0017134         NCP         %         89         70-130         Pass           Heptachlor         K22-Ap0016828         NCP         %         72         70-130         Pass           Heptachlor epoxide         Z22-Ap0017134         NCP         %         109         70-130         Pass           Hexachlorobenzene         Z22-Ap0017134         NCP         %         97         70-130         Pass           Methoxychlor         Z22-Ap0017134         NCP         %         915         70-130         Pass           trans-Chlordane         K22-Ap0016347         NCP         %         98         70-130	Endosulfan II	Z22-Ap0017134	NCP	%	71		70-130	Pass	
Endrin         Z22-Ap0017134         NCP         %         89         70-130         Pass           Endrin aldehyde         Z22-Ap0017134         NCP         %         127         70-130         Pass           Endrin ketone         K22-Ap0017134         NCP         %         75         70-130         Pass           g-HCH (Lindane)         Z22-Ap0017134         NCP         %         89         70-130         Pass           Heptachlor         K22-Ap0016828         NCP         %         72         70-130         Pass           Heptachlor epoxide         Z22-Ap0017134         NCP         %         109         70-130         Pass           Heptachlor epoxide         Z22-Ap0017134         NCP         %         109         70-130         Pass           Hexachlorobenzene         Z22-Ap0017134         NCP         %         97         70-130         Pass           Methoxychlor         Z22-Ap0017134         NCP         %         115         70-130         Pass           trans-Chlordane         K22-Ap0016347         NCP         %         98         70-130         Pass           Spike - % Recovery	Endosulfan sulphate	Z22-Ap0017134	NCP	%	107		70-130	Pass	
Endrin aldehyde         Z22-Ap0017134         NCP         %         127         70-130         Pass           Endrin ketone         K22-Ap0021993         NCP         %         75         70-130         Pass           g-HCH (Lindane)         Z22-Ap0017134         NCP         %         89         70-130         Pass           Heptachlor         K22-Ap0016828         NCP         %         72         70-130         Pass           Heptachlor epoxide         Z22-Ap0017134         NCP         %         109         70-130         Pass           Heptachlor epoxide         Z22-Ap0017134         NCP         %         109         70-130         Pass           Hexachlorobenzene         Z22-Ap0017134         NCP         %         97         70-130         Pass           Methoxychlor         Z22-Ap0017134         NCP         %         97         70-130         Pass           trans-Chlordane         K22-Ap0016347         NCP         %         98         70-130         Pass           Spike - % Recovery         Heavy Metals         Result 1              Copper         K22-Ap0013268         NCP         %         104         75-125         Pass </td <td>Endrin</td> <td>Z22-Ap0017134</td> <td>NCP</td> <td>%</td> <td>89</td> <td></td> <td>70-130</td> <td>Pass</td> <td></td>	Endrin	Z22-Ap0017134	NCP	%	89		70-130	Pass	
Endrin ketone         K22-Ap0021993         NCP         %         75         70-130         Pass           g-HCH (Lindane)         Z22-Ap0017134         NCP         %         89         70-130         Pass           Heptachlor         K22-Ap0016828         NCP         %         72         70-130         Pass           Heptachlor         K22-Ap0016828         NCP         %         72         70-130         Pass           Heptachlor epoxide         Z22-Ap0017134         NCP         %         109         70-130         Pass           Hexachlorobenzene         Z22-Ap0017134         NCP         %         109         70-130         Pass           Methoxychlor         Z22-Ap0017134         NCP         %         97         70-130         Pass           trans-Chlordane         K22-Ap0017134         NCP         %         115         70-130         Pass           spike - % Recovery          %         98         70-130         Pass            Heavy Metals         K22-Ap0013268         NCP         %         104         75-125         Pass           Spike - % Recovery          K22-Ap0013268         NCP         %         103         75-125 <td>Endrin aldehyde</td> <td>Z22-Ap0017134</td> <td>NCP</td> <td>%</td> <td>127</td> <td></td> <td>70-130</td> <td>Pass</td> <td></td>	Endrin aldehyde	Z22-Ap0017134	NCP	%	127		70-130	Pass	
g-HCH (Lindane)         Z22-Ap0017134         NCP         %         89         70-130         Pass           Heptachlor         K22-Ap0016828         NCP         %         72         70-130         Pass           Heptachlor epoxide         Z22-Ap0017134         NCP         %         109         70-130         Pass           Heptachlor opoxide         Z22-Ap0017134         NCP         %         109         70-130         Pass           Hexachlorobenzene         Z22-Ap0017134         NCP         %         97         70-130         Pass           Methoxychlor         Z22-Ap0017134         NCP         %         915         70-130         Pass           Itrans-Chlordane         K22-Ap0016347         NCP         %         98         70-130         Pass           Spike - % Recovery         K22-Ap0013268         NCP         %         98         70-130         Pass           Gopper         K22-Ap0013268         NCP         %         104         75-125         Pass           Spike - % Recovery         K22-Ap0013268         NCP         %         103         75-125         Pass           Lead         K22-Ap0013268         NCP         %         103         75-125	Endrin ketone	K22-Ap0021993	NCP	%	75		70-130	Pass	
Heptachlor         K22-Ap0016828         NCP         %         72         70-130         Pass           Heptachlor epoxide         Z22-Ap0017134         NCP         %         109         70-130         Pass           Hexachlorobenzene         Z22-Ap0017134         NCP         %         97         70-130         Pass           Methoxychlor         Z22-Ap0017134         NCP         %         97         70-130         Pass           Methoxychlor         Z22-Ap0017134         NCP         %         97         70-130         Pass           trans-Chlordane         K22-Ap0016347         NCP         %         98         70-130         Pass           Spike - % Recovery         K22-Ap0013268         NCP         %         98         70-130         Pass           Heavy Metals         K22-Ap0013268         NCP         %         104         75-125         Pass           Spike - % Recovery         K22-Ap0013268         NCP         %         104         75-125         Pass           Metals M8 (NZ MfE)         Result 1                Arsenic         K22-Ap0013268         NCP         %         103         75-125         Pass	g-HCH (Lindane)	Z22-Ap0017134	NCP	%	89		70-130	Pass	
Heptachlor epoxide         Z22-Ap0017134         NCP         %         109         70-130         Pass           Hexachlorobenzene         Z22-Ap0017134         NCP         %         97         70-130         Pass           Methoxychlor         Z22-Ap0017134         NCP         %         97         70-130         Pass           Methoxychlor         Z22-Ap0017134         NCP         %         115         70-130         Pass           trans-Chlordane         K22-Ap0016347         NCP         %         98         70-130         Pass           Spike - % Recovery         K22-Ap0013268         NCP         %         98         70-130         Pass           Copper         K22-Ap0013268         NCP         %         104         75-125         Pass           Spike - % Recovery	Heptachlor	K22-Ap0016828	NCP	%	72		70-130	Pass	
Hexachlorobenzene         Z22-Ap0017134         NCP         %         97         70-130         Pass           Methoxychlor         Z22-Ap0017134         NCP         %         115         70-130         Pass           trans-Chlordane         K22-Ap0016347         NCP         %         98         70-130         Pass           Spike - % Recovery         K22-Ap0016347         NCP         %         98         70-130         Pass           Heavy Metals         K22-Ap0013268         NCP         %         104         75-125         Pass           Copper         K22-Ap0013268         NCP         %         104         75-125         Pass           Spike - % Recovery         K22-Ap0013268         NCP         %         103         75-125         Pass           Lead         K22-Ap0013268         NCP         %         103         75-125         Pass	Heptachlor epoxide	Z22-Ap0017134	NCP	%	109		70-130	Pass	
Methoxychlor         Z22-Ap0017134         NCP         %         115         70-130         Pass           trans-Chlordane         K22-Ap0016347         NCP         %         98         70-130         Pass           Spike - % Recovery         K22-Ap0013268         NCP         %         104         75-125         Pass           Gopper         K22-Ap0013268         NCP         %         104         75-125         Pass           Spike - % Recovery         Result 1         Result 1         Copper         K22-Ap0013268         NCP         %         104         75-125         Pass           Metals M8 (NZ MfE)         K22-Ap0013268         NCP         %         103         75-125         Pass           Lead         K22-Ap0013268         NCP         %         97         75-125         Pass	Hexachlorobenzene	Z22-Ap0017134	NCP	%	97		70-130	Pass	
trans-Chlordane         K22-Ap0016347         NCP         %         98         70-130         Pass           Spike - % Recovery         Result 1         Result 1         Image: Copper serve serv	Methoxychlor	Z22-Ap0017134	NCP	%	115		70-130	Pass	
Spike - % Recovery         Result 1         Image: Composition of the system of the sys	trans-Chlordane	K22-Ap0016347	NCP	%	98		70-130	Pass	
Result 1         Image: colspan="3">Metals           Copper         K22-Ap0013268         NCP         %         104         75-125         Pass           Spike - % Recovery         Metals M8 (NZ MfE)         Result 1         Image: colspan="3">Metals M8 (NZ MfE)           Arsenic         K22-Ap0013268         NCP         %         103         75-125         Pass           Lead         K22-Ap0013268         NCP         %         97         75-125         Pass	Spike - % Recovery	·			•				
Copper         K22-Ap0013268         NCP         %         104         75-125         Pass           Spike - % Recovery         Result 1         Result 1              Metals M8 (NZ MfE)         K22-Ap0013268         NCP         %         103         75-125         Pass           Arsenic         K22-Ap0013268         NCP         %         103         75-125         Pass           Lead         K22-Ap0013268         NCP         %         97         75-125         Pass	Heavy Metals				Result 1				
Spike - % Recovery           Metals M8 (NZ MfE)         Result 1         Image: Colspan="5">Colspan="5">Colspan="5">Colspan="5">Colspan="5">Colspan="5">Colspan="5">Colspan="5">Colspan="5"Colspan="5"Colspan="5">Colspan="5"Colspan=	Copper	K22-Ap0013268	NCP	%	104		75-125	Pass	
Metals M8 (NZ MfE)         Result 1         Result 1         Metals M8 (NZ MfE)           Arsenic         K22-Ap0013268         NCP         %         103         75-125         Pass           Lead         K22-Ap0013268         NCP         %         97         75-125         Pass	Spike - % Recovery	·							
Arsenic         K22-Ap0013268         NCP         %         103         75-125         Pass           Lead         K22-Ap0013268         NCP         %         97         75-125         Pass	Metals M8 (NZ MfE)				Result 1				
Lead K22-Ap0013268 NCP % 97 75-125 Pass	Arsenic	K22-Ap0013268	NCP	%	103		75-125	Pass	
	Lead	K22-Ap0013268	NCP	%	97		75-125	Pass	



Test Lab Sample ID QA Source Units				Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Organochlorine Pesticides (NZ Mfl	E)			Result 1	Result 2	RPD			
2.4'-DDD	Z22-Ap0017133	NCP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
2.4'-DDE	Z22-Ap0017133	NCP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
2.4'-DDT	Z22-Ap0017133	NCP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
4.4'-DDD	Z22-Ap0017133	NCP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
4.4'-DDE	Z22-Ap0017133	NCP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
4.4'-DDT	Z22-Ap0017133	NCP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
a-HCH	Z22-Ap0017133	NCP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Aldrin	Z22-Ap0017133	NCP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
b-HCH	Z22-Ap0017133	NCP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Chlordanes - Total	Z22-Ap0017133	NCP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
cis-Chlordane	Z22-Ap0017133	NCP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
d-HCH	Z22-Ap0017133	NCP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Dieldrin	Z22-Ap0017133	NCP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Endosulfan I	Z22-Ap0017133	NCP	mg/kg	< 0.01 < 0.01 <1 30%				Pass	
Endosulfan II	Endosulfan II Z22-Ap0017133 NCP m		mg/kg	< 0.01 < 0.01 <1 30%		30%	Pass		
Endosulfan sulphate	sulfan sulphate Z22-Ap0017133 NCP mg/		mg/kg	< 0.01 < 0.01 <1		<1	30%	Pass	
Endrin	Z22-Ap0017133	NCP	mg/kg	< 0.01	< 0.01 < 0.01 <1 30%		30%	Pass	
Endrin aldehyde	Z22-Ap0017133	NCP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Endrin ketone	Z22-Ap0017133	NCP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
g-HCH (Lindane)	Z22-Ap0017133	NCP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Heptachlor	Z22-Ap0017133	NCP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Heptachlor epoxide	Z22-Ap0017133	NCP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Hexachlorobenzene	Z22-Ap0017133	NCP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Methoxychlor	Z22-Ap0017133	NCP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Toxaphene	K22-Ap0003221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
trans-Chlordane	Z22-Ap0017133	NCP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Copper	K22-Ap0013821	NCP	mg/kg	37	37	1.0	30%	Pass	
Duplicate									
Metals M8 (NZ MfE)				Result 1	Result 2	RPD			
Arsenic	K22-Ap0013821	NCP	mg/kg	8.9	9.5	7.0	30%	Pass	
Lead	K22-Ap0013821	NCP	mg/kg	27	29	8.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	K22-Ap0013821	NCP	%	20	19	4.0	30%	Pass	



### Comments

Sample Integrity	
Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	No
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

### Authorised by:

Swati Oberoi Michael Ritchie Analytical Services Manager Senior Analyst

JAD)

Michael Ritchie Head of Semi Volatiles (Key Technical Personnel)

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

\* Indicates IANZ accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

Eurofins shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.





All tests reported herein have been performed in accordance with the laboratory's scope of accreditation

Geosciences Ltd First Floor, 47 Clyde Road Browns Bay Auckland NZ 0630

Chris Davies

Report
Project name
Project ID
Received Date

**906096-S** 73 TRIG ROAD J1732A Jul 15, 2022

Client Sample ID			Comp 2	Comp 3	Comp 4	Comp E	
Sample Matrix			Comp-2	Comp-s	Soil	Soil	
Eurofins Sample No.			K22-JIUU3U561	K22-J10030562	K22-J10030563	K22-J10030564	
Date Sampled			Jul 13, 2022	Jul 13, 2022	Jul 13, 2022	Jul 13, 2022	
Test/Reference	LOR	Unit					
Organochlorine Pesticides (NZ MfE)							
2.4'-DDD	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	
2.4'-DDE	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	
2.4'-DDT	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	
4.4'-DDD	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	
4.4'-DDE	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	
4.4'-DDT	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	
DDT + DDE + DDD (Total)*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	
a-HCH	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	
Aldrin	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	
b-HCH	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	
Chlordanes - Total	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	
cis-Chlordane	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	
d-HCH	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	
Dieldrin	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	
Endosulfan I	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	
Endosulfan II	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	
Endosulfan sulphate	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	
Endrin	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	
Endrin aldehyde	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	
Endrin ketone	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	
g-HCH (Lindane)	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	
Heptachlor	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	
Heptachlor epoxide	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	
Hexachlorobenzene	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	
Methoxychlor	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	
Toxaphene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	
trans-Chlordane	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	
Dibutylchlorendate (surr.)	1	%	99	96	73	62	
Tetrachloro-m-xylene (surr.)	1	%	115	109	89	99	
Heavy Metals		•					
Copper	0.1	mg/kg	9.4	11	15	18	
Metals M8 (NZ MfE)	1						
Arsenic	0.1	ma/ka	1.8	3.5	2.9	3.2	
Lead	0.1	ma/ka	9.3	15	16	18	
		- JJ			-		
% Moisture	1	%	25	32	42	31	
1			-				



Client Sample ID			SS1 0-75mm	SS2 0-75mm	SS5 0-75mm	SS6 0-75mm	
Sample Matrix			Soil	Soil	Soil	Soil	
Eurofins Sample No.			K22-JI0030565	K22-JI0030566	K22-JI0030567	K22-JI0030568	
Date Sampled			Jul 13, 2022	Jul 13. 2022	Jul 13. 2022	Jul 13, 2022	
Test/Reference	LOR	Unit					
Organochlorine Pesticides (NZ MfE)	LOIN	Onit					
2 4'-DD	0.01	ma/ka	_	_	0.01	< 0.01	
2.4'-DDF	0.01	ma/ka	_	_	< 0.01	< 0.01	
2 4'-DDT	0.01	ma/ka	_	_	< 0.01	< 0.01	
4 4'-DDD	0.01	ma/ka	-	-	< 0.01	< 0.01	
4.4'-DDE	0.01	ma/ka	_	-	< 0.01	< 0.01	
4.4'-DDT	0.01	ma/ka	-	-	< 0.01	< 0.01	
DDT + DDE + DDD (Total)*	0.01	ma/ka	-	-	0.01	< 0.01	
a-HCH	0.01	ma/ka	-	-	< 0.01	< 0.01	
Aldrin	0.01	ma/ka	-	-	< 0.01	< 0.01	
b-HCH	0.01	mg/kg	-	-	< 0.01	< 0.01	
Chlordanes - Total	0.01	ma/ka	-	-	< 0.01	< 0.01	
cis-Chlordane	0.01	mg/kg	-	-	< 0.01	< 0.01	
d-HCH	0.01	mg/kg	-	-	< 0.01	< 0.01	
Dieldrin	0.01	mg/kg	-	-	< 0.01	< 0.01	
Endosulfan I	0.01	mg/kg	-	-	< 0.01	< 0.01	
Endosulfan II	0.01	mg/kg	-	-	< 0.01	< 0.01	
Endosulfan sulphate	0.01	mg/kg	-	-	< 0.01	< 0.01	
Endrin	0.01	mg/kg	-	-	< 0.01	< 0.01	
Endrin aldehyde	0.01	mg/kg	-	-	< 0.01	< 0.01	
Endrin ketone	0.01	mg/kg	-	-	< 0.01	< 0.01	
g-HCH (Lindane)	0.01	mg/kg	-	-	< 0.01	< 0.01	
Heptachlor	0.01	mg/kg	-	-	< 0.01	< 0.01	
Heptachlor epoxide	0.01	mg/kg	-	-	< 0.01	< 0.01	
Hexachlorobenzene	0.01	mg/kg	-	-	< 0.01	< 0.01	
Methoxychlor	0.01	mg/kg	-	-	< 0.01	< 0.01	
Toxaphene	0.5	mg/kg	-	-	< 0.5	< 0.5	
trans-Chlordane	0.01	mg/kg	-	-	< 0.01	< 0.01	
Dibutylchlorendate (surr.)	1	%	-	-	INT	INT	
Tetrachloro-m-xylene (surr.)	1	%	-	-	86	93	
% Moisture	1	%	30	32	22	38	
Polycyclic Aromatic Hydrocarbons (NZ MfE)							
Acenaphthene	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	
Acenaphthylene	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	
Anthracene	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	
Benz(a)anthracene	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	
Benzo(a)pyrene	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	
Benzo(a)pyrene TEQ (lower bound)*	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	
Benzo(a)pyrene TEQ (medium bound)*	0.03	mg/kg	0.04	0.04	0.04	0.04	
Benzo(a)pyrene TEQ (upper bound)*	0.03	mg/kg	0.08	0.08	0.08	0.08	
Benzo(b&j)fluoranthene <sup>N07</sup>	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	
Benzo(g.h.i)perylene	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	
Benzo(k)fluoranthene	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	
Chrysene	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	
Dibenz(a.h)anthracene	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	
Fluoranthene	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	
Fluorene	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	
Indeno(1.2.3-cd)pyrene	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	
Naphthalene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	



Client Sample ID			SS1 0-75mm	SS2 0-75mm	SS5 0-75mm	SS6 0-75mm
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			K22-JI0030565	K22-JI0030566	K22-JI0030567	K22-JI0030568
Date Sampled			Jul 13, 2022	Jul 13, 2022	Jul 13, 2022	Jul 13, 2022
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons (NZ MfE)						
Phenanthrene	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03
Pyrene	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03
p-Terphenyl-d14 (surr.)	1	%	134	112	147	149
2-Fluorobiphenyl (surr.)	1	%	99	74	84	91
Metals M7 (NZ MfE)						
Arsenic	0.1	mg/kg	5.2	6.3	2.2	10
Cadmium	0.01	mg/kg	0.31	0.17	0.28	0.25
Chromium	0.1	mg/kg	10	9.5	11	16
Copper	0.1	mg/kg	11	8.3	11	22
Lead	0.1	mg/kg	24	12	15	16
Nickel	0.1	mg/kg	5.2	5.3	8.4	12
Zinc	5	mg/kg	41	16	17	62
Total Petroleum Hydrocarbons (NZ MfE 1999)						
TPH-SG C7-C9	5	mg/kg	-	-	< 5	-
TPH-SG C10-C14	10	mg/kg	-	-	< 10	-
TPH-SG C15-C36	20	mg/kg	-	-	< 20	-
TPH-SG C7-C36 (Total)	35	mg/kg	-	-	< 35	-

Client Sample ID			SS8 0-75mm	SS9 0-75mm	SS10 0-75mm	SS11 0-75mm
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			K22-JI0030569	K22-JI0030570	K22-JI0030571	K22-JI0030572
Date Sampled			Jul 13, 2022	Jul 13, 2022	Jul 13, 2022	Jul 13, 2022
Test/Reference	LOR	Unit				
Organochlorine Pesticides (NZ MfE)						
2.4'-DDD	0.01	mg/kg	-	-	< 0.01	-
2.4'-DDE	0.01	mg/kg	-	-	< 0.01	-
2.4'-DDT	0.01	mg/kg	-	-	< 0.01	-
4.4'-DDD	0.01	mg/kg	-	-	< 0.01	-
4.4'-DDE	0.01	mg/kg	-	-	< 0.01	-
4.4'-DDT	0.01	mg/kg	-	-	< 0.01	-
DDT + DDE + DDD (Total)*	0.01	mg/kg	-	-	< 0.01	-
a-HCH	0.01	mg/kg	-	-	< 0.01	-
Aldrin	0.01	mg/kg	-	-	< 0.01	-
b-HCH	0.01	mg/kg	-	-	< 0.01	-
Chlordanes - Total	0.01	mg/kg	-	-	< 0.01	-
cis-Chlordane	0.01	mg/kg	-	-	< 0.01	-
d-HCH	0.01	mg/kg	-	-	< 0.01	-
Dieldrin	0.01	mg/kg	-	-	< 0.01	-
Endosulfan I	0.01	mg/kg	-	-	< 0.01	-
Endosulfan II	0.01	mg/kg	-	-	< 0.01	-
Endosulfan sulphate	0.01	mg/kg	-	-	< 0.01	-
Endrin	0.01	mg/kg	-	-	< 0.01	-
Endrin aldehyde	0.01	mg/kg	-	-	< 0.01	-
Endrin ketone	0.01	mg/kg	-	-	< 0.01	-
g-HCH (Lindane)	0.01	mg/kg	-	-	< 0.01	-
Heptachlor	0.01	mg/kg	-	-	< 0.01	-
Heptachlor epoxide	0.01	mg/kg	-	-	< 0.01	-
Hexachlorobenzene	0.01	mg/kg	-	-	< 0.01	-



Client Sample ID			SS8 0-75mm	SS9 0-75mm	SS10 0-75mm	SS11 0-75mm	
Sample Matrix			Soil	Soil	Soil	Soil	
Eurofins Sample No.			K22-JI0030569	K22-JI0030570	K22-JI0030571	K22-JI0030572	
Date Sampled			Jul 13, 2022	Jul 13, 2022	Jul 13, 2022	Jul 13, 2022	
Test/Reference	LOR	Unit					
Organochlorine Pesticides (NZ MfE)							
Methoxychlor	0.01	mg/kg	-	-	< 0.01	-	
Toxaphene	0.5	mg/kg	-	-	< 0.5	-	
trans-Chlordane	0.01	mg/kg	-	-	< 0.01	-	
Dibutylchlorendate (surr.)	1	%	-	-	99	-	
Tetrachloro-m-xylene (surr.)	1	%	-	-	85	-	
% Moisture	1	%	38	39	56	33	
Polycyclic Aromatic Hydrocarbons (NZ MfE)							
Acenaphthene	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	
Acenaphthylene	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	
Anthracene	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	
Benz(a)anthracene	0.03	mg/kg	0.03	< 0.03	< 0.03	< 0.03	
Benzo(a)pyrene	0.03	mg/kg	< 0.03	< 0.03	0.07	< 0.03	
Benzo(a)pyrene TEQ (lower bound)*	0.03	mg/kg	< 0.03	< 0.03	0.07	< 0.03	
Benzo(a)pyrene TEQ (medium bound)*	0.03	mg/kg	0.04	0.04	0.09	0.04	
Benzo(a)pyrene TEQ (upper bound)*	0.03	mg/kg	0.08	0.08	0.12	0.08	
Benzo(b&j)fluoranthene <sup>N07</sup>	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	
Benzo(g.h.i)perylene	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	
Benzo(k)fluoranthene	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	
Chrysene	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	
Dibenz(a.h)anthracene	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	
Fluoranthene	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	
Fluorene	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	
Indeno(1.2.3-cd)pyrene	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	
Naphthalene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	
Phenanthrene	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	
Pyrene	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	
p-Terphenyl-d14 (surr.)	1	%	149	135	119	142	
2-Fluorobiphenyl (surr.)	1	%	95	88	90	95	
Metals M7 (NZ MfE)							
Arsenic	0.1	mg/kg	9.0	3.6	6.6	3.5	
Cadmium	0.01	mg/kg	0.40	0.37	0.61	0.36	
Chromium	0.1	mg/kg	24	14	16	12	
	0.1	mg/kg	21	12	28	17	
Lead	0.1	mg/kg	24	27	27	19	
	0.1	mg/kg	7.4	10	17	8.9	
	5	mg/kg	23	84	68	40	
Total Petroleum Hydrocarbons (NZ MfE 1999)							
IPH-SG C7-C9	5	mg/kg	-	-	< 5	-	
1PH-SG C10-C14	10	mg/kg	-	-	< 10	-	
1PH-SG C15-C36	20	mg/kg	-	-	< 20	-	
TPH-SG C7-C36 (Total)	35	mg/kg	-	-	< 35	-	



Client Sample ID Sample Matrix			SS12 0-75mm Soil
Eurofins Sample No.			K22-JI0030573
Date Sampled			Jul 13, 2022
Test/Reference	LOR	Unit	
% Moisture	1	%	38
Polycyclic Aromatic Hydrocarbons (NZ MfE)			
Acenaphthene	0.03	mg/kg	< 0.03
Acenaphthylene	0.03	mg/kg	< 0.03
Anthracene	0.03	mg/kg	< 0.03
Benz(a)anthracene	0.03	mg/kg	< 0.03
Benzo(a)pyrene	0.03	mg/kg	< 0.03
Benzo(a)pyrene TEQ (lower bound)*	0.03	mg/kg	< 0.03
Benzo(a)pyrene TEQ (medium bound)*	0.03	mg/kg	0.04
Benzo(a)pyrene TEQ (upper bound)*	0.03	mg/kg	0.08
Benzo(b&j)fluoranthene <sup>N07</sup>	0.03	mg/kg	< 0.03
Benzo(g.h.i)perylene	0.03	mg/kg	< 0.03
Benzo(k)fluoranthene	0.03	mg/kg	< 0.03
Chrysene	0.03	mg/kg	< 0.03
Dibenz(a.h)anthracene	0.03	mg/kg	< 0.03
Fluoranthene	0.03	mg/kg	< 0.03
Fluorene	0.03	mg/kg	< 0.03
Indeno(1.2.3-cd)pyrene	0.03	mg/kg	< 0.03
Naphthalene	0.1	mg/kg	< 0.1
Phenanthrene	0.03	mg/kg	< 0.03
Pyrene	0.03	mg/kg	< 0.03
p-Terphenyl-d14 (surr.)	1	%	161
2-Fluorobiphenyl (surr.)	1	%	102
Metals M7 (NZ MfE)			
Arsenic	0.1	mg/kg	2.6
Cadmium	0.01	mg/kg	0.11
Chromium	0.1	mg/kg	9.6
Copper	0.1	mg/kg	8.1
Lead	0.1	mg/kg	15
Nickel	0.1	mg/kg	8.7
Zinc	5	mg/kg	33



### Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Organochlorine Pesticides (NZ MfE)	Auckland	Jul 19, 2022	14 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water by GCMSMS			
Heavy Metals	Auckland	Jul 15, 2022	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Metals M8 (NZ MfE)	Auckland	Jul 19, 2022	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Metals M7 (NZ MfE)	Auckland	Jul 15, 2022	6 Months
- Method: LTM-MET-3040 Metals in Waters Soils Sediments by ICP-MS			
% Moisture	Auckland	Jul 15, 2022	14 Days
- Method: LTM-GEN-7080 Moisture Content in Soil by Gravimetry			
Polycyclic Aromatic Hydrocarbons (NZ MfE)	Auckland	Jul 19, 2022	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water by GC MSMS			
Total Petroleum Hydrocarbons (NZ MfE 1999)	Auckland	Jul 19, 2022	14 Days

- Method: LTM-ORG-2010 TRH and BTEX in Soil and Water by GC FID and PT GCMS

	euro	Eurofins Environment Testing Australia Pty Ltd ABN: 50 005 085 521													Eurofins ARL Pty Ltd ABN: 91 05 0159 898					
web: www.eurofins.com.au email: EnviroSales@eurofins.com		.com	Auckland         Christchurch           35 O'Rorke Road         43 Detroit Drive           Penrose,         Rolleston,           Auckland 1061         Christchurch 7675           Tel: +64 9 526 45 51         Tel: 0800 856 450           IANZ# 1327         IANZ# 1290		rch         Mell           Drive         6 Mo           Drive         7675           VIC         156 450           0         NAT	Melbourne 6 Monterey Road Dandenong South VIC 3175 Tel: +61 3 8564 5000 NATA# 1261 Site# 1254		<b>G</b> e 19 Gr VI Te 254 NA	Geelong 19/8 Lewalan Street Grovedale VIC 3216 Tel: +61 3 8564 5000 NATA# 1261 Site# 1254		Sydney           179 Magowar Road           Girraween           NSW 2145           Tel: +61 2 9900 8400           NATA# 1261 Site# 18217		<sup>-</sup> Road 00 8400 Site# 18217	Canberra Unit 1,2 Dacre Street Mitchell ACT 2911 Tel: +61 2 6113 8091 7	Brisb 1/21 S Murar QLD Tel: + NATA	Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Tel: +61 7 3902 4600 NATA# 1261 Site# 2079		Newcastle 4/52 Industrial Drive Mayfield East NSW 2304 PO Box 60 Wickham 2293 Tel: +61 2 4968 8448 4 NATA# 1261 Site# 25079	Perth 46-48 Banksia Road Welshpool WA 6106 Tel: +61 8 6253 4444 NATA# 2377 Site# 2370	
Company Name:Geosciences LtdAddress:First Floor, 47 Clyde RoadBrowns BayAucklandNZ 0630				Order No.:         Received:         Jul           Report #:         906096         Due:         Jul           Phone:         0011 64 9 4760 454         Priority:         5 I           Fax:         Contact Name:         Ch									Jul 15, 2022 Jul 22, 2022 5 Day Chris Davies	1:00 PM						
Pre Pre	oject Name: oject ID:	73 TRIG RC J1732A	AD													Euro	ofins Ana	lytical	Services Manager	: Karishma Patel
Sample Detail						HOLD	Moisture Set	Organochlorine Pesticides (NZ MfE)	Metals M7 (NZ MfE)	Polycyclic Aromatic Hydrocarbons (NZ MfE)	Eurofins Suite B4B-NZ: TPH, PAH (NZ MfE)	Eurofins Suite B22-NZ: OCP, Metals (As,Cu,Pb) (NZ MfE)								
Auc	kland Laborato	y - IANZ# 1327					Х	Х	х	Х	х	Х	х							
Chri	stchurch Labor	atory - IANZ# 1	290																	
Exte	rnal Laboratory	1			1															
No	Sample ID	Sample Date	Sampling Time	Matrix	LABI	D														
1	Comp-2	Jul 13, 2022		Soil	K22-JI0030	0561		X					X							
2	Comp-3	Jul 13, 2022		Soll	K22-JI0030	0562		X					X							
3	Comp-4	Jul 13, 2022		Soll	K22-JI0030	564		×					×							
4	SS1 0 75mm	Jul 13, 2022		Soil	K22-J10030	565		×		x	x		^							
6	SS2 0-75mm	Jul 13, 2022		Soil	K22-JI0030	1566		X		X	X									
7	SS5 0-75mm	Jul 13, 2022		Soil	K22-JI0030	)567		X	х	X	~	Х								
8	SS6 0-75mm	Jul 13, 2022		Soil	K22-JI0030	0568		X	X	X	х	~								
9	SS8 0-75mm	Jul 13, 2022		Soil	K22-JI0030	0569		Х		Х	X									
10	SS9 0-75mm	Jul 13, 2022		Soil	K22-JI0030	)570		Х		х	х									
11	SS10 0-75mm	Jul 13, 2022		Soil	K22-JI0030	)571		Х	х	х		Х								
12	SS11 0-75mm	Jul 13, 2022		Soil	K22-JI0030	)572		Х		Х	Х									

	Eurofins Environment Testing NZ Ltd         Eurofins           NZBN: 9429046024954         ABN: 50 00					1s Environment Testing Australia Pty Ltd 005 085 521										Eurofins ARL Pty Ltd ABN: 91 05 0159 898		
web: web: web: web: web: web: web: web:	vww.eurofins.com.au EnviroSales@eurofins	.com	Auckland 35 O'Rorke Road Penrose, Auckland 1061 Tel: +64 9 526 45 51 IANZ# 1327	Christchurch 43 Detroit Drive Rolleston, Christchurch 7675 Tel: 0800 856 450 IANZ# 1290	Melbourne 6 Monterey F Dandenong S VIC 3175 Tel: +61 3 85 NATA# 1261	Melbourne 6 Monterey Road Dandenong South VIC 3175 Tel: +61 3 8564 5000 NATA# 1261 Site# 1254		Geelong 19/8 Lewalan Street Grovedale VIC 3216 Tel: +61 3 8564 5000 NATA# 1261 Site# 1254		Sydney         Canberra           179 Magowar Road         Unit 1,2 Dacre Street           Girraween         Mitchell           NSW 2145         ACT 2911           Tel: +61 2 9900 8400         Tel: +61 2 6113 8091           NATA# 1261 Site# 18217		Canberra Unit 1,2 Dacre Street Mitchell ACT 2911 Tel: +61 2 6113 8091 7	Brisbane         New           1/21 Smallwood Place         4/52           Murarrie         May           QLD 4172         PO           Tel: +61 7 3902 4600         Tel:           NATA# 1261 Site# 20794 NAT		vcastle 2 Industrial Drive drield East NSW 2304 Box 60 Wickham 2293 +61 2 4968 8448 FA# 1261 Site# 25079	Perth 46-48 Banksia Road Welshpool WA 6106 Tel: +61 8 6253 4444 NATA# 2377 Site# 2370		
Cc Ac	ompany Name: Idress:	Geoscience First Floor, Browns Ba Auckland	es Ltd 47 Clyde Road y NZ 0630			Order No.: Report #: 906096 Phone: 0011 64 9 4760 454 Fax:							760 454	Received: Due: Priority: Contact N	lame:	Jul 15, 2022 1 Jul 22, 2022 5 Day Chris Davies	:00 PM	
Pr Pr	oject Name: oject ID:	73 TRIG R J1732A	OAD												Eurofins Anal	ytical Se	ervices Manager :	: Karishma Patel
Sample Detail					HOLD	Moisture Set	Organochlorine Pesticides (NZ MfE)	Metals M7 (NZ MfE)	Polycyclic Aromatic Hydrocarbons (NZ MfE)	Eurofins Suite B4B-NZ: TPH, PAH (NZ MfE)	Eurofins Suite B22-NZ: OCP, Metals (As,Cu,Pb) (NZ MfE)							
Auc	kland Laborator	y - IANZ# 132	7			Х	х	х	х	х	х	X						
Chri	istchurch Labor	atory - IANZ#	1290															
Exte	ernal Laboratory	,																
13	SS12 0-75mm	Jul 13, 2022	Soi	K22-J	10030573		х		х	Х								
14	Comp 2A	Jul 13, 2022	Soi	I K22-J	10030574	х												
15	Comp 2B	Jul 13, 2022	Soi	I K22-J	10030575	Х												
16	Comp 2C	Jul 13, 2022	Soi	K22-J	10030576	Х												
17	Comp 2D	Jul 13, 2022	Soi	K22-J	10030577	Х												
18	Comp 3A	Jul 13, 2022	Soi	K22-J	10030578	Х												
19	Comp 3B	Jul 13, 2022	Soi	K22-J	10030579	Х												
20	Comp 3C	Jul 13, 2022	Soi	K22-J	10030580	Х												
21	Comp 3D	Jul 13, 2022	Soi	I K22-J	10030581	Х												
22	Comp 4A	Jul 13, 2022	Soi	I K22-J	10030582	Х												
23	Comp 4B	Jul 13, 2022	Soi	I K22-J	10030583	Х												
24	Comp 4C	Jul 13, 2022	Soi	I K22-J	10030584	Х												
25 Comp 4D Jul 13, 2022 Soil K22-Jl0030585				Х														
26	Comp 5A	Jul 13, 2022	Soi	K22-J	10030586	Х												

•	Eurofins Environment Testing NZ Ltd NZBN: 9429046024954			NZ Ltd Eu	Eurofins Environment Testing Australia Pty Ltd ABN: 50 005 085 521										Eurofins ARL Pty Ltd ABN: 91 05 0159 898			
8	euro	rins	Auckland 35 O'Rorke Road Penrose, Auckland 1061	Christchurc 43 Detroit Dr Rolleston, Christchurch	h Me ive 6 M Dar 7675 VIC	Melbourne 6 Monterey R Dandenong §		G 19 G	Geelong 19/8 Lewalan Street Grovedale		reet	Sydney 179 Magowar Road Girraween NSW 2145			Canberra Unit 1,2 Dacre Street Mitchell ACT 2911	Brisbane         Newcastle         F           1/21 Smallwood Place         4/52 Industrial Drive         4           Murarrie         Mayfield East NSW 2304         4           OL D. 4172         PO Rox 60 Wickham 293         4		Perth 46-48 Banksia Road Welshpool
web: v email:	www.eurofins.com.au EnviroSales@eurofins.	com	Tel: +64 9 526 45 5 IANZ# 1327	51 Tel: 0800 85 IANZ# 1290	6 450 Tel NA	Tel: +61 3 8564 5000 NATA# 1261 Site# 1254		) Te 254 N	el: +61 3 ATA# 13	5000 Tel: +61 2 9900 8400 e# 1254 NATA# 1261 Site# 1821				Tel: +61 2 6113 8091 7	Tel: +61 7 3902 4600 Tel: +61 2 4968 8448 NATA# 1261 Site# 20794 NATA# 1261 Site# 2507		Tel: +61 8 6253 4444 NATA# 2377 Site# 2370	
Co Ao	ompany Name: ddress:	Geoscience First Floor, Browns Ba Auckland	es Ltd 47 Clyde Road y NZ 0630					Oi Re Pi Fa	rder N eport hone: ax:	No.: #:	9	90609 9011 6	6 64 9 47	760 454		Received: Due: Priority: Contact Nam	Jul 15, 2022 1 Jul 22, 2022 5 Day Chris Davies	:00 PM
Pr Pr	Project Name:       73 TRIG ROAD         Project ID:       J1732A														Eurofins Analytic	cal Services Manager	: Karishma Patel	
Sample Detail				НОГД	Moisture Set	Organochlorine Pesticides (NZ MfE)	Metals M7 (NZ MfE)	Polycyclic Aromatic Hydrocarbons (NZ MfE)	Eurofins Suite B4B-NZ: TPH, PAH (NZ MfE)	Eurofins Suite B22-NZ: OCP, Metals (As,Cu,Pb) (NZ MfE)								
Auckland Laboratory - IANZ# 1327						х	Х	х	X	Х	х	х						
Chr	istchurch Labora	atory - IANZ#	1290															
Exte	ernal Laboratory										<u> </u>							
27	Comp 5B	Jul 13, 2022	s	Soil	K22-JI003	0587	Х											
28	Comp 5C	Jul 13, 2022	s	Soil	K22-JI003	0588	Х											
29	Comp 5D	Jul 13, 2022	s	Soil	K22-JI003	0589	Х											
Tes	est Counts						16	13	3	9	7	2	4					



#### Internal Quality Control Review and Glossary

#### General

- 1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
- 2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
- 3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
- 4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- 5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
- 6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- 7. Samples were analysed on an 'as received' basis.
- 8. Information identified on this report with blue colour, indicates data provided by customer that may have an impact on the results.
- 9. This report replaces any interim results previously issued.

#### **Holding Times**

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

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA. If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

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

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

### Units

mg/kg: milligrams per kilogram	mg/L: milligrams per litre	μg/L: micrograms per litre
ppm: parts per million	ppb: parts per billion	%: Percentage
org/100 mL: Organisms per 100 millilitres	NTU: Nephelometric Turbidity Units	MPN/100 mL: Most Probable Number of organisms per 100 millilitres

#### Terms

APHA	American Public Health Association
coc	Chain of Custody
СР	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
твто	Tributyltin oxide ( <i>bis</i> -tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment however free tributyltin was measured and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

#### **QC** - Acceptance Criteria

The acceptance criteria should be used as a guide only and may be different when site specific Sampling Analysis and Quality Plan (SAQP) have been implemented RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR: No Limit

Results between 10-20 times the LOR: RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.4 where no positive PFAS results have been reported have been reviewed and no data was affected.

#### **QC Data General Comments**

- 1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- 2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- 3. pH and Free Chlorine analysed in the laboratory Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- 4. Recovery Data (Spikes & Surrogates) where chromatographic interference does not allow the determination of recovery the term "INT" appears against that analyte.
- 5. For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
- 6. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.



### **Quality Control Results**

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Method Blank		-	1	1		
Organochlorine Pesticides (NZ MfE)						
2.4'-DDD	mg/kg	< 0.01		0.01	Pass	
2.4'-DDE	mg/kg	< 0.01		0.01	Pass	
2.4'-DDT	mg/kg	< 0.01		0.01	Pass	
4.4'-DDD	mg/kg	< 0.01		0.01	Pass	
4.4'-DDE	mg/kg	< 0.01		0.01	Pass	
4.4'-DDT	mg/kg	< 0.01		0.01	Pass	
а-НСН	mg/kg	< 0.01		0.01	Pass	
Aldrin	mg/kg	< 0.01		0.01	Pass	
b-HCH	mg/kg	< 0.01		0.01	Pass	
Chlordanes - Total	mg/kg	< 0.01		0.01	Pass	
cis-Chlordane	mg/kg	< 0.01		0.01	Pass	
d-HCH	mg/kg	< 0.01		0.01	Pass	
Dieldrin	mg/kg	< 0.01		0.01	Pass	
Endosulfan I	mg/kg	< 0.01		0.01	Pass	
Endosulfan II	mg/kg	< 0.01		0.01	Pass	
Endosulfan sulphate	mg/kg	< 0.01		0.01	Pass	
Endrin	mg/kg	< 0.01		0.01	Pass	
Endrin aldehyde	mg/kg	< 0.01		0.01	Pass	
Endrin ketone	mg/kg	< 0.01		0.01	Pass	
g-HCH (Lindane)	mg/kg	< 0.01		0.01	Pass	
Heptachlor	mg/kg	< 0.01		0.01	Pass	
Heptachlor epoxide	mg/kg	< 0.01		0.01	Pass	
Hexachlorobenzene	mg/kg	< 0.01		0.01	Pass	
Methoxychlor	mg/kg	< 0.01		0.01	Pass	
Toxaphene	ma/ka	< 0.5		0.5	Pass	
trans-Chlordane	ma/ka	< 0.01		0.01	Pass	
Method Blank						
Heavy Metals						
Copper	mg/kg	< 0.1		0.1	Pass	
Method Blank						
Metals M8 (NZ MfE)						
Arsenic	mg/kg	< 0.1		0.1	Pass	
Lead	ma/ka	< 0.1		0.1	Pass	
Method Blank						
Polycyclic Aromatic Hydrocarbons (NZ MfE)						
Acenaphthene	mg/kg	< 0.03		0.03	Pass	
Acenaphthylene	mg/kg	< 0.03		0.03	Pass	
Anthracene	mg/kg	< 0.03		0.03	Pass	
Benz(a)anthracene	mg/kg	< 0.03		0.03	Pass	
Benzo(a)pyrene	mg/kg	< 0.03		0.03	Pass	
Benzo(b&i)fluoranthene	mg/kg	< 0.03		0.03	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.03		0.03	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.03		0.03	Pass	
Chrysene	mg/kg	< 0.03		0.03	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.03		0.03	Pass	
Fluoranthene	mg/kg	< 0.03		0.03	Pass	
Fluorene	mg/kg	< 0.03		0.03	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.03		0.03	Pass	
Naphthalene	mg/ka	< 0.1		0.1	Pass	
Phenanthrene	mg/kg	< 0.03		0.03	Pass	



Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Pyrene	mg/kg	< 0.03		0.03	Pass	
Method Blank						
Metals M7 (NZ MfE)						
Cadmium	mg/kg	< 0.01		0.01	Pass	
Chromium	mg/kg	< 0.1		0.1	Pass	
Nickel	mg/kg	< 0.1		0.1	Pass	
Zinc	mg/kg	< 5		5	Pass	
Method Blank						
Total Petroleum Hydrocarbons (NZ MfE 1999)						
TPH-SG C7-C9	mg/kg	< 5		5	Pass	
TPH-SG C10-C14	mg/kg	< 10		10	Pass	
TPH-SG C15-C36	mg/kg	< 20		20	Pass	
TPH-SG C7-C36 (Total)	mg/kg	< 35		35	Pass	
LCS - % Recovery		1				
Organochlorine Pesticides (NZ MfE)						
2.4'-DDD	%	85		70-130	Pass	
2.4'-DDE	%	90		70-130	Pass	
2.4'-DDT	%	94		70-130	Pass	
4.4'-DDD	%	78		70-130	Pass	
4.4'-DDE	%	79		70-130	Pass	
4.4'-DDT	%	74		70-130	Pass	
a-HCH	%	76		70-130	Pass	
Aldrin	%	72		70-130	Pass	
b-HCH	%	114		70-130	Pass	
Chlordanes - Total	%	91		70-130	Pass	
cis-Chlordane	%	101		70-130	Pass	
d-HCH	%	74		70-130	Pass	
Dieldrin	%	88		70-130	Pass	
Endosulfan I	%	74		70-130	Pass	
Endosulfan II	%	82		70-130	Pass	
Endosulfan sulphate	%	103		70-130	Pass	
Endrin	%	94		70-130	Pass	
Endrin aldehyde	%	96		70-130	Pass	
Endrin ketone	%	80		70-130	Pass	
g-HCH (Lindane)	%	75		70-130	Pass	
Heptachlor	%	76		70-130	Pass	
Heptachlor epoxide	%	86		70-130	Pass	
Hexachlorobenzene	%	104		70-130	Pass	
Methoxychlor	%	81		70-130	Pass	
trans-Chlordane	%	82		70-130	Pass	
LCS - % Recovery						
Heavy Metals						
Copper	%	88		80-120	Pass	
LCS - % Recovery			· · · · · ·			
Metals M8 (NZ MfE)						
Arsenic	%	84		80-120	Pass	
Lead	%	82		80-120	Pass	
LCS - % Recovery						
Polycyclic Aromatic Hydrocarbons (NZ MfE)						
Acenaphthene	%	103		70-130	Pass	
Acenaphthylene	%	98		70-130	Pass	
Anthracene	%	97		70-130	Pass	
Benz(a)anthracene	%	88		70-130	Pass	
Benzo(a)pyrene	%	129		70-130	Pass	



Test			Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Benzo(b&j)fluoranthene			%	83		70-130	Pass	
Benzo(g.h.i)perylene			%	74		70-130	Pass	
Benzo(k)fluoranthene			%	87		70-130	Pass	
Chrysene			%	94		70-130	Pass	
Dibenz(a.h)anthracene			%	70		70-130	Pass	
Fluoranthene			%	93		70-130	Pass	
Fluorene			%	109		70-130	Pass	
Indeno(1.2.3-cd)pyrene			%	80		70-130	Pass	
Naphthalene			%	96		70-130	Pass	
Phenanthrene			%	98		70-130	Pass	
Pyrene			%	95		70-130	Pass	
LCS - % Recovery				1		-	-	
Metals M7 (NZ MfE)								
Cadmium			%	84		80-120	Pass	
Chromium			%	86		80-120	Pass	
Nickel			%	88		80-120	Pass	
Zinc			%	89		80-120	Pass	
LCS - % Recovery							-	
Total Petroleum Hydrocarbons (NZ	. MfE 1999)							
TPH-SG C7-C36 (Total)			%	121		70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
Organochlorine Pesticides (NZ Mf	Ξ)			Result 1				
2.4'-DDD	K22-JI0030562	CP	%	112		70-130	Pass	
2.4'-DDE	K22-JI0030562	CP	%	121		70-130	Pass	
2.4'-DDT	K22-JI0030562	CP	%	114		70-130	Pass	
4.4'-DDD	K22-JI0030562	CP	%	111		70-130	Pass	
4.4'-DDE	K22-JI0030562	CP	%	105		70-130	Pass	
4.4'-DDT	K22-JI0030562	CP	%	114		70-130	Pass	
a-HCH	K22-JI0030562	CP	%	105		70-130	Pass	
Aldrin	K22-JI0030562	CP	%	106		70-130	Pass	
Chlordanes - Total	K22-JI0030562	CP	%	126		70-130	Pass	
d-HCH	K22-JI0030562	CP	%	105		70-130	Pass	
Dieldrin	K22-JI0030562	CP	%	119		70-130	Pass	
Endosulfan I	K22-JI0030562	CP	%	114		70-130	Pass	
Endosulfan II	K22-JI0030562	CP	%	112		70-130	Pass	
Endosulfan sulphate	K22-JI0030562	CP	%	130		70-130	Pass	
Endrin aldehyde	K22-JI0030562	CP	%	105		70-130	Pass	
Endrin ketone	K22-JI0030562	CP	%	111		70-130	Pass	
g-HCH (Lindane)	K22-JI0030562	CP	%	92		70-130	Pass	
Heptachlor	K22-JI0030562	CP	%	106		70-130	Pass	
Heptachlor epoxide	K22-JI0030562	CP	%	124		70-130	Pass	
Methoxychlor	K22-JI0030562	CP	%	122		70-130	Pass	
trans-Chlordane	K22-JI0030562	CP	%	116		70-130	Pass	
Spike - % Recovery				1	r r	T		
Polycyclic Aromatic Hydrocarbons	(NZ MfE)	,		Result 1				
Acenaphthene	K22-JI0030562	CP	%	129		70-130	Pass	
Acenaphthylene	K22-JI0030562	CP	%	120		70-130	Pass	
Anthracene	K22-JI0030562	CP	%	117		70-130	Pass	
Benz(a)anthracene	K22-JI0030562	CP	%	114		70-130	Pass	
Benzo(a)pyrene	K22-JI0030562	CP	%	124		70-130	Pass	
Benzo(b&j)fluoranthene	K22-JI0030562	CP	%	86		70-130	Pass	
Benzo(g.h.i)perylene	K22-JI0030562	CP	%	121		70-130	Pass	
Benzo(k)fluoranthene	K22-Jl0030562	CP	%	125		70-130	Pass	



Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Chrysene	K22-JI0030562	CP	%	115			70-130	Pass	
Dibenz(a.h)anthracene	K22-JI0030562	CP	%	111			70-130	Pass	
Fluoranthene	K22-JI0030562	CP	%	111			70-130	Pass	
Indeno(1.2.3-cd)pyrene	K22-JI0030562	CP	%	121			70-130	Pass	
Naphthalene	K22-JI0030562	CP	%	122			70-130	Pass	
Phenanthrene	K22-JI0030562	CP	%	112			70-130	Pass	
Pyrene	K22-JI0030562	CP	%	114			70-130	Pass	
Spike - % Recovery									
Organochlorine Pesticides (NZ Mf	Ξ)			Result 1					
b-HCH	K22-JI0032805	NCP	%	111			70-130	Pass	
cis-Chlordane	K22-JI0032962	NCP	%	127			70-130	Pass	
Endrin	K22-JI0032962	NCP	%	130			70-130	Pass	
Hexachlorobenzene	K22-JI0032962	NCP	%	105			70-130	Pass	
Spike - % Recovery				•			•		
Polycyclic Aromatic Hydrocarbons	s (NZ MfE)			Result 1					
Benzo(a)pyrene	K22-JI0036056	NCP	%	101			70-130	Pass	
Pyrene	K22-JI0032762	NCP	%	121			70-130	Pass	
Spike - % Recovery	•	•							
Total Petroleum Hydrocarbons (NZ	Z MfE 1999)			Result 1					
TPH-SG C7-C36 (Total)	K22-JI0036056	NCP	%	118			70-130	Pass	
Spike - % Recovery	•								
Heavy Metals				Result 1					
Copper	K22-JI0030570	CP	%	94			75-125	Pass	
Spike - % Recovery						1			
Metals M8 (NZ MfE)				Result 1					
Arsenic	K22-JI0030570	CP	%	101			75-125	Pass	
Lead	K22-JI0030570	CP	%	96			75-125	Pass	
Spike - % Recovery	•				•				
Metals M7 (NZ MfE)				Result 1					
Cadmium	K22-JI0030570	CP	%	101			75-125	Pass	
Chromium	K22-JI0030570	CP	%	99			75-125	Pass	
Nickel	K22-JI0030570	CP	%	96			75-125	Pass	
Zinc	K22-JI0030570	CP	%	106			75-125	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons	s (NZ MfE)			Result 1					
Acenaphthene	K22-JI0030572	CP	%	127			70-130	Pass	
Acenaphthylene	K22-JI0030572	CP	%	122			70-130	Pass	
Anthracene	K22-JI0030572	CP	%	124			70-130	Pass	
Benz(a)anthracene	K22-JI0030572	CP	%	124			70-130	Pass	
Benzo(b&j)fluoranthene	K22-JI0030572	CP	%	119			70-130	Pass	
Benzo(q.h.i)perylene	K22-JI0030572	CP	%	71			70-130	Pass	
Benzo(k)fluoranthene	K22-JI0030572	СР	%	118			70-130	Pass	
Chrysene	K22-JI0030572	CP	%	93			70-130	Pass	
Dibenz(a.h)anthracene	K22-JI0030572	CP	%	87			70-130	Pass	
Fluoranthene	K22-JI0030572	CP	%	125			70-130	Pass	
Fluorene	K22-JI0030572	СР	%	120			70-130	Pass	
Indeno(1.2.3-cd)pvrene	K22-JI0030572	CP	%	96			70-130	Pass	
Naphthalene	K22-JI0030572	CP	%	110			70-130	Pass	
Phenanthrene	K22-JI0030572	CP	%	116			70-130	Pass	



Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate				1			1		
Organochlorine Pesticides (NZ Mf	<b>=)</b>			Result 1	Result 2	RPD		_	
2.4'-DDD	K22-JI0030561	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
2.4'-DDE	K22-JI0030561	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
2.4'-DDT	K22-JI0030561	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
4.4'-DDD	K22-JI0030561	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
4.4'-DDE	K22-JI0030561	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
4.4'-DDT	K22-JI0030561	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
а-НСН	K22-JI0030561	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Aldrin	K22-JI0030561	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
b-HCH	K22-JI0030561	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Chlordanes - Total	K22-JI0030561	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
cis-Chlordane	K22-JI0030561	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
d-HCH	K22-JI0030561	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Dieldrin	K22-JI0030561	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Endosulfan I	K22-JI0030561	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Endosulfan II	K22-JI0030561	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Endosulfan sulphate	K22-JI0030561	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Endrin	K22-JI0030561	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Endrin aldehyde	K22-JI0030561	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Endrin ketone	K22-JI0030561	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
g-HCH (Lindane)	K22-JI0030561	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Heptachlor	K22-JI0030561	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Heptachlor epoxide	K22-JI0030561	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Hexachlorobenzene	K22-JI0030561	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Methoxychlor	K22-JI0030561	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
trans-Chlordane	K22-JI0030561	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Duplicate				1	r	-	1		
Polycyclic Aromatic Hydrocarbons	(NZ MfE)			Result 1	Result 2	RPD			
Acenaphthene	K22-JI0030561	CP	mg/kg	< 0.03	< 0.03	<1	30%	Pass	
Acenaphthylene	K22-JI0030561	CP	mg/kg	< 0.03	< 0.03	<1	30%	Pass	
Anthracene	K22-JI0030561	CP	mg/kg	< 0.03	< 0.03	<1	30%	Pass	
Benz(a)anthracene	K22-JI0030561	CP	mg/kg	< 0.03	< 0.03	<1	30%	Pass	
Benzo(a)pyrene	K22-JI0030561	CP	mg/kg	< 0.03	< 0.03	<1	30%	Pass	
Benzo(b&j)fluoranthene	K22-JI0030561	CP	mg/kg	< 0.03	< 0.03	<1	30%	Pass	
Benzo(g.h.i)perylene	K22-JI0030561	CP	mg/kg	< 0.03	< 0.03	<1	30%	Pass	
Benzo(k)fluoranthene	K22-JI0030561	CP	mg/kg	< 0.03	< 0.03	<1	30%	Pass	
Chrysene	K22-JI0030561	CP	mg/kg	< 0.03	< 0.03	<1	30%	Pass	
Dibenz(a.h)anthracene	K22-JI0030561	CP	mg/kg	< 0.03	< 0.03	<1	30%	Pass	
Fluoranthene	K22-JI0030561	CP	mg/kg	< 0.03	< 0.03	<1	30%	Pass	
Fluorene	K22-JI0030561	СР	mg/kg	< 0.03	< 0.03	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	K22-JI0030561	CP	mg/kg	< 0.03	< 0.03	<1	30%	Pass	
Naphthalene	K22-JI0030561	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Phenanthrene	K22-JI0030561	СР	mg/kg	< 0.03	< 0.03	<1	30%	Pass	
Pyrene	K22-JI0030561	CP	mg/kg	< 0.03	< 0.03	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	K22-JI0030562	CP	%	32	31	1.1	30%	Pass	
Duplicate	·				·				
Total Petroleum Hydrocarbons (NZ	2 MfE 1999)			Result 1	Result 2	RPD			
TPH-SG C7-C9	K22-JI0036055	NCP	ma/ka	< 5	< 5	<1	30%	Pass	
TPH-SG C10-C14	K22-JI0036055	NCP	mg/ka	< 10	< 10	<1	30%	Pass	
TPH-SG C15-C36	K22-JI0036055	NCP	mg/ka	< 20	< 20	<1	30%	Pass	
TPH-SG C7-C36 (Total)	K22-JI0036055	NCP	mg/ka	< 35	< 35	<1	30%	Pass	
									1



Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Copper	K22-JI0030569	СР	mg/kg	21	18	13	30%	Pass	
Duplicate									
Metals M8 (NZ MfE)				Result 1	Result 2	RPD			
Arsenic	K22-JI0030569	CP	ma/ka	9.0	7.4	20	30%	Pass	
Lead	K22-JI0030569	CP	ma/ka	24	18	27	30%	Pass	
Duplicate									
Metals M7 (NZ MfE)				Result 1	Result 2	RPD			
Cadmium	K22-JI0030569	CP	ma/ka	0.40	0.33	20	30%	Pass	
Chromium	K22-JI0030569	CP	ma/ka	24	21	15	30%	Pass	
Nickel	K22-JI0030569	CP	ma/ka	7.4	7.4	<1	30%	Pass	
Zinc	K22-JI0030569	CP	ma/ka	23	22	6.1	30%	Pass	
Duplicate		-				-			
Organochlorine Pesticides (NZ Mf	Ξ)			Result 1	Result 2	RPD			
2.4'-DDD	, K22-JI0030571	СР	ma/ka	< 0.01	< 0.01	<1	30%	Pass	
2.4'-DDE	K22-JI0030571	CP	ma/ka	< 0.01	< 0.01	<1	30%	Pass	
2.4'-DDT	K22-JI0030571	CP	ma/ka	< 0.01	< 0.01	<1	30%	Pass	
4.4'-DDD	K22-JI0030571	CP	ma/ka	< 0.01	< 0.01	<1	30%	Pass	
4.4'-DDF	K22-JI0030571	CP	ma/ka	< 0.01	< 0.01	<1	30%	Pass	
4.4'-DDT	K22-JI0030571	CP	ma/ka	< 0.01	< 0.01	<1	30%	Pass	
а-НСН	K22-JI0030571	CP	ma/ka	< 0.01	< 0.01	<1	30%	Pass	
Aldrin	K22-JI0030571	CP	ma/ka	< 0.01	< 0.01	<1	30%	Pass	
b-HCH	K22-JI0030571	CP	ma/ka	< 0.01	< 0.01	<1	30%	Pass	
Chlordanes - Total	K22-JI0030571	CP	ma/ka	< 0.01	< 0.01	<1	30%	Pass	
cis-Chlordane	K22-110030571	CP	ma/ka	< 0.01	< 0.01	<1	30%	Pass	
d-HCH	K22-110030571	CP	ma/ka	< 0.01	< 0.01	<1	30%	Pass	
Dieldrin	K22-110030571	CP	ma/ka	< 0.01	< 0.01	<1	30%	Pass	
Endosulfan I	K22-110030571	CP	ma/ka	< 0.01	< 0.01	<1	30%	Pass	
Endosulfan II	K22-110030571	CP	ma/ka	< 0.01	< 0.01	<1	30%	Pass	
Endosulfan sulphate	K22-110030571	CP	ma/ka	< 0.01	< 0.01	<1	30%	Pass	
Endrin	K22-110030571	CP	ma/ka	< 0.01	< 0.01	<1	30%	Pass	
Endrin aldebyde	K22-JI0030571	CP	ma/ka	< 0.01	< 0.01	<1	30%	Pass	
Endrin ketone	K22-JI0030571	CP	ma/ka	< 0.01	< 0.01	<1	30%	Pass	
g-HCH (Lindane)	K22-JI0030571	CP	ma/ka	< 0.01	< 0.01	<1	30%	Pass	
Hentachlor	K22-110030571	CP	ma/ka	< 0.01	< 0.01	<1	30%	Pass	
Heptachlor epoxide	K22-110030571	CP	ma/ka	< 0.01	< 0.01	<1	30%	Pass	
Hexachlorobenzene	K22-110030571	CP	ma/ka	< 0.01	< 0.01	<1	30%	Pass	
Methoxychlor	K22-110030571		mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Toxaphene	K22-110030571	CP	ma/ka	< 0.5	< 0.01	<1	30%	Pass	
trans-Chlordane	K22-110030571	CP	ma/ka	< 0.0	< 0.0	<1	30%	Pass	
	1122 010000011	01	iiig/kg	0.01	< 0.01	<u></u>	0070	1 400	
Polycyclic Aromatic Hydrocarbons	: (NZ MfF)			Result 1	Result 2	RPD			
Acenaphthene	K22-110030571	CP	ma/ka	< 0.03	< 0.03	<1	30%	Pass	
Acenaphthylene	K22-110030571	CP	ma/ka	< 0.00	< 0.00	<1	30%	Pass	
Anthracene	K22-110030571	CP	ma/ka	< 0.00	< 0.00	<1	30%	Pass	
Benz(a)anthracene	K22-,II0030571	C.P	ma/ka	< 0.03	< 0.03	~1	30%	Page	
Benzo(a)pyrene	K22-110030571	CP	ma/ka	0.07	0.07	47	30%	Page	
Benzo(b&i)fluoranthene	K22-,II0030571	C.P	ma/ka	< 0.07	< 0.07	-1	30%	Page	
Benzo(a h i)pervlene	K22-110030571	CP	ma/ka	< 0.03	< 0.03	~1	30%	Page	
Benzo(k)fluoranthene	K22-110030571	CP	ma/ka	< 0.03	< 0.03	~1	30%	Page	
Chrysene	K22-II0030571		ma/ka	< 0.03	< 0.03	~1	30%	Page	
Dihenz(a h)anthracene	K22-110030571		ma/ka	< 0.03	< 0.03	~1	30%	Page	
Fluoranthene	K22-110030571	CP	ma/ka	< 0.03	< 0.03	~1	30%	Page	
Fluorene	K22-110030571		ma/ka	< 0.03	< 0.03	~1	30%	Page	
Indeno(1 2 3-cd)pyrepe	K22-110030571	CP	ma/ka	< 0.03	< 0.03	~1	30%	Page	
		0	y/NY	0.00	~ 0.00	<u> </u>	0070	1 433	1



Duplicate										
Polycyclic Aromatic Hydrocarbons	Result 1	Result 2	RPD							
Naphthalene	K22-JI0030571	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass		
Phenanthrene	K22-JI0030571	CP	mg/kg	< 0.03	< 0.03	<1	30%	Pass		
Pyrene	K22-JI0030571	CP	mg/kg	< 0.03	< 0.03	<1	30%	Pass		
Duplicate										
Result 1 Result 2 RPD										
% Moisture	K22-JI0030572	CP	%	33	34	3.2	30%	Pass		



### Comments

Sample Integrity	
Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

### **Qualifier Codes/Comments**

Code

Description

Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs N07

### Authorised by:

Swati Oberoi Michael Ritchie

Analytical Services Manager Senior Analyst-Metal

X)+

**Michael Ritchie** Head of Semi Volatiles (Key Technical Personnel)

Final Report - this report replaces any previously issued Report

### - Indicates Not Requested

- \* Indicates IANZ accreditation does not cover the performance of this service
- Measurement uncertainty of test data is available on request or please click here.

Eurofins shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

	CHAIN OF CUSTODY RECORD			Sydney Laboratory Unit F3 Bitd F16 Mars Road Lane Cove West NSW 2066 02 9900 8400 EnviroSampleNSW@eurofins.com							Brisbane Laboratory     Unit 1 21 Smallwood Pla     07 3902 4600 Envirol			,	Perth Laboratory Unit 2 91 Leach Highway Kewdale WA 6105 08 9251 9600 EnviroSampleWA@eurofins.com					Melbourne Laboratory 6 Monterey Road Dandenong South VIC 3175 03 8564 5000 EnviroSampleVic@eurofins.com						
Company	Company Geosciences Ltd				Project № J1732						Project Manager Carl O'Brien				Sampler(s)				David Wilkinson							
	and the second	Project	Name	73 Tr	ig Road						Format EQuiS etc					Handed over by										
Address	t Name Carl O'Brien		:see.														Email fo	or Invo	nice	in	fo@ge	eoscie	ences	.co.nz		
Contact Name	Carl O'Brien		ter or Fill					-	(6		1	IIW ZN) (					Email Id	or Res	ults	s	9(2	2)(a	a)			
Phone №	09 475 0222		s speoliy To duect SUIT				(ME)	(NZ ME	MIE 199	e		As,Cu,Pb		s			Char	nge cont	Conta ainer typ	iners e & size	s if neces:	sary		Required Turn Default will be	around Time (TAT) 5 days if not licked	
Special Directions Purchase Order Quote ID Na	ns Pr		Analyse Where metals are requested please SUITE code met be used to	Moisture Set	Metals M8 (NZ MfE)	Metals M7 (NZ MfE)	Organochlorine Pesticides (NZ	olycyclic Aromatic Hydrocarbons	otal Petroleum Hydrocarbons (NZ	Asbestos - Semi-quantitati	Asbestos - AS4964	mgt Suite 822-NZ: OCP, Metals (	Lead only	B22-N2- As, Cu, Pb, OCF		500ml Plastic	250mL Plastic	125mL Plastic	OmL Amber Glass	40mL VOA vial	00mL PFAS Bottle	r (Glass or HDPE)	estos AS4964, WA Guidelines)	<ul> <li>○ Overnight (repu</li> <li>○ Same day ◆</li> <li>○ 2 days ◆</li> <li>○ 5 days (Standa</li> <li>○ Other(</li> </ul>	+Surcharge will apply orting by 9am) ↓ □ 1 day ↓ □ 3 days ↓ rd)	
N	Client Sample ID	Sampled Date/Time ddimnayy Mis.mm	Matrix Solid (S) Weter (W)						4			Eurofins							20		20	el.	Other (Asb	Sample / Dangerous Goo	Comments ods Hazard Warning	
1	Comp 1a	6/04/21	s											X			1									
2	Comp 1b 6/04/21		s	s										×			1							Comp 1a, Comp1b, Comp1c and Comp1d		
3	Comp 1c	6/04/21	s											X			1							- are to be composited into one sample: Comp1		
4	Comp 1d	6/04/21	S											X			1									
	Service and	Tot	al Counts								1			4			4									
Method of Shipmen	t 🔄 Courier (#	)	Hand Delivered	1.1	D P	ostal	N	ame					Sign	ature	MS		D	)ate						Time		
Eurofins   mgt Labo	Received By	Kyla Alan	,	SYD	BNE   MI	EL   PER	ADL   NTL	DRW	Sig	nature	444	Ha	L		Date		T	ime		-				Temperature		
Use Only	Received By	0	SYD	SYD   BNE   MEL   PER   ADL   NTL   DRW				Sig	nature					Date		Time							Report Nº	877977		

Eurofins Environment Testing Australia Pty Ltd trading as Eurofins | mgt

Submission of samples to the laboratory will be deemed as acceptance of Eurofins | mgt Standard Terms and Conditions unless agreed otherwise. A copy of Eurofins | mgt Standard Terms and Conditions is available on request





Company	Geoeriences I td	Projec	and Ma 11732 A							Project Manager Carl O'Brien			Brien			Sam	nlet/s)	and i	CL	,							
Company	Geosciences Ltu	riojec	51132 Ph							EDD Format								Sampler(5)									
Address	47 Clyde Road, Browns Bay,	Project	Name	73 Tri	g Road	-	1			ESdat, EQuiS etc			-					Handed over by			CD						
			Bleed.									(III)					E	Email f	or invo	ice	inf	'o@ge	oscie	nces.co.nz			
Contact Name	Chris Davies 09 475 0222 18		Total" or "					Û	(66			N ZN) (q	Z (РАН, ТРН)							ilts	S	9(	(2)	(a)			
Phone Na			es e specily atract SL				Z MIE)	s (NZ M	Z MIE 19	s		(As,Cu,F					Con Change container t			Contai iner type	ners & size	ll necess	вгү.	Require Defau	Required Turnaround Time (TA Dafault will be 5 days if not ticked		
ipecial Directions			Analys requested please e must be used to	isture Set	M8 (NZ MFE)	M7 (NZ MIE)	e Pesticides (N	c Hydrocarbons	drocarbons (N2	- WA guideline	tos - AS4964	OCP, Metals (		omposite										(see Overnig	+Sur it (reporting b) ay •	tcharge will apply y 9am)♦ 1 day ♦	
Purchase Order			mothels are Suitt'E ood	¥	Metals	Metals	ochlorin	Aromati	leum Hy	Isbestos	Asbes	B22-NZ	B4B-N	o			plastic	Plastic	plastic	ber Glas	DA vial	AS Bottl	or HDPE	2 days	Standard)	3 days 🕈	
Quote ID Ne			Where				Organ	olycyclic	ital Petro	-		ngt Suite					500mL I	250mL F	125mL F	mL Am	40mL VC	OmL PF	r (Glass	Cther(	nunuu u		
2	Cilent Sample ID	Sampied Date/Time dd/mm/yy hh mm	Matrix Solid (S) Water (W)					ď	To			Eurofins   n								20(		8		s / Dangero	imple Comm is Goods Hai	ients zard Warning	
	Comp-2	13/07/22	S									×		×					4					Composit 2C, Comp	Comp 2A, C 2D	omp 2B, Com	
	Comp-3	13/07/22	s									×		×					4					Composit 3C, Comp	Composite Comp 3A, Comp 3 3C, Comp 3D		
-	Comp-4	13/07/22	s									×		×					4					Composit 4C, Comp	Composite Comp 4A, Comp 4C, Comp 4D		
L.	Comp-5 13/07/22		s									×		×					4					Composite Comp 5A, Comp 5 5C, Comp 5D		omp 5B, Com	
	SS1 0-75mm	13/07/22	S			×		×															1				
	SS2 0-75mm	13/07/22	S			×		×															1				
	SS5 0-75mm	13/07/22	S			×	×						×										1				
e la	SS6 0-75mm	13/07/22	S			X	×	×			_					Dat	e/Tim	ne:	is	17/	22	ŀ	100	ppm			
	SS8 0-75mm	13/07/22	s			×		×							04	Chi	lled:			(	Yes	ho	1				
0	SS9 0-75mm	13/07/22	S			×		X													T	5.1	1				
	SS10 0-75mm	13/07/22	S			×	×						×			Col	mectional Ter	on: mp:			1	12	1				
2	SS11 0-75mm	13/07/22	S			X		×															1	-			
3	SS12 0-75mm	13/07/22	S			X		X															1				
		To	al Counts			9	3	7				4	2	4					16				9				
lethod of Shipment 🔽 Courier (# )			Hand Delivered		Postal		Na	me	Chris		s Davies		Signature		CD			Date			15/07/22			Time			

Eurofins Environment Testing Australia Pty Ltd trading as Eurofins | mgt

Submission of samples to the laboratory will be deemed as acceptance of Eurofine | mgt Standard Terms and Conditions unless agreed othorwise. A copy of Eurofine | mgt Standard Terms and Conditions in available on request