

Assessment of Contaminated Land Effects

Alternative to the Brynderwyn Hills - Brynderwyn Hills section

2 April 2026

Revision A

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NZ TRANSPORT AGENCY WAKA KOTAHI

Roads of National Significance

Te Kāwanatanga o Aotearoa
New Zealand Government

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Table of Contents

1. INTRODUCTION 1

1.1. Purpose and scope of this report 1

1.2. Qualifications and Experience 1

1.2.1. Megan Baddiley: Senior Environmental Scientist 1

1.2.2. Stephen Thomson: Technical Lead 2

2. ASSESSMENT METHODOLOGY 3

2.1. Assessment Framework 3

2.1.1. Resource Management (National Environmental Standards for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 3

2.1.2. Preliminary Site Investigation Requirements 3

2.1.3. Discharge of contaminants- regional rules 4

2.2. Desktop Assessment 4

2.2.1. Initial Qualitative Risk Assessment 4

2.2.2. Preliminary Site Investigation Method 5

2.3. Field Assessment 6

2.4. Relevant Standards and Guidelines 6

2.4.1. Nomenclature of standards and guidelines 6

2.4.2. National Environmental Standards 6

2.4.3. Contaminated Land Management Guideline No. 1 7

2.4.4. Soil Assessment Criteria 7

2.5. Alignment changes within the Proposed Designation 8

3. EXISTING ENVIRONMENT 9

3.1. Desktop Review Findings 9

3.1.1. Historical Aerial Photograph Review 9

3.1.2. Review of Property Files 10

3.1.3. Council Selected Land Use Register list 11

3.1.4. Preliminary Site Investigation findings 11

3.1.5. Preliminary Conceptual Site Model 13

3.2. Field Surveys and Observations 15

3.2.1. Preliminary Field Assessment 15

3.2.2. Field observations, subsurface conditions 16

3.2.3. Ground water sampling - BH2B_1160 Unexpected Discovery Location 19

3.3. Analysis of Data 19

3.3.1. Discussion of Laboratory Analysis – Mayflower Farm and the Plant Nursery / Market Garden 19

3.3.2. Unexpected discovery at Borehole BH2B_1160 20

Human Health (NES-CS) 20

Environment (Regional Plans) 20

Spoil Disposal and Management 20
3.3.3. Quality Control Samples 21
4. ASSESSMENT OF CONTAMINATED LAND EFFECTS 22
4.1. Overview 22
4.2. Assessment of actual and potential effects 22
4.2.1. Proposed Designation 22
4.2.2. Borehole BH 2B_1160 unexpected discovery 22
4.2.3. Absolute Concrete - outside of Proposed Designation 22
5. RECOMMENDED MITIGATION 23
5.1.1. All earthworks 23
5.1.2. Moderate risk sites 23
5.2. Monitoring Requirements 23
5.2.1. Unexpected discovery at Borehole BH2B_1160 23
6. CONCLUSION 24

Appendices

APPENDIX A
Figures
APPENDIX B
Historical Aerial Photographs
APPENDIX C
Property Files
APPENDIX D
Laboratory Certificates
APPENDIX E
Groundwater Monitoring Sheets
APPENDIX F
Analytical Results Tables
APPENDIX G
Quality control and assurance

Tables

Table 1: Summary of requirements of a PSI and within Application
Table 2: Adopted Selection Criteria for Contaminant and Land Use Analysis
Table 3: Summary of moderate- risk historical and current HAIL Activities within and immediately adjacent to the Proposed Designation
Table 4: Summary of relevant information within property files.
Table 5: Summary of HAIL Sites identified within and adjacent to the Proposed Designation
Table 6: Summary of identified moderate-- risk HAIL Sites
Table 7: Summary of subsurface conditions encountered during sampling
Table 8: Summary of subsurface conditions encountered during sampling of the unexpected discovery.

Glossary of Acronyms and Abbreviations

The glossary of acronyms and abbreviation tables in Volumes A and B of the Substantive Application apply to this report and should be referred to in addition to the acronyms and abbreviations below.

Abbreviation / Acronym	Term
CLMG (No.1)	Contaminated Land Management Guidelines No. 1 – Reporting on contaminated sites in New Zealand (Revised 2021)
CLMG (No.5)	Contaminated Land Management Guidelines No.5- Site investigation and analysis of soils
CSM	Conceptual Site Model
CSMP	Contaminated Soils Management Plan
DSI	Detailed Site Investigation
EQL	Estimated quantitation limit
HAIL	Ministry for the Environment's Hazardous Activities and Industries List
NAPL	Light non-aqueous phase liquid
NES-CS	Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011
OCP	Organochlorine Pesticide
PAH	Polycyclic Aromatic Hydrocarbons
PID	Photoionisation Detector
PSI	Preliminary Site Investigation
QA	Quality Assurance
QC	Quality Control
RAP	Remedial Action Plan
RPD	Relative percentage differences
SAC	Soil Assessment Criteria
SLUR	Selected Land Use Register
TPH	Total Petroleum Hydrocarbons

Glossary of Defined Terms

The glossary of defined terms tables in Volumes A and B of the Substantive Application applies to this report and should be referred to in addition to the defined terms below.

Term	Meaning
Contaminant	As defined in the Resource Management Act 1991 (RMA), includes any substance (including gases, odorous compounds, liquids, solids, and micro-organisms) or energy (excluding noise) or heat, that either by itself or in combination with the same, similar, or other substances, energy, or heat— (a) when discharged into water, changes or is likely to change the physical, chemical, or biological condition of water; or (b) when discharged onto or into land or into air, changes or is likely to change the physical, chemical, or biological condition of the land or air onto or into which it is discharged.
The Methodology	CLMG No. 1 – Reporting on Contaminated Sites in New Zealand, (Ministry for the Environment,2011) CLMG No. 2 – Hierarchy and Application in New Zealand of Environmental Guideline Values, (Ministry for the Environment,2011) CLMG No. 5 – Site Investigation and Analysis of Soils, CLMG No. 5 – Site Investigation and Analysis of Soils

1. Introduction

1.1. Purpose and scope of this report

This report provides an assessment of the actual and potential effects in relation to contaminated land associated with the construction of the Brynderwyn Hills section of the Alternative to the Brynderwyn Hills project (the Project).

This assessment forms part of a suite of technical assessments prepared for NZTA to inform the Substantive Application under the Fast-track Approvals Act 2024 (FTAA) for the Project. In particular, consents for disturbance of potentially contaminated soils under the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 (NES-CS), and consents under the Northland Regional Plan. This report should be read in conjunction with Volume A of the Substantive Application.

The purpose of this assessment is to investigate areas within the Proposed Designation to characterise the potential risk from contaminated soils to human health and the environment that require further action prior to redevelopment for the Project. The scope of the assessment includes a description of the methodology applied in preparing the assessment, determination of the actual and potential effects generated by the Project, and details of the proposed measures to manage and mitigate adverse effects.

1.2. Qualifications and Experience

1.2.1. Megan Baddiley: Senior Environmental Scientist

I am a Senior Environmental Scientist and Service Line Leader (Contaminated Land Management) at WSP New Zealand.

I hold a Bachelor of Science (Geology and Archaeology) and Master of Science (Engineering Geology) from the University of Auckland. I have over 12 years' experience as a professional Contaminated Land Scientist, holding certification (CEnvP) since 2019. I am member of the Australasian Land and Groundwater Association, WasteMINZ and the Environmental Institute of Australia and New Zealand (EIANZ).

My experience relevant to this application is as follows:

- **Te Ahu A Turanga: Manawatū Tararua Highway** – Senior Environmental Scientist responsible for the environmental assessment of eight locations of interest along the alignment route, including development and completion of multiple contaminated land assessments and authorship of validation and ongoing management reports. Engagement and development of remedial goals with iwi resulting in the formation of an encapsulation cell allowing for the retention of contaminated soils within the project footprint in line with preferred management and custodianship of soils.
- **State Highway 1 / Elles Road Intersection Improvements** – Field engineer for the geotechnical and contaminated land investigation, overseeing site works and sample collection. Author of the geotechnical factual and interpretive reports. Responsible for the development, management and reporting of the concurrent contaminated land investigation including preparation of a waste disposal assessment and Detailed Site Investigation (DSI).
- **Northern Corridor Improvements** – Environmental Scientist responsible for the environmental assessment of various sites along the corridor route, including development and completion of various contaminated land assessments for asbestos in soil, service station tank pull/remediation and a DSI and Remedial Action Plan (RAP) for the Rosedale Bus Station and Wainoni Park Pony Club.

I have been involved with NZTA projects throughout New Zealand since 2016 in various environmental and geotechnical capacities, most recently as the Senior Contaminated Land Specialist for Northland Corridor.

1.2.2. Stephen Thomson: Technical Lead

I am a Principal Environmental Scientist and Head of Environmental Sciences at WSP New Zealand.

I hold a Bachelor of Science and Post Graduate Diploma in Science (Physical Geography) from the University of Otago. I have over 27 years of experience in contaminated land management and remediation within New Zealand and Europe. I am a member of the Australasian Land and Groundwater Association and WasteMinz.

My experience relevant to this application is as follows:

- **Ōtaki to North Levin** – Project Suitably Qualified and Experienced Person (SQEP) and Contaminated Land Specialist for the Northern Alliance. Responsible for gap analysis of early investigation and development of management options including stabilisation for use in construction or disposal within spoil sites and the determination of project specific background concentrations.
- **State Highway 29 Tauriko Road Improvements** – Contaminated Land Specialist and Project SQEP. Responsible for overseeing the completion of the Preliminary Site Investigation and Detailed Site Investigation suitable for consenting and soil management during construction. The Project also required the design of a robust sampling strategy, interaction with regulators and the development of a Contaminated Soil Management Plan allowing for the reuse of low level contaminated soils within the Project designation.
- **Te Ahu A Turanga: Manawatū Tararua Highway** – Contaminated Land Specialist and Project SQEP. Oversaw the Preliminary Site Investigation Report (PSI) and DSI identifying areas of contamination and ground truthing soil characterisation. Responsible for development of the remediation strategy which involved the encapsulation and long-term management of impacted soils. Key involvement in communication with iwi partners and regulators.

I have been the Project SQEP and Contaminated Land Specialist on Northland Corridor since 2024. My knowledge of rural New Zealand farming processes and typical contaminates is extensive, having planned and successfully executed numerous large scale infrastructure projects throughout New Zealand.

1.3. Code of Conduct

Although this Project is not being considered before the Environment Court, we confirm that we have read the Code of Conduct for expert witnesses as contained in section 9 of the Environment Court Practice Note 2023. We agree to comply with that Code. We are satisfied that the matters which we have address in this Assessment are within our areas of expertise, except where we state that we are relying on information provided by another person or expert. We have not omitted to consider material facts known to us that might alter or detract from the opinions we express.

2. Assessment Methodology

2.1. Assessment Framework

This assessment has been prepared to support the Substantive Application and meet the requirements for a PSI in accordance with the Ministry for the Environment's (MfE) Contaminated Land Management Guidelines No. 1 – Reporting on contaminated sites in New Zealand (CLMG (No. 1)) (MfE, 2021) the NES-CS and relevant regional council discharge rules.

This assessment provides all information necessary to satisfy both the FTAA and PSI requirements, detailed in Table 1 and Section 2.4.1 of this report.

2.1.1. Resource Management (National Environmental Standards for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011

The NES-CS provides a nationally consistent risk-based criteria for the assessment of contaminant risk to human health.

The policy objective of the NES-CS as outlined in the Ministry for the Environment's NES-CS Users' Guide is "…. *to ensure 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. The NES-CS enables the safe use of affected land by:*

a) *Establishing regulations for five activities that ensure district planning controls relevant to assessing and managing public health risks from contaminants in soil are appropriate and nationally consistent.*
b) *Establishing soil contaminant standards protective of human health and requiring their use when decisions are made under the NES-CS.*
c) *Ensuring best practice and consistent reporting on land affected or potentially affected by contaminants is applied that enables efficient information gathering and consistent decision-making."*

It is unlikely that the Project will meet the permitted activity standards under the NES-CS due to the scale of soil disturbance proposed and the likelihood of encountering pockets of potentially contaminated soil with concentrations above natural background concentrations.

A DSI has not been undertaken, and limited soil sampling has been undertaken at sites of interest. Therefore, potential soil contamination within the Proposed Designation has not been validated.

2.1.2. Preliminary Site Investigation Requirements

CLMG (No. 1) (MfE, 2021) provides a list of requirements that are required within PSI reporting on potentially contaminated sites. Table 1 below signposts the corresponding detail within this report to the CLMG (No. 1). Where we have departed from requirements outlined in Table 1, we have provided justification in Section 2.2.2.

Table 1: Summary of requirements of a PSI and within Application

Requirements of a PSI	Section of this Report
▪ Investigation objectives ▪ Site identification including - Site name, address, legal description, boundary, map reference sand geographic coordinates ▪ Proposed site use	Sections 2, 3 and Appendix A

Requirements of a PSI	Section of this Report
Site description including: ▪ Environmental setting ▪ Site layout ▪ Current site uses ▪ Surrounding land use ▪ Geophysical surveys ▪ Site inspection	Volume A, and Sections 2 and 3
Historical site use ▪ Summary of site history from the following sources: - Existing investigation reports - Council information - Aerial photographs - Interviews - Other historical information ▪ Preliminary sampling - Description (including diagram) and justification of sampling locations and analyte selection - Results with comparison to guidelines	Section 3, 3.1, 3.2, 3.3
▪ Risk assessment evaluating the probability that: - *An activity or industry described in the HAIL is, or is not, being undertaken on the piece of land; or* - *An activity or industry described in the HAIL has, or has not, been undertaken on the piece of land; or* - *The likelihood of an activity or industry described in the HAIL being undertaken, or having been undertaken on the piece of land* ▪ Evaluation of: - *The likelihood that the soil is contaminated as a result of activity or industry occurring* ▪ Description of limitations, of the data collected and the assumptions and uncertainties in the data and models used	Section 3.1
▪ Conclusions ▪ Report limitations ▪ SQEP certification of report ▪ References	Section 5

2.1.3. Discharge of contaminants- regional rules

As a precautionary measure we are also seeking approval under the Regional Plan for Northland 2026 (RPN) regional rules C.6.8.5 discharges to land and water- contaminated land and C.6.9.7 other discharges of contaminants. This relates to the potential discharge to land or water from any contaminated land disturbed or reuse of contaminated land within the proposed designation including at BH2B- 1160 (refer section 3.2.1). Some soil and groundwater sampling has been undertaken at the higher risk sites to understand the nature of the contamination and satisfy the regional councils assessment criteria.

2.2. Desktop Assessment

A desktop assessment was undertaken to inform an understanding of the existing environment and included a review of historical aerial photographs, Northland Regional Council (NRC) Selected Land Use Register[1] (SLUR), selected property files and historical reports as specified below.

2.2.1. Initial Qualitative Risk Assessment

A qualitative risk assessment was undertaken to rank the risk profile of actual and potentially contaminated sites identified through the initial desktop review. This qualitative risk assessment involved assessing the probability and consequence of potential contamination, as follows:

[1] Selected Land Use Registers are databases which identify properties with current or historical activities as listed on the Ministry for the Environment's HAIL as known to the regional council.

- **Probability**: The likelihood of contaminants being present based upon multiple sources of evidence (e.g. time since activity occurred, type of contaminants potentially present/used and scale of activity) reviewed as part of the desktop review.
- **Consequence:** If contaminants are likely to be present, assessing the likely impact of these contaminants if they were encountered during project works (i.e. risk to human health, environment and/or cost to project). The determination of consequence with regard to potential of contamination typically takes into consideration the following:
  - Specific contaminant types likely to be present as a result of the activities or industry;
  - The relative toxicity and proximity of the source to the proposed study area boundary;
  - Scale of activity; and
  - Potential sensitive receptors (person or ecosystem with the potential to be exposed to the contaminant).

Due to limitations in the completeness of desktop data sources, there is some ambiguity as to whether contamination has actually occurred in a particular location. Accordingly, we have used our professional experience and judgement to determine whether it is "*more likely than not*"[2] an activity or industry as listed in MfE's Hazardous Activities and Industries List (HAIL) is currently or has historically occurred.

Sites with a potential HAIL activity as identified during the desktop review were grouped into three risk categories (low, moderate and high) based on the assessed probability and consequence. When characterising risk of contamination, multiple factors were considered including current and historical land use (notably HAIL-listed activities), proximity to the Proposed Designation, presence of sensitive receptors, and potential for groundwater contamination.

Each level of risk was applied to sites with a potential HAIL activity as follows:

Low Risk

a) Agricultural and horticultural activities which may have caused relatively low levels of contamination.
b) Horticulture activities that occurred for less than 10 years or ceased more than 25 years ago.
c) Council identified properties – as listed on council databases but listed as low risk.
d) Sites with a potential activity on the HAIL but are not within Proposed Designation nor within 50 m of the Proposed Designation.

Moderate Risk

a) Existing and previous land uses are on the HAIL, but any ground contamination is likely to require management.
b) Sites that may be contaminated and are within the Proposed Designation

High Risk

a) Industrial land use.
b) Properties the Council has identified with verified HAIL of a large scale or significant contamination.
c) Existing and/or previous land uses are on the HAIL, and any ground contamination has the potential to be significant (for example closed landfills or petrol stations) requiring ongoing management and likely remediation protocols.

2.2.2. Preliminary Site Investigation Method

As part of the PSI, a more detailed analysis of sites with potential activities on the HAIL have been undertaken to identify 'locations of interest' within the Proposed Designation.

[2] Section 7c of the NESCS

Assessment of risk categories involved the reinspection of current and historical aerials of the Proposed Designation, and evaluation of the Northland Regional Council's SLUR. As part of this reinspection and evaluation process, we also considered areas where contamination may have migrated from outside to within the Proposed Designation boundary, meaning HAIL sites outside of the Proposed Designation with potential contamination that is easily mobilised, were also flagged as potential locations of interest.

At the time of completing the assessment the SQEP was not aware of any geophysical surveys completed for contaminated land purposes and therefore no geophysical reports were reviewed. Additionally, the majority of the assessment was undertaken prior to landowners being informed of project details, therefore interviews with landowners were not carried out. The property files were reviewed to see if they contained any additional information (scale of operation, types on product uses, time commencing and/or ending) that support the contaminated land assessment.

Following the risk assessment criteria outlined in Section 2.2.1, locations of interest were identified and assigned a risk rating.

As is normal practice prior to detailed design being available, the PSI did not include an assessment of building materials and whether they could impact soil quality. Instead, this PSI focused on the activity that occurred within the property and assessed whether the activity was on the HAIL or not.

2.3. Field Assessment

We undertook a drive over of the Proposed Designation and surrounding area. Three potential HAIL sites were identified as areas where opportunistic sampling could take place. Site access was not available for all identified locations of interest. Sampling was undertaken at the following:

- Three locations within the Proposed Designation identified as potential HAIL sites (Mayflower Farms, The Waipu Land Company plant nursery and market garden, and BH2B_1160).
- Locations of geotechnical boreholes (BH2B_1140, BH2B_1104, BH2B_1105 and BH2B_1149) advanced as part of the geotechnical investigation. These boreholes were sampled due to potential contamination identified when advancing BH2B_1160 (described in greater detail at Section 4.3 of this report).

2.4. Relevant Standards and Guidelines

2.4.1. Nomenclature of standards and guidelines

There are a number of terms to define assessment criteria. Soil assessment criteria (SAC) have been adopted throughout this report to incorporate soil contaminant standards, soil guideline criteria and numeracy standards.

2.4.2. National Environmental Standards

The NES-CS allows certain activities to be undertaken as a permitted activity provided specific standards are met. The NES-CS does not generally apply to production land unless residential buildings are affected or land use changes. However, other activities may require a DSI and are classified as controlled, restricted discretionary, or discretionary depending on contamination levels and whether a DSI has been done.

Activities proposed to be undertaken on a Piece of Land (as defined in the NES-CS), if not permitted, are:

a) Controlled activities, if a DSI exists and where soil contamination does not exceed the applicable SAC for the land use or intended land use.
b) Restricted Discretionary, if a DSI exists and where soil contamination exceeds the applicable SAC for the land use or intended land use.
c) Discretionary, for any activity which does not have a DSI, and does not meet any of the requirements to be a permitted, controlled or restricted discretionary activity.

The investigation, including limited soil sampling, to date has been undertaken in accordance with the NES-CS. It should be noted that due to the limited nature of the sampling undertaken this report may not be considered a DSI. Sampling that was undertaken has also been beneficial for understanding relevant rules and controls under the NRP.

Based on the detail provided within this report, consents are required under the NES-CS as a Discretionary Activity in accordance with clause 11 of the NES-CS and RPN rules C.6.8.5 and C.6.9.7 for discharge of contaminants to land and water from contaminated land).

2.4.3. Contaminated Land Management Guideline No. 1

Contaminated land management guidelines No 1: Reporting on contaminated sites in New Zealand (CLMG No 1) (MfE2011b) is incorporated by reference into the NES-CS. These guidelines have a regulatory role when reporting for NES-CS purposes. The guidelines set out the requirements for reporting on contaminated land for contaminated land investigators. This assessment has been prepared to meet the requirements of a PSI in CLMG No.2.

2.4.4. Soil Assessment Criteria

The NES-CS sets out a suite of SAC for priority contaminants that are legally binding. These SACs are applied as screening criteria to inform on-site management actions, or to trigger further investigation (i.e. DSI). Five land-use scenarios have applied SAC under the NES-CS; rural residential/lifestyle, residential 10% produce, high-density residential, recreational and commercial/industrial.

Where soil contaminant standards for certain contaminants are not incorporated into the NES-CS, then SAC selection follows the process set out in the Contaminated Land Management Guidelines No. 2 – Hierarchy and Application in New Zealand of Environmental Guideline Values (Revised 2011) (MfE, 2011b). CLMG No.2 sets out a hierarchy for soil contaminants standard selection. The hierarchy is:

1. New Zealand documents that derive risk-based guideline values.
2. Rest-of-the-world documents that derive risk-based guideline values.
3. New Zealand documents the derive threshold values.
4. Rest-of-the-world documents that derive threshold values.

In rare situations when soil contaminant standards cannot be obtained through the above hierarchy, specific soil contaminant standards are determined through the Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health (the Methodology) (MfE, 2011c). This has not been required for this project.

As this assessment is to also determine potential risk to the project, mainly around soil reuse and disposal, from contaminated soils, waste acceptance criteria (WAC) and SAC for environmental receptors have been included.

The sources of the SAC used in this assessment are summarised in Table 2 below.

Table 2: Adopted Selection Criteria for Contaminant and Land Use Analysis

Matrix	Source Guideline	Land-use Criteria	Analytes
Soil	Ministry for the environment Guidelines for assessing and managing petroleum hydrocarbon contaminated sites in New Zealand (MfE, 2011)	▪ Guideline for: - Commercial Industrial for sandy SILT (<1m below ground level (bgl))	Arsenic, cadmium, chromium, copper, lead, mercury, zinc.
	Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health (MfE, 2011c)	Soil Contaminant Standards for: ▪ Commercial/ Industrial Land Use	Arsenic, cadmium, copper, lead, and mercury.
	National Environment Protection (Assessment of Site Contamination)	Health Investigation Levels (HILs)[1] for: ▪ Commercial/Industrial Soil	Chromium, nickel and zinc.

Matrix	Source Guideline	Land-use Criteria	Analytes
	Measure 1999 (April 2013) (National Environmental Protection Council, 2013).		
	Waste management institute of New Zealand, Technical guidelines for disposal to land (WasteMINZ, 2023)	▪ Waste acceptance criteria for: - Class 3 Managed Fill - Class 4 Controlled Fill	Heavy Metals, Total Petroleum Hydrocarbon (TPH), benzo(a)pyrene, BTEXN, atrazine, dieldrin
	Australian and New Zealand Guidelines for Fresh & Marine Water Quality. ANZG 2018[3]	▪ Sediment quality guidelines - Interim sediment quality guidelines (ISQG) – High - ISQG - Low	Heavy metals, Polycyclic Aromatic Hydrocarbons (PAHs), Organochlorine Pesticides (OCP)
	Manaaki Whenua Landcare Research (2023) Title: PBC – Predicted Background Soil Concentrations, New Zealand (Deprecated)[4]	▪ Soil – Upper range for hex: - ID 8715 - ID 26517 - ID 27516 - ID 23536	Heavy Metals

2.5. Alignment changes within the Proposed Designation

The Indicative Alignment within the Proposed Designation represents a possible alignment which has been developed for assessment purposes and to illustrate what the Project's final design might look like, and the effects generated by its construction and operation. The alignment that gets built including the design and placement of bridges, culverts, stormwater systems, soil disposal areas and landscaping, will be refined and confirmed during the detailed design stage. This assessment has identified potentially contaminated soils within the Proposed Designation, rather than just the Indicative Alignment, to anticipate the potential effects of the Project irrespective of where the final alignment moves. The proposed conditions establish outcome-based criteria that will ensure effects on the environment are adequately avoided, remedied or mitigated, regardless of the final design and construction methodology for the Project. Should the final alignment within the Proposed Designation change, we consider that the effects assessment, proposed mitigation and recommendations outlined in this report would remain appropriate.

[3] Whilst the ANZG 2018 SACs are not directly application to soil, they provide a good indication on potential limitations for soil reuse, especially when soil is reused near watercourses.
[4] Manaaki Whenua Landcare Research predicted background soil concentrations for the area of the unexpected discovery area are based on a limited data set and may not represent true background.

3. Existing Environment

3.1. Desktop Review Findings

This PSI desktop review identified eleven locations of interest within and adjacent to the Proposed Designation. A summary of the risk rating for each potentially contaminated site is included in Table 5 in Section 3.1.4. Four of the eleven potential HAIL sites were categorised as a moderate-risk with the remaining seven sites classified as low-risk. No locations of interest were categorised as high-risk.

Refer to **Appendix A** for site layout and HAIL locations.

3.1.1. Historical Aerial Photograph Review

A summary of our review of historical aerial photographs for moderate-risk sites is presented in Table 3. Historical aerials reviewed are included in **Appendix B** – Historical Aerial Photographs.

Where a site was identified as moderate- risk, the extent of these sites both within, and immediately adjacent to, the Proposed Designation were considered.

Table 3: Summary of moderate- risk historical and current HAIL Activities within and immediately adjacent to the Proposed Designation

Site	Year	Site observations
Brynderwyn Service Station (2753 State Highway 1, Brynderwyn)	1963	A small service station presents and appears operational in 1963 – the earliest available aerial of the area.
	1973	Site largely unchanged, petrol station pumps clearly visible in aerial, there is a small number of pumps, but no veranda present in 1973.
	1983	Multiple buildings constructed to the west of service station, driveway also now present.
	1996	Site unchanged.
	2024	Site unchanged, most recent available aerial.
Plant Nursery and Market Garden (36 Glenmorhr Road, Waipu)	2018	Site is pasture with no activity.
	2019	Earthworks present across extent of location.
	2021	Green houses partially complete.
	2023	Northern area resembles present day; earthworks present in area for construction of southern nursery area.
	2024	Southern nursery area now present, most recent available aerial.
Mayflower Farms – Potential Sheep Dip Site (63 Brynderwyn Road, Brynderwyn)	1961	Wool Shed with surrounding pens present to the east.
	1977	Sheep pens of present-day structure constructed to the west.
	2010	Demolition of sheep pens to the east.
	2024	Most recent aerial, woolshed to east demolished replace with another farm building that is present today.
Absolute Concrete Manufacturing -Absolute Concrete (2458 State Highway 1, Kaiwaka 0542) *Adjacent to Proposed Designation*	1961	Earliest available aerial of this site is from 1961. A single large structure was present in the centre of the area surrounded by two auxiliary buildings. Area appears to exist as a work-yard. A meandering stream is present to the northern portion of the area. There is also a residential building present on intersection of State Highway 1 (SH1) and Baldrock Road.
	1977	Original building demolished and replaced with industrial structure that forms part of the present-day structure. Work-yard area surrounding central structure has grown. Stream in northern portion has been diverted and now runs along the western edge of the area.

Site	Year	Site observations
	1985	Largely unchanged, small extensions to central structure and a minor extension to southern work yard area.
	1996	Structural extension to the central building to the east. Work-yard has a minor extension to the east.
	2011	Significant expansion of the work yard area has taken place to the south. Central structure has been fully extended to resemble present day structure. Residential building at the southern boundary of the area has been demolished.
	2024	Present day aerial, work yard has had a significant extension in northern direction. Most recent available aerial.

3.1.2. Review of Property Files

Property files for three moderate-risk sites were requested from Kaipara District Council, one property file for the plant nursery and market garden was requested from Whangārei District Council as shown in **Appendix C** – Property Files. For the Plant Nursey and Market Garden, a Potentially Contaminated Site property search report has been received.

Information relating to contaminated land held within each file is summarised in Table 4 below.

Table 4: Summary of relevant information within property files.

Property Address (Site Description)	Legal Description	Relevant information from property files
2753 State Highway 1, Kaiwaka (Brynderwyn Service Station)	Legal Description: LOT 2 DP 113162 BLKS IX X WAIPU SD	Correspondence from 'The Chairman and Councillors' of Otamatea County Council regarding an application for construction of a motel on the property was provided. The document confirmed the use of the site as a service station in 1979. No decommissioning reports for the service station were contained within the property files.
63 Brynderwyn Road, Brynderwyn (Mayflower Farms - Potential Sheep Dip Site)	Legal Description: LOT 1 DP 208336 LOT 6 DP 160430 LOT 2 DP 454381 SEC 8 SO 418102 LOT 2 DP 417208 LOT 1 DP 208323 PT LOT 11 DP 3184 SEC 3 SO 67448 ALLOTS 248-249 KAIWAKA PSH - p t subj to open space covenant on DP 4451	No information pertaining to contaminated land contained in property file
	Legal Description: LOT 3 DP 573641 LOT 1 DP 208336 LOT 6 DP 160430 LOT 2 DP 454381 SEC 8 SO 418102 LOT 2 DP 417208 PT LOT 11 DP 3184 ALLOTS 248-249 KAIWAKA PSH - pt subj to open space covenant on DP 445109	
Adjacent to Proposed Designation **State Highway 1 & 33 Baldrock Road, Kaiwaka (Absolute Concrete Manufacturing)**	Legal Description: LOT 1 DP 45538 PT LOT 1 DP 41410 BLK XIV WAIPU SD	The file contained the application for a building consent to extend the workshop and storage areas of the concrete manufacturing facility. An attachment to Property information memorandum (PIM) No. 010662 for the project had a summary of the impacts of contaminated land, it stated that there are no known impacts of underground tanks, asbestos or chemical contamination known on the site.
	Legal Description: SECS 4 6 10 SO 456515	The bulk of these documents related to installation of wastewater systems and not on the management of contaminated land.

Property Address (Site Description)	Legal Description	Relevant information from property files
Plant Nursery and Market Garden **(36 Glenmorhr Road, Waipu)**	Legal description: Part Allotment 42 Parish of Waipu, Section 36, 47 Survey Office Plan 510398 and Part Allotment 42 Parish of Waipu	A "Potentially Contaminated Site" property search was provided from the Council on 3rd March 2026. This did not show current or previous evidence of HAIL activity. It is noted the report predates the construction of the Plant nursery and market garden.

3.1.3. Council Selected Land Use Register list

We also reviewed the Northland Regional Council's SLUR, which identified five council recorded HAIL sites: one within the Proposed Designation and four adjacent HAIL sites. The HAIL sites outside of the Proposed Designation (including Absolute Concrete, Atlas Quarry, the Artillery Road/Langsview Track Powerstation and Ahuroa Waste Treatment Plant) have been included to account for the potential migration of contaminants into the Proposed Designation. This form of contamination is captured under HAIL Category H '*Any land that has been subject to the migration of hazardous substances from adjacent land in sufficient quantity that it could be a risk to human health or the environment*'.

The risk of contaminant migration from three of these adjacent sites into the Proposed Designation is unlikely for the following reasons:

- Ahuroa Waste Treatment Plant is primarily situated on the western side of Ahuroa River. Areas likely to be contaminated (storage drums, bulk storage areas) are not present east of the Ahuroa River.
- Atlas Quarry exists down gradient from the Proposed Designation and a significant distance from the indicative alignment.
- Artillery Road/Langsview Track Powerstation has a HAIL B4. (Power stations, substations or switchyards) activity that takes place to the east of SH1. Considering the size of the HAIL site and the distance from the Proposed Designation, migration of contamination is low.

Absolute Concrete requires further investigation if Project earthworks adjoin the site, to confirm migration if contaminants is unlikely.

3.1.4. Preliminary Site Investigation findings

A list of identified locations of interest and their applied risk ranking is present in Table 5.

In addition to the identified HAIL sites outlined in Table 5, a hydrocarbon odour was observed during geotechnical investigation drilling at BH2B_1160, (located at 2471 Twin Coast Discovery Highway, Chainage 26000). Subsequent soil sampling from BH2B_1160 identified the presence of hydrocarbons from 10 m below ground level (bgl) to 28 m bgl, however, olfactory evidence suggested that the hydrocarbons extended deeper. This area has been referred to as "BH2B_1160 unexpected discovery area" throughout the rest of this report.

Due to the proximity of borehole BH2B_1160 to the Indicative Alignment and a proposed large cutting, an additional four boreholes were advanced to determine if the hydrocarbons extended into the Indicative Alignment and therefore the cutting. Monitoring wells were installed into all five boreholes (including BH2B_1160) to better understand groundwater condition. The objective of the additional boreholes was not to delineate the extent of hydrocarbons; rather they were installed to determine potential impacts to the project.

The soil sampling in BH2B_1160 also identified elevated concentrations of arsenic, copper, lead, nickel and zinc in the soil collected from 1.4 m bgl.

The investigation and the findings are discussed further in Section 3.3.

Table 5: Summary of HAIL Sites identified within and adjacent to the Proposed Designation

Site Activity Description	Address	Parcel ID	HAIL Category	Timeline	~ distance from Indicative Alignment	Risk	Method of identification
Within Proposed Designation							
Plant nursery and market garden (The Waipu Land Company)	36 Glenmohr Road, Waipu	Part Allot 42 PSH OF Waipu Section 47 SO 510398	A10. Persistent pesticide bulk storage or use, including sport turfs, market gardens, orchards, glass houses or spray sheds.	2019 - Present	Intersects with indicative alignment	Moderate - only operating since 2019. Would be low if area not disturbed	Aerial
Possible Farm Quarry	163 State Highway 12, Brynderwyn	Lot 1 DP 466121, 621901	I. Any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health or the environment.	1970s - Present	330 m west of Indicative Alignment	Low – often subject to fly tipping, potential contamination sources (typically diesel) are likely limited in volume	Aerial
Potential Sheep Dip (Mayflower Farm)	63 Brynderwyn Road, Brynderwyn	Part Lot 11 DP 3184, 466398	A8. Livestock dip or spray race operation	Eastern pens present 1961, demolished by 2010. Western sheep pens 1977 - Present	230 m west of Indicative Alignment	Moderate - would be low if area not disturbed	Aerial
Farm borrow pit/quarry	67 Brynderwyn Road, Northland	Part Lot 11 DP 3184	I. Any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health or the environment.	1987 – Present	150m east of Indicative Alignment	Low – often subject to fly tipping, potential contamination sources (typically diesel) are likely limited in volume	Aerial
Former Brynderwyn Service station	2753 State Highway 1, Brynderwyn	Lot 2 DP 113162, NA63C/768	F7. Service stations	1963 - Structure still exists but is no longer an active service station	850 m east of Proposed Designation	Moderate - would be low if area not disturbed	SLUR – Verified HAIL: Risk not quantified SLU.802903
Adjacent to Proposed Designation							
Market Garden	3785 State Highway 1, Waipu	Lot 3 DP 180474	A10. Persistent pesticide bulk storage or use, including sport turfs, market gardens, orchards, glass houses or spray sheds.	2001 - Present	150m west of Indicative Alignment	Low - due to the distance from the indicative alignment, the site is unlikely to be disturbed. However, if is to be disturbed then would be moderate.	Aerial
Market Garden	50-24 Ryan Road, Waipu	Lot 1DP 427416	A10. Persistent pesticide bulk storage or use, including sport turfs, market gardens, orchards, glass houses or spray sheds.	2020 - Present	800m east of Indicative Alignment	Low – has only been in operation for a short period of time so low potential for soil to be impacted at a level that would impact soil quality. Additionally, due to the distance from the indicative alignment, the site is unlikely to be disturbed.	Aerial
Concrete manufacturing (Absolute Concrete Limited)	2458 State Highway 1, Kaiwaka	Part Lot 1 DP 45538, NA26A/629 Allot 342 PSH OF Kaiwaka, NA38A/779 Section 10 SO 456515, 735108	E4. Commercial concrete manufacture or cement storage A17. Storage tanks or drums for fuel, chemicals or liquid waste	1961 - Present	50m east of Proposed Designation	Moderate – industrial site that has been in operation for 50+ years.	SLUR – Verified HAIL SLU.803279
Commercial quarrying activities (Atlas Quarry)	State Highway 1 Brynderwyn, Maungaturoto	Section 10 Block X Waipu SD, NA93C/666	H. Any land that has been subject to the migration of hazardous substances from adjacent land in sufficient quantity that it could be a risk to human health or the environment	1961 - Present	500m+ east of Proposed Designation	Low – due to distance from designation.	SLUR – Verified HAIL: Risk not quantified SLU.803276
Power station, substation or switchyard	No Address, Artillery Road Langsview Track, Brynderwyn	Section 1 SO 69960, NA128C/703	H. Any land that has been subject to the migration of hazardous substances from adjacent land in sufficient quantity that it could be a risk to human health or the environment	2004 - Present	500m+ east of Proposed Designation	Low - due to distance from designation.	SLUR - Verified HAIL: Risk not quantified SLU.042442
Ahuroa Waste Treatment Plant	174-176 Ahuroa Road	Allot 589 PSH OF Waipu, NA22D/1333	H. Any land that has been subject to the migration of hazardous substances from adjacent land in sufficient quantity that it could be a risk to human health or the environment	1995 - Present	20m west of Proposed Designation	Low – due to distance from designation and Ahuroa River acting as a natural barrier	SLUR - Verified HAIL: Risk not quantified SLU.042628

3.1.5. Preliminary Conceptual Site Model

Based on the desktop review, a preliminary Conceptual Site Model (CSM) has been prepared, presented in Table 6 below. The primary purpose of this CSM is to identify the relationships between contamination sources, migration pathways, and potential receptors. The focus for the below CSM has been restricted to moderate-risk sites identified through the PSI (including both sites within and adjacent to the Proposed Designation).

Table 6: Summary of identified moderate-- risk HAIL Sites

Identified sources of potential contamination	Description	Contaminants of Interest
Inside Proposed Designation		
Plant Nursery and Market Garden (36 Glenmohr Road, Waipu (both sites Part Allot 42 PSH OF Waipu and Section 47 SO 510398)	Market garden and plant nursery.	Insecticides, herbicides and fungicides. Metals, monosodium methanearsonate, OCP, neonicotinoids
Mayflower Farm – Possible sheep dip site (63 Brynderwyn Road, Brynderwyn)	Sheep pens potentially used for sheep dipping	Arsenic, organochlorines (e.g., aldrin, dieldrin, DDT, lindane) and organophosphates, carbamates, and synthetic pyrethroids.
Brynderwyn Service Station (Former) (2753 State Highway 1, Brynderwyn)	Former site of a service station (No longer operational)	Petroleum hydrocarbons (BTEX, PAHs) and lead
Outside Proposed Designation (with potential for migration if Indicative Alignment changes)		
Absolute Concrete Manufacturing (2458 State Highway 1, Kaiwaka 0542)	Site used for the commercial manufacture of concrete products	Cement, calcium hydroxide, alkalis, and ammonia Wide range of chemicals (organic and inorganic), and biological hazards
Potential Pathways		
Soil	**Groundwater**	
▪ Direct contact with impacted soils (dermal, inhalation and ingestion) ▪ Inhalation of vapours from impacted soils. ▪ Surface sediment runoff during earthworks ▪ Airborne dust caused by earthworks	▪ Direct contact with impacted groundwater during dewatering ▪ Migration of impacted groundwater through the subsurface and discharge to surface water bodies. ▪ Inhalation of vapours volatising from impacted groundwater through the subsurface to the ground surface.	
Potential Pathways		
Impacted Soils	**Impacted Groundwater**	
▪ Site users during intrusive works through direct contact with impacted soils (dermal, inhalation or ingestion). ▪ On-site soil environment through the migration of contaminants from impacted soils.	▪ On and off-site intrusive workers through direct contact with impacted groundwater (dermal, inhalation or ingestion). ▪ Groundwater through the migration of contaminants from impacted soils entering/ leaching into groundwater systems. ▪ All surface water bodies, through the migration of contaminants from impacted groundwater entering/leaching into surface water via preferential pathways.	
Potentially complete Source-Pathway-Receptor Linkage		
▪ For a risk to a receptor to occur, a complete pathway must exist between the source of the contamination and the receptor. Where the contaminant pathway is incomplete, there is no exposure and hence no risk via that pathway. ▪ Significant earthworks are anticipated during construction, at time of assessment the Indicative Alignment crosses one moderate-risk HAIL site (Plant nursery and market garden at 36 Glenmohr Road, Waipu), which will require further assessment to confirm risk. The remaining three moderate-risk HAIL sites do not currently intersect the Indicative Alignment and as such we consider that there is no unacceptable risk to human health or the environment should these sites remain unaltered. ▪ No PSI can provide 100% certainty that all HAIL activities have been identified, therefore all soil disturbance works should be undertaken under a contaminated soils unexpected discovery protocol. ▪ If the Indicative Alignment changes resulting in potential soil disturbance of a potential moderate risk HAIL sites, then a DSI should be undertaken across the impacted site.		

3.2. Field Surveys and Observations

3.2.1. Preliminary Field Assessment

Contaminated land sampling was undertaken concurrently with geotechnical investigations with samples collected by hand auger adjacent to geotechnical boreholes on HAIL sites where possible. Accessible sites included:

1) Plant Nursery and Market Garden (36 Glenmohr Road, Waipu at the intersection of SH1 and Glenmohr Road).
2) Mayflower Farms - Potential sheep dip site (63 Brynderwyn Road, Brynderwyn).

We also undertook sampling at and around borehole BH2B_1160 (located at 2471 Twin Coast Discovery Highway, Chainage 26000) following the olfactory hydrocarbon cues (odour) observed during geotechnical drilling. Four additional boreholes were advanced to facilitate further investigation in this area (BH2B_2101, BH2B_2147, BH2B_2148 and BH2B_2149).

Soil and rock samples collected as part of these assessments were sent to R J Hills Laboratories Limited and Flinders Cook Technical Services for certified analysis of requested analytes.

A description of the sampling is outlined below. Sampling undertaken to date provides a high-level overview of potentially contaminated sites identified within the project area and does not fulfil the sampling requirements of a DSI.

Plant Nursery and Market Garden

The property is an existing commercial plant nursey and market garden that has operated since, 2019. Limited soil sampling was undertaken alongside the geotechnical investigation. Prior to sampling a site walkover was conducted. The property consists of greenhouses at the north of the site while the southern end comprises seedlings grown outside in plastic pots and an area between State Highway 1 and the Waihoihoi River of juvenile and mature shrubs. Ground underlying the outdoor growing space was covered with black polythene and soil was not exposed at the time. The more mature shrubs were planted directly into underlying soils. During the site walkover, two stockpiles of fold tires were noted on the property. Large mounds of mulch / compost were also present on the property.

Three hand augers were completed across the area adjacent to boreholes: BH2B_1140, BH2B_1104 and BH2B_1105 to a depth of 1.5m bgl. Three soils samples were collected from each of the hand auger investigation locations from varying depths with one duplicate collected from BH2B_1105.

Between samples, all non-dedicated equipment (hand auger and trowel) were cleaned using a decon90 solution and a rinse with tap water. Nitrile gloves were worn and replaced between collection of each soil sample. Soil was place directly into laboratory supplied sampling jars.

Mayflower Farm – Potential sheep dip site

The property consists of a house along with several farm structures including multiple pens and a loading ramp in poor condition.

A hand auger was attempted adjacent to BH2B_1149. However, high gravel content in the subsurface prevented penetration of the hand auger and therefore samples at depth could not be collected.

In the loading pen area, away from the main yard structures, five surface samples from 0.1m bgl were collected using a trowel and gloved hands. Sample were collected from each pen to ensure general coverage. Quality Control (QC) measures as outlined above were followed at this location. Soil sampling was unable to be undertaken within the main yard structure.

Borehole BH2B_1160 Unexpected Discovery and additional investigation

The assessment around borehole BH2B_1160, focused on determining if the detected hydrocarbon impacted material extended south towards and into the location of the proposed cutting, located immediately south of borehole BH2B_1160. The assessment consisted of an additional four boreholes

(BH2B_2101, BH2B_2147, BH2B_2148 and BH2B_2149) drilled between 101 m and 195 m to the west and south of BH2B_1160. Location of the boreholes were constrained by topography and access however were placed within the proposed cutting. The boreholes were drilled from surface to between 34 m and 50 m bgl. The end depth of each borehole was determined based on olfactory evidence of hydrocarbons (natural and with a photoionisation detector (PID)) and anticipated cutting depth. Soil samples were collected across the drill sample at approximately 5 m intervals with selected samples (based on field observations) submitted for laboratory analysis consisting of:

- Heavy metals
- Total petroleum hydrocarbons (TPH)
- Polycyclic aromatic hydrocarbons (PAH0)
- Monocyclic aromatic hydrocarbons (MAH)
- Benzene, toluene ethylbenzene, xylene and naphthalene (BTEXN)

Groundwater monitoring wells were installed within each borehole. The screen interval of each monitoring well was targeted to the geological until where hydrocarbons were observed and consisted of:

- BH2B_2101 had a screen depth 21m to 27m bgl
- BH2B_2147 had a screen depth 31m to 36.9m bgl
- BH2B_2148 had a screen depth 9m to 16m bgl
- BH2B_2149 had a screen depth 10m to 16m bgl
- BH2B_1160 had a screen depth 9m to 12m bgl

3.2.2. Field observations, subsurface conditions

Subsurface conditions observed during the sampling are detailed in Table 7. Sampling plans are presented in **Appendix A**.

Table 7: Summary of subsurface conditions encountered during sampling

Site	Associated Borehole	Depth (m bgl)	Soil description	PID readings (ppm)
Plant nursery and market Garden	BH2B_1104	0.00 – 0.20	FILL/ TOPSOIL: Clayey SILT with minor gravel; brown. Gravel, fine to coarse.	0.0
		0.20 – 1.00 End of hole (EOH)	CLAY, with trace sand; brown. Sand, fine to medium.	0.0 - 0.1
	BH2B_1105	0.0 – 0.25	FILL/TOPSOIL: CLAY with trace silt and rootlets.	0.2
		0.25 – 0.60 EOH	CLAY with trace silt and rootlets; brownish orange with grey mottling.	0.0 – 0.2
	BH2B_1140	0.00 – 0.20	FILL/TOPSOIL: Clayey SILT; dark brown.	0.1
		0.20 – 0.60	Clayey SILT with minor sand; orange, brown and grey. Sand, fine to medium.	0.1
		0.60 – 1.00 EOH	Clayey SILT with minor sand and trace organics; dark brown. Sand, fine to medium. Becomes grey, orange and brown at 0.8 m bgl.	0.2
Mayflower Farm	BH2B_1149	0.10 EOH	Refusal at surface. Silty GRAVEL with rootlets; brown. Gravel, coarse grained.	0.0
	Surface samples	0.10 EOH	Silty GRAVEL with rootlets; brown. Gravel, coarse grained.	0.0 – 0.2

BH2B_1160 Unexpected Discovery Location

Subsurface conditions observed when drilling the five boreholes to investigate the unexpected discovery are summarised in Table 8. Borehole locations are presented in **Appendix A.**

Table 8: Summary of subsurface conditions encountered during sampling of the unexpected discovery.

Borehole	Depth (m bgl)	Soil description	PID range reading (ppm)
BH2B_1160	0.00 – 3.80	FILL – CLAY with some silt and trace refuse (wire and steel fragments); dark grey with orange mottling.	NA[1]
	3.80 – 6.95	NORTHLAND ALLOCHTHON SOILS – CLAY some silt; light bluish grey with brown and green mottling. Core loss between 5.20 – 6.00m bgl.	NA[1]
	6.95 – 23.00	NORTHLAND ALLOCHTHON DEGRADED ZONE – Highly to moderately weathered, dark grey to brown, sheared SILTSTONE, extremely weak (Silty GRAVEL with some sand). 10.50m strong hydrocarbon odour noted in core. 17.00m strong hydrocarbon odour noted in core.	NA[1]
	23.00 – 30.40 EOH	NORTHLAND ALLOCHTHON MELANGE MATRIX – Slightly weathered, grey and brown, sheared SILTSTONE; very weak to weak (breaks down to Sandy SILT when on handling). 24.00m – Strong hydrocarbon odour noted in core.	67.8 - 316.2
BH2B_2101	0.00 – 1.00	FILL – SILT with some clay; grey with trace brownish orange streaking.	0.3
	1.00 – 6.70	NORTHLAND ALLOCHTHON MELANGE MATRIX – Slightly weathered, greenish grey, calcareous SILTSTONE. Very weak (SILT with some clay).	0.6 – 0.9
	6.70 – 7.10	NORTHLAND ALLOCHTHON CALCAEROUS SEQUENCE – Slightly weathered, silty LIMESTONE. Very weak (breaks down to silty fine to coarse GRAVEL).	
	7.10 – 25.20	NORTHLAND ALLOCHTHON MELANGE MATRIX – Slightly weathered, greenish grey with reddish brown staining, calcareous SILTSTONE with minor interbedded fine to medium gravel. Very weak (SILT with some clay, minor grave). 13.40 – 13.90 NORTHLAND ALLOCHTHON CALCAREOUS SEQUENCE – Slightly weathered, light grey, LIMESTONE. Moderately strong. 16.30 – 17.30 NORTHLAND ALLOCHTHON CALCAREOUS SEQUENCE – Slightly weathered, greenish grey, interbedded calcareous SILTSTONE and MUDSTONE. Weak.	0.7 - 10
	25.20-28.50	NORTHLAND ALLOCHTHON NON-CALCAREOUS SEQUENCE – Slightly weathered, greenish grey, SILTSTONE. Weak. 27.80 – 28.50 NORTHLAND ALLOCHTHON CALCAREOUS SEQUNCE – Slightly weathered, calcareous, very thin, fine to medium silty SANDSTONE. Weak.	2.1 – 7.6
	28.50-50.00 EOH	NORTHLAND ALLOCHTHON MELANGE MATRIX – Slightly weathered, greenish grey, calcareous SILTSTONE with interbedded fine to medium gravel. Weak (SILT with some clay, minor gravel). 46 – 47.55m No hydrocarbon odour. 47.55 – 50.00m Very weak hydrocarbon odour.	1.0 – 7.3
BH2B_2147	0 – 0.50	Concrete and gravel driveway basecourse	
	0.50 – 1.17	FILL – Sandy SILT, some gravel, with minor organics; dark grey.	0.2
	1.17 – 2.15	NORTHLAND ALLOCHTHON SOILS – Silty CLAY, with some sand; light grey with orange mottling.	

Borehole	Depth (m bgl)	Soil description	PID range reading (ppm)
	2.15 – 6.90	NORTHLAND ALLOCHTHON DEGRADED ZONE -Highly to moderately weathered, bluish grey, pervasively shared, calcareous SILTSTONE. Extremely weak (Gravelly SILT, with some clay). Weak hydrocarbon odour from 6.60m bgl.	0.1 – 0.4
	6.90 – 40.40 EOH	NORTHLAND ALLOCHTHON MALANGE – Slightly weathered, light to dark greenish grey, perversely sheared, calcareous SILTSTONE. Extremely weak (Gravelly CLAY) Weak hydrocarbon odour from 6.90 – 20.00m bgl.	0.0 – 1.3
BH2B_2148	0.00 – 1.10	FILL – Clayey SILT, trace rootlets; light yellowish brown with orange mottling.	
	1.10 – 4.50	NORTHLAND ALLOCHTHON SOILS – Clayey SILT with some gravel; grey with reddish brown mottling to dark grey with depth. CORELOSS between 2.50 – 3.00 and 3.80 – 4.50.	1.1 - 2
	4.50 – 50.00 EOH	NORTHLAND ALLOCHTHON MELANGE MATRIX – Slightly weathered, dark greyish brown, indistinctly bedded, calcareous SILTSTON. Very weak to weak. 5.00m Weak hydrocarbon odour. 9.50m Strong hydrocarbon odour. Fracture zone 9.45 – 9.775m. Becomes moderately weathered at 25.40m, 20.5m Hydrocarbon odour.	1.6 - 117
BH2B_2149	0.00 – 3.00	FILL/NORTHLAND ALLOCHTHON SOILS – CLAY with some organics, minor silt; dark brown. Core loss between 2.27 – 3.00m	0.3
	3.00 – 18.45	NORTHLAND ALLOCHTHON DEGRADED ZONE – Highly to moderately weathered, dark grey, calcareous SILTSTONE. Very weak (SILT some clay) 15.00m Slight hydrocarbon odour. 16.10 – 16.40m NORTHLAND ALLOCHTHON MELANGE MATRIX – Slightly weathered, dark brown, bedded SILTSTONE. Weak.	0.1 – 12.8
	18.45 – 19.10	NORTHLAND ALLOCHTHON MELANGE MATRIX – Slightly weathered, dark grey, calcareous SILTSTONE. Very weak.	6.4
	19.10 – 20.70	NORTHLAND ALLOCHTHON DEGRADED ZONE – Slightly weathered, light greenish grey, SILTSTONE. Extremely weak (Gravelly SILT, with some sand).	1.4
	20.70 - 31.50	NORTHLAND ALLOCHTHON MELANGE MATRIX – Slightly weathered, dark grey, calcareous SILTSTONE. Very weak.	9.1 - 32.5
	31.50 – 33.00	NORTHLANS ALLOCHTHON DEGRADED ZONE – Moderately weathered, light greenish grey, SILTSTONE. Extremely weak (Gravelly SILT, with some sand).	0.4
	33.00 – 35.35	NORTHLAND ALLOCHTHON MELANGE MATRIX – Slightly weathered, dark grey, calcareous SILTSTONE. Extremely weak (Sandy SILT with some clay and gravel) INTERMIXED WITH Silty CLAY, with some gravel, with minor sand. Core loss between 34.81 – 35.35m	25.1
	35.35 – 37.00	NORTHLAND ALLOCHTHON FAULT – Slightly weathered, dark grey, calcareous FAULT BRECCIA. Very weak.	32.8 – 56.2
	37.00 – 41.40 EOH	NORTHLAND ALLOCHTHON MELANGE MATRIX – Slightly weathered, dark grey, calcareous SILTSTONE. Extremely weak (Sandy SILT, with some clay, with minor gravel).	3.5 - 13.5

1: NA - contaminated land field staff were not present during the initial drilling of BH2B_1160.

3.2.3. Ground water sampling - BH2B_1160 Unexpected Discovery Location

Groundwater sampling of the five groundwater monitoring wells took place over two days on the 26 and 27 September 2025. Groundwater levels were gauged using an oil-water interface probe and the following was recorded: depth to groundwater, depth to non-aqueous phase liquid (NAPL) (if present), and depth of well. Groundwater levels were measured relative to the highest point of the casing. NAPL was not encountered in any well.

Groundwater monitoring wells were sampled using low-flow peristaltic pump or a bladder pump sampling methodology. A bladder pump was used for BH2B_2147, BH2B_2148 and BH2B_2101, a peristaltic pump was used in BH2B_2149 and BH2B_1160.

During groundwater sampling the pump intake (tubing or bladder) was placed at either midway within the screened interval or midway within the water column (whichever was deeper). New lengths of disposable tubing were used for each well.

During purging, pH, electrical conductivity, temperature, oxidation/reduction (redox) potential, and dissolved oxygen (DO) were measured with a calibrated water quality meter connected to a flow cell. Samples were collected once these parameters had stabilised. The field data sheets have been provided in **Appendix E.**

Reusable sampling equipment was decontaminated between sample locations by washing in a decontamination solution (Decon 90®), followed by a rinse in tap water and final rinse in deionised water.

For quality control purposes one rinsate sample was taken. This was collected by pouring laboratory provided deionised water over the bladder pump and collecting water into sampling containers. The rinsate sample were taken prior to purging wells.

Samples were collected into analytical grade bottles provided by R J Hills Laboratory Limited (Hills). Samples were placed in chilled, insulated containers and submitted to Hills for laboratory analysis for the following analytes:

- Dissolved heavy metals
- Total heavy metals
- TPH
- PAH
- MAH
- BTEX

Groundwater monitoring sheets are included in Appendix E. Chain of custody (CoC) documents and laboratory analytical reports are included in **Appendix D.**

3.3. Analysis of Data

3.3.1. Discussion of Laboratory Analysis – Mayflower Farm and the Plant Nursery / Market Garden

Laboratory certificates from soil samples undertaken at Mayflower Farm and Plant Nursery / Market Garden sites are included in **Appendix D** with results summarised and compared to human health and waste acceptance criteria (refer Section 2.4.2) included in **Appendix F** – Tabulated Analytical Results.

Concentration of pesticides, herbicides, fungicides, organo-chlorine pesticides were not detected above the laboratory detection limits in soil samples collected from these sites.

Soil samples BH2B_SS01 and BH2B_SS04 collected from the Mayflower Farm loading pens contained concentrations of arsenic and zinc that exceeded the predicted background concentration and the Class 4 controlled fill waste acceptance criteria. However, this did not exceed human health acceptance criteria. As noted above, soil sampling was unable to be undertaken within the main sheep yard structures.

3.3.2. Unexpected discovery at Borehole BH2B_1160

Field observation made during drilling indicate that there was a hydrocarbon odour in all five boreholes, confirmed with PID measurements detecting between 0.0 parts per million (ppm) and 316 ppm of volatile organic compounds. Only slight odours and low PID readings were observed in BH2B_2147, with the strongest odours and PID readings observed in BH2B_1160 and BH2B_2148. The single highest PID reading recorded was 316ppm from BH2B_1160 at a depth of 25.0m bgl.

The analytical results for soil samples collected from the boreholes installed are summarised in the tables in **Appendix F** - Tabulated Analytical Results, and have been compared to applicable human health, ecological guidelines and waste acceptance criteria and the results have been discussed in more detail below. The investigation has not been able to identify a potential source of the hydrocarbons and based on the distribution (depth and laterally, and specifically a depth below the water table) it is most likely it is a natural source.

Human Health (NES-CS)

All concentrations of metals and hydrocarbons detected in soil were below adopted human health SAC.

Environment (Regional Plans)

The analytical results have been compared to the ANZG 2018 ISQG low and high. An exceedance of the ISQG low does not necessary indicate an effect, but an indication that further assessment is required, where as an exceedance of the ISQG high indicates strong evidence of ecological risk. ANZG 2018 ISQGs are used to indicate potential limitations for spoil reuse, especially if spoil is to be placed in or near water courses.

With the exception of arsenic, copper, lead and zinc, concentrations detected in the shallow (1.4 m bgl) soil from BH2B_1160, the overall concentrations (95% mean concentration) of metals and hydrocarbons do not exceed the high or low ANZG 2018 ISQGs. There are individual samples that contain concentrations of nickel and copper that exceed the low ANZG 2018 ISQGs, however as soil is generally mixed when reused, adoption of the 95% mean concentration for comparison is widely accepted.

Ground Water Results

Groundwater monitoring results are provided in Appendix F. Results were compared with Table 3.4.1 in the Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Volume 1 (ANZECC 2000) at the level of 80%of species protection, except for benzene which is to be applied at a level of 1 milligram per litre (95 percent protection of species) in accordance with Northland Regional Plan rule C6.8.2 (Permitted activity criteria). The sample collected form BH2B_2147 could not be analysed for dissolved metals due to the high sediment content in the sample.

In summary:

- Metal concentrations detected in groundwater samples contained dissolved metal concentrations below the 80% ANZECC Freshwater guideline.
- BTEX compounds were detected in all samples, however at concentrations below the 80% ANZECC Freshwater guideline for toluene, ethylbenzene and xylene and 95% ANZECC Freshwater guideline for benzene.
- PAHs were not detected in any sample.
- Low concentrations of TPH C7 - C9 carbon fraction (0.16 mg/L) was detected in BH2B_1160 and TPH C10 - C14 carbon was detected (0.5 mg/L) in BH2B_2101

Spoil Disposal and Management

The following conclusions are made about spoil disposal and management based on the results of samples collected at the unexpected discovery site:

- The spoil may be able to be reused within the designation with specific management controls and controls on reuse locations (i.e. a certain distance from water bodies). For this to occur, additional

assessment will be required along with a robust spoil management framework to ensure spoil is managed appropriately.

- The spoil cannot be disposed offsite as cleanfill. This is due to the presence of heavy metals above background and the presence of hydrocarbons.
- The spoil may be able to be disposed offsite to a managed fill or class A landfill subject to it meeting their specific consent conditions.

Further assessment would provide additional information, specifically in respect to the following:

- Due to the distribution of the “elevated” concentrations of metals throughout the length of each borehole, the concentrations are likely a` reflection of the local background concentrations for the geological unit sampled. Further assessment is required to determine this.
- Arsenic, copper and lead and zinc concentrations detected in the shallow (1.4 m bgl) soil from BH2B_1160 are significantly elevated compared to the wider metal data set and the predicted background concentrations. They are likely to reflect a potential anthropogenic source.

3.3.3. Quality Control Samples

Field duplicates were collected and analysed for quality assurance (QA / QC) purposes with both primary and duplicate samples analysed by Hills for all sampled sites. An assessment of accuracy and precision of the primary laboratory analytical data was undertaken by calculating the relative percentage differences (RPD) between the primary and duplicate results. RPD is calculated as the difference between the two results divided by the average of the two results, expressed as a percentage. Acceptable RPDs for each estimated quantitation limit (EQL) multiplier range are: 100 (1 - 10 x EQL); 50 (10 - 20 x EQL); 30 (> 20 x EQL).

Table E3 Quality Control and Assurance show the RPDs for all analytes between the primary sample and duplicate sample. The RPDs between samples was calculated according to the following formula:

$$RPD = \frac{(Result\ No.1 - Result\ No.2)\ x\ 100}{(Mean\ of\ result\ No.1 + result\ No.2)}$$

The RPD’s calculated ranged between 4% to 5%, with one primary and duplicate sample recording a RPD of 106% (cadmium concentration detected at BH2B_21010_16). Metals in soils are highly heterogeneous and RPD can vary widely, especially at low concentrations. The RPDs calculated are acceptable for the data quality objectives.

The rinsate sample had concentrations of most analytes below detection limit. Indicating decontamination methods were adequate and contaminants were not intoduced from sampling equipment. Styrene and Xylene (o) were above detection level in the rinsate sample. As xylene and Styrene was detected in all wells at a concentration higher than the rinsate it is considered unlikely that the bladder pump introduced these contaminants to the wells.

4. Assessment of Contaminated Land Effects

4.1. Overview

This investigation is based on a PSI, limited soil sampling and site inspections. As a result, further investigation of sites may be required when detailed design is confirmed.

Based on the information currently known, outside of the unexpected discovery at BH2B_1160 and the Nursery and Market Garden no additional controls are needed to disturb potentially contaminated soils.

4.2. Assessment of actual and potential effects

4.2.1. Proposed Designation

The Proposed Designation traverses predominantly rural and residential land uses and therefore the potential for additional HAIL sites to be present is low. The potential moderate risk HAIL sites (identified in this PSI) within the Proposed Designation, with the exception of the Plant Nursery and Market Garden, are greater than 160 m from the Indicative Alignment. Therefore, the potential effects to human health and the environment from the disturbance of potentially contaminated soils is currently low. If the Indicative Alignment changes during detailed design and will impact the identified medium risk HAIL sites, then further assessment in the form of DSIs will need to take place. As the Indicative Alignment intersects the Plant Nursery and Market Garden further investigation should be undertaken.

4.2.2. Borehole BH 2B_1160 unexpected discovery

Four additional boreholes have been installed to understand the nature and spatial extent of contaminants within the unexpected discovery area at borehole BH2B_1160. However, the full extent of this contamination is yet to be determined and therefore requires further investigation to fully understand the actual or potential effects on the environment. Additionally, as the Indicative Alignment may change with the detailed design, confirmation of the spatial extent of contamination is required.

Although the concentration of heavy metals within soil samples collected at BH2B_1160 did not exceed human health guideline criteria for a future commercial / industrial (and therefore road land use), concentrations of arsenic, copper and zinc exceeded sediment quality guidelines and concentrations of arsenic, copper, lead and zinc exceeded predicted background concentrations. Further assessment work is required to determine if these reflect local background concentration for the geological unit. Similarly, the wide range of hydrocarbons detected did not exceed human health guideline criteria, but concentrations of TPH and benzene exceeded the waste acceptance criteria for WasteMINZ Class 2, 3 and 4 Landfills and concentrations of toluene and ethylbenzene exceed the acceptance criteria for Envirofill South, the effects of which requires further assessment.

Due to these elevated concentrations, material does not meet cleanfill criteria and will require offsite disposal to a landfill certified to accept the material or managed within the designation so as not to create an unacceptable risk to the environment.

Based on a limited groundwater data set, the concentrations of dissolve metals and hydrocarbons in groundwater in the area are below the discharge standards set in Northland Regional Plan permitted activity rule C 6.8.2 Further sampling is required to confirm these results and potential compliance. If additional sampling still confirms that the concentrations are below the requirements of the Northland Regional Plan then groundwater can be discharged to the environment without any prior treatment.

4.2.3. Absolute Concrete - outside of Proposed Designation

Further assessment (DSI) to determine risk of migration of contaminants into the Proposed Designation area from Absolute Concrete would only be necessary if the Project earthworks adjoined property boundaries.

5. Recommended Mitigation

Our recommended mitigation to ensure appropriate management of contaminated soils is as follows:

5.1.1. All earthworks

No PSI can provide 100% certainty that all potential contaminated sites have been identified. Therefore, we recommend that all soil disturbance works should be undertaken under a contaminated soils unexpected discovery protocol. This protocol should include requirements for assessment and reporting if an unexpected discovery of contamination occurs, including:

- Engaging a SQEP if unexpected, contaminated soil is discovered;
- Delineating the extent of the soil contaminated to be disturbed; and
- SQEP to develop a Contaminated Soils Management Plan (CSMP) and/or a RAP to manage the risk associated.

Staff involved in earthworks for the Project should be briefed on the contents of the unexpected discovery protocol and what evidence of contamination to be aware of and action they need to undertake if identified.

5.1.2. Moderate risk sites

Prior to disturbance of any medium risk sites the following recommended:

- Engage a SQEP to review the area of the HAIL site to be disturbed and if they determine that potentially contaminated soil may be disturbed a DSI should be undertaken.
- If the DSI identifies the presence of soil contamination (i.e. concentrations above background) the SQEP is to develop a CSMP and/or a RAP to manage risk.

5.2. Monitoring Requirements

5.2.1. Unexpected discovery at Borehole BH2B_1160

To support disturbance of soil within this area and potential reuse of the spoil generated, along with the discharge of stormwater from reused spoil and discharge of groundwater from the adjacent cutting, it is recommended that the following takes place:

- Engage a SQEP to undertake further assessment within the area of soil disturbance, to gain a greater understand of the hydrocarbon concentrations and the background metal concentrations in soil and groundwater.
- The SQEP is to include in the CSMP a framework that outlines controls required to reuse or dispose of spoil generated from this area within the designation, and to ensure it does not create an unacceptable risk to human health or the environment.
- The SQEP is to undertake a risk assessment on water generated from reused spoil and any exposed cutting of hydrocarbon and metal impacted material and its potential impact to human health and the environment.

6. Conclusion

This assessment has been prepared to meet requirements under Schedule 5 of the FTAA and the requirements for a PSI in accordance with the MfE's CLMG (No. 1) NES-CS.

The investigation included limited field sampling, QA/QC measures, and evaluation of actual and potential effects of contaminated soils on human health and the environment. Other than at Borehole BH2B_1160, most soil samples showed contaminant levels below detection limits with only arsenic and zinc elevated in two samples from the Mayflower Farms loading pens. All results were below human health criteria.

Further assessment (DSIs) and management through a CSMP and/or RAP are recommended for medium risk HAIL sites, if they are to be disturbed, and for the unexpected discovery area at Borehole BH2B_1160, with all other identified HAIL sites presenting a low risk. Further assessment on the potential risk associated with discharge of hydrocarbon and metal contaminated water from any exposed cuttings and reused spoil in the area of the unexpected discovery area at Borehole BH2B_1160 will be required.

Implementation of an unexpected discovery protocol during all earthworks along with general training on how to identify contamination and required management controls is recommended.



APPENDICES

Appendix A
Figures

- Site Layout and HAIL Locations
- Sampling Plans
- Borehole Locations



Legend

- Accidental discovery location BH2B_1160
- HAIL sites as shown on SLUR
- HAIL sites identified during desktop investigation
- Proposed Designation — Indicative alignment

0 1 km 2 km

LINZ CC BY 4.0 © Imagery
Basemap contributors

Produced by **Datanest.earth**

Title: Proposed Designation and Identified HAIL		
Client: NZTA		Size: A4
Project: Northland Corridor	Drawn: HM	Figure No.: 1
Date: 02-03-2026	Checked: MB	
Proj No: 1-C2466.16	Scale: 1:85000	Version: Rev A



Legend

- Sample locations
- Proposed Designation
- Accidental discovery sampling locations

0 1 km 2 km

LINZ CC BY 4.0 © Imagery Basemap contributors

Produced by **Datanest.earth**

Title: Soil Sample Locations		
Client: NZTA		Size: A4
Project: Northland Corridor	Drawn: HM	Figure No.: 2
Date: 03-03-2026	Checked: MB	
Proj No: 1-C2466.16	Scale: 1:85000	Version: Rev A

Appendix B
Historical Aerial Photographs



Legend

Service station site boundary

0 25 m 50 m

© OpenStreetMap contributors

Produced by **Datanest.earth**

Title: Brynderwyn Service Station Site Aerial 1963		
Client: NZTA		Size: A4
Project: Northland Corridor	Drawn: HM	Figure: B1
Date: 02-03-2026	Checked: MB	
Proj No: 1-C2466.16	Scale: 1:1200	Version: Rev A



Legend

Service station site boundary

0 25 m 50 m

LINZ CC BY 4.0 © Imagery Basemap contributors

Produced by **Datanest.earth**

Title: Brynderwyn Service Station Site Aerial 1973		
Client: NZTA		Size: A4
Project: Northland Corridor	Drawn: HM	Figure: B2
Date: 06-10-2025	Checked: MB	
Proj No: 1-C2466.16	Scale: 1:1200	Version: Rev A



Legend

Service station site boundary

0 25 m 50 m

LINZ CC BY 4.0 © Imagery Basemap contributors

Produced by **Datanest.earth**

Title: Brynderwyn Service Station Site Aerial 1983		
Client: NZTA		Size: A4
Project: Northland Corridor	Drawn: HM	Figure: B3
Date: 06-10-2025	Checked: MB	
Proj No: 1-C2466.16	Scale: 1:1200	Version: Rev A



Legend

Service station site boundary

0 25 m 50 m

LINZ CC BY 4.0 © Imagery Basemap contributors

Produced by **Datanest.earth**

Title: Brynderwyn Service Station Site Aerial 1996		
Client: NZTA		Size: A4
Project: Northland Corridor	Drawn: HM	Figure: B4
Date: 06-10-2025	Checked: MB	
Proj No: 1-C2466.16	Scale: 1:1200	Version: Rev A



Legend

Service station site boundary

0 25 m 50 m

LINZ CC BY 4.0 © Imagery Basemap contributors

Produced by **Datanest.earth**

Title: Brynderwyn Service Station Site Aerial 2024		
Client: NZTA		Size: A4
Project: Northland Corridor	Drawn: HM	Figure: B5
Date: 06-10-2025	Checked: MB	
Proj No: 1-C2466.16	Scale: 1:1200	Version: Rev A



Legend

Plant Nursery site boundary

0 100 m 200 m

LINZ CC BY 4.0 © Imagery Basemap contributors

Produced by **Datanest.earth**

Title: Plant Nursery and Market Garden Site Aerial 2018		
Client: NZTA		Size: A4
Project: Northland Corridor	Drawn: HM	Figure: B6
Date: 05-10-2025	Checked: MB	
Proj No: 1-C2466.16	Scale: 1:7800	Version: Rev A



Legend

Plant Nursery site boundary

0 100 m 200 m

© OpenStreetMap contributors

Produced by **Datanest.earth**

Title: Plant Nursery and Market Garden Site Aerial 2019		
Client: NZTA		Size: A4
Project: Northland Corridor	Drawn: HM	Figure: B7
Date: 05-10-2025	Checked: MB	
Proj No: 1-C2466.16	Scale: 1:7800	Version: Rev A



Legend

Plant Nursery site boundary

0 100 m 200 m

© OpenStreetMap contributors

Produced by **Datanest.earth**

Title: Plant Nursery and Market Garden Aerial 2021		
Client: NZTA		Size: A4
Project: Northland Corridor	Drawn: HM	Figure: B8
Date: 27-02-2026	Checked: MB	
Proj No: 1-C2466.16	Scale: 1:7800	Version: Rev A



Legend

Plant Nursery site boundary

0 100 m 200 m

LINZ CC BY 4.0 © Imagery Basemap contributors

Produced by **Datanest.earth**

Title: Plant Nursery and Market Garden Site Aerial 2023		
Client: NZTA		Size: A4
Project: Northland Corridor	Drawn: HM	Figure: B9
Date: 05-10-2025	Checked: MB	
Proj No: 1-C2466.16	Scale: 1:7800	Version: Rev A



Legend

Plant Nursery site boundary

0 100 m 200 m

LINZ CC BY 4.0 © Imagery Basemap contributors

Produced by **Datanest.earth**

Title: Plant Nursery and Market Garden Site Aerial 2024		
Client: NZTA		Size: A4
Project: Northland Corridor	Drawn: HM	Figure: B10
Date: 03-11-2025	Checked: MB	
Proj No: 1-C2466.16	Scale: 1:7800	Version: Rev A



Legend

Mayflower Farm site boundary

0 25 m 50 m

LINZ CC BY 4.0 © Imagery Basemap contributors

Produced by **Datanest.earth**

Title: Mayflower Farm Sheep Dip Site Aerial 1961		
Client: NZTA		Size: A4
Project: Northland Corridor	Drawn: HM	Figure: B11
Date: 30-11-2025	Checked: MB	
Proj No: 1-C2466.16	Scale: 1:1300	Version: Rev A



Legend

Mayflower Farm site boundary

0 25 m 50 m

LINZ CC BY 4.0 © Imagery Basemap contributors

Produced by **Datanest.earth**

Title: Mayflower Farm Sheep Dip Site Aerial 1977		
Client: NZTA		Size: A4
Project: Northland Corridor	Drawn: HM	Figure: B12
Date: 30-11-2025	Checked: MB	
Proj No: 1-C2466.16	Scale: 1:1460	Version: Rev A



Legend

Mayflower Farm site boundary

0 25 m 50 m

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Produced by **Datanest.earth**

Title: Mayflower Farm Sheep Dip Site Aerial 2010		
Client: NZTA		Size: A4
Project: Northland Corridor	Drawn: HM	Figure: B13
Date: 30-11-2025	Checked: MB	
Proj No: 1-C2466.16	Scale: 1:1300	Version: Rev A



Legend

Mayflower Farm site boundary

0 25 m 50 m

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Produced by **Datanest.earth**

Title: Mayflower Farm Sheep Dip Site Aerial 2024		
Client: NZTA		Size: A4
Project: Northland Corridor	Drawn: HM	Figure: B14
Date: 30-11-2025	Checked: MB	
Proj No: 1-C2466.16	Scale: 1:1300	Version: Rev A



Legend

Absolute Concrete site boundary

0 50 m 100 m

LINZ CC BY 4.0 © Imagery Basemap contributors

Produced by **Datanest.earth**

Title: Absolute Concrete Site Aerial 1961		
Client: NZTA		Size: A4
Project: Northland Corridor	Drawn: HM	Figure: B15
Date: 06-10-2025	Checked: MB	
Proj No: 1-C2466.16	Scale: 1:3582	Version: Rev A



Legend

Absolute Concrete site boundary

0 50 m 100 m

LINZ CC BY 4.0 © Imagery Basemap contributors

Produced by **Datanest.earth**

Title: Absolute Concrete Site Aerial 1977		
Client: NZTA		Size: A4
Project: Northland Corridor	Drawn: HM	Figure: B16
Date: 06-10-2025	Checked: MB	
Proj No: 1-C2466.16	Scale: 1:3582	Version: Rev A



Legend

Absolute Concrete site boundary

0 50 m 100 m

LINZ CC BY 4.0 © Imagery Basemap contributors

Produced by **Datanest.earth**

Title: Absolute Concrete Site Aerial 1985		
Client: NZTA		Size: A4
Project: Northland Corridor	Drawn: HM	Figure: B17
Date: 06-10-2025	Checked: MB	
Proj No: 1-C2466.16	Scale: 1:3582	Version: Rev A



Legend

Absolute Concrete site boundary

0 50 m 100 m

© OpenStreetMap contributors

Produced by **Datanest.earth**

Title: Absolute Concrete Site Aerial 1996		
Client: NZTA		Size: A4
Project: Northland Corridor	Drawn: HM	Figure: B18
Date: 06-10-2025	Checked: MB	
Proj No: 1-C2466.16	Scale: 1:3582	Version: Rev A



Legend

Absolute Concrete site boundary

0 50 m 100 m

LINZ CC BY 4.0 © Imagery Basemap contributors

Produced by **Datanest.earth**

Title: Absolute Concrete Site Aerial 2011		
Client: NZTA		Size: A4
Project: Northland Corridor	Drawn: HM	Figure: B19
Date: 06-10-2025	Checked: MB	
Proj No: 1-C2466.16	Scale: 1:3582	Version: Rev A



Legend

- Unexpected Discovery Site
- Absolute Concrete site boundary

0 50 m 100 m

LINZ CC BY 4.0 © Imagery Basemap contributors

Produced by **Datanest.earth**

Title: Absolute Concrete Site Aerial 2024		
Client: NZTA		Size: A4
Project: Northland Corridor	Drawn: HM	Figure: B20
Date: 06-10-2025	Checked: MB	
Proj No: 1-C2466.16	Scale: 1:3582	Version: Rev A

Appendix C
Property Files

Rm 957654

TOWN AND COUNTRY PLANNING

NOTIFIED APPLICATION

STEVE SCHUTTE

1617/21/

FILE NO.

Part 1

Date Started OCT 1973

Date Closed

OTAMATEA COUNTY COUNCIL

Folio NO.	Date	Action BY	Completed	Folio NO.	Date	Action BY	Completed	Folio NO.	Date	Action BY	Complete

FILE NO.

Part .....

Date Started .....

Date Closed .....

OTAMATEA COUNTY COUNCIL

Folio No.	Date	Action By	Completed	Folio No.	Date	Action By	Completed	Folio No.	Date	Action By	Completed

X/21

PLEASE QUOTE
REF.: A252/2
BEB/KN

E.E

File

Northland Catchment Commission

and

[redacted] *Water Board*

P.O. BOX 886

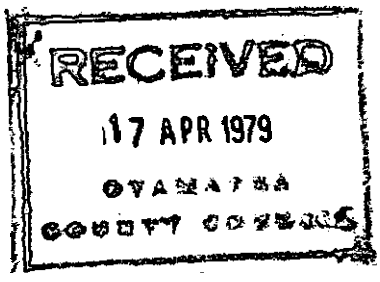
All Communications to :
The Secretary

TELEPHONE 84-639 (4 Lines)

COMMERCIAL UNION BUILDING,
RATHBONE STREET,
WHANGAREI, N.Z.

12 April 1979

Your Ref X/21



The County Clerk,
Otamatea County Council,
P.O. Box 1,
PAPAROA.

Attention : Mr Newell

Dear Sir,

NOTIFIED APPLICATION - S. SCHUTTE

We received your letter of 27 February 1979 on this matter and point out that the statement in condition 1 is not that of Commission staff. Should the situation regarding stability be as good as the condition indicates, the Commission may not have lodged an objection. Staff consider the risk of erosion to be much greater than indicated by your Condition 1 and have since seen another study carried out for Ministry of Works and Development which supports our opinion.

The Commission has however shown its concern over this matter by lodging an objection on the grounds of instability and land unsuitable for the use and trusts that the parties condsrned have been adequately advised of the risks of the site.

Yours faithfully,

B.E. Burridge
CHIEF WATER AND SOIL OFFICER

Copies to Northland Regional Planning Authority, Commissioner of Works, District Commissioner of Works

Mr Newell

27 February 1979 K/21

Mr S. Schutte
Brynderwyn Junction
MAUNGATUROTO

Dear Sir

Notified Application

I am pleased to advise that Council approved your application to erect 6 Motel units, on your property subject to the following conditions :

1. The applicant recognising that although the site is reasonably stable, there is a remote chance of earth movement, and that he accepts all risks.

2. That a Memorandum of Encumbrance be registered against Lot 5 D. P. 26821 Block IX - X Waipu W. D., providing that any owner of the lot wishing to build thereon shall on applying for a building permit, submit an engineer's report certifying that the proposed erection, excavation, filling and stormwater drainage will be stable in all foreseeable circumstances.,

3. The motel units being sited generally in accordance with the plan submitted.

4. Only one entrance being formed onto State Highway 12, that being on the line of the eastern entrance shown on the plan submitted.

5. Entrance, driveway and manoeuvring area to be sealed or concreted to the satisfaction of the County Engineer.

6. Effluent soakage drains to be located and constructed to the satisfaction of the County Engineer.

7. Compliance with all relevant Acts, regulations and bylaws.

Yours faithfully

for E. A. Wrigley
County Engineer

Mr Newell

27 February 1979 X/21

The Secretary
Northland Catchment Commission
P. O. Box *886*
WHANGAREI

Dear Sir

Objection to Notified Application - S. Schutte

Council approved **Mr Schutte's** application to build 6 Motel units on his property subject to the following conditions :

1. **The** applicant recognising that although the site **is** reasonably stable, there in a remote chance of earth movement, and that he accepts all risks.

2. That a Memorandum of Encumbrance be registered against. **Lot 5 D. P. 28821 Block IX - X, Waipu S. D, providing** that any owner of the lot wishing to build thereon shall on applying for a building permit, submit an engineer's report certifying **that** the proposed erection, excavation, filling and stormwater drainage will be stable in all foreseeable circumstances.

3. The motel units being sited generally in accordance with the plan submitted.

4. Only one entrance being formed onto **State** Highway 12, that being on the line of the eastern entrance **shown** on the plan submitted.

5. Entrance, driveway and manoeuvring area to be sealed or concreted to the satisfaction of the County Engineer.

6. Effluent soakege drains to be located and constructed to the satisfaction **of** the County Engineer.

7. Compliance with all relevant **Acts**, regulations and bylaws.

Yours faithfully

for **E. A. Wrigley**
County Engineer

FILE REF X/21

HEADING Notified Application - Conditional Use.

SUB-HEADING S. Schutte - Bryndercwgn

MEETING DATE 22/2/79.

CONFIDENTIAL

PREAMBLE ~~Hearing to be held at 11.00 am~~

A Hearing was held at 11.00 a.m.
The applicant appeared on his own behalf accompanied by his consultant engineer Mr. J.W. Bradstock.
Mr. G.B. Fitzwilliam presented the objections of the Northland Catchment Commission.
Senior Engineer Assistant N. W. Newell was in attendance.

The C.E. presented his report and recommendations, after the M/s Bradstock and Fitzwilliam had presented their submissions.

RECOMMENDATION BY

After ~~the~~ the hearing closed and M/s Schutte, Bradstock and Fitzwilliam left the Council chamber, Council considered the matter raised in the report.
C. Perkins thought that the proposal was similar to a previous one in which Council had sought legal advice on the steps which should be taken to avoid future liability arising from soil instability in the area.
The business was adjourned for further consideration later in the meeting when the County Clerk had had an opportunity to study the legal opinion referred to.

RESOLVED

ACTION REQUIRED

FILED 27.2.79

FILE REF X/21.

HEARING Notified Application — Conditional Use.

SUB-HEADING S. Schulte — Bryndenwyn.

MEETING DATE 22.2.79

CONFIDENTIAL

PREAMBLE Council resumed consideration of this item and received the County Clerk's comments on the legal opinion previously obtained. In his view it was not entirely relevant to the case as it referred to a subdivision scheme plan, but a condition to provide similar protection to Council could be worded.

RECOMMENDATION BY Dalebrook / Skelton.

As per C.E.'s report deleting condition (2) and substituting :-

That a Memorandum of Encumbrance be registered against Lot 5 DP 27821 Block IX - Waipu SD, providing that any owner of the lot wishing to build thereon shall on applying for a building permit, submit an engineer's report certifying that the proposed erection, excavation, filling and stormwater drainage will be stable in all foreseeable circumstances

RESOLVED

Carried.

The meeting was declared closed at 1-15 p.m.

ACTION REQUIRED

Copy to Mr. Newell for action.
Replied on Mr Newell's behalf 28/2/79 S. Schulte Jobn and Nocklands Catchment Commission with copies to N.R.P.A, Com of Works, Dist. Com Works

FILED 27.2.79

OTAMATEA COUNTY COUNCIL

20 February 1979

The Chairman and Councillors
Otamatea County Council
PAPAROA

Councillors

Re Notified Application - Conditional Use - Mr S. Schutte

The Application and Zoning

The applicant wishes to erect 6 Motel units on his property, zoned Rural A, at the Brynderwyn Junction.

Premises for the transient accommodation of travellers and holiday makers is a Conditional Use in this zone.

An objection from the Northland Catchment Commission has been received.

Location

The site is on the north western side of State Highway 1 and 12 junction at Brynderwyn, more or less behind the existing service station and tearooms.

The legal description of the property is lot 5, D. P. 28821 Block IX - X, Waipu Survey District.

Description

The actual area on which the Motels are to be sited is level, and away from the head of the gully where the Ministry of Works and Development is experiencing difficulty in supporting their road. There is a further drop towards the south and in this area Mr Schutte has his residence. Southwards from here the land drops towards an unstable valley.

The western boundary has a row of older pines which would be best removed before development of the Motel site.

At an elevated level along the eastern boundary are the service station and tearooms.

Statutory Considerations

Section 72 (2) of the Town and Country Planning Act 1977 provides that:

(2) Subject to Section 3 of this Act, in considering an application for consent to a Conditional Use, the Council shall have regard to :

a. The suitability of the site for the proposed use determined by reference to the provisions of the Operative District Scheme; and

b. The likely effect of the proposed use on the existing and foreseeable future amenities of the neighbourhood and on the health, safety, convenience, and the economic, cultural, social and general welfare of the people of the district.

The Objection

The Northland Catchment Commission and Regional Water Board have lodged an objection to this application.

"The reasons for the Commission's objections are :

1. The land is unstable and has been moving for many years.

2. Buildings erected on the land would be prone to damage by earth movement.

3. Although no details of waste water disposal are included in the proposal, it is assumed effluent is to be disposed of by ground soakage. Adding water to the ground will tend to increase the rate of land movement".

Comments in Reply to Objection

The actual site for the Motels is towards the top of an east/west ridge and fence lines on the sites western boundary appear reasonably straight. The block basement of Mr Schutte's dwelling, erected some three years ago, shows no signs of creeping or croaching, and a similar comment applies to the tearooms and service station. From this, it can be assumed the actual site is reasonably stable, although land one hundred to two hundred metres away shows evidence of movement over many years.

Further evidence on the stability of the site will be presented by Mr Schutte's consultant.

Effluent disposal is proposed to be by way of ground soakage. The location of the soakage trenches must be carefully chosen. Mr Schutte's consultant is expected to provide additional information at the hearing.

Planning Considerations

The establishment of a motel unit in this area, the junction of two busy highways, will serve the travelling public rather than long stay holiday makers.

The nearest motel units to this site are situated at Wellsford, Dargaville, Waipu and Mangawhai, so that a reasonable demand can be expected in this vicinity.

The Ministry of Works and Development have forwarded a letter of submission regarding the siting of the entrance to the motel and have stated their desire to see the eastern entrance used, rather than that below Mr Schutte's house.

The entrance would have to be sealed and control of stormwater exercised, to avoid concentrations that may lead to erosion.

Recommendation

That the application be approved subject to :

1. The applicant recognising that although the site is reasonably stable, there is a remote chance of earth movement, and that he accepts all risks.

2. The applicant entering into a formal agreement with Council excluding Council from any responsibility in the event of future land movement, and also registering on his title a caveat to ensure that future owners are bound to the same effect.

4. The motel units being sited generally in accordance with the plan submitted.

4. Only one entrance being formed onto State Highway 12, that being on the line of the eastern entrance shown on the plan submitted.

5. Entrance, driveway and manoeuvring area to be sealed or concreted to the satisfaction of the County Engineer.

6. Effluent soakage drains to be located and constructed to the satisfaction of the County Engineer.

7. Compliance with all relevant Acts, regulations and bylaws.

E. A. Wrigley
County Engineer

SPECIFIED DEPARTURE APPLICATION TO THE OTAMATEA COUNTY COUNCIL

IN THE MATTER *of* an Application by Mr and Mrs S. Schutte for the construction of a Motel on Lot 5 D.P.28621, a site at the intersection of State Highways 1 and 12.

STATEMENT OF EVIDENCE by JOHN WRLTER BRADSTOCK

I hold a Bachelor of Engineering (Civil) Degree and am a Registered Engineer - Registration No. 5104. I am a member *of* the New Zealand Institution of Engineers, a registered Professinnal Engineer of the Province of Ontario, Canada and of the State of Maryland, U.S.A. My present position is Senior Engineer with the firm of Tapper, Cotter, Brown and Fartners, Consulting Engineers *of* Whangarei, Auckland and Hamilton.

Prior to returning to New Zealand I was a Consulting Engineer in Toronto, Canada for eighteen years.

1. I have examined the site of the proposed Motel.
2. It is situated at the intersection *of* State Highuays 1 and 12.
3. The site at present contains a residence occupied by Mr and Firs Schutte, a tea room business and a service station.
4. The general area has a history of earth movement which has created problems on Highway 1 and at the intersection of Highways 1 and 12.
5. The Ministry of Works has done extensive soil testing in the area and has proposals *for* the realignment and possible stabilization of the intersection.
   At a meeting with Mr B. Fowlie *of* the Ministry of Works, plans for improvement of the area were obtained.
6. On recent inspection of the general area and buildings, a distinct pattern of instability wa5 observed, although the buildings do not show any visible signs of distress.
7. The intersection of Highways 1 and 12 appears to be the demarcation line of an area of surface instability which covers the area to the south of Highway 12 and west of Highway 1. Considerable movement of soils has occurred and old building foundations south of Highway 12 have moved, as has the Coates Monument at the intersection.
8. A distinct line *is* visible at the southbound intersection of Highways 1 and 12 where earth movement has occurred and local

residents recount the occurrence of major slumps in this section of the road requiring large amounts of fill to restore the road profile. The impression given to the observor is that this line is the edge of the shear failure line of a major slip circle or slide.

9. The subject lot, however, does not appear to have been affected by this earth movement and examination of the house which has been erected over four years shows no sign of movement, neither does the service station and tea room which have been there for a great number of years. The proposed position of the motel is further away from the slip zone than either the house or the tea room.

10. It is my opinion that the construction of the proposed Motel will not cause further problems of instability in the area.

11. The region of shallow instability appears to be clear of Lot 5 and damage would occur only in the case of a major tectonic movement of such proportions that the value of the Motel damage would be of minor significance.

12. The weight of the proposed new buildings is low and would not represent a significant surcharge to the site. The general excavation of approximately 150 to 200mm of soil would compensate for the total weight of the new structure.

Signed .....

IN THE MATTER OF THE APPLICATION
OF MR. S. SCHUTTE TO ERECT MOTELS
ON PROPERTY AT BRYNDERWYN JUNCTION

STATEMENT OF GARRY BERNARD FITZWILCIAM

My name is Garry Bernard Fitzwilliam and I reside in Whangarei.

I am qualified as a Bachelor of Agricultural Science, a Member of the New Zealand Institute of Agricultural Science and hold a Soil Conservation Certificate recognised by the National Water and Soil Conservation Authority of New Zealand.

I am a Soil Conservator with the Northland Catchment Commission and Regional Water Board. I have been in the employment of this authority for nine years and have in that time been involved in the various aspects of soil and water conservation, erosion control and land davelopmant administered by the Commission under the *Soil* Conservation and Rivers Control Act 1941 and the Water and Soil Conservation Act 1967.

The Commission as catchment authority for the Otamstea County advises Council on the likely affects of proposed developments on water and soil values and the possible physical limitations of the site to the proposed use.

Accordingly, the Commission has lodged an objection to the application by Mr. S. Schutts to erect motels on a site at Brynderwyn Junction for the following reasons :

1) That the land on the site is potentially unstable.

2) That a structure srected on the site may be at risk of damage from rotational or shear subsidence of the ground on which it stands.

3) That additional disposal of stormwater and wastewater on the site, as a result of such proposed development, may further increase risk of instability of the area as a whole.

In support of these concerns I have inspected the site and wish to advise Council of my observations.

There is no sign of recent surface instability on the proposed site itself. The area to be developed, however, adjoins and is located upslope of a broad zone of unstable land. This zone is situated below the intersections of State Highway 1 and 12.

The geology of the sits and the unstable zone is common to both, namely Onerahi Chaos Breccia. This is a formation known to be unstable and prone to slumping.

Instability problems in this zone are complex. They range from surface soil creep on Some steep slopes to an earthflow crossing State Highway 1 just below the intersection. The whole zone exhibits signs of deep seated rotational slumping. Signs of such slumping are evident not only in surface appearance but also by observed distortion to fencelines, damage to old farm structures and road damage.

fly concern is that, if no special stabilization measures are taken, such deep seated movement may eventually extend upslope. The progression may be slow but, over the economic life of the units, it may be sufficient to cause damage while certain adverse conditions may contribute to an accelerated effect. Such conditions would be :

1) The incidence of a major storm event in the area or even resumption of a cyclic pattern of erosion processes evident in rural situations in the district.

2) The effects of additonal disposal of stormwater and septic tank soakage, should this be permitted, in the area.

3) Changes in or concentration of runoff induced by development of the area.

4) Changes in groundwater and runoff flows arising from realignment and periodic maintenance of the State Highways. (I am informed that no major etabilization works are to be carried out by Ministry of Works and Development in the forseeable future, other than a cutoff drain on the east side of State Highway One).

5) In conjunction with any of the above conditions, any major slope failure in the present unstable zone.

It is apparent that an expansion of erosion at the Brynderwyn Corner would first affsct existing assets and structures such as the highways, the tearooms and Mr. Schutte's existing dwelling. In my view, this is not an argument for allowing further development but, due to possible cumulative effects, a principal reason against granting the application.

At our request Mr. D.R. Petty, a geologist from the N.Z. Geological Survey, Otara, carried out his own investigation of the site and completed a report on 16 February. Mr. Petty has confirmed the unstable nature of the geology of the area and reaches the same conclusion as my own, that further development of the area will face a long term hazard from slope instability.

COATES MEMORIAL CORNER

LAND STABILITY

D. R. Petty

N.Z. Geological Survey, Otara.

16 February 1979

RECEIVED
19 FEB 1979

INTRODUCTION

Following a request from Northland Catchment Commission, a field reconnaissance survey was made of the area N.W. of Coates Memorial (at foot of Brynderwyn Hills - the junction of S.H.l and S.H. 12) to check on the land stability.

A proposal has been put forward to construct motels on a flat area between S.H.l and S.H.12 behind the existing tea rooms.

GEOLOGY

The only outcrops of rock seen were in the road cut immediately below the first house on the left along S.H.12. Here multicoloured shales were observed. The rest of the area was grass or tree covered.

Although different lithologies are probable over the area they can all be considered to belong to the same formation. These rocks called the Onerahi Chaos Sreccia, are known to be unstable and prone to slumping.

SLUMPING

The Proposed building site is surrounded by a slumped topography. The hills immediately to the east of S.H.l show surface creep terracettes and cracks resulting from sliding; all the road junction area surrounding the memorial is broken and. obviously unstable and appears to be moving to the S and SW; the farmland immediately south of S.H. 12 is steep and very slumped; and the land west and NW of the proposed building

site shows a low, hummocky, slumped topography.

The only relatively flat area is that behind the tearooms where it is proposed to build the motel. This area appears to be less affected than the surrounding areas probably because of the large clump of old pine trees, immediately to the NW, which seem to be restraining the land movement.

CONCLUSIONS

The proposed motel site is surrounded by slumping material.

The flat area where it is proposed to build the motel seems to be less affected at the moment, possibly only because of a very fragile balance of contributing factors.

The old pines will most probably need to be felled soon thus removing the 'buttress' to the west; the movement from the road junction area and from across S.H.12 could well be creeping towards the proposed building area and if there is any road reconstruction, excavations or change in the watertable conditions then the area may become mobile like the adjoining land.

Increased weight load of a new building, addition of drainage, septic tanks and any concentration of storm water or runoff not effectively removed from the area could well contribute to triggering some land movement.

Movement would probably occur slowly but would be peristent. Some controls such as planting may help stem the movement but with such large scale adjacent activity in progress it is doubtful whether the movement in the long term could be stopped and the proposed building eventually must be affected.

ACTION BY

Name / Dept.	Tick as Reqd.												
GEO	✓	✓											
CWSO	✓	✓											
CRCDO	✓												
CAO	✓												
S. CON	✓												
WRO													
PHE													
RC & D													
WSP													
FARM													

FILE No. 633/

Mr Newell

12 February 1979 X/21

Mr S. Schutte
Brynderwyn Junction
MAUNGATUROTO

Dear Sir

Notified Application

I advise that the hearing of your application to erect Motels on property at Brynderwyn Junction will be held at 11.00 a.m. on Thursday, 22 February 1979, in the Council Chambers, Paparoa.

Yours faithfully

for E. A. Wrigley
County Engineer

12 February 1979 Mr Newell X/21

The Secretary
Northland Catchment Commission
P. O. Box 886
WHANGAREI

Dear Sir

Objection to Notified Application - S. Schutte

I advise that the hearing of the above application will now be held in the Council Chambers, Paparoa, at 11.00 a.m. on Thursday, 22 February 1979.

Yours faithfully

for E. A. Wrigley
County Engineer

4 (FILE) REF 4/21

HEADING Notified Application — Conditional Use.

SUB-HEADING S-Schutte.

MEETING DATE 7/2/79

CONFIDENTIAL

PREAMBLE Council to set time and date for hearing

RECOMMENDATION BY C.E. Dalebrook/Hunter

That the hearing be set for 11.00 a.m. on 22 February 1979.

Carried

RESOLVED

ACTION REQUIRED

Copy to Mr Newell for action.
Applicant and Northland Catchment Commission advised 12/2/79 on Mr Newell's behalf

FILED 13.2.79

Mr Newell

19 December 1978 X/21

Mr S. Schutte
Brynderwyn Junction
MAUNGATUROTO

Dear Sir

Notified Application

I advise that the hearing of your application to erect Motels on property at Brynderwyn Junction will be held at 1.30 p.m. on Thursday, 25 January 1979 in the Council Chambers, Paparoa.

An objection has been received from the Northland Catchment Commission, who should have forwarded you a copy of their objection.

Yours faithfully

for E. A. Wrigley
County Engineer

19 December 1978 Mr Newell X/21

The Secretary
Northland Catchment Commission
P. O. Box 886
WHANGAREI

Dear Sir

Objection to Notified Application - S. Schutte

I advise that the hearing of the above application will be held in the Council Chambers, Paparoa, at 1.30 p.m. on Thursday, 25 January 1979.

Yours faithfully

for E. A. Wrigley
County Engineer

FILE REF C/21

HEARING Notified Application.

SUB-HEADING S. Schulte.

MEETING DATE 14/12/78.

CONFIDENTIAL

PREAMBLE An objection and a submission having been received, a hearing is required.

Council set a hearing date

RECOMMENDATION BY ~~C/E~~. Thurston/Drakeford

That hearing of the application be set for 1.30 p.m. 25 January 1979.

Carried

RESOLVED

ACTION REQUIRED

Copy to Mr Newell for action.
Schulte Notified on Mr Newell's behalf 19/12/78 from Northland Catchment Commission also notified

FILED 20.12.78

P O Box 59
Maungatapoto.
13th Dec 1978

Mr S. Schute

Dear Sir,

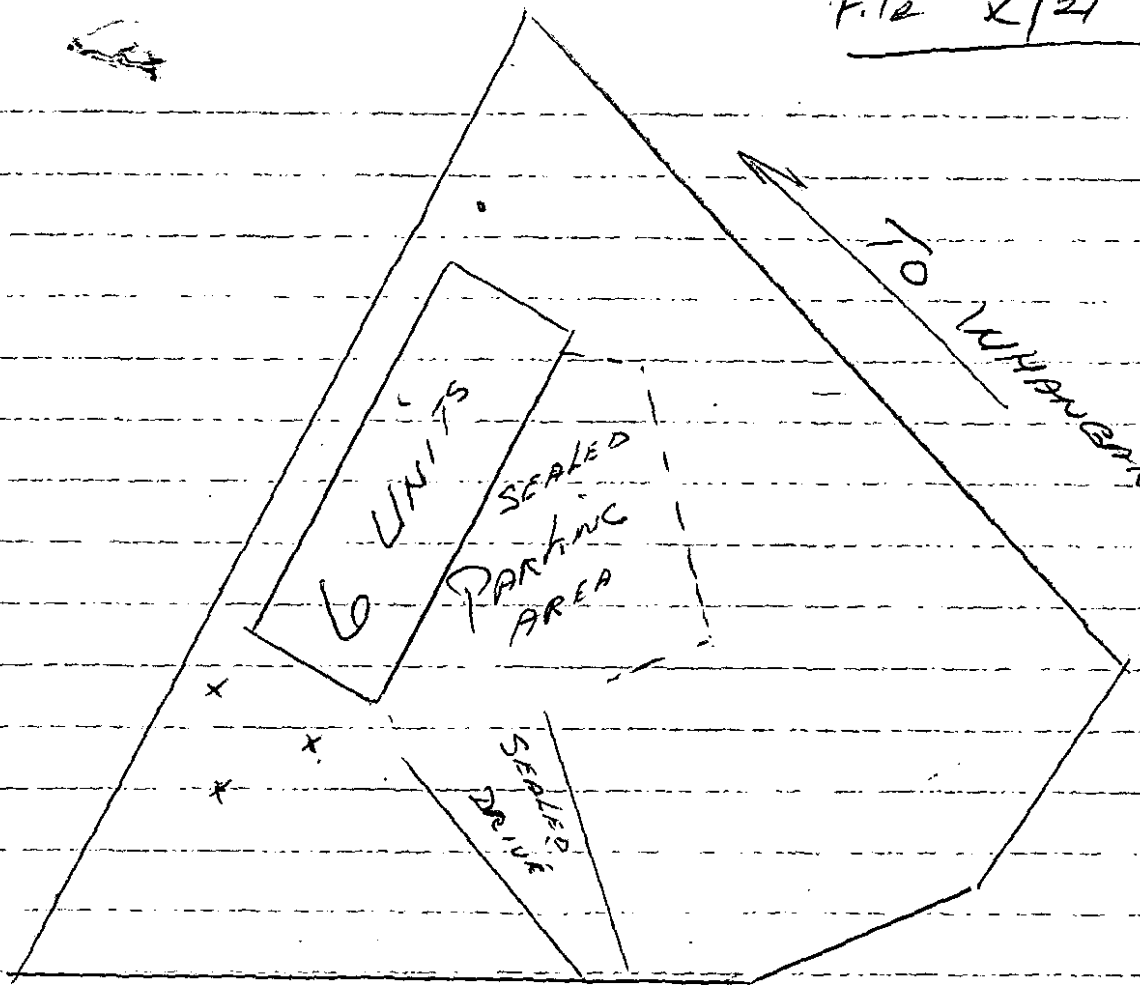
In answer to your request for an investigation of soil drainage for proposed motel complex, I have sunk three trial drainage holes in the property and submitted them to a water soakage test.

These proved satisfactory with one area quite good considering that at the time of testing the ground was wet from recent rain.

As drainage from motels will usually be confined to short periods of the day no problem should arise.

Yours faithfully
N H Macray
Reg Plumber & Drainlayer

File X/21



MOTEL UNITS WILL BE BUILT WITH BLOCKS ON A CONCRETE SLAB. ALL PARTITION WALLS TO BE BLOCKS. ROOF WILL CONSIST OF LONG RUN IRON. EACH UNIT WILL BE FULLY SERVICED. THE PARKING AREA AND DRIVE TO UNITS WILL BE TAR-SEALED.

Mr Newell

1 December 1978 X/21

Mr S. Schutte
Brynderwyn Junction
R. D. 2
MAUNGATUROTO

Dear Sir

Re Notified Application for Motel Units

I wish to advise that Council will require, when hearing this application, evidence of adequate soakage for effluent on this site. This test can be carried out by a registered drainlayer or Engineering consultant.

We would like further information as to the appearance of the units, the number of units and internal roading layout.

If this information can be supplied for the hearing, delays in a decision may be avoided.

With the receipt of an objection, it now appears that the hearing will be held towards the end of January, the date will be confirmed after next Council meeting.

Yours faithfully

for E. A. Wrigley
County Engineer

Mr Newell

27 November 1978 X/21

The Secretary
Northland Catchment Commission
P.O. Box 886
WHANGAREI

Dear Sir

RE: OBJECTION TO PLANNING APPLICATION BY STEVE SCHUTTE BRYNDERWYN

I acknowledge receipt of your objection and wish to advise that a date for the hearing will be set, at next Council meeting.

At this stage I feel the application will not be heard until late January 1979.

Yours faithfully

For E.A. Wrigley
County Engineer

Mr Newell

27 November 1978 X/21

The Resident Engineer
Ministry of Works & Development
P.O. Box 641
WHANGAREI

ATTENTION: MR M.E. JONES

Dear Sir

RE: STEVE SCHUTTE & NOTIFIED APPLICATION

I acknowledge receipt of your letter of submission on the above application and wish to advise that it will be placed before Council when the application is considered. Owing to recent developments, it seems likely that this application will not be heard by Council until 25 January 1979.

Yours faithfully

for E.A. Wrigley
County Engineer

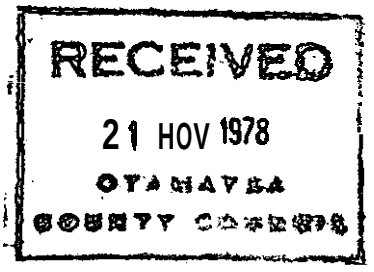
File x/21 M Newell

Ministry of Works and Development

P.O. Box 641 Whangarei
Telephone 81839

Inquiries to Mr M E Jones Date 17 November 1978 Ref 20/7/2

The County Clerk
Otamatea County Council
PO *Box* 1
PAPAROA



Dear Sir

RE: PLANNING APPLICATION FOR MOTELS - STEVE SCHUTTE

I am writing to advise that although the Department has not recommended any Ministerial objection to this application, there is one condition which it is considered important to apply in the interests of highway efficiency and safety.

> THAT one access only shall be provided to the State Highway, that access being the one marked X on the enclosed plan.

I would be grateful if you would place this letter before your Council for its assistance when the matter comes to hearing.

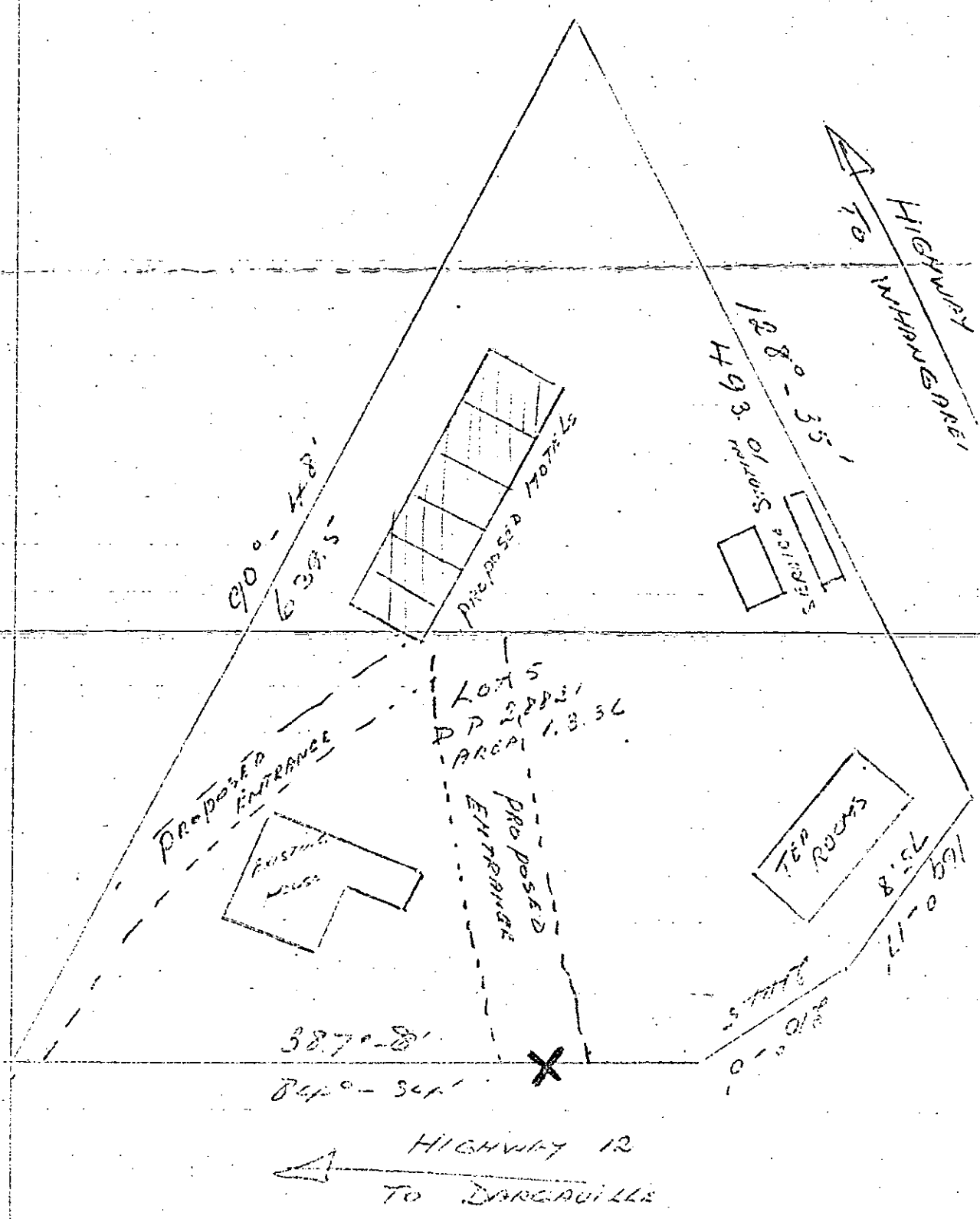
Yours faithfully

R C Holland
Resident Engineer

Per MEJones

(M E Jones)

1 THE 2 ALTERNATIVE EXISTING ENTRANCES FROM HIGHWAY 12 TO BE DISCUSSED WITH COUNCIL



NOT TO SCALE

PROPOSED MOTELS FOR MR + MRS SCHMITZ

R.D. 2 WHANGAREI

RESOLUTION DWG 1/18/11/611A

File X/21

PLEASE QUOTE
REF. A252/2
RWC: DPD

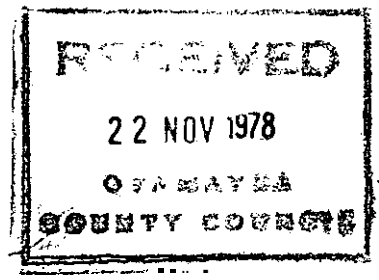
Northland Catchment Commission and Regional Water Board

P.O. BOX 886
All Communications to : The Secretary

TELEPHONE 84-639 (4 Lines)

COMMERCIAL UNION BUILDING.
RATHBONE STREET,
WHANGAREI, N.Z.

20 November 1978



The County Engineer,
Otamatea County Council,
P.O. Box 1,
PAPAROA.

Dear Sir,

TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To the Otamatea County Council -

Name : Northland Catchment Commission and Regional Water Board

Address : Commercial Union Building, Rathbone Street, Whangarei

The Northland Catchment Commission objects to the application of Mr S. Schutte to erect motels on property at Brynderwyn Junction.

The particular part of the application the Commission opposes is the proposal to develop and erect buildings upon this site.

The reasons for the Commission's objections are :-

1. The lend is unstable end has been moving for many years.

2. Buildings erected on the land would bs prone to damage by *e* cth movement.

3. Although no details of waste water disposal are included in the proposal, it is assumed treated effluent is to be dispossd of by ground soakage. Adding water to the ground will tend to increase the rate of land movement.

The Commission's objection would be met by disallowing the application or by the appropriate authorities and adjacent land owners taking steps to stabilise the land before any further development takes place.

M.O.W. have had a major problem for many years EOW 22/11/78

Signature

J.T. Howarth
SECRETARY

Address of Service :-

Northland Catchment Commission,
P.O. Box 886,
WHANGAREI.

CONSTITUTED UNDER THE TOWN AND COUNTRY PLANNING ACT 1953

21/11/78

File x/19 x/20 x/21

NORTHLAND

REGIONAL PLANNING AUTHORITY

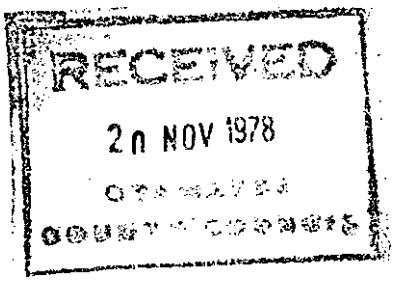
TELEPHONE 62579

17 ROSE STREET
WHANGAREI, N.Z.

16 November 1978

The County Engineer
Otamatea County Council
P 0 Box 1
PAPAROA

.ATTENTION MR NEWELL



Dear Sir

re: Applications under the Town and Country Planning Act 1977
Applicants M D Meenken & J Starrenburg
S Schutte
E M Sheppard

I hereby acknowledge receipt of notice of application for planning consent and notice, relative to the above, received. by me on 1 November 1978 and a copy of the completed Map Change No. 29

Yours faithfully

W Taylor
DIRECTOR OF PLANNING

per: J D Sholl.

J D Sholl

Mr Newell

27 October 1978 X/21

Mr S. Schutte
Brynderwyn Junction
MAUNGATUROTO

Dear Sir

Notified Application

I acknowledge receipt of your application and wish to advise that **it** will be advertised on Wednesday 1 November 1978 and will close *for* objections on 23 November 1978.

It will be heard by Council at **its** December meeting **or** on a date **66t** at that meeting.

Yours faithfully

for E. A. Wrigley
County Engineer

The Editor
Northern Advocate
P. O. Box 210
WHANGAREI

Order No 7286.

26 October 1978

Mr Nowell

~~X/19, X/20,~~ X/21

The Editor
N. Z. Herald
P. O. Box 32
AUCKLAND

Dear Sir

Please insert the attached advertisement in the Public Notices section of your paper on Wednesday, 1 November 1978.

I enclose Order No 7285.

Yours faithfully

for E. A. Wrigley
County Engineer

Encls : (2)

IRE TOWN AND COUNTRY PLANNING ACT **1.977**

OTAMATEA COUNTY COUNCIL DISTRICT SCHEME

PUBLIC NOTIFICATION OF APPLICATIONS FOR PLANNING CONSENTS

Details of the applications for planning consents listed below may be examined in the office of the Otamatea County Council during normal office hours. Objections can be made by notice in writing in form I prescribed in the First Schedule to the Town and Country Planning Regulations 1978 or to the like effect and should be addressed to the County Engineer,

Otamatea County Council, P. O. Box 1, Paparoa, by 23 November 1978.

A copy of the objection must also be sent to the applicant.

Address	Applicant	Proposal
R.D.1, Pahi Paparoa	Mrs E.M. Sheppard	Separate titles for Allots 111, 137, & 120 Pahi Township.
C/- Solicitors P. O. Box 240 Auckland. 1	Meenken & Starrenburg	Two dwellings on Section 39 Block XV Matakohe Survey District.
Brynderwyn .Junction Maungaturoto	Mr S. Schutte	Erect Motels on property at Brynderwyn Junction.

E'. A. Wrigley
.....
For the Otamatea County Council

1 November .. 1978

New File X/21

FORM A

Regs 20(1), 37(1).

C.E. m Newell 24/10/78

THE TOWN AND COUNTRY PLANNING ACT 1977

APPLICATION FOR PLANNING CONSENT

The County Engineer
Otamatea County Council
P. O. Box 1
PAPAROA

RECEIVED
19 OCT 1978
OTAMATEA
COUNTY COUNCIL

DATE : 29-9-78

Dear Sir

I, STEVE SCHUTTE, hereby
(State full name of applicant or firm)

apply for ERECTION OF MOTELS
(State fully what is proposed)

The property in respect of which this application is made is situated

at BRYNDERWYN JUNCTION (BEHIND COFFEE LOUNGE)
(Street number or locality)

The Legal description of the propcrty is lot 5, D.P. 28821, allotment 106 + 149, section _____, Parish of KAIWAKA, Block IX-X WAIPU S.D. Survey District.
(For legal description refer to rate demand)

I am OWNER of the property.
(Owner, lessee etc)

Name of Owner S. SCHUTTE

Address of Owner RD 2 MAUNGATUROTO

Name of Occupier S. SCHUTTE

Address of Occupier RD 2 MAUNGATUROTO

Date at MAUNGATUROTO this 29th (Date) day of SEPTEMBER (Month) 1978 (Year)

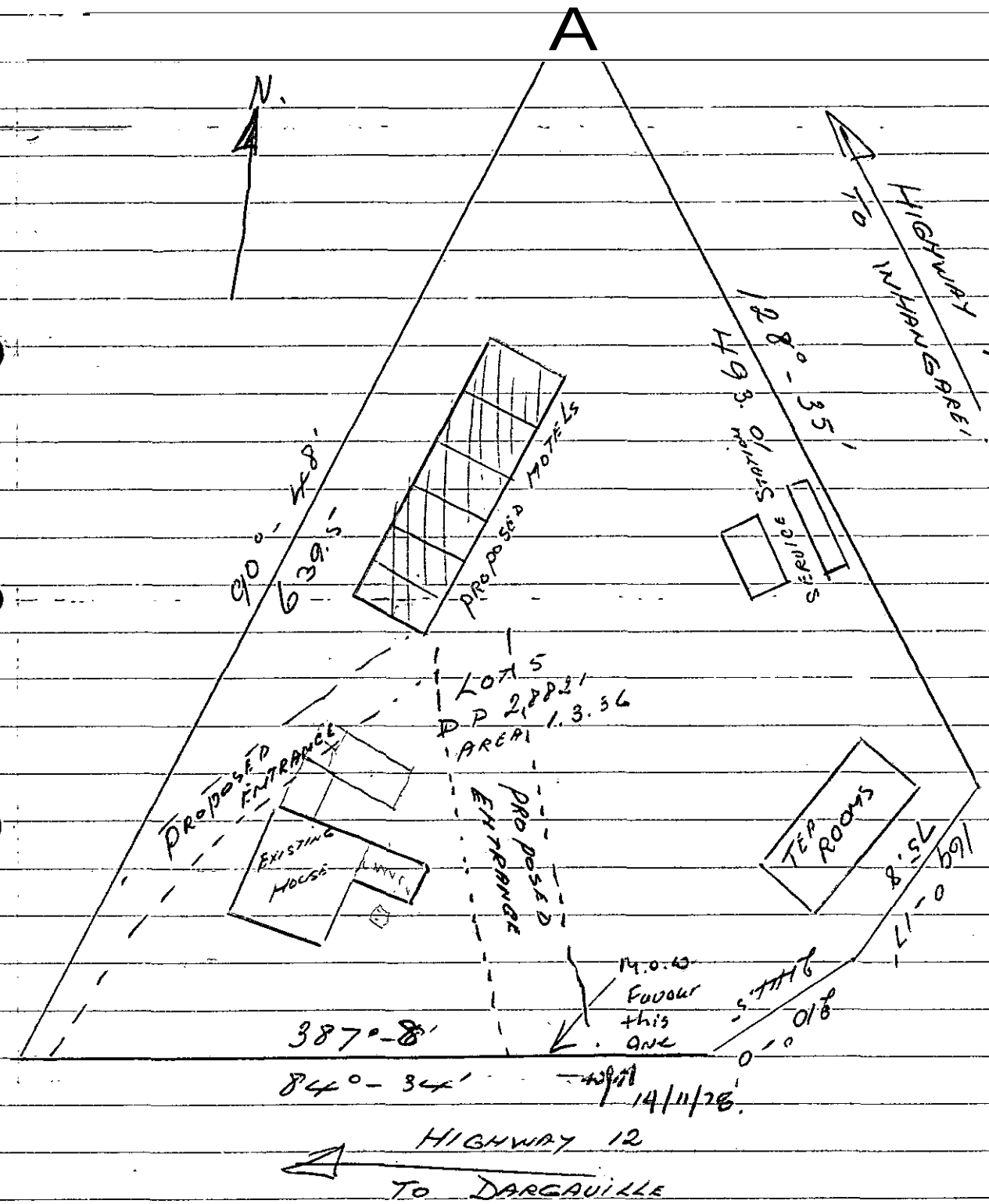
Address for Service BRYNDERWYN JUNCTION (BEHIND COFFEE LOUNGE)

Signature S. Schutte

THE 2 ALTERNATIVE ENTRANCES FROM HIGHWAY 12 TO BE DISCUSSED WITH COUNCIL.

Comb Use.

THE 2 ALTERNATIVE ~~DRIVE~~ ENTRANCES FROM HIGHWAY 12 TO BE DISCUSSED WITH COUNCIL



NOT TO SCALE

PROPOSED MOTELS FOR MR & MRS SCHUTTE

RD 2 MAUNGATUROTO

Ref MOW DWG 1/18/1/611A

File No. SP464

Rm 952053

OTAMATEA COUNTY COUNCIL

Bryderwyn Motel

Colour card

SUBDIVISION CHECK LIST FILE NO SP464

SUBDIVIDER Bayviews Motel, Cowan Dodson L T (D P)

LEGAL DESCRIPTION Lot 500 28821

SCHEME PLAN : RECEIVED 20/5 ACKNOWLEDGED 21/5

FEE $50 RECEIPT NO _____ DATE PAID _____

DECISION RE CONCEPT PLAN : REQUIRED/NOT REQUIRED

REFERRED TO SURVEYOR _____

REFERRED TO :

District Commissioner of Works Sent _____ Returned _____

Northland Catchment Commission Sent _____ Returned _____

North Auckland Electric Power Board Sent 21/5 Returned _____

Sent _____ Returned _____

To Council _____

Applicant notified of decision _____

Govt Departments etc notified of decision _____

Objection to decision Received _____ Considered _____

Applicant notified of Council's decision on Objection _____

Govt Depts etc notified of variations _____

Appeals to Planning Tribunal :

Lodged _____ Heard _____ Decision received _____

CONTRIBUTIONS AND BONDS

87-89 FILE REF SP 464

HEADING PROPOSED SUBDIVISION

SUB-HEADING CATLOW & WATSON.

MEETING DATE 21-8-85

CONFIDENTIAL

PREAMBLE The Council to consider an application for a scheme plan approval in respect of a proposal to subdivide the Blynderwyn Motel & Seaboard.

RECOMMENDATION BY C.E.O. - Bill Robinson

As per report

(Copy attached)

RESOLVED

ACTION REQUIRED 1. Advise Surveyor Done 27/8/85 JBR
2. File

FILED

87

Otamatea County Council

Telephone : 37-019 Paparoa

P.O. Box 1 Paparoa

NORTHLAND

WHEN REPLYING OR CALLING
W E N REPLYING OR CALLING
PLEASE REFER TO
PLEASE REFER TO
Mr Palmer
Mr Palmer

In Reply Please Quote :
Your Ref. .....
Our Ref. S P 464

30 July 1985

Memo To : Chief Executive Officer
From : Executive Officer Administration

RE PROPOSED SUBDIVISION - CATLOW & WATSON

The applicants wish to be able to subdivide the property presently containing the Brynderwyn Motel and Restaurant, to enable each of those two facilities to be situated on its own site. (The attached plan refers).

The development was established pursuant to various planning consents and therefore, if the Council is satisfied that the area of each lot is appropriate to the use, the subdivision will satisfy the requirements of the Proposed Scheme.

The subdivision has been designed to enable each facility to function independently and Council staff are satisfied that each'lot is of a sufficient size to ensure that the appropriate bylaws and regulations can be met.'

The proposal was submitted to the Ministry of Works and Development for its comment as it fronts two state highways.

That department is not happy with the position of the entrance proposed to serve lot 1 and has suggested that, either the existing entrance continue to serve both facilities, or that lot 1 be provided with a new entrance at its western boundary.

After an inspection of the property I am of the opinion that, of the three alternatives, 'the most satisfactory from a highway safety point of view, would be the retention of the existing entrance to serve both the Restaurant and the Motels and that therefore Council should, as a condition of its approval, require a right of way to be provided over the existing drive in favour of lot 1.

RECOMMENDATION

That in accordance with Section 279 of the Local Government Act 1974, the Otamatea County Council approve the scheme plan of subdivision of lot 5 D P 28821 subject to the condition that an easement of right of way in favour of lot 1 be granted over the existing metal drive across lot 2.

R N Palmer
EXECUTIVE OFFICER ADMINISTRATION

File

DEPARTMENT OF JUSTICE
Land Registry Office
Private Bag
Auckland
Telephone 771-499

SP464

National Insurance Building
Victoria Street
Auckland

In reply, please quote

The County Clerk
Otamatea County Council
BOX 1
PAPROA

RECEIVED
11 AUG 1986
OTAMA..
COUNTY COUNCIL

Dear Sirs

PLAN DEPOSIT NOTICE

PLAN NO: 113.162
LODGED ON BEHALF OF: R.S. 6 C.W. Catlow
BEING A PLAN OF: Lots 1 & 2 being a Subdivision of Lot 5 **DP 28821**
IN: State Highway No.1
CERTIFICATE OF TITLE: 1005/293 All
SURVEYOR'S FILE REF: **321284**
SCHEME PLAN: -
SIGNED BY:
DEPOSITED **ON:** 24th day **of JULY** 1986

New title references have been allocated as follows:

Lot 1 - 63C/767 & Lot 2 - 63C/768

These references must be used in any documents registered in terms of this plan.

Yours faithfully

for District Land Registrar

Otamatea County Council

Telephone : 37-019 Paparoa **P.O. Box 1 Paparoa** . . . NORTHLAND

.WHEN REPLYING OR CALLING
PLEASE REFER TO
Mr Hunter

In Reply Please Quote :
Your Ref : .....
Our Ref : S P 464

6 June 1986

Mrs **J Malcolm**
Harrison; Grierson Consultants Ltd
P O Box 37076
AUCKLAND

Dear Sir

I enclose signed plans as requested in your letter of 9 April 1986.

Yours faithfully.

P V Higgins
CHIEF EXECUTIVE OFFICER

Encl :

FILE REF SP/464

HEADING SURVEY **PLAN** –

SUB-HEADING From Scheme Plan 464

22 MAY 1986

[redacted]

PREAMBLE Council to consider survey plan arising from scheme plan 464 approval granted at Council meeting August 1985 (Brydonjon Motel)

Plan attached to Cordboard by policy cabinet

RECOMMENDATION BY CHIEF EXECUTIVE OFFICER

Togair Robinson

(1) That in accordance with Section 305 of the Local Government Act 1974 and Scheme Plan 464 previously approved, the Council hereby approves the land transfer plan of Lots 1 & 2 being a subdivision of Lot 5 DP 28821

and further endorses its consent by signing and sealing the survey plan.

(2) That in accordance with Section 306 (1) (g) of the Local Government Act 1974, the Council also certifies that the survey plan is in accordance with the requirements and provisions of the operative district scheme in force for the County.

Carried

ACTION REQUIRED

1. Plan Signed & Sealed.
Copy of Print Signed.
Forlet 7 JUN 1986 work left

FILED

Consulting Engineers Surveyors Planners

HARRISON GRIERSON CONSULTANTS LTD

321284

P.O. Box 33-076
Takapuna, Auckland
New Zealand
Telephone 499-072

Takapuna House
3 Anzac Street
Auckland 9
New Zealand

9 April 1986

Chief Executive Officer
Otamatea County
P'O **Box** 1
PAPAROA

Attention: Mr Higgins

Dear Sir .

R CATLOW : BRYNDERWYN MOTEL : SCHEME PLAN 464

We enclose the original title plan, together with prints of the title and survey plans of the subdivision of the Brynderwyn Motel & Tea Rooms, for endorsement under Section 305. Council advised **us** of the approval of the scheme plan on 27/8/85.

Also enclosed is **a** print for endorsement'under Section 306.

Would'you please'return the plans to this office when signed.

Yours faithfully
HARRISON'GRIERSON CONSULTANTS LTD

Jacqui Malcolm.
Jacqui Malcolm (Mrs)

Encls

RECEIVED
14 APR 1986
OTAMATEA
COUNTY

Directors

VN Herries C Eng MICE. FIPENZ
DA Finioy MNZIS, RS Fiji, MPMI
PW Simpson MNZIS. MPMI
DJ Ruegg MNZIS. MPMI
J Maplesden Dip Surv, Dip TP, MNZIS. RS Fiji
WAI Kent-Johnston Dip Surv, MNZIS. ARICS

BL Stone MNZIS
IM Grierson MIPENL. MNLIS. MPMI'
KJD Marlin MNZIS, MIS Aust, MPMI
FC Cumming MNZIS. RS Fiji. MPMI
JN Ginn MNZIS. RS Fiji
DE Peterson BE (HONS), M Sc, MIPENZ. MIWPC

AG McCulloch MICE. MIPENZ
DC East MNZIS. RS Fiji
TRA Clark BE. C Eng. MICE, MIPENZ. MFIE
CR Aherne B Sc, Dip TP, MNZIS. MNZPI. MRAPI. MPMI
GRB Wilson MIPENZ

Associates

DC Scott B Sc Eng. MIPENZ.
Ami Chand RS Fiji

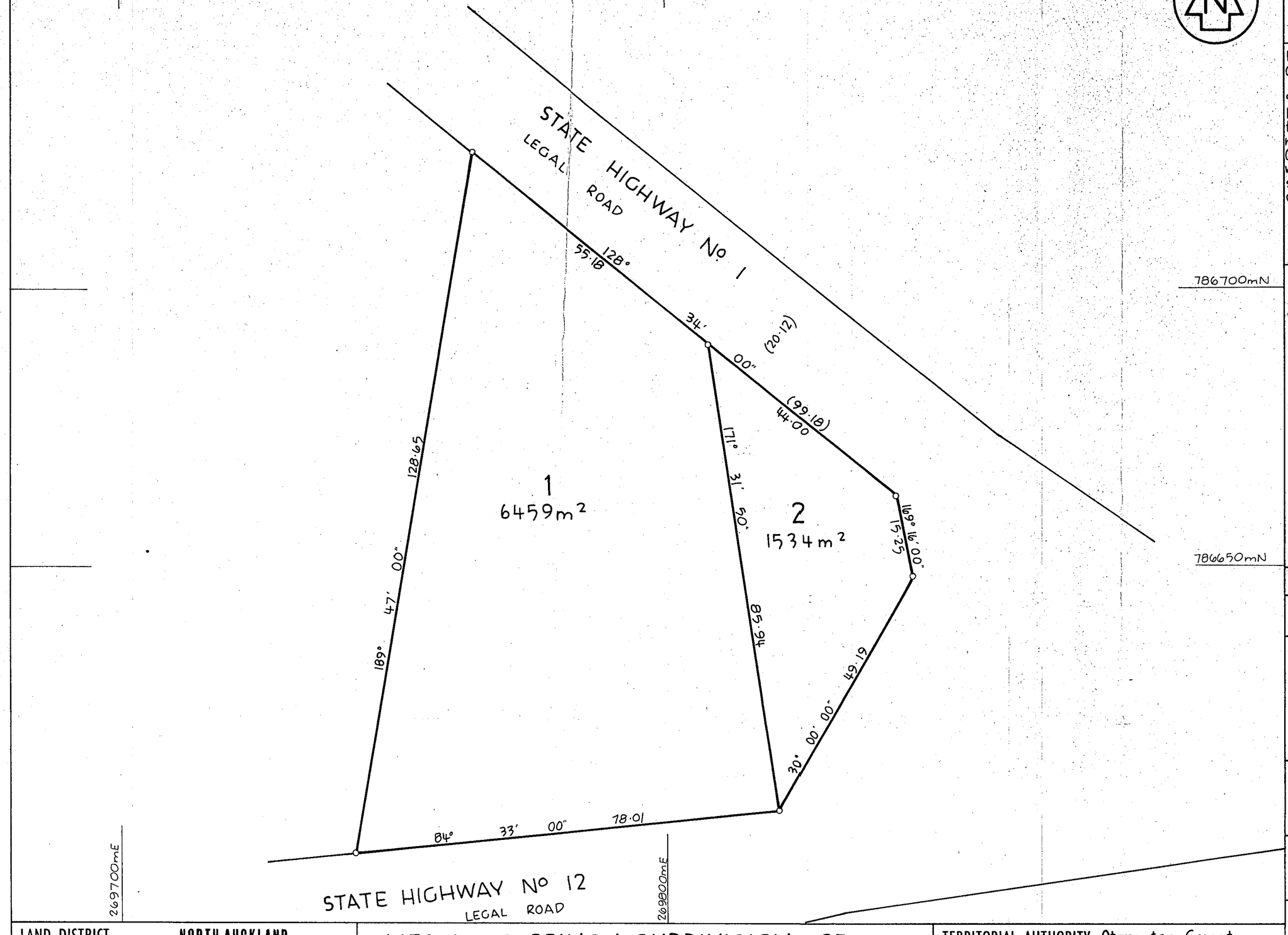
PWM Williams BE. MIPENZ. MFIE
DA Laing MNZIS

JS Collie B Sc, MNZIS

Member Association of Consulting 'Engineers New Zealand (ACENZ)
Consultants Division New Zealand Institute of Surveyors
Consultants Group New Zealand Planning Institute
Property Management Institute

Head Office: **Auckland** — Office5 at Takapuna, Manurewa, Tauranga, Rotorua, Tokoroa, Whokotone. Suva, Lautoka.

SP464



Approvals

REGISTERED OWNER

Pursuant to a Resolution of the Otamatea County Council passed on the day of 1986 approving pursuant to Section 305 of the Local Government Act 1974 this survey plan and certifying that the plan is in accordance with the requirements and provisions of the Operative District Scheme for the area to which the survey plan relates the common seal of the Otamatea County was hereto affixed in the presence of :

Chairman ..... County Clerk

NEW C's T ALLOCATED

LOT 1
LOT 2

Total Area 7993m²

Comprised in CT1005/293

I, Keith James Douglas Martin of Takapuna

Registered Surveyor and holder of an annual practising certificate (or who may act as a registered surveyor pursuant to the proviso to section 33(2) of the Surveyors Act 1966) hereby certify that this plan has been made from surveys executed by me or under my directions, that both plan and survey are correct and have been made in accordance with the Survey Regulations 1972.

Dated at Takapuna *this day of 19 Signature*

Field Book p. Traverse Book p.

Reference Plans

Examined Correct

Approved as to Survey

/ / Chief Surveyor

Deposited this day of 19 .

District Land Registrar

File 321284 *Received Instructions*

LAND DISTRICT **NORTH AUCKLAND**
SURVEY BLK. & DIST. X Waipu
NZMS 261 SHT RECORD MAP No

LOTS 1 & 2 BEING A SUBDIVISION OF LOT 5 DP28821

TERRITORIAL AUTHORITY Otamatea County
Surveyed by HARRISON GRIERSON CONSULTANTS LTD
Scale 1·500 Date February 1986

Printed by Sterling Imports Ltd. Auckland. New Zealand

W. A. HAWKES, SURVEYOR-GENERAL, DEPARTMENT OF LANDS AND SURVEY NEW ZEALAND WELLINGTON

L & S FORM N93

SEE DIAGRAM A

RCM XVIII S054964 ORIGIN 553·90 127° 27' 31" TO RCM XIX

ADPT FROM IIIA 143° 16' 60·07

IVA ADPT

IVB ADPT 6·56

ADPT S054324 5·48 309° 00'

RMB S054324

108° 54' ADPT 19·73

1A ADPT

184° 30' ADPT 44·58

11A ADPT

158° 41' ADPT 59·20

IIIA ADPT

143° 16' ADPT TO IVA 60·07

347° 32' 25" 121·74

STATE HIGHWAY No 1

RCM XVIII S054964 ORIGIN 553·90 127° 27' 31" TO RCM XIX

135° 48' 10" TO 151 113·38

DIAGRAM A
not to scale

128·65

47° 00' 189° ADPT (150·46)

117·88 (124·44) 128° 34' 00" ADPT

STATE HIGHWAY No 1

LEGAL ROAD

21·81

135° 48' 10" FROM RCM XIII S054964 113·38

303° 54' 42·12

128° 34' 00" 55·18

151 IN CONC

(99·18)

128° 23' 10" 97·86

Sealed

144° 00' 20" 13·05

44·00 ADPT

(20·12)

1

2

30° 00' 00" (59·25) ADPT 49·19

84° 33' 00" 78·01 ADPT

273° 15' 25" TO RM1 S054345 171·94 sealed

6° 31' 30" 17·89

220° 42' 20"

1511 IN CONC

269100mE

269800mE

269900mE

SEE DIAGRAM B

123° 41' FROM VA 300·06 ADPT

STATE HIGHWAY No 1

FROM RCM XVIII S054964 ORIGIN OF BEARINGS 127° 27' 31" 553·90

FROM 1511 124° 49' 37" 354·24

FROM RM1 S054345 106° 38' 10" 535·45

786750mN

786700mN

OITVII S029539 321° 79·52 28' 00"

RCM XIX S054964

DIAGRAM B
not to scale

ORIGIN 127° 27' 31" 553·90 VA ADPT

ADPT TO OITVII S029539 123° 41' 00" 300·06

786650mN

33° 00' 19·19 ADPT

31·50

10·06

301° 44'

1511 IN EDGE KERB SEAL

273° 46' 50" 24·00

TO RCM XIX S054964 124° 49' 37" 354·24

77·54

SEE DIAGRAM B

LAND DISTRICT	NORTH AUCKLAND	
SURVEY BLK. & DIST.	X Waipu	
NZMS 261 SHT	RECORD MAP No	

LOTS 1 & 2 BEING A SUBDIVISION OF LOT 5 DP28821

TERRITORIAL AUTHORITY Otamatea County

Surveyed by HARRISON GRIERSON CONSULTANTS LTD

Scale 1:500 Date February 1986

Approvals

COORDINATES

Mark	mN	mE
RCM XVIII S054964 ORIGIN	786782·19	269721·01
1S1	786700·91	269800·04
1S111	786587·59	269818·33

BEARING AND COORDINATE DATUM GEODETIC 1949
MT EDEN CIRCUIT COORDINATES
ORIGIN MT EDEN 700000mN 300000mE

Unless otherwise noted Adoptions are from S029539

BEARINGS ADOPTED FROM S029539 ARE ADJUSTED BY -01' (See S054324)

Total Area

comprised in

I, Keith James Douglas Martin of Takapuna Registered Surveyor and holder of an annual practising certificate to who may act as a registered surveyor pursuant to the proviso to section 33(2) of the Surveyors Act 1966) hereby certify that this plan has been made from surveys executed by me or under my directions, that both plan and survey are correct and have been made in accordance with the Survey Regulations 1972.

Dated at Takapuna this day of 19 Signature

Field Book p. Traverse Book p.

Reference Plans DP28821 SO's 29539, 54324, 549.69, 54345

Examined Correct

Approved as to Survey

/ / Chief Surveyor

Deposited this day of 19

District Land Registrar

File 321204
Received
Instructions

Printed by Sterling Imports Ltd. Auckland. New Zealand

W N HAWKEY SURVEYOR GENERAL DEPARTMENT OF LANDS AND SURVEY NEW ZEALAND WELLINGTON

L & S FORM N93

27 August 1985 Mr Higgins S P 464

The Manager
Harrison, Grierson Consultants Ltd
P O BOx 33-076
AUCKLAND

Dear Sirs

SCHEME PLAN 464 - CATLOW & WATSON

Council considered your clients' application for a scheme plan approval in respect of a proposal to subdivide the Brynderwyn Motel and Tearooms, at its recent meeting.

I am pleased to advise that, in accordance with Section 279 of the Local Government Act 1974, the Council approved the scheme plan of subdivision of lot 5 D P 28821, subject to the condition that an easement of right of way in favour of lot 1 be granted over the existing metal drive across lot 2.

Yours faithfully

P V Higgins
CHIEF EXECUTIVE OFFICER.

30 July 1985 Mr Palmer S P 464

Memo TO : Chief Executive Officer
From : Executive Officer Administration

RE PROPOSED SUBDIVISION - CATLOW & WATSON

The applicants wish to be able to subdivide the property presently containing the Brynderwyn Motel and Restaurant:, to enable each of those two facilities to be situated on its own site. (The attached plan refers).

The development was established pursuant to various planning consents and therefore, if the Council is satisfied that the, area of each lot is appropriate to the use, the subdivision will satisfy the requirements of the Proposed Scheme.

The subdivision has been designed to enable each facility to function independently and Council staff, are satisfied that each lot is of a sufficient size to ensure that the appropriate bylaws and regulations can be met.

The proposal was submitted to the Ministry of Works and Development for its comment as it fronts two state highways.

That department is not happy with the position of the entrance proposed to serve lot 1 and has suggested that, either the existing entrance continue to serve both facilities, or that lot 1 be provided with a new entrance at its western boundary.

After an inspection of the property I am of the opinion that, of the three alternatives, the most satisfactory from a highway safety point of view, would be the retention of the existing entrance to serve both the Restaurant and the Motels and that therefore Council should; as a condition of its approval; require a right of way to be provided over the existing drive in favour of lot 1.

RECOMMENDATION

That in accordance with Section 279 of the Local Government Act 1974, the Otamatea county council approve the scheme plan of subdivision of lot 5 D P ,28821 subject to the condition that an easement of right of way in favour of lot 1 be granted over the existing metal drive across lot 2.

R N Palmer
EXECUTIVE OFFICER ADMINISTRATION

fa+

Ministry of Works and Development

District Office
Bledisloe Bldg., Wellesley St.
Box 5040, Auckland
Telephone 778 940. Telex NZ 2769

Inquiries to A T Polglase Date 18 July 1985 Our ref 72/12/1/5
Your ref

RECEIVED
19 JUL 1985

The Chief Executive Officer
Otamatea County Council
PO Box 1
PAPAROA

Dear Sir

SH 1/SH 12 JUNCTION : SCHEME PLAN SP 464 :
BRYNDERWYN MOTEL : CATLOW & WATSON

Thank you for forwarding the papers.

The position at which the proposed entrance joins the highway is not satisfactory, and can lead to endangering traffic on the highway, as well as vehicles using the entrance.

It is requested that the proposed entrance be relocated. It is considered that the best solution would be for both restaurant and motel vehicles to use the existing metal drive with an easement or right of way over Lot 2 as may be appropriate. An alternative which would also be suitable would be for the proposed entrance to be close to the western boundary.

Yours faithfully

J 8 Fraser
for District Commissioner of Works

OTAMATEA COUNTY COUNCIL OFFICIAL RECEIPT

29 V 1 9603 AU2 - 000.050.00 A0103800

7 June 1985 Mr Palmer SP 464

The District Commissioner of Works
Ministry of Works and Development
P O Box 5040
AUCKLAND

Dear Sir

PROPOSED SUBDIVISION : BRYNDERWYN MOTEL : CATLOW AND WATSON

In accordance with and 'as required by section 279 (8) of the' Local Government Act 1974, we herewith enclose a copy of a scheme plan' recently received in respect of land on State Highway 12 and l'at Brynderwyn.

'Should you require any further information'; I suggest you contact the surveyor concerned.

Yours faithfully

P V Higgins
CHIEF EXECUTIVE OFFICER

cc Resident Engineer
Ministry of Works and Development
WHANGAREI

PLEASE DETACH BEFORE PRESENTING

Remittance from
HARRISON GRIERSON CONSULTANTS LTD
CONSULTING ENGINEERS, SURVEYORS & PLANNERS
P.O. BOX 33-076
TAKAPUNA, AUCKLAND, N.Z.

YOUR STATEMENT		
LESS		
LESS DISCOUNT		
	$	

LOCAL GOVERNMENT ACT **1974**

APPLICATION FOR SCHEME 'PLAN'

File reference SP/464

Applicant Bryderwyn Motel, Catlow & Watson

Please peruse the attached application and let **se** have whatever comments your consider appropriate.

R N Palmer
EXECUTIVE: **OFFICER** ADMINISTRATION

Building Inspector :	Date Seen	22.5.85	Initials	

Executive Officer Works :	Date Seen	22-5-85	Initials	

Executive Officer Cesign :	Date Seen	29/5/85	Initials	

File E.O.A.

Otamatea County Council

Telephone : 1 Paparoa | P.O. Box 1 Paparoa | NORTHLAND

37019

WHEN REPLYING OR CALLING PLEASE REFER TO
Mr Palmer

In Reply Please Quote :
Your Ref. .....
Our Ref. S.P. 464

21 May 1985

RECEIVED
28 MAY 1985
OTAMATEA COUNTY COUNCIL

Messrs. Harrison. Grierson. Consultants
P O BOX 33-076
TAKAPUNA

Dear Sir

RE: BRYNDERWYN MOTEL : CATLOW AND WATSON

Your Scheme Plan No. 464 has been received in this office. However, it was not accompanied by the required inspection fee.

Will you please forward the fee of ....$50.00... (being $10 per lot) as soon as possible. (minimum Fee $50.00).

Yours faithfully

P. V. Higgins
CHIEF EXECUTIVE OFFICER

Rose Catlow - Brynderwyn tearooms
if Queries arise.

Consulting Engineers Surveyors Planners

HARRISON GRIERSON CONSULTANTS LTD

HG

E.O.N.

Our Ref: 321284

Your Ref

P.O. Box 33-076
Takapuna. Auckland
New Zealand
Telephone 499-072

Takapuna House
3 Anzac Street
Auckland 9
New Zealand

RECEIVED
20 MAY 1985
OTAMATEA
COUNTY COUNCIL

16 May 1985

The Chief Executive Officer
Otamatea County Council
P O Box 1
PAPAROA
Northland

Dear Sir

SP 407 : BRYNDERWYN MOTEL - CATLOW AND WATSON

We refer to our letter dated 30 June 1983 being a scheme for subdivision of the above property and your reply of 28 July 1983.

The owners have now decided to proceed with this matter and in response to your letter of the 28th we now enclose five copies of an amended scheme plan embodying issues as outlined by you.

In particular we would ask that you note that the proposed division line between the existing uses has now been amended to ensure that the effluent fields from the septic tanks serving both the restaurant and the motel units, are within the boundaries surrounding each particular use. The easement over the existing access to the motel has now been deleted with a new proposed entrance located a little further to the west along State Highway No 12. We understand that this particular road is not a limited access highway and as such we can see no reason for this entrance not to be acceptable.

We have examined the report by Tapper Cotter Brown & Partners and have today further discussed the matter of stability with Mr K James, the District Engineer for the Ministry of Works at Whangarei. In our discussions with him we have advised that the matter concerned relates to the existing uses only and that if any proposed future motel development was contemplated, then obviously the criteria would change, but as such future development would be subject to a further Planning application the Department and others would have the opportunity to make comment and to require such further investigation as may be necessary at that time.

...2

Directors

VN Herries C Eng. MICE, FIPENZ
DA Finlay MNZIS, RS Fiji, MPMI
PW Simpson MNZIS, MPMI
DJ Ruegg MNZIS, MPMI
J Maplesden Dip Surv, Dip TP, MNZIS, RS Fiji
WAI Kent-Johnston Dip Surv, MNZIS, ARICS

BL Stone MNZIS
IM Grierson MIPENZ, MNZIS, MPMI
KJD Martin MNZIS, MIS Aust, MPMI
FC Cumming MNZIS, RS Fiji, MPMI
JN Ginn MNZIS, RS Fiji
DE Peterson BE (HONS), M Sc, MIPENZ, MIWPC

AG McCulloch MICE, MIPENZ
DC East MNZIS, RS Fiji
TRA Clark BE, C Eng, MICE, MIPENZ, MFIE
CR Aherne B Sc, Dip TP, MNZIS, MNZPI, MRAPI, MPMI
GRB Wilson MIPENZ

Associates

DC Scott B Sc Eng, MIPENZ
Ami Chand RS Fiji

PWM Williams BE, MIPENZ, MFIE
DA Laing MNZIS

JS Collie B Sc, MNZIS

Membef. Association of Consulting Engineers New Zealand (ACENZ)
Consultants Division New Zealand Institute of Surveyors
Consultants Group New Zealand Pianning Institute
Property Management Institute

Heod Office: Auckland — Offices at Takapuna, Manurewa, Tauranga, Rot&
Tokoroa, Whakatane, Suva, Lautoka.

In this instance Mr James doesn't believe that the subdivision will exacerbate the existing situation. We are not doing anything that will change the situation and in any event he believes that the motel is situated outside of the mechanism of the unstable part of the road. Nevertheless, neither his Department nor us can give any categoric opinion as to whether this particular area is likely to be subject to movement in the future. It is our opinion however, that Council have already taken such steps to satisfy themselves that the use to which this property is put is reasonable and that the improvements have been constructed in accordance with proper investigations and requirements. We are certain that should further development be contemplated, then such development will also be subject to similar investigations and constraints.

This application is to regularise an existing situation and to enable the administration of the motel business to be separated from that of the restaurant. Both uses in this area satisfy a public need and as such we believe that it is appropriate that Council consider and approve this application. Please advise if further inspection fees are required or whether any further investigation should be undertaken. An additional copy of the plan is enclosed for referral to the Ministry of Works at Whangarei.

Yours faithfully
HARRISON GRIERSON CONSULTANTS LTD

K J D Martin

Encl

21 May 1985 Mr Palmer SP 464

The Chief Engineer
North Auckland Electric Power Board
Private Bag
WHANGAREI

Desr Sir

We enclose a copy of scheme plan 464, Brynderwyn Motel, Catlow and Watson for your information.

Yours faithfully

P V Higgins
CHIEF EXECUTIVE OFFICER

Otamatea County Council

Telephone : 1 Paparoa P.O. Box 1 Paparoa NORTHLAND

37019

WHEN REPLYING OR CALLING PLEASE REFER TO
Mr Palmer

In Reply Please Quote :
Your Ref. .....
Our Ref. SP 464

21 May 1985

Messrs.Harrison.Grierson.Consultants
P O Box 33-076
TAKAPUNA

Dear Sir

RE: BRYNDERWYN MOTEL : CATLOW AND WATSON

Your Scheme Plan No 464 has been received in this office. However, it was not accompanied by the required inspection fee.

Will you please forward the fee of $50.00 (being $10 per lot] as soon as possible. (minimum Fee $50.00).

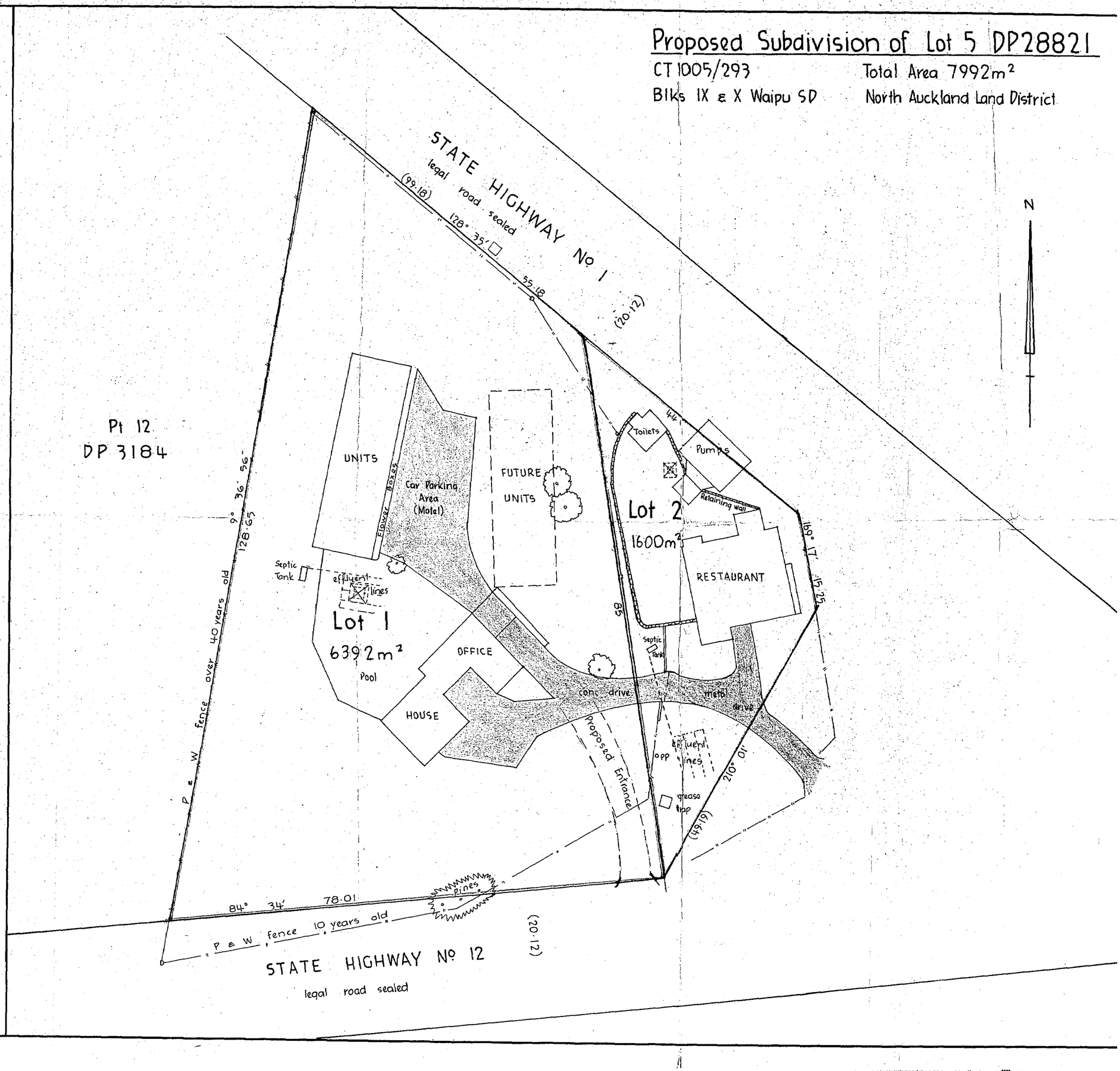
Yours faithfully

P. V. Higgins
CHIEF EXECUTIVE OFFICER

Proposed Subdivision of Lot 5 DP28821

CT 1005/293 — Total Area 7992m²

Blks IX & X Waipu SD — North Auckland Land District



NOTES — APPROVED

Approved by the Registered Owners Council under Section 279 of the Local Government Amendment Act 1978 at a meeting held subject to the conditions contained in Resolution No.

.....
County Clerk

I Keith James Douglas Marlin hereby certify that this scheme plan has been prepared by me in accordance with the provisions of Sec 275 Of the Local Government Act 1978

K.J.D. Marlin
8/6/83 Registered Surveyor

ISSUED TO	DATE	ISSUED TO	DATE

THIS PLAN HAS BEEN PREPARED BY AND IS COPYRIGHT TO –

HARRISON AND GRIERSON AND PARTNERS

CONSULTING ENGINEERS
REGISTERED SURVEYORS
TOWN PLANNERS

	NAME	DATE	FIELD BOOK
SURVEYED	C.S.	5/83	
DESIGNED			
DRAWN	C.S.		LEVEL BOOK
TRACED	J. M.	1/6/83	
CHECKED			CALC. BOOK
APPROVED			

CATLOW **and** WATSON
BRYNDERWYN MOTEL

SCALE 1·400

DRAWING No 3·2128-4

SHEET No. 1 OF 1 SHEETS

KAIPARA DISTRICT COUNCIL
APPLICATION FOR A BUILDING PERMIT



Valuation reference : 120/20 1

Name of Applicant : Bayderyn Service STaTion

Address of Property : Cnr SH W1 + SH W12 MaungaTuroTo

Permit required for : AddiTion's and Repairs Sewerage SysTem

1.	Application received	30 4'	19 91
2.	Further details sought (if required)	Y/N	19
3.(a)	Vehicle Crossing (green) application required	Y/N	19
(b)	Vehicle Crossing (green) application received	No	19
(c)	Vehicle crossing (green) application to AOE/W		19
(d)	Kerb (etc) damage (blue) deposit application required	Y/N	19
(e)	Kerb (etc) damage (blue) deposit application received	NO	19
(f)	Kerb (etc) damage (blue) deposit application to AOE/W		19
4.	Application accepted for processing		19
5.	Presiting inspection carried out by County Inspector	R/NR	
	Issue of building permit approved (signed) CI		19
6.	Collate and issue building permit		19
	~~(a) Building Permit~~	Y/N	
	(b) Plumbing and Drainage Permit 657	Y/N	
	(c) Receipts (various)	Y/N ✓	
	(d) One copy of plan submitted with application	Y/N	
	(e) One copy of specification submitted with application	Y/N	
	(f) One copy of advice to applicant of inspection procedure	Y/N	
	(g) Other (eg copy of Design Certificate, calculations etc)	Y/N	
7.	Foundation inspection requested	R/NR	19
8.	Foundation inspection carried out by County Inspector		19
9.	Prelining inspection requested	R/NR	19
10.	Prelining inspection carried out by County Inspector		19
11.	Plumbing and drainage inspection requested	R/NR	19
12.	Plumbing and Drainage inspection carried out by County Inspector		19
13.	Any additional inspection of property Reason		
	Building out zone U	9 10 91	
	Application completed and approved for filing		
	(signed) County Inspector		19
14.	Checked and all sections correctly completed		
	(signed) SAO		19
15.	Date application completed and filed		19

2/2

13867-65

17969

KAIPARA DISTRICT COUNCIL

APPLICATION FOR PERMIT FOR SANITARY PLUMBING OR DRAINAGE WORK

To: The Engineer (Attn. Plumbing & Drainage Inspector)
Kaipara District Council

Private Bag DARGAVILLE	P.O.Box 1 PAPAROA

I, the undersigned GB SLATTER (full name) of 5 VIEW Rd MAUNGATUROTO (full postal address) hereby apply for a permit for the work described herein, and set-but in the plans attached hereto, to be carried out in the premises situated at:

Valuation Number: 1200-00200
Legal Description: Lot No.: 2 DP 113162
Street or Road: SH 1
Deposited Land: Block:
District: ~~Kaipara~~ Waipu SD
Survey District:

Name and Address of Person for whom work is to be carried out:
BRYNDERWYN TEAROOMS
SH 1 MAUNGATUROTO

Name and Address of Registered Craftsman Plumber, or Registered Orainlayer:

Plumber:

Drainlayer: GB SLATTER
5 VIEW Rd
MAUNGATUROTO

Registration Number:

Registration Number: 10399

DESCRIPTION OF WORK

State type of premises: Commerical

State extent of work: Install effluent tank - change Drainage

ESTIMATED VALUE OF WORK

	Materials	Labour	Subtotal
Drainage	250	200	450
Plumbing			
		TOTAL	450

Signed: GB Slatter Date: 26-4-91

- SEE NOTES ON REVERSE -

.....

OFFICE USE ONLY

Fee Paid: $30.00 Receipt Number: 32236 Date: 30.4.91

Permit No. 657 issued 29.7.91

P 207

SCALE OF PERMIT FEES PAYABLE

Labour Value — Up to $200.00.....$30.00

Plus $6.00 for every $100.00 or part thereof

NOTE:

Fees are calculated on the total value of the work less the cost of materials. Such items as digger hire should not be included in the value of materials. Where the value of materials is not stated these will be calculated at 60% of the total value of plumbing work and 40% of the total value of drainage work. The Council reserve the right to alter the estimated value of all work for permit fee purposes at the discretion of the Plumbing and Drainage Inspector.

Water Conservation Bylaw (Dargaville Only)

Dual Flush Toilets

All water closet flushing cisterns in new installations or where the cistern is being replaced shall be of a dual flush type approved by the engineer.

On Demand Urinal Flush Controllers

The flushing of all urinals in new installations or where the cistern is being replaced, shall be controlled by an on-demand controller or a type approved by the Engineer.

Work is to be carried out by a registered plumber or drainlayer.

A plan of the proposed work is to be submitted with this application.

"As built" plans of the completed work will be the responsibility of the Drainage and Plumbing Inspector.

All testing gear to be supplied by the Drainlayer and drains are to be pretested by air.

Permit fees are payable on sanitary plumbing and drainage, but not on roofing, spouting etc.

Plan

A suitable plan should be provided here indicating position, and length of the walls of the building, the position of sanitary fittings, the proposed position of drainage and septic tank, distances from boundaries and the position and dimensions of effluent disposal.

KAIPARA DISTRICT COUNCIL

PAPAROA OFFICE
PO BOX 1, PAPAROA, NORTHLAND

Phone : (089)431 7019
Fax : (089)431 7017

WHEN REPLYING OR CALLING PLEASE REFER TO

.....

In Reply Please Quote :

Your Ref : .....

Our Ref : .....

FROM Bevan PRITCHARD

TO Ian GUNN

COMPANY University of Auckland.

FAX NO 09-3660702

JOB BRYDERWYN SERVICE STATION OSWOS

DATE 18-7-91 NO OF PAGES (including this) 1

Please pass the message to the person designated immediately.

If pages are missing or not clear, please telephone sender.

MESSAGE

Thanks for FAX yesterday. Please note my number above.

Please contact or send review with your costs A.S.P..

Regards Bevan

Ph 089 431 7019

Fax " 017

Private Bag, Auckland, New Zealand Telephone: 737- FAX:

FACSIMILE TRANSMISSION HEADER SHEET

TOTAL NUMBER OF PAGES (including this page): 1 DATE: 17 July 1991

SENT TO: Kaipara District Council, Dargaville

ATTENTION: Bevan Pritchard

Lisa Allan

		(Cont)	6775

BRYNDERWYN SERVICE STATION
SEWAGE WASTEWATER SYSTEM

Thank you for your telephone call yesterday. I completed my review of the proposal this morning.

Please can you phone me when you have the opportunity today.

Regards,

Direct Line (09) 737-0455

IF YOU DO NOT RECEIVE ALL THE PAGES PLEASE CONTACT US IMMEDIATELY

Sent Bev Ins Tuesday 24/7/91

UNIVERSITY OF AUCKLAND

DEPARTMENT OF CIVIL ENGINEERING

Private Bag, Auckland, New Zealand Telephone: 737-999 FAX: 64-9-3660702

FACSIMILE TRANSMISSION HEADER SHEET

TOTAL NUMBER OF PAGES (including this page): 6			DATE: 19 July 1991
SENT TO: Kaipara District Council, Paparoa Office			
ATTENTION: Beum Pritchard			
FROM: Ian Gunn			
FAX NO:	(country)	(code) (089)	(number) 431 7017

Message/Delivery Instructions:

Beum,

BAYNOFRUYN SERVICE STATION
OSWMS

Sorry to learn you were off work due to sickness when I phoned this morning. There are 2 matters which I wanted to discuss with you rather than just put in a written report. I will set them out below, and we can make contact next week when you are back at desk.

(1) Wetland Size

Design recommendations for RZM systems carrying "primary" or "screened raw" wastewater are 3m² to 5m²/person.

DO NOT RECEIVE ALL THE PAGES, PLEASE CONTACT US IMMEDIATELY.

Bryndewyn Oswos 12.

19 July 1991

At 4m³/day flow ≡ 22 persons, a total of 66m² would be required for direct septic tank effluent loading (ie during bypass of saturated capillary field)

The applicant proposes a 20m² wetland (7m × 3m nominal) with presumably ie Zone I plus Zone II total of 40m² (as per calculations) although only a Zone I 20m² wetland is shown on the Drawing No. 91-6 (Note that the costs are for .12M metal, at 26m³/m in the calculations of cost, includes for two wetland beds)

It could be argued that given that the wetland will only operate intermittently (ie when discharge from saturated capillary bed occurs) then 40m² to meet periodic loading is an appropriate scale down for a 66m² bed requirement for continuous loading.

Brynderwyn Osmos

19 July 1991

(2) Allowance for Rainfall on Wetland Catchment

Normally the only rainfall allowed for by the wetland design criteria would be that falling directly on the wetland surface.

In this instance, the catchment area provided by the "capillary" mound under saturated conditions is significant ie, several times the wetland surface area, and hence, under conditions when septic tank effluent is diverted to the wetland, rainfall would also be directed thereto.

(3) Additional Effects of Saturation of "Capillary" Mound

When the mound is saturated to the point of producing a discharge via the 100 Ø "navflo" then a head of liquid of some significance will exist in the sand membrane against the reinforced block wall. Unless this wall is designed and constructed as a water retaining structure, potential for leaks exist.

Brynderwyn OSWMS
19 July 1991

4

④ Septic Tanks in Series

I am not concerned about this proposal. Its objective is to provide secondary settling of septic tank overflow and therefore minimise solids in the effluent. Splitting the flow two ways to tanks in parallel is difficult to achieve in a consistently reliable manner.

⑤ Effluent Dispersal Trench

The loading is 200 mm/day which will result in significant discharge of seepage during peak loading periods particularly when rainfall from both the saturated "capillary" mound and that from the surface of the wetlands is being discharged.

A question arises as to why have a wetland at all? 15 effluent disposal trenches at loading rate of 13 mm/day would appear to be able to be accommodated on the site area set aside for wetland plus trench.

Brynderwyn
OSWWS

19 July 1991

Indeed 20 such beds/trenches could form a complete "disposal" system that would replace both the "capillicury" mound and two stage wetland and subsequent dispersal trench, and thus avoid the need for any off-site disposal at all.

Design Basis for Wetland

Page 4 of the Design Report dealing with "Rootzone Wetland System" refers to "criteria developed from data recorded from the results of water quality analyses carried out during past 10 years at existing systems throughout Northland."

The Kloostermen/Craig "Wetland Manual" June 1989 (Auckland Regional Water Board Technical Publication No. 58) provides a Table 2.1 listing of constructed wetlands and a status report for NZ at that date, noting that "the monitoring of these systems to date has been minimal and for the most

Brynderwyn 16
OSWWS
19 July 1991

Work has only been done to assess water right compliance. Hence there is not an extensive data base for NZ systems.

As for Root zone Wetland operational experience in Northland, TP 58 Table 3.1 is only

- Tapeka Point (Bay of Islands County) a 16 m² unit commenced operation 1988
- Awanui (Mangonui County) a 16 m² unit under construction 1989
- Matakana (Rodney County) a 400 m² community septic tank effluent system commissioned Spring 1988.
- Langs Beach (Whangarei County) a 70 m² unit for primary effluent commissioned 1989

Hence it seems hard to justify a statement for the design of the 40 m² Root Zone System at Brynderwyn on the basis of a 16 year record of data.

Regards,

general filtration in the substratum. This factor is probably one of the most important factors with apparent inactivation of bacteria. Retention of algae onto which bacterial colonies have absorbed also allows maximum' predatory activity to occur because of bacterial availability through density.

SEDIMENTATION

The primary stages in a surface flow marsh system also foster sedimentation, again removing bacteria from the main water column. Because of the organic compounds released by entrapped algal cells the immediately available nutrient advantages bacterial activity and consequent predation in this section.

EFFECTS OF MIXING AND MAINTENANCE OF PLUG FLOW

Due to low dilution rates the advective contribution to mixing in a constructed marsh system is not significant. It is the emergent stems and their density that is chiefly responsible for mixing and maintaining a plug flow regime.

Results obtained from extensive dye tracer and bacteriological testing carried out in constructed marshland systems indicate that short circuiting has an important effect in controlling bacterial numbers in marsh or pond effluent. Tests are currently under way evaluating the performance of 20 surface wetland systems operating in Northland. Results from the surveys are being compiled for grouping and assessment with a view to optimising these systems. A preliminary opinion is that each system is site specific needing emphasis on different aspects of design to achieve maximum efficiencies.

PLANT DESCRIPTIONS AND PERFORMANCE NOTES

Pakiri Surfside Lodge $70m^3$/day Domestic **Sewage**

This system has been designed to cater for widely fluctuating loads. The nucleous **of** the system is constructed in the form of a modified Pasveer Ditch which has some 20 days hydraulic retention at $70m^3/day$. Aeration is achieved using submersible aerators which operate on sequence timers. Circulation is promoted using a submersible pump also operating on sequencial timers. Effluent from the aeration-circulation channel passes over a wide concrete flume at a maximum depth of 50mm. Some bacterial die-off is achieved during daylight hours due to sunlight. Effluent from this solar channel drains into settling tanks where any sludge carry-

over settles. From the settling tanks the effluent drains into a bunded area of sand forming a constructed marshland.

Retention within 'this section is some 20 days at a depth of 0.3m and plant stem density of **6** to the square metre. Faecal coliform colonies in the effluent from the marsh range from <100-200/100ml. Any water leaving the marsh is directed to a natural salt marsh where it is dispersed over a 30 metre swathe.

Comments

The system has been operating since **1969** when the planted bunded area was intended to be a beautified sand filter soakage to the ground. Even now 20 years later some soakage and evaporation reduces the discharge to the natural marsh considerably.

Ruakaka $600m^3$/day Domestic Sewage

This system uses two facultative ponds connected in parallel to achieve secondary treatment. Pond effluent flows into a common constructed marsh system planted with Scirpus validus sp. Retention within the marsh system is of the order of **14** days at full loading. Water leaving the marshland is directed to a large soakage area in the sand dunes for disposal into ground. Lysimeters are sunk around the ground disposal area to establish both movement and levels of local bacterial contamination.

Comments

This system is not exerting any significantly detrimental effect on water quality in the area. The shoreline in Bream Bay is at least 200 metres away from the effluent disposal area.

The scheme was the subject of objections from the Department of Conservation on the grounds that the discharge into the sand dunes would be detrimental to wildlife in the area. Wildlife observation carried out at other constructed marshlands have been more than borne out with this particular system in that the numbers of birds and species has increased manyfold in the area surrounding the marsh. One pair of banded dotterels and one pair of oyster catchers were observed in the vicinity of the oxidation ponds before the marshland was completed, planted and filled with water from the ponds. Approximately one month later at least 20 pairs of banded dotterels and oyster catchers were observed to have taken up residence. Welcome swallows abound and are nesting in the area. Seagulls and shags abound as do pied stilts. In my opinion as a layman, the system has enhanced the diversity of nature in the area. The marsh system fosters removal of algae

allowing effluent to soak into the dunes without significant ponding. Nutrients in the effluent will no doubt promote growth of dune grasses assisting with stabilisation of sand dunes.

Portland $200m^3$/day Domestic Sewage

This treatment consists of a facultative oxidation pond followed by a maturation pond. Effluent from the ponds is discharged into a constructed marsh system designed to have some **7** days hydraulic retention. Water from this marshland discharges into an estuarine area populated with juvenile mangroves. The dispersal area is only covered by spring tides so that normal mangrove growth would be slow with the trees growing to a limited height. Measurements have been taken so that plant growth can be tabulated in areas affected by effluent against areas which are not. Bacterial removal in the ponds is average with removal through the marsh within a 90 per cent corridor.

Comments

The mangroves in the immediate vicinity of the marsh discharge were no greater than 0.3 metres in height when the first effluent was discharged from the marsh. The density and rate of growth is being measured at regular intervals to gauge the effect of nutrients contained in the effluent. The marsh has been planted with species designed to produce stages in the marsh to simulate an anaerobic-aerobic system so that nutrient removal rates can be measured at specific stages. Data gained from this system will be most useful in evaluating site specific designs for other areas.

Whangarei City Corporation $18,000m^3$/day Domestic Sewage

City sewage is to be treated by means of the existing fixed growth reactors (Trickling **filters)** followed by a high rate activated sludge unit. Effluent from this system is to be disinfected by ultraviolet radiation before discharge to a constructed wetland. The proposed wetland will incorporate a series of open water areas to assist with the maintenance of dissolved oxygen which usually is depleted in a planted area.

The wetland will consist of 6 cells with a total retention of some 6 days. Some 50 percent will be open water area where hydraulic retention, some light induced mortality and some predation should significantly reduce the bacterial content. However the system as designed will rely heavily on the mangrove area to buffer the main effect of the discharge. Seven outlets from the marsh sections will tend to increase the risk of shortcircuiting into Limeburners Creek and markedly reduce the bacterial die-off. Ultraviolet disinfection

of plant effluent before introduction to the marsh system could well be a backward step. Photoreactivation is of particular concern in wastewater treatment plants where wastewater containing UV inactivated bacteria is discharged into open water receiver systems such as lakes, rivers or sea.

Significant fractions of bacteria may be reactivated following exposure to sunlight. Photoreactivation of coliforms, particularly E. coli has been well documented in the literature. There **is,** however, little evidence in the photoreactivation of faecal streptococci and indeed some evidence that they may not photoreactivate. Only time will tell if this system will be as successful as hoped. However there is no doubt that there will be a very marked improvement to water quality in Limeburners Creek as a result of the system upgrade.

Ngunguru Sewerage Scheme

This scheme caters for some 200 cubic metres per day of domestic sewage from the Ngunguru Township. Primary and secondary treatment is achieved by using a facultative pond and a maturation pond connected in series. This type of system is much superior to any single pond concept in that short circuiting is at least 40 percent less of a problem and hydraulic retention times are also at least 40 percent closer to fact. Effluent from this system is pumped to a natural marsh modified with weirs to ensure a retention of the order of 10 days within the marsh regime. Since the plant was commissioned plant growth in the marshland has increased markedly both in stem density and diversity of species. The marsh water discharges to a spring fed stream which drains into a large area of mangroves at the head of the Ngunguru Estuary.

Bacterial reduction through the marsh system before entering the stream is consistently within a 95 percent corridor.

Kaikohe Sewerage Scheme

This scheme caters for 2,000 cubic metres of domestic sewage from Kaikohe Borough. The sewage had been treated using a single large facultative pond during the past 20 years.

Effluent from this pond was discharged directly to the Wairoro Stream resulting in high coliform counts recorded at medium to low flows. In order to balance the bacterial fluctuations which occur naturally, especially with single low aspect ratio facultative ponds, a marsh system was designed and constructed in 1987.

The total area of constructed marsh is one hectare. The system has been designed to generate as much data as possible by

incorporating 3 rectangular low aspect ratio ponds followed by 3 narrow high aspect ratio ponds. A waterfall some 6 metres in height has been formed at the outlet from the main oxidation pond before effluent enters the first rectangular pond. Flow is also divided to allow oxidation pond effluent through a natural marsh parallel to the constructed marsh areas. The outlets from both these systems then join and flow into a large raupo marsh which eventually drains into the Wairoro Stream. Initial sampling of the unplanted marsh ponds indicated a bacterial inactivation of some 98 percent. This removal rate has been loosely attributed to the effect of UV light in shallow water where thermal stratification does not occur to a significant extent, predation and pH induced mortality. The rate of bacterial inactivation in the parallel natural marshland is slightly less at 95 percent. This is due to a much lower retention time because of the existing channels through the marsh system. There is no significant difference between high aspect ratio and low aspect ratio ponds in the system. However no real conclusions can be drawn until they have been planted and achieved optimum stem densities. This system is being used to further actual site specific knowledge in terms of removal mechanisms in constructed and natural marshland systems.

Paihia Sewerage Scheme

This system caters for some 2,000 cubic metres of domestic sewage per day. Sewage treatment is achieved using an anaerobic pond for initial breakdown followed by two maturation ponds connected in series. This approach was, at the stage of construction, unique in New Zealand. The sometimes objectionable odours generated by anaerobic ponds precluded any large-scale use until the Paihia scheme was mooted. Located in a small valley in the Waitangi Forest, odour was not considered to represent a problem. The importance of mixing in pond systems cannot be overstressed when considering pond design. The use of an anaerobic stage in an oxidation pond system has many advantages. Depths are unlimited and shaft systems over 20 metres deep have been used in some approaches to anaerobic treatment. The anaerobic treatment system could be extended to two stages. In this way it would be possible to obtain $B.O.D_5$ removals that are sufficient to ensure starvation mortality in the next facultative shallow oxidation pond.

The anaerobic pond at Waitangi Forest generally achieves at least 40 percent $B.O.D_5$ and some 60 percent suspended solids removal. Effluent from the final pond typically contains 2,000 - 3,000 faecal coliform colonies per 100ml, chlorophyll-a 1,200 mg/m^3 has a pH of 7.5 - 8.5 and dissolved oxygen of 6 - 10mg/litre.

Effluent from this pond is discharged into a natural meandering marsh system of some 3 hectares. Prior to the introduction of

pond effluent to this naturally marshy area the marsh water had a pH of 4.5 - 6.0 with a sparse population of aquatic animals.

Within 3 months of introducing the pond effluent the pH moved to 7.0 and the water was abundant with divers species of aquatic life. Monitoring at the outlet from this marsh during the 3 years prior to commissioning the scheme returned bacterial results indicating faecal coliform colonies ranging from 20/100ml to 200/100ml. After nine years of operation, faecal coliform levels recorded at this point range from 20/100ml - 300/100ml - virtually no increase. The 3 hectare marsh is followed by a further **4** hectare marsh dominated by Typha sp.

The substratum of these natural marshes is rich in humus to a depth of at least one metre in the shallowest sections.

Bacterial inactivation during passage through the marsh system has been consistently within a 98 percent corridor. Nutrient removal from the water column has also been significant in this natural marsh system.

Kawakawa Sewerage Scheme

This scheme which was commissioned in 1966 involves two oxidation ponds connected in series. The system was designed to serve 1,700 persons effectively controlling the hydraulic retention time within the ponds, one of the key factors to ensure effluent quality. The present population served is 1,538 (latest census) which, calculated on 260 l.c.d. will allow a hydraulic retention of at least 100 days. The oxidation pond system has consistently operated within the performance criteria generally expected from such systems when it was designed in 1966. However weather conditions play a major part in dictating pond performance. This has been reflected by coliform levels recorded in the final effluent during water right monitoring. The system which has been operating for approximately 22 years was designed according to the state of the art for such systems at the time. Retention time within the ponds was greater than 100 days with pond depths of up to 2 metres.

Current design criteria favours a maximum depth for facultative or aerobic ponds of 1.2 metres to fully utilise the natural mechanisms involved with the treatment process without fostering rising sludge resulting from gas formation in the benthic region.

A recent survey revealed that the primary pond has an average depth of 1.8 metres which includes 0.6 metres of sludge. The secondary pond has an average depth of 1.8 metres with an estimated sludge depth of 0.3 metres. Retention time at average D.W.F. is still in excess of 100 days which should result in almost

total bacterial removal. However there is some evidence that thermal stratification does occur, especially during warm sunny conditions, resulting in a marked reduction in residence time. Warm conditions also accelerate rising sludge increasing bacterial levels to an untenable degree. In order to reduce effluent bacterial levels and stop shortcircuiting caused by thermal stratification the secondary pond depth has been reduced to one metre and areas of it planted with emergent aquatic plants. The planted areas are arranged so as to direct the flow within the pond regime and impart mixing both locally stem by stem and generally by clump location. Although plant numbers and growth are still below the optimum required, a definite increase in bacterial removal has already been achieved. Data returned during the next 12 months will confirm the expected trend in this regard.

Tapeka Point Sewerage Scheme

This scheme is designed to serve a community of some 400 persons - 90 cubic metres/day.

Sewage from the area has been treated in an early model activated sludge plant since 1971. Although the system was upgraded *to* a near extended aeration status performance of this plant was typical of such mechanical systems in that the rate of bacterial inactivation was extremely erratic, despite reasonably uniform levels of $B.O.D_5$ and suspended solids. Plant effluent was directly discharged into the sea by way of a submarine pipeline off Tapeka Point. The sea in the area is classified S.A. and is used extensively for recreation and the taking of shellfish. Fluctuating plant performance regularly caused bacterial levels in the sea around Tapeka Point to rise well above the S.A. classification. In order to dampen the effects of this discharge a composite small scale marshland was constructed. The marsh system which has some 4 days retention at full load consists of two shallow ponds 0.6m deep and a rootzone-cum-biological filtration system. Effluent from the mechanical plant discharges in a sheet flow into the bottom of the first pond. The ponds are high aspect ratio 6 metres wide, 25 metres long. Algae developed within 48 hours of admitting plant effluent into the pond. Because of the urgency to reduce pollution at Tapeka Point, this system was commissioned before any planting was done. The primary pond discharges into the bottom of the rootzone system which consists of 1.5 metres depth graded gravel. The rootzone section is flooded *to* a top water depth of 0.1 metre. Water flows from that area to a piped distribution system at the bottom of the second pond. The discharge into the submarine pipeline is at a balanced rate gravitating from the final pond to the point of discharge.

Bacterial removal of 90 percent is achieved in the primary pond-cum-marsh, while the rootzone achieves a further 90 percent reduction down to 100 faecal coliform colonies per 100ml. The final pond-cum-marsh merely appears to maintain the status quo with little apparent die-off through it. However the bacterial levels contained in the effluent discharge are consistently low to the extent that bacterial levels in the sea are consistent with background measurements. Some light induced mortality appears to be occurring in the 0.1 deep clear water above the rootzone. However, levels in the final pond often rise indicating some photoreactivation is occurring.

Rawene Sewerage Scheme

This scheme caters for 150 cubic metres of domestic sewage per day from the Rawene Township.

The treatment system consists of a facultative pond and a maturation pond operating in series. The total design hydraulic retention is 60 days. Effluent from the maturation pond discharges into a constructed marsh which has been built on tight clay. Raupo won from neighbouring wetlands was used for the initial planting programme. Raupo stems were planted at approximately one metre spacings. Effluent from the maturation pond commenced flowing into the marsh in August 1985 at an estimated (bucket measurement) 0.4 litres per second .

Plant growth was quite rapid and resulted in a dense cover of raupo and some sedges after 12 months. However the plants had only a tenuous grip because of the heavy clay soil which precluded any firm rootzone establishment. Measurements of stem growth carried out in 1986 confirmed the effect of nutrient uptake as the pond effluent passed through the marsh. Plant growth was greatest in the first two channels gradually depleting in size and mass in the two final channels. Stems in the first channels averaged 2.5 metres in height while in the final channel, stems averaged 1.5 metres, similar to stems measured in a natural marsh approximately 50 metres away. Water leaving the marsh was crystal clear at 2 N.T.U. and bacterial levels indicated a 90 percent reduction. The bacterial inactivation in the final channels were indicative of starvation induced mortality in that B.O.D5 was <5 and suspended solids <5mg/litre. Chlorophyll-a was $<10 mg/m^3$ indicating a massive reduction in algae from an influent containing chlorophyll-a at $1,350 mg/m^3$.

As growth continued the number of stems per square metre increased to the extent that the hydraulic capacity of the channels was markedly reduced. This was expected as part of the formation of a substratum similar to that of a natural marshland.

Monitoring carried out in May 1987 when two growth and die-off seasons had past indicated that bacterial inactivation had dropped from a consistent 90 percent down *to* 80 percent. Detritus build-up from decomposing plant litter was forming a substantial substratum in itself essential as a significant contribution to the several mechanisms involved with wastewater renovation in marshland environments. Retention within the marsh was reduced from some 20 days to a measured two days.

The outlet weir was raised and retention increased to 8 days. The new water level is such that all plant litter is covered accelerating the substratum formation. Weir adjustments are checked every 3 months and retention confirmed with dye tracer testing.

Latest data returned from monitoring the treatment in March 1989 after **4** years operation indicates that a bacterial inactivation rate of 92 percent is currently being achieved in the marsh system.

Stem densities have been decreased by some 30 percent to leave commensurate areas of open water. Data returned from monitoring the open water sections will assist in future designs of similar systems.

Kohukohu Sewerage Scheme

This scheme which caters for a maximum design flow of 50 cubic metres per day represents the first true E.D.S. system in the Northland Regional Water Board area. By using existing septic tank systems, upgraded where necessary, the $B.O.D_5$ loading imposed on the community sewage treatment system has been reduced by at least 50 percent per capita.

Septic tank effluent is pumped into an oxidation pond for further treatment before passing into a constructed marsh system. Effluent from the marsh drains into a stone-filled trench where it eventually filters through an intertidal mudflat and enters the waters of Hokianga Harbour. The septic tanks function as a plug flow anaerobic reactor reducing B.O.D. as methane and hydrogen sulphide. As most of the initial biological degradation takes place in the septic tanks, the oxidation pond process is more maturation than facultative. Die-off of bacteria within the pond environment is as a result of the anaerobic pre-treatment of the order of 99 percent. Bacterial inactivation in the marsh system is low at the present state of stem numbers and growth, at 50 percent. The effect of the discharge through the stone trench system cannot be measured above background levels in the harbour waters. The scheme has not been in operation for more than 6 months so that results and comments must be viewed in perspective.

Taipa Sewerage Scheme

This scheme has been designed to cater for a wastewater flow of 850 cubic metres per day. The proposed treatment system involves aerated lagoons followed by a maturation pond. The "land disposal system" consists of a constructed marshland in the form of staged planted lagoons. Effluent leaving the marsh area will enter a farm drain some 500 metres long before draining into the Te Moho Stream and thence the Parapara River. This scheme has been delayed by hearings of the Waitangi Tribunal and lately the Town and Country Planning Tribunal which has yet to bring down a decision in the matter of land aquisition, so that the plant can be constructed.

Whatuwhiwhi Sewerage Scheme

This scheme has been designed and constructed *o* ater for 100 cubic metres per day of domestic sewage.

The sewage is treated in an aerated lagoon-oxidation pond designed to operate in either mode depending on the seasonal loading.

Discharge from this system is directed into a dispersion area in the Waimango Swamp, which is some 200 hectares in area. **A** study of plant species and possible effects on natural conditions has been instituted by the D.S.I.R. under the direction of Dr Jim Cooke. Surveys will be undertaken annually for the forseeable future, in order to gather relevant data.

Rangiputa Sewerage Scheme

This system which serves a small but expanding settlement at Rangiputa consists of two oxidation ponds connected in series which discharge to a bunded soakage area which in effect constitutes a third pond left unsealed to utilise the permeable soil for final effluent treatment and dispersion while allowing storage for seasonal peaks. The present hydraulic loading from 26 houses and a small motel is insufficient during fine weather to maintain water levels in the ponds. Evaporation during long dry spells can account for some 15 cubic metres per day. Until the input is greater than this, extra water must be added to ensure maximum treatment efficiency. The bunded soakage area is designed to be planted with scirpus validus sp which has a well developed ability to translocate oxygen to its rootzone. Soil moisture in this area is being maintained during dry weather by bypassing the second pond at weekly intervals. Lysimeters sunk within 10 metres of the soakage area to **a** depth of 2 metres have been sampled regularly since 1985. Bioassays of pond water and measurements

of dissolved oxygen and pH have all indicated that the system is operating well. Groundwater sampled from the lysimeters recorded bacterial levels consistently <10/100ml.

Ultimate development of all sections within the space of this plan could increase the hydraulic loading to greater than 100 cubic metres per day. At this stage final disposal of effluent in the marsh-cum-soakage area could become overloaded in terms of available area.

Meanwhile much valuable data is being collected in terms of the effects on soil conditions and plant physiology at this site.

Ahipara Sewerage Scheme

This scheme serves the township of Ahipara, a coastal settlement at the southern end of Ninety Mile Beach. The system has been designed to treat 160 cubic metres per day of domestic sewage. The sewage is treated in an aerated lagoon-cum-oxidation pond similar to that employed by the Whatuwhiwhi scheme. Effluent from this pond is pumped some 3km north to an area of marginal land where a marsh system has been constructed. The marsh has been constructed using a series of cells with a total available area of 0.5 hectares. A distribution system enables each cell to receive sufficient pond effluent to maintain plant growth until the scheme reaches its design hydraulic loading when cells will be connected in series. Water leaving the marsh system is piped to a sandy area in the catchment of the Wairoa Stream, which discharges across Ninety Mile Beach at Ahipara. However even at the design hydraulic load this water is extremely unlikely to ever reach the stream other than by way of groundwater. All evidence of the water from the marsh disappears within 100 metres of the site. The nearest part of the Wairoa Stream is at least 2km from the marsh area. Results from monitoring indicate bacterial removals well within a 90 percent corridor at all times.

Awanui Sewerage Scheme

This scheme serves the township of Awanui, some 10km north of Kaitaia. The hydraulic loading is calculated to be 150 cubic metres per day. The system is a combination of E.D.S. and conventional reticulation. The township was once served by several septic tanks with effluent reticulated to the Awanui River. Sewage is treated in an extended aeration activated sludge plant. Effluent from this plant discharges through a diffuser into the Awanui River. Although this system represented a major improvement in terms of river water quality the plant performance paralleled that of all plants of this type in that effluent quality was inconsistent, especially in terms of bacterial inactivation. Sand filtration was

mooted but discarded in favour of a constructed marsh system for tertiary treatment. The marsh is a high aspect ratio system involving two channels. A rootzone area provides the first contact treatment of effluent discharged from the treatment plant. This is followed by a surface flow channel planted at 0.5 metre spacings with scirpus validus sp. Water from this section then moves into a second rootzone area before discharge into the second open water channel where planting is at one metre spacings. Water leaving the constructed marsh discharges to a small area of Glyceria maxima growing on the river embankment where it filters into the river. Although plant growth is not yet established experience gained from the Tapeka Point marsh enabled us to accurately gauge likely effects on river water quality.

Houhora Sewerage Scheme

In 1975 two ponds were constructed to serve the camping ground at Houhora. Sandy country made it difficult to seal these ponds, despite attempts using Butynol liners.

It is now intended to upgrade this system to provide for further development in the area. The upgrading will be carried out using data gained from Rangiputa which is nearly a parallel situation in terms of hydraulic loads and site restrictions. The primary pond will be reconstructed as necessary and sealed as much as is practicable with imported clay material, The secondary pond area will be converted into a marsh system and left unsealed to allow natural infiltration of water to occur. The bunding as at Rangiputa will be retained to cater for seasonal hydraulic loadings.

Again water will need to be pumped into the system to offset any infiltration and evaporation losses until the primary pond eventually seals. A distribution system similar to Ahipara marsh will be necessary to foster plant growth in the low load periods.

Waitiki Landing Sewerage Scheme

This system was constructed to serve a tourist development in the far north. Domestic sewage from the chalets and restaurant facilities is initially treated in septic tanks. Septic tank effluent is pumped into a single oxidation pond which has at least 30 days retention at full load. Pond effluent drains into a small marsh constructed parallel with the oxidation pond. Water from the marsh discharges to a natural marshy area before it enters the Waitiki Stream. This system which can and does cater for fluctuating loads is also dependant on water level augmentation during dry weather under low hydraulic loading conditions. Lack of water is the only major drawback in the operation of marsh

systems. Plants, must be kept healthy in order to cope with loadings when they are imposed.

Te Kao Area School

This system serves 9 staff houses and the Te Kao Area School at Te Kao. Sewage is treated in an aerated tank to an activated sludge stage and pumped into a settling tank before discharging to a constructed marsh system for tertiary treatment.

This system was constructed prior to the Rawene scheme and the same initial error was made. Construction was on heavy pipe clay material with no plant growth potential. Raupo was used as the dominant species. Growth was prolific but again the plant roots had little chanced of establishing any hold in the clay. The performance has been within the 90 percent corridor bacterial inactivation at all times, despite windthrow damage to the raupo. After 5 years of operation a substantial substratum has developed. It is now intended in the light of data returned from monitoring to replant the final bay with scirpus validus sp.

Mechanisms Governing Performance of Wetland Treatment Systems and Examples of Their Application

Introduction.

Interest in the use of Wetlands for the treatmen of wastewater as a low cost, low technology, energy efficient Treatment alternative is rapidly increasing world wide.

There are currently 23 wetland systems operating in northland alone treating wastewater volumes ranging from 2 cubic metres to 2000 cubic metres per day. These systems offer an environmentall sensitive approach to todays sewage problems. In particular for New Zealand these systems go a long way towards recognition of the Maori statement on cultural and spiritual perceptions as they apply to water and pollution by human wastes. The philosoph behind their development is that of emulating and stimulating the stabilising processes naturally existing in the environment.

My research to date confirms the ability of these systems to achieve excellent standards of waste renovation especially in term of bacterial inactivation.

General Physiological Functions

Wetland systems, although considered by some to represent a low technology method of wastewater purification, are in fact very complex employing almost infinitely variable combinations of biological, physical and chemical processes in the process of renovation. Although the higher aquatic plants are the most obvious biological component of any wetland system, uptake of pollutants by wetland vegetation cannot on its own account for the high pollutant removal results recorded. Rather, the major mechanisms contributing to pollutant removal in any wetland system include both bacterial transformations and physico-chemical reactions including adsorption, precipitation and sedimentation in a similar manner to the basic functions of oxidation ponds.

However the emergent plants do play an important role in the purification of wastewater by wetland systems.

In particular the plant rhizome provides surfaces for bacterial growth as well as for the filtration of solids

More importantly plants translocate oxygen from the leaves, stems and shoots to the rhizosphere providing an essential link between the atmosphere and the limnosphere.

The rhizosphere or rootzone therefore forms an oxidised micro-environment in an otherwise anaerobic substrate which stimulates both the decomposition of organic matter and the growth of nitrifying bacteria which can convert ammonia-N to nitrate. The nitrate formed in this manner will then diffuse or percolate through to the oxygen deficient zones where it will be removed from the system by denitrification.

The fate of ammonia entering a modified natural wetland has been determined by assessing 10 years of data derived from monitoring the discharge from the Paihia sewerage scheme sewage treatment system in the Waitangi Forest. The mean concentration of (NO_3^- + NO_2^- N) entering the marsh was 0·38 mg/l. while water leaving the marsh system contained 0·05 mg/l.

Such low (NO_3^- + NO_2^- = N) levels indicate that nearly all the ammonia-N nitrified in this wetland must have been subsequently denitrified and lost from the system as gaseous N_2 or N_2O.

Unlike oxidation ponds waters flowing through wetlands have a pH below but near to neutrality therefore any significant losses by volatilisation would not be likely. Bacterial inactivation remained consistently within a 98 percent corridor

Mechanics of Bacterial Removal

1. Light induced mortality.

It can be demonstrated that in aquatic environments light - "UV spectrum" is responsible for the rapid die off of bacteria.

Light penetration in an oxidation pond is limited by algae to the top 10 - 15 cm and as adequate shade is available to bacteria adsorbed onto the algae die off from this cause is usually negligible in terms of the total bacterial population.

However in a surface flow marsh environment where algal growth is much less and depths are rarely > 50 cm, bacterial colonies are more evenly distributed through the water column and a proportionate light induced mortality can be expected.

2. pH induced mortality

Mortality in an oxidation pond is also partly due to high pH levels during intense photosyntheses. However this will not normally occur in marshland systems where pH levels tend to be < 7 with very low levels of chlorophyll-a.

3. Starvation induced mortality

A marshland tends to remove any algae present by adsorption onto emergent stems and general filtration in the substrate. Bacterial adsorption onto the emergent stems and the rhizomes fosters maximum predatory activity because of bacterial availability. Nutrients immediately available in the vicinity of the bacterial colonies is limited inhibiting the growth rate. It has also been demonstrated by workes overseas that some of the emergent species have the ability to inactivate E. coli and Enterococci by alteration of the complex microflora in the rhizosphere producing toxins fatal to these bacteria.

Effects of Mixing and Maintenance of Plug Flow

Due to low dilution rates the advective contribution to mixing in a constructed marsh system is not significant.

It is the emergent stems and the density in a surface flow wetland that is chiefly responsible for mixing and maintaining a plug flow regime.

In a subsurface wetland the substrate material and the thick network of roots ensure plug flow and maximum contact with the bacterial colonies which will form on the media.

As the effluent moves slowly over the bacterial films soluble organics diffuse in ... are bacterially oxidised and the stable waste products diffuse out.

Plants diffuse oxygen through the aerenchyma to the submerged roots creating a micro environment for aerobic and facultative anaerobic micro-organisms. This process has limited significance for natural and surface flow wetlands since their rootzones, although saturated, are not in direct contact with the general flow of organic matter. However this process contributes the main oxygen source for the subsurface wetland as the total water surface is confined to the bed.

Retention Times in Wetland Systems

Detention time has a significant effect on treatment performance. Surface flow wetlands require a minimum retention of 7 days when required to treat secondary effluent from either a mechanical activated sludge plant or oxidation pond. Note: remarks in the status report for the Rawene system enclosed. A rootzone cum stone filter has been installed in one of the marsh sections to allow measurement of bacterial reduction by this method. Retention within this zone is estimated from dye tracer tests to be 4 hours.

faecal coliform colonies / 100 ml from 5 tests.

Influent	3000,	1850,	600,	2500	1300.	- geo average	1610
After R.Z.	1000	620	500	850	680		709.
						% red	56

Tapeka Point - Report enclosed indicates the effect of an upward flow rootzone regime. Rootzone retention is 3.2 hours at peak flows using 0.7 voids r % red 90

Kaikohe Sewerage Scheme.

Note comments on this system with respect to

bacterial inactivation.

Awanui Sewerage Scheme.

The rootzone system placed at the head of this marsh has an average retention of 4 hours using 0.5 voids r.
Influent from A.S. Plant

5 tests. faecal coliform colonies / 100 ml.

	130,000	50,000	75,000	112,000	62,000 - log average	80522
After RZ	26,000	12,500	24,000	16,800	6,200	15204
Marsh outlet	1300	375	480	672	496	600

RZ. % red 81

Systems designed and construction / monitoring supervised when with N R Ccl. - marsh systems.

Kaikohe
Kawakawa
Tapeka Pond
Rawene - modifications only
Rangiputa
Ahipara
Awanui
Houhora
Waitiki landing.
Te Kao School total modification since "retiring"
Pakiri Surfside Lodge system designed and constructed 1969. Totally revamped mechanically and electrically 1988 Marsh system as originally constructed.

6 . 2

Proposed Brynderwyn System

Marsh - rootzone System

				Days
2 (7m x 3m x 0.6)	0.7 vr	17.64 m^3	r	3.92
	0.6	15.12	r	3.36
	0.5	12.60	r	2.80
	0.4	10.08	r	2.24

Mounded Dispersal Trench

Gravel bed	(10 x 2 x 0.3) 0.5	=	3 m^3
Mound	(10 x 2 x 0.3) 0.2	=	1.2 m^3
	Total V	= 4.2	= 0.93 days

∴ Minimum r = 3.2 days

Area available for extensions - 1500 m^2

Periphery of mound = 28 lineal metres.
= 6.22 lineal metres / m^3 / day
= 160.7 litres / lineal metre / day.
= 6.7 litres / l m / hr
= 0.112 = 112 ml / minute / lineal metre

Soakage below mound @ 1 ml / hr = 0.48 m^3 / day.
∴ escape from edge of mound = 0.52 x 112 ml / mm
" " " " = 58.24 ml / mm / metre

By deepening each RZ to 1 m

r @ 0.4 vR	=	3.73 days
0.5	=	4.66 days

Voids measurements were carried out by placing 65/40 clean gravel in a 1 cubic ft capacity glass tank filled with water. Displaced water measured 19.7 litres. This was carried out 5 times with different metal samples from the same grading and checked out within ± 15 % which at the lower range equates to 0.6

Root zone - Fundamentals of Design

As stated in the section "General Physiological Functions" the function of a root zone wetland is dependant upon several factors to facilitate the purification process as a whole. One of these factors includes bacterial transformation by microbiological colonies established by adsorption onto media. This part of the process can be likened to contact stabilisation by A.B.C., Trickling filters etc. When the media is considered in terms of a high rate recirculating trickling filter the following comparisons can be made :-

A Trickling filter with single recirculation will handle 5.76 m^3 effluent per m^2 of media surface per day. A system such as this can cause bacterial inactivation of some 60%.

In this particular design each rootzone using 0.5 voids contains 65/40 clean hard metal with a total surface area of 740 m^2. Influent at the rate of 4.5 m^3 day equates to 6 litres / m^2 of media surface. With a retention in each cell of 1.4 days this is equivalent to 4.34 litres / m^2 of media surface per day. On the basis of 60% inactivation during a single recirculation through a trickling filter at a rate of 5.76 m^3/m^2 media surface the reaction rate within a rootzone system could reasonably be considered as 1000 fold all other factors being equal. In this particular case using two cells of the same dimensions in series will bring the contact volume per m^2 of media down to 2.2 litres doubling the effective bacterial transformation effect by microbial colonies. When the plants are established the effective contact area will be substantially increased with the added bonus of direct translocation of O^2 from the atmosphere to the lemnosphere.

Discharge to ground by way of a small mound system with central gravel bed will also result in an initial contact area of > 300 m^2. Effluent leaving the gravel bed will travel at least 1 metre through imported topsoil before leaving the mound with further bacterial inactivation taking place.

It has been well documented in the literature by many researchers, studying the occurrence of faecal pollution indicator bacteria in the immediate soil environments of septic tank and other ground disposal systems that bacterial inactivation is dependant on contact time and soil type.

All authors suggest that, provided there is sufficient depth of suitable unsaturated soil between the point of effluent input and the water table, the numbers of faecal coliform bacteria decline significantly with depth - distance. It was suggested that a minimum depth - distance from the unsaturated zone is 0·90 metres. However it is difficult to generalise because soil type and topography are important. In a mound system the soil type can be optimised by importation and mixing. For this reason lysimeters should always be installed downstream from any ground disposal system to further existing knowledge in this regard

References

1. Fenner F. "Microbiological Pollution of groundwater 1979"

2. Gloyna. Earnest F. - Theoretical Concentrations of faecal bacteria in single pond, series of ponds and river conditions. (World Health Organisation Geneva 1971)

3 Ministry of Works and Development - "Intermittent Biological Sand Filters for waste water treatment". GDP906A 1982

4. Parker Carbon and Grubb - "Coliform Bacteria in Sands of soils beneath septic tank sites" 1979 Perth, Western Australia

Mr Ian Gunn
Dept of Civil Eng
University of Auckland
Private Bag
Auckland.

5/2/4

re Bay Design Service Station.

Refer to our telephone conversation 1/7/91.

Would you please peruse the attached calculations with regard to the size of the root zone mound and its suitability for treatment of effluent assuming the capillary field is by passed i.e. the mound is taking effluent direct from the septic tank.

My calculations show a retention period of 2.3 days for 2 mound beds (Mr Parker has confused voids ratio with porosity) - Is this sufficient age for the working bed?

Further, I would like to see the septic tanks in parallel to slow down velocity through the tank.

Your comments would be appreciated.

KAIPARA DISTRICT COUNCIL

BAG.

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PAPAROA
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REFER Mr Pritchard

FILE REF

6 May 1991

To URM

Mr Len Parker
7 Hunt Street
WHANGAREI

Mr Parker 4365791
4352491

Dear Sir

RE JELICICH BRYNDERWYN TEAROOMS WASTE WATER DISPOSAL PROBLEM

I refer to our meeting on Friday, 3 May, during which we discussed your application for a permit and your calculations and plans that were submitted.

In order to assist, we have listed below items that were agreed to and mentioned during our discussions.

1. The input to the system for a design basis is agreed at $4m^3$ per day.

2. The existing septic tank size is to be confirmed and a detention tank of $4m^3$ capacity is to be installed ahead of the existing septic tank.

3. The calculated storage capacity of the existing bed is to be reduced.

4. Calculations are required to show that the pump chamber will receive a minimum of $4m^3$ per day.

5. An operation manual is required to identify the operation of valves.

6. A bypass line is required from the septic tank outlet to the pump chamber.

7. Scour velocities are to be checked in all of the pipelines.

8. Provision must be made for resting beds and for storage.

In addition, before commissioning the project, we will require written confirmation of :

1. Transit New Zealand approval of any work in the State Highway.

2. A gatisfactory easement endorsement on the land of all works outside Mr Jelicich's title (please denote title boundaries On your plans).

3. Written approval for effluent discharge off site from the Northland Health Board.

.../2...

1) Because of the possibility of settlement affecting flat grades and silting / growth inside pipes in the existing soakage / capillary field, this area should be disregarded and a bypass line installed.

2) To slow down the velocity through the septic tanks they should be constructed in parallel and not series. The existing tank will have to be relocated.

3) Re alkaline EDS pipeline velocity could be as low as 0.06 m/sec

4) Root zone system calcs require 2 areas 7m x 3m but plan shows 1 only. No rationale used.

Voids ratio = 0.7 porosity = $\frac{e}{1+e} = \frac{0.7}{1.7} = 0.41$

∴ retained volume = $2 \times (7 \times 3 \times 0.6 \times 0.41) = \underline{10.3\ m^3}$

∴ retention = $\frac{10.3}{4.56} = 2.3$ days for 2 cells

require more rational calculation

Note only one Room on plan.

5) Management manual required and a nominated waste water operator class B.

6) Alkathene effluent pipe - velocity of 1.25 m/sec can only be attained by dosing

$$vel = \frac{flow}{CSA} = \frac{1 \times 10^{-7}}{0.8 \times 10^{-3}} = 1.25 \text{ m/sec}$$

but at average flow of 4.5 m^3/day

$$vel = \frac{4.5}{24 \times 60} \times \frac{1000 \times 1000}{} \times \frac{1}{0.8 \times 10^{-3}} = 3.75 \text{ mm/-}$$

$$= 0.06 \text{ m/sec}$$

7) No calculations on flow through soil from capillary tube outlet to 5 cm H.

8) Equivalent EP bed @ $3m^2$/person = $100 m^2$ min
design provides for $7m \times 3m \times 2$ = $42 m^2$

9) Test area to be provided

10) Establishment time 2yrs to grow plants

KAIPARA DISTRICT COUNCIL

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FROM Bevan Pritchard

TO Colin Ashby Port O & S

COMPANY

FAX NO

JOB

DATE 28/6/91 NO OF PAGES (including this) 18

Please pass the message to the person designated immediately.

If pages are missing or not clear, please telephone sender.

MESSAGE

Mr. Parkes sales.

BRYNDERWYN CALCULATIONS AND OPERATIONAL METHODOLOGY

Levels and Related Storage in Existing Subsurface Irrigation System and Superimposed Aerobic Capilliary Field

Invert of existing septic tank outlet		100.00
Ground level at boundary wall		100.30
Capilliary field invert at wall		100.05
Capilliary field invert at driveway end		99.97
Length of 100 Ø capilliary pipes	10 metres	
Gradient from wall to driveway end	1 : 125	

Storage in Capilliary and Existing Subsurface Irrigation Fields

When the capilliary field pipes are 0.33 d the septic tank outlet will be at 0.34 d (insignificant difference).

Depth of capilliary field pipes from surface = 0.29 m

Maximum storage in capilliary field = ($75\ m^2$ x 0.381) 0.2 voids
= $5.715\ m^3$

... storage volume to capilliary field invert
= $75\ m^2$ (0.381 - 0.29) 0.2
= $1.365\ m^3$

... When the septic tank outlet is at normal flow level 0.34 d total field storage is $1.365\ m^3$ or 80 percent less than the $5.715\ m^3$ available retention.

Seepage Collection Manhole S.C.M.H.

Ground level	100.48
Invert	98.50
Depth from surface	1.98 m
Depth from capilliary field invert	1.51 m
Storage in S.C.M.H. at capilliary field invert = $\frac{\pi D^2}{4}$ x 1.51 d	
=	$1.186\ m^3$
∴ Total storage volume in field and S.C.M.H. =	$2.551\ m^3$

Capilliary Field Layout and Function

The capilliary field consists of 5 x 100mm diameter parallel interceptors laid in imported topsoil and sand overlaying the existing unsatisfactory subsurface irrigation field.

The interceptors are constructed of drain coil 10 metres in length laid parallel at 2 metre spacings 300mm deep at a grade of 1 : 125.

Effluent from the septic tank is directed into the lower anaerobic field and the first of the surface parallel interceptors. Some soakage occurs in the lower field but the excess fluid rises through the sandy loam soil where it receives further treatment by microbial activity. Effluent flowing from the septic tank into the first surface interceptor is distributed across the aerobic soil zone from the openings in the drain coil into each of the four remaining parallel interceptors. To ensure this takes place despite variations in soil moisture the parallel interceptors are interconnected by 50mm diameter grid interceptors drilled at intervals with 6mm Ø holes designed to distribute the fluid uniformly over the active soil interface. The fluid level in the field is controlled by two of the parallel interceptors which are directly connected to a seepage control manhole surrounded by a stone filter section at the edge of the field.

marked

Capilliary Field Transfer to Seepage Collection MH

Transfer across the capilliary field is achieved through 2 of the 5 100mm diameter parallel interceptors which are directly connected to the S.C.M.H. stone filter system. The 3 remaining 100mm diameter parallel interceptors which form the capilliary field are interconnected to the directly connected interceptors by 50mm diameter grid interceptors.

Really!!

Using Mannings equation derived nomographs the rate of flow in a 100mm diameter pipeline at a gradient of 1 : 125 1/3 full is 1 l/sec.

The 50mm diameter grid interceptors at a gradient of 1:500 at 2/3 D can transfer water at 0.2 l/sec across the capilliary field into the 2 100mm diameter parallel interceptors which are directly connected to the S.C.M.H. stone filter system.

Because the 100mm diameter interceptors are constructed from drain coil a conservative value of 0.1 l/sec has been adopted as a realistic continuous transfer rate from the capilliary field for the period when the interceptors are 1/3 full at which time the total field storage will be 1.365 m^3. A transfer rate of 0.1 l/sec gives a transfer capability of 4.32 m^3 during the 12 hour period of maximum loading.

Applying data published in the Trickle Irrigation Design Manual published by the New Zealand Agricultural Engineering Institute, the wetting pattern for the imported sandy loam soil has been calculated and verified by field tests. The wetted area diameter when the total discharge is 4 m^3/day is of the order of 2.5m with a fluid penetration of 0.6m.

The volume of interstitial fluid at saturation and 0.2 voids ratio is 1.365 m^3 to 1/3 interceptor depth. All fluid in excess of this quantity will move directly through the interceptors into the S.C.M.H. stone filter system.

The percolation rate measured over the capilliary field is 30mm/hour. Using a zone of direct influence covered by the individual 100mm diameter interceptors of 0.6m the area of collection neglecting advection from the intermediate areas between the interceptors is 30 m^2. The volume of interstitial fluid at this point directly available to the interceptors is 0.55 m^3 which will be transferred from the field in 10 hours leaving 0.82 m^3 in the lower field area or the equivalent of 150mm water depth at the base of the capilliary field prior to the next loading sequence.

Transfer Pipeline System to Tertiary Treatment

The seepage collection manhole has a storage capacity of 1.186 m^3 when the fluid in the capilliary field is at the invert of the capilliary interceptors. The gravity transfer pipeline is to be constructed from 32mm diameter alkathene and will be 170 metres long. The line will be laid in the road berm at a depth of 500mm according to Transit New Zealand requirements. Invert level of S.C.M.H. is 98.50. Ground level at the rootzone location is 95.13 with the final dispersion area at 94.0. A reserve area for possible extension is at 93.60.

The gradient of the gravity line is 1:50 overall. However the topography of the ground is such that there will be an undervertical section in the pipeline where it crosses the berm drain and rises to the plateau where the rootzone system is to be located.

There will therefore be a fill and draw cyclic action governing the discharge from the S.C.M.H. each time the manhole drains leaving the undervertical section full under static loading conditions. This situation will occur during low loading periods at night and possibly during off season periods.

However flow will restart automatically as the gravity line fills above the level of equilibrium and continue at rates commensurate with loading applied to the S.C.M.H.

The velocity of water in the gravity line will vary according to the hydraulic loading and could at times be lower than the desired scour velocity of 0.6m/sec. In order to counter any adverse effects on pipeline efficiency which may arise because of the periods of low velocity a valve will be fitted at the head of the line which will allow water to be retained in the S.C.M.H. to a depth of 1 metre which when released will effectively scour the line. At this depth the capilliary field water will be 0.5 metres below the septic tank invert. A gravity bypass will be fitted to allow for the possibility of operating errors when the scour routine is carried out.

Rootzone Wetland System.

The rootzone wetland system has been designed using criteria developed from data recorded from the results of water quality analyses carried out during the past 10 years at existing systems throughout Northland.

Hydraulic loading has been calculated on the basis of 8 bus loads of 35 persons per day using the stop over facilities. A bus equivalent has been estimated using a water use of 16 litres/capita = 0.56 m^3/unit. = 4.5 m^3/day.

Stormwater runoff from the site has been taken as 60% of total precipitation through redirection. Rainfall values were calculated on the basis of rainfall records for the period 1986-1990 at Brynderwyn site No 640436 - Map reference Q8: 382-719.

Although some percolation into the ground is occurring from the remnant of the original soakage field this has not been taken into consideration for design purposes. The geometric average hydraulic loading on the system assuming 8 bus loads each day is 138.64 cubic metres per month or 4.56 m^3/d.

The rootzone system will consist of 2 cells in series rather than a single cell which methodology increases efficiency in terms of basic losses from 60% to 84%. Each cell is to be 7 x 3 x 0.6 m

The media in each zone will promote a voids ratio of 0.7 giving an effective retained volume of 1.89 m^3 8.82 m^3 with a retention at a continuous loading of 4.56 m^3/d of 1.93 days for each cell. The two cells in series will provide a minimum retention of 3.86 days. Water discharging from the second zone is to be directed into a shallow gravel filled trench 10 metres long and 2 metres wide with a depth of 0.3 metres. The gravel will be covered by a layer of geotextile material and superimposed by a mound of soil 300 deep and 4 metres wide. Some percolation will occur through the base and sidewalls of the trench but the main discharge will pass through the soil mound and flow overland into the existing stormwater drain which passes through a naturally swampy area before leaving the property by way of the road

culvert. Retention in the final trench mound system will be 24 hours at the maximum design loading of 4.5 m^3/d.

Hydraulic Retention through the system
Assuming no losses through percolation or transpiration

Loading 8 bus equivalents / day = 4.5 m^3

		Hours	
Septic Tanks.	2 x 4.5 m^3 capacity	48	
Capilliary field		12	0
Stage 1 Rootzone		46	27
Stage 2 Rootzone		46	27
Trench Mound System		24	13
	Total Hours	176	67
	Days	7.3	2.8

Note

Observations during an average trading week indicated that the following loading pattern could be expected.
6 buses can be expected for 30 percent, 8 buses for 30 percent and 4 buses for 40 percent of any one week period. Should this loading pattern remain consistant the design loading would be reduced by 30 percent increasing hydraulic retention to 9.5 days.

Background Bacterial Levels

Bacterial levels in the drain, derived from 5 samples taken over a 3 hour period returned values of 1500, 1360, 2250, 900 and 3,800 faecal coliform colonies / 100 ml. The geometric average of these values is 1734 faecal coliform colonies / 100 ml which is consistent with rural land use in the area. A further monitoring series will be carried out during construction prior to commissioning the system to establish a baseline for future performance monitoring.
I have no doubt that one of the main conditions placed on any water right granted by the Northland Regional Council in respect of this system will involve faecal coliform levels related to insitu levels.

Projected System Performance in terms of Bacterial Inactivation

		faecal coliform colonies/100 ml
Septic Tank Effluent		2×10^6
Capilliary feild - Seepage Control.	80%	400,000
Rootzone Cell N° 1.	90%	40,000
Rootzone Cell N° 2	95%	2,000
Seepage Trench and Mound	80%	400
Back ground level		1734.

Operational Methodology.

Capilliary Feild

The capilliary feild has been extensively planted above the parallel interceptors to foster transpiration and microbial activity in the rootzone area. This will preserve the advection and dispersion conductivity maintaining controlled seepage to the level control manhole. This section should require no maintenance other than gardening.

Rootzones and Seepage trench mound

These sections will be planted with schoenoplectus lacustris which will develop the rootzone regime. Again maintenance should be confined to weeding on a monthly basis. It is essential to keep the media free of weeds.

Transfer Pipeline System and Seepage Control Manhole

The gravity pipeline will require regular monthly inspections to ensure the line integrity. Daily inspection of the level of water in the S.C. MH must be carried out during the commissioning period The level of water in the manhole must not rise higher than 1.5 m from the invert. This is the capilliary feild irrigation

network invert. If the water does not recede to invert under no load conditions within a period of 25 to 30 minutes the following procedures must be carried out.

1. Check the discharge valve - it must be fully open.

2. Inspect the inlet control chamber at rootzone 1 and note the flow from the gravity main. If the rate of flow is slow or non existant despite the fact that the water level in the SCMH is above the invert the line could be airlocked or blocked.

3. In the event of the above problem, close the discharge valve, remove the cap from the standpipe and flush with fresh water. Do not, under any circumstances use a hose directly connected to the domestic water supply. Observe the flow into the rootzone inlet chamber and cease flushing when flow is established. Replace the standpipe cap and open the SCMH discharge valve. The manhole should drain in 25 to 30 minutes depending on the loading at the time.

4. In order to avoid any sludge or slime build up in the under vertical section of the gravity line the above flushing procedure must be carried out at least on a monthly basis.

Note: Should operational experience so indicate an auto flushing system using a rainwater supply tank can be fitted and arranged to flush during off loading periods at night

Derivation formula. Total Static Head.

length in 100 metres viz 170 m = x 1·7

1·51 + 3·37 = 4·88

Effective head = Static head − Head loss.

head loss = 2·87 x 1·7 = 4·879.

∴ flow rate will be 1·0 l/sec.

reducing h by 0·1 m = 4·78 / 1·7

= 2·81 m

Invert chamber = 99.00

Root zone = 95·17

3·87

Surcharge 1·5

5·37 max head

L = 170 m

∴ Head loss m/100 m = $\frac{5.37}{1.7}$ = 3.16

= 1 lt/sec = 1·25 m²/sec

= 86 m³/day !!

If line dosed eg by auto syphon or pump then velocity of 1 l/sec or greater could be attained.

99.0

Status of gravity main flow from SCMH invert ~~98.5~~

Static head - friction head - m	Discharge l/sec.	Velocity m/sec	Volume litres	Time minutes
0.00 = 98.5 = 3.37m.	1 metre head intervals 1:50			
1.98	0.65	0.81	-	-
1.39	0.64	0.80	40	0.83
0.80	0.45	0.56	40	1.19
0.22	0.24	0.30	40	2.22
0.10	0.15	0.19	16	1.40

98.5
95.13
3.37

99.0
95.13
3.87

Total t minutes to empty the gravity line assuming load ceases.
= 5.64 minutes

S.C.M.H. refilling at 6 bus equivalents in 3 hour period = 0.19 l/sec
= 64.3 litres = 80.37 metres pipe length full.

Elapsed time for total S.C.MH drainage = 25.26 minutes.

S.C. MH refilling at 6 bus equiv = 287.9 litres
= 359.9 metres pipe length full.

Gravity line capacity = 170 m x 0.8 litres = 136 litres.

∴ S.C.M.H contains 288.2 litres

D in SCMH = 0.37 m. = 1.14 m below capillary field invert.

Flow rate and velocity prediction 32 mm dia gravity line at 0.1 m intervals

1.51 metres water depth in S.C MH = capilliary field and septic tank outlet invert level. Total Static Head 4.88 m gravity line 170 metres long. gradient 1:50

S.C. Manhole Water depth - m.	Static H - Friction H. m (4.88 / 1.70)	Discharge l/sec.	Velocity m/sec	Volume litres	Time minutes
1.51	2.87	0.96	1.2		
1.41	2.80	0.92	1.15	78.54	1.42
1.31	2.75	0.90	1.12	78.54	1.45
1.21	2.69	6.88	1.10	78.54	1.49
1.11	2.63	0.86	1.07	78.54	1.52
1.01	2.58	0.84	1.05	78.54	1.56
0.91	2.52	0.82	1.02	78.54	1.60
0.81	2.46	0.80	1.00	78.54	1.64
0.71	2.40	0.79	0.98	78.54	1.66
0.61	2.34	0.77	0.96	78.54	1.70
0.51	2.28	0.75	0.94	78.54	1.74
0.41	2.22	0.73	0.91	78.54	1.79
0.31	2.16	0.11	0.89	78.54	1.84
0.21	2.10	0.69	0.86	78.54	1.89
0.11	2.05	0.67	0.84	78.54	1.95
0.00	1.98	0.65	0.81	78.54	2.01

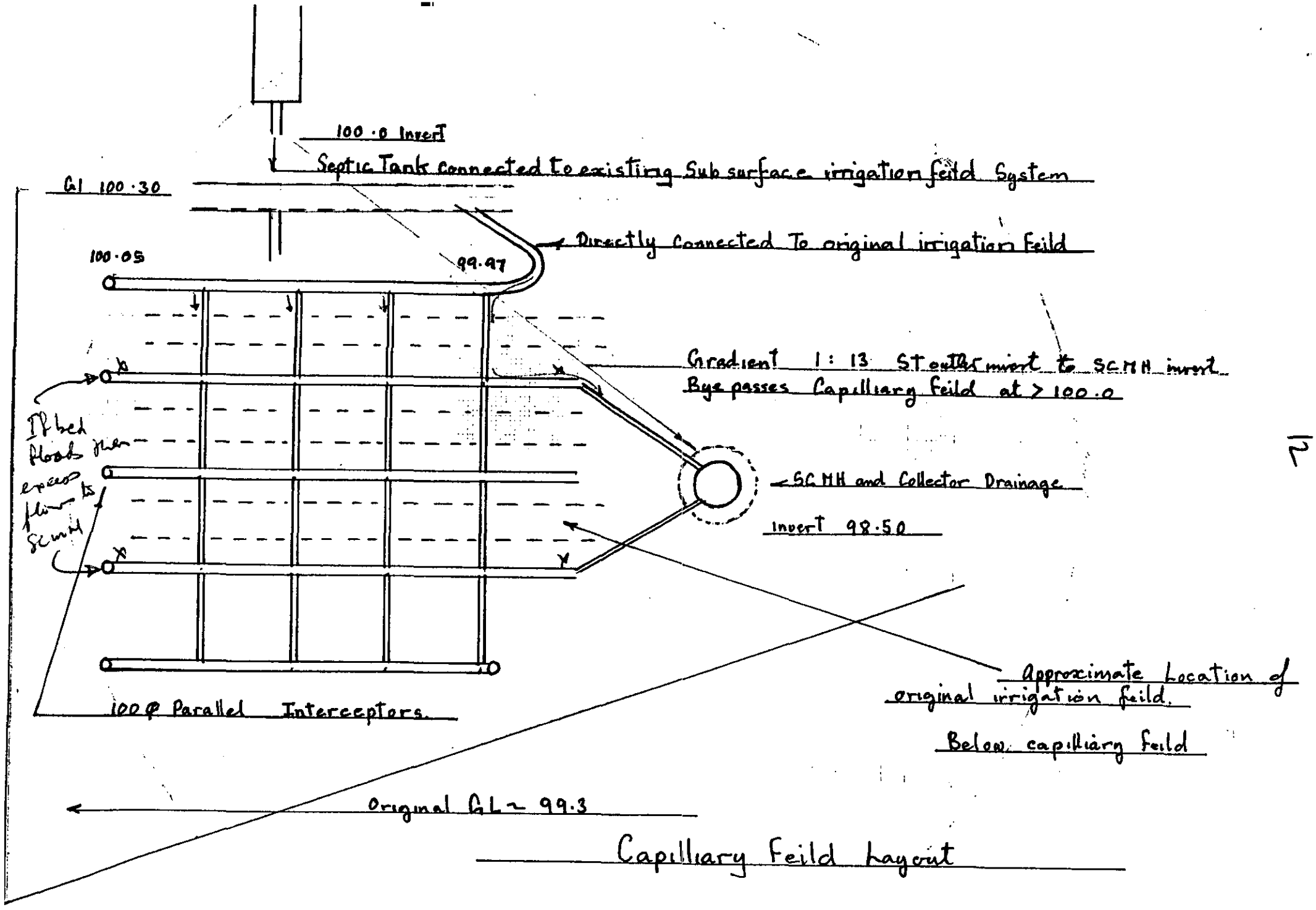
Invert S.C.MH 98.5 (99) = 3.37 m Static Head.

Geometric average	Discharge l/sec.	Velocity m/sec	Time - minutes
	0.79 l/sec.	0.98 m/sec.	1.67

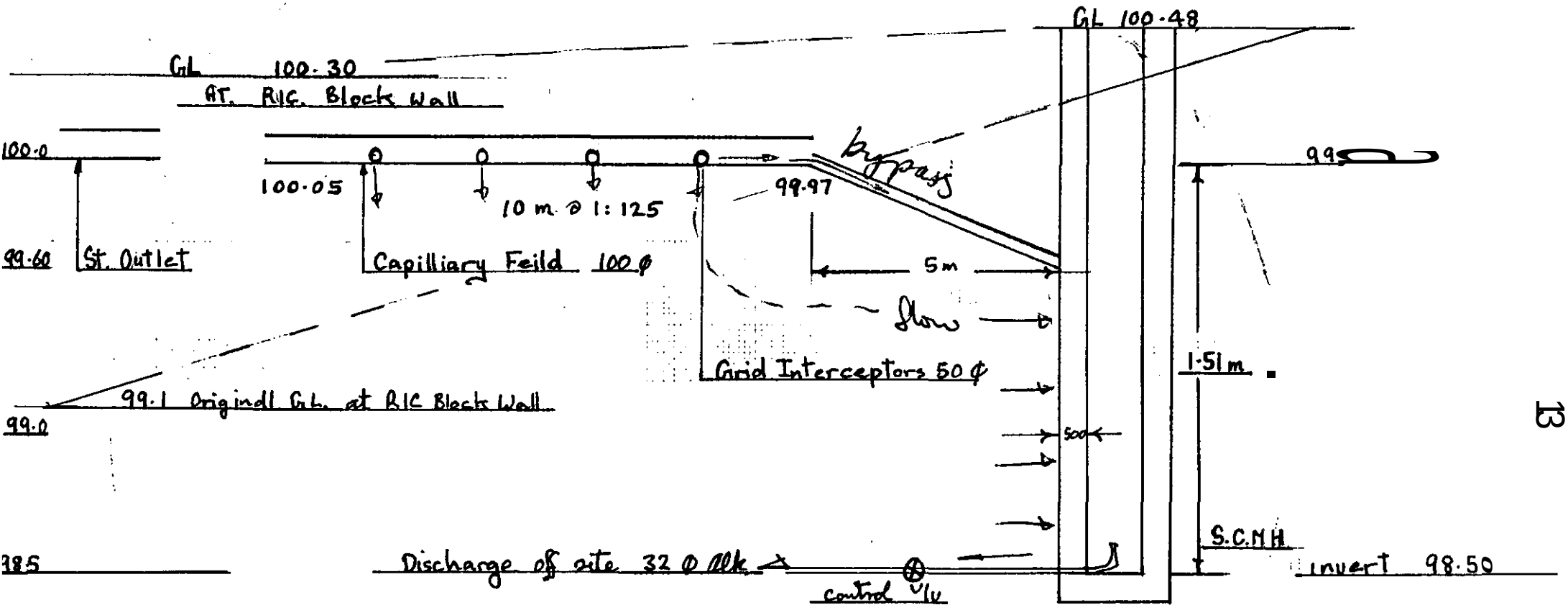
Time required to reduce water level from 1.51 m to 0.00 invert level 98.5 = 25.28 minutes 0.78 l/second

Cost Estimate of Extensions for permit

4.5 m^3 Septic tank in place			2000.00
Rootzone metal	26 m^3	@ 50.00	1300.00
Mound dispersal	6 m^3	@ 50.00	300.00
Gravity line 32 mm ϕ alkathene	170 m	@ 12.00	2040.00
S.C.M.H and stone surround.			1250.00
Valve chamber and fittings			750.00
Dig and form RZ and dispersal mound			1000.00
Planting RZ			300.00
Fencing area			500.00
Total			$9,440.00



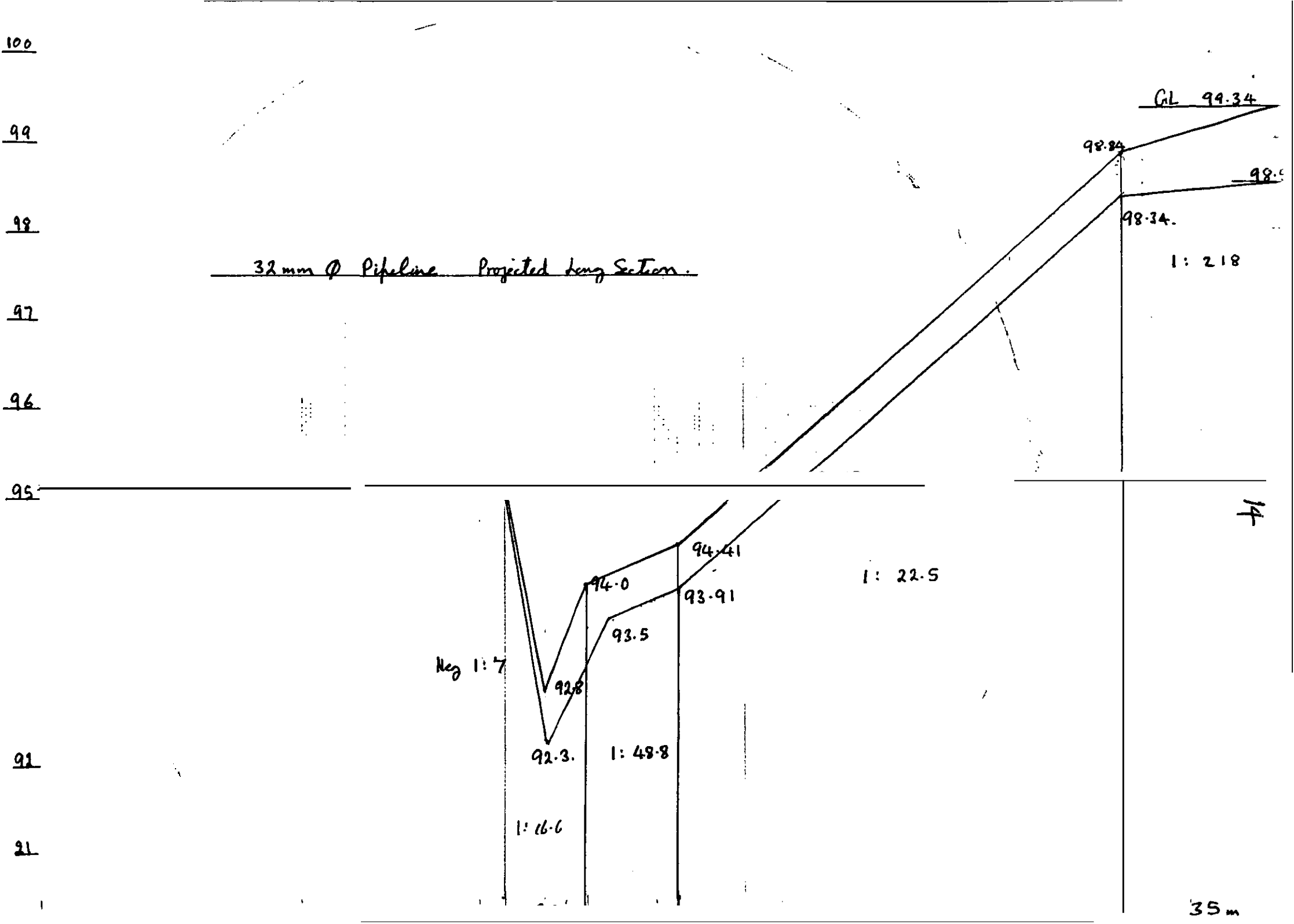
Capilliary Feild Layout



Seepage Control MH Porous and surrounded by Drainage Metal.

Capilliary feild is Bye passed at level > 100 - Gradient 1:13

Relative levels Through The System on Lot 2 DP 113162


100
99
98
97
96
95
91
21
32 mm ϕ Pipeline Projected long Section.
GL 99.34
98.84
98.34.
1 : 218
14
94.41
94.0
93.91
93.5
1 : 22.5
Neg 1 : 7
92.8
92.3.
1 : 48.8
1 : 16.6
35 m

100

99

98

97

96

95

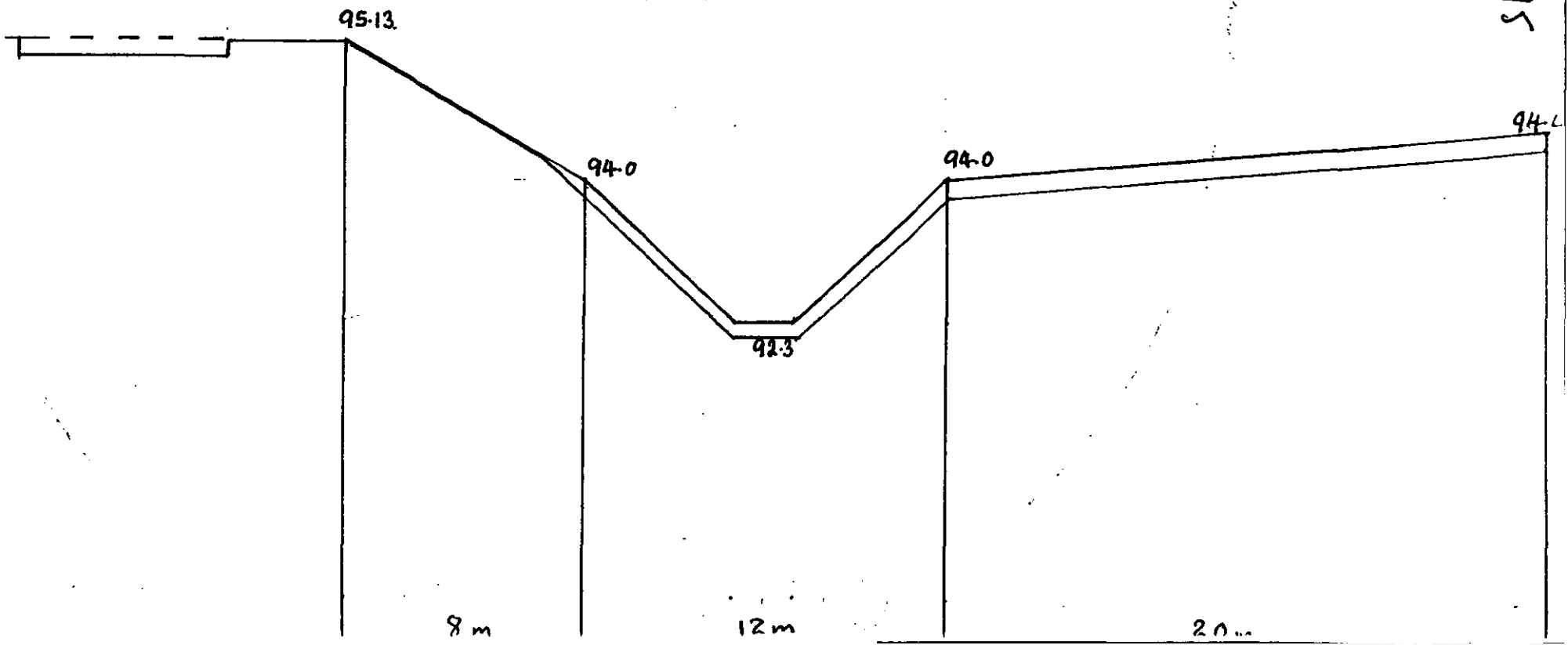
94

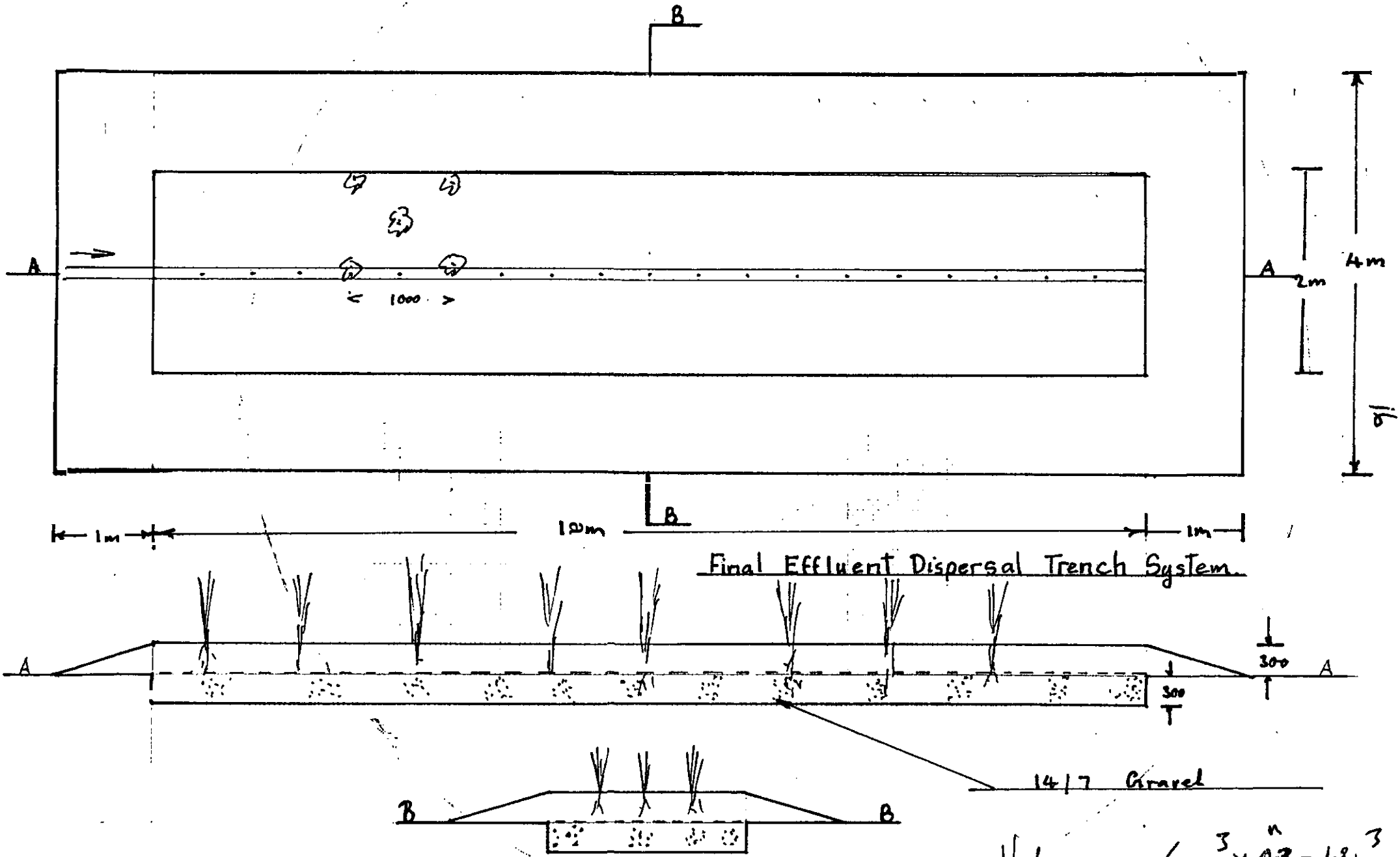
93

92

91

Drain Crossing Detail



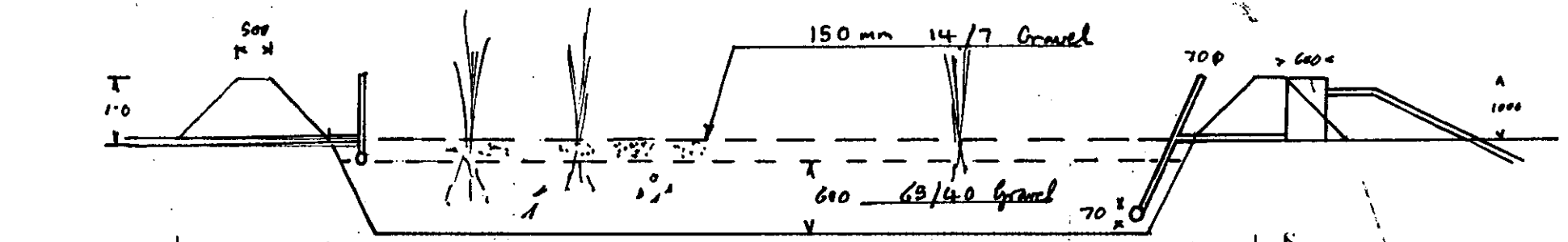


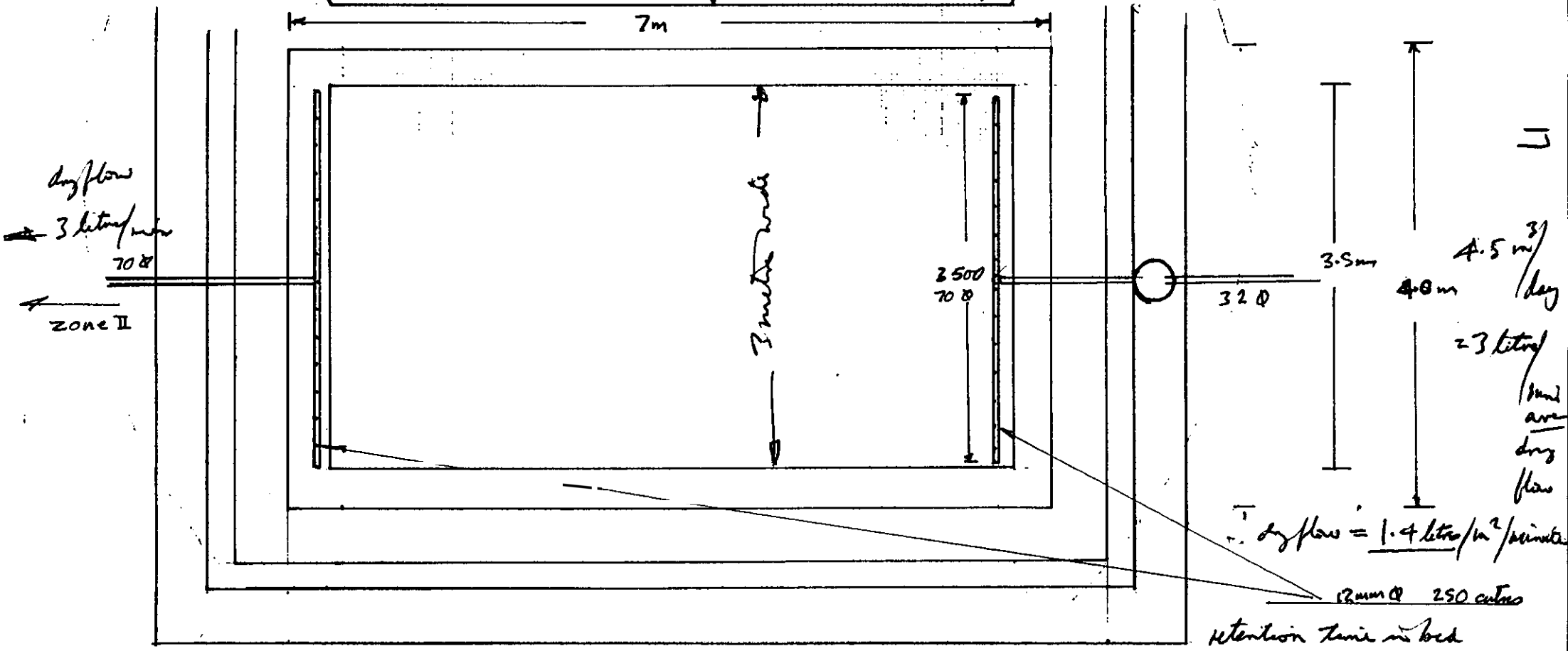
Volume = $6m^3 \times 0.3 = 1.8m^3$

Seepage rate = $\frac{1.5}{\text{1 day}}$ / day = 10 mm / hr

Rootzone Wetland Zone (1)

Schoenoplectus Validus sp. 5 / m²

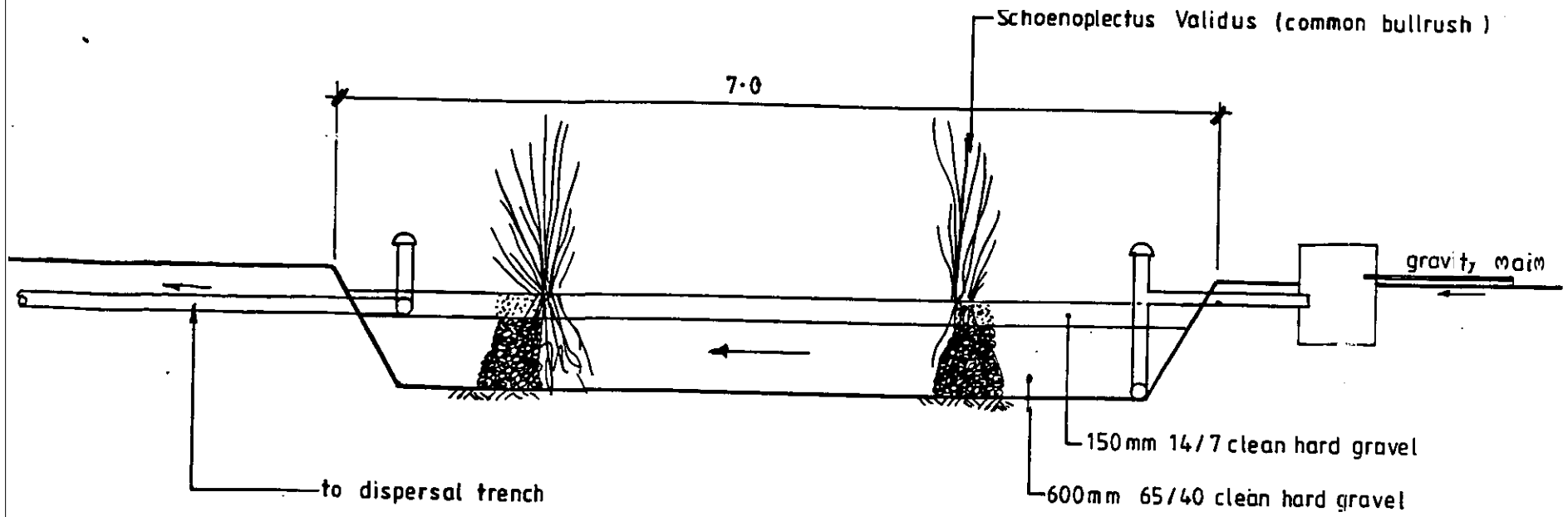




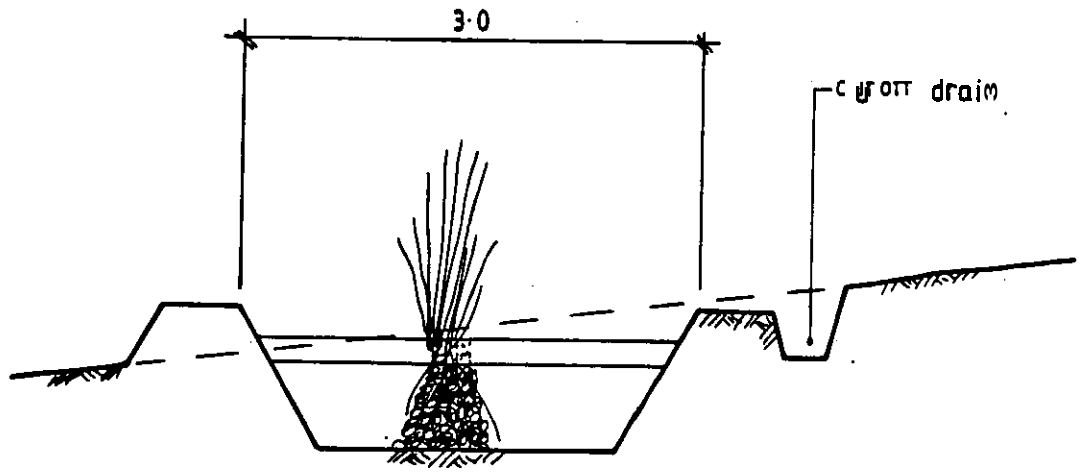
∴ dry flow = 1.4 litres/m²/minute

Velocity = .0014 m/min + 1/3 = 0.005

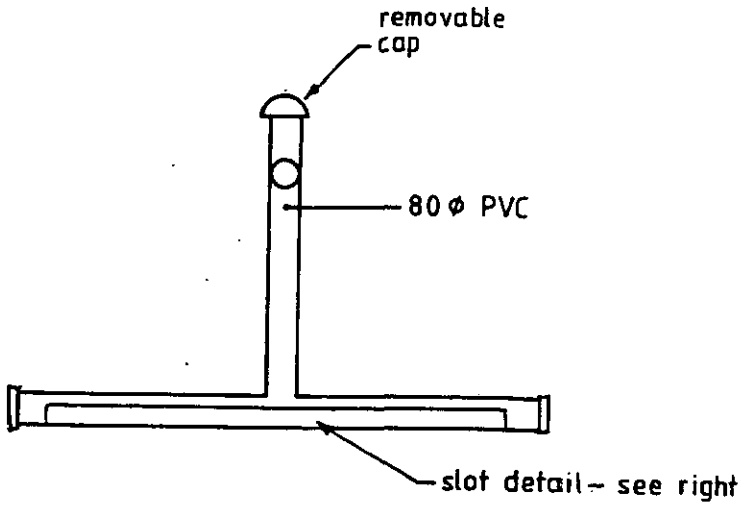
Retention time in bed $\frac{7 \times 3 \times 0.6 \times .3}{4.5} = 0.84$ days



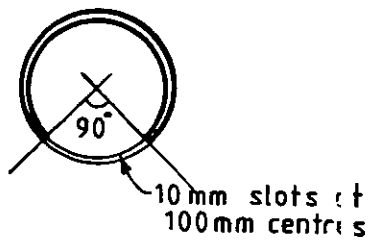
LONG SECTION
1:50



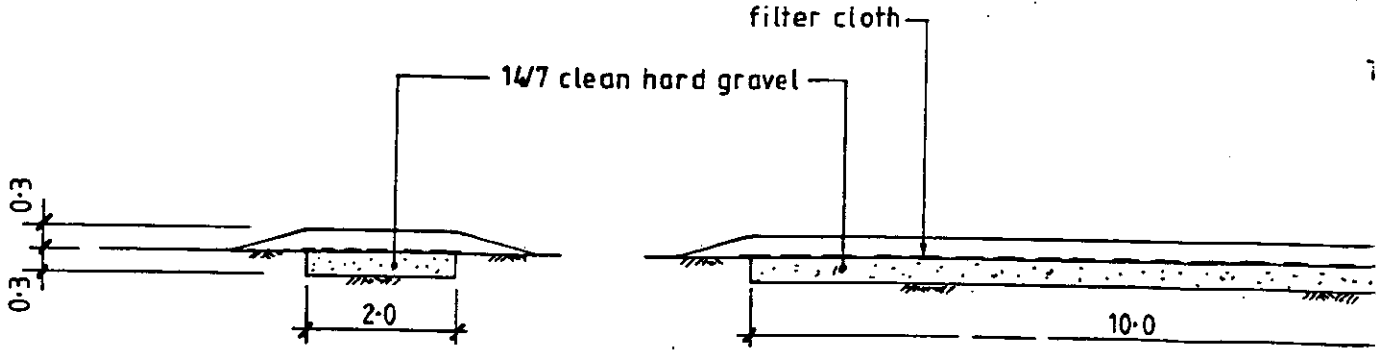
CROSS SECTION
1:50



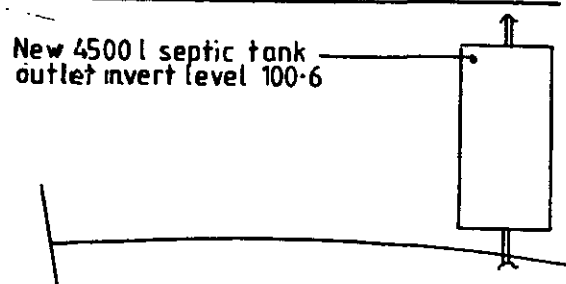
INLET AND OUTLET PIPES



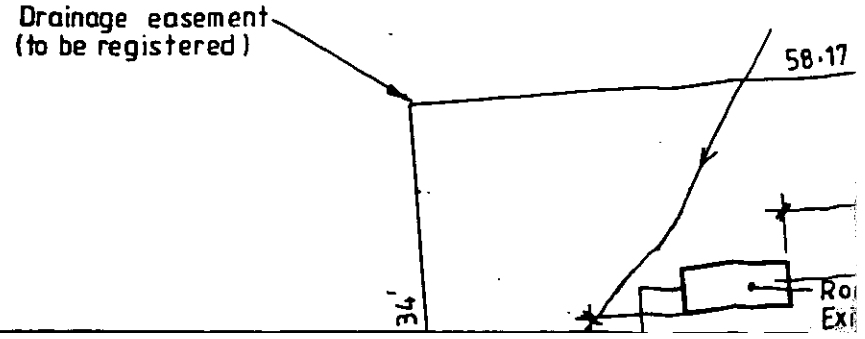
SLOT DETAIL



FINAL EFFLUENT DISPERSAL TRENCH



ROOT ZONE MARSH DETAILS



N

S.H. 1

LOT 1

LOT 2

DP 113162

SERVICE STATION

MOTEL

TEAROOMS

Pt 12
DP 3184
TC & SM POWDRELL

58·17

264° 34'

9° 48'

26m

Root zone marsh

GL 99·34

Existing mound system

4500 l
septic tank

outlet invert 100·00

Stormwater cutoff drain
0·2m deep × 0·6 wide min. grade 1:200

Approx. area of imported
sandy loam fill

connection from
original field

regrade to driveway
1:100

concrete cutoff wall

5m

A

A

2m

50ø grid
interceptors

Seepage Manhole – see right

15 m

100 ø Novaflo drain coil
300mm deep (max.)
1:125 grade

parallel interceptors

32 mm ø alkathene
to root zone marsh

26m

10m
Fine sand membranes

MOUND SYSTEM PLAN
1:125

V/3

V/3

V/3

V

V

V

V

30·00 35'4' 34'

15 m

50·00

7m

500

1000ø

RL 100·48

1000

RL 98·5

porous pipe

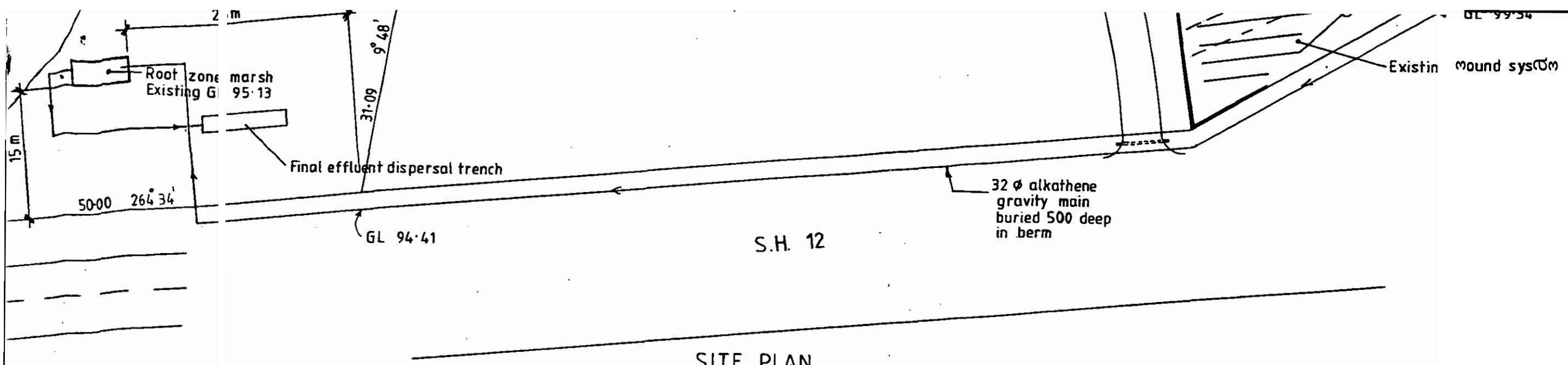
6

5"40 clean

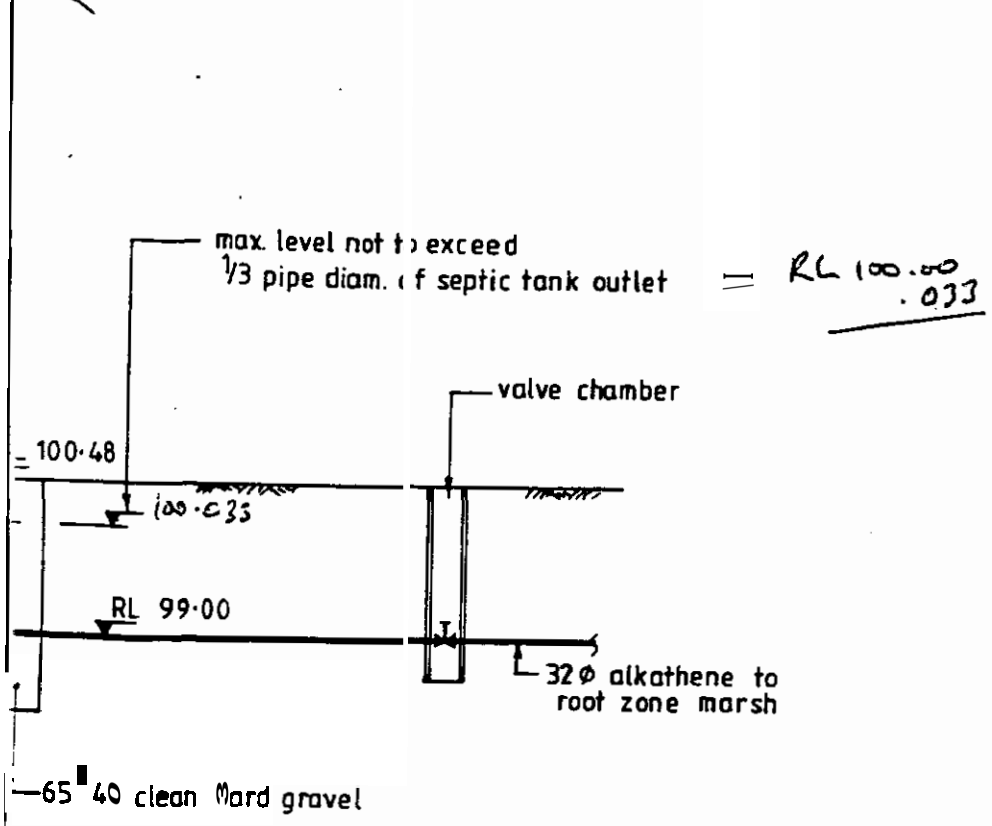
SEEPAGE MANHOL
1:50

BRYNDERWYN TEAROOMS & S
SEWAGE TREATMEN

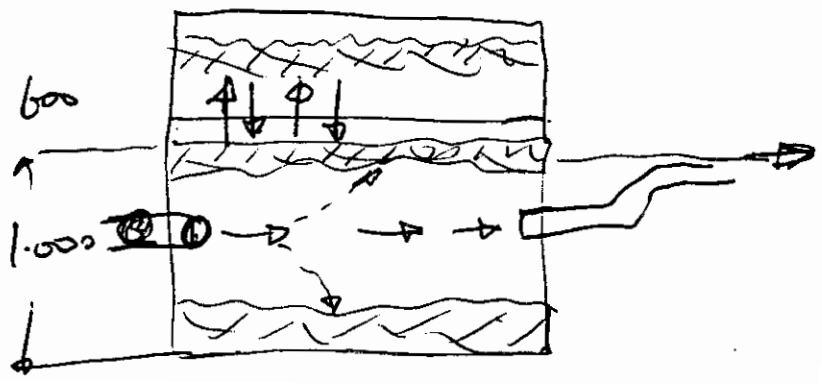
OCKLEY

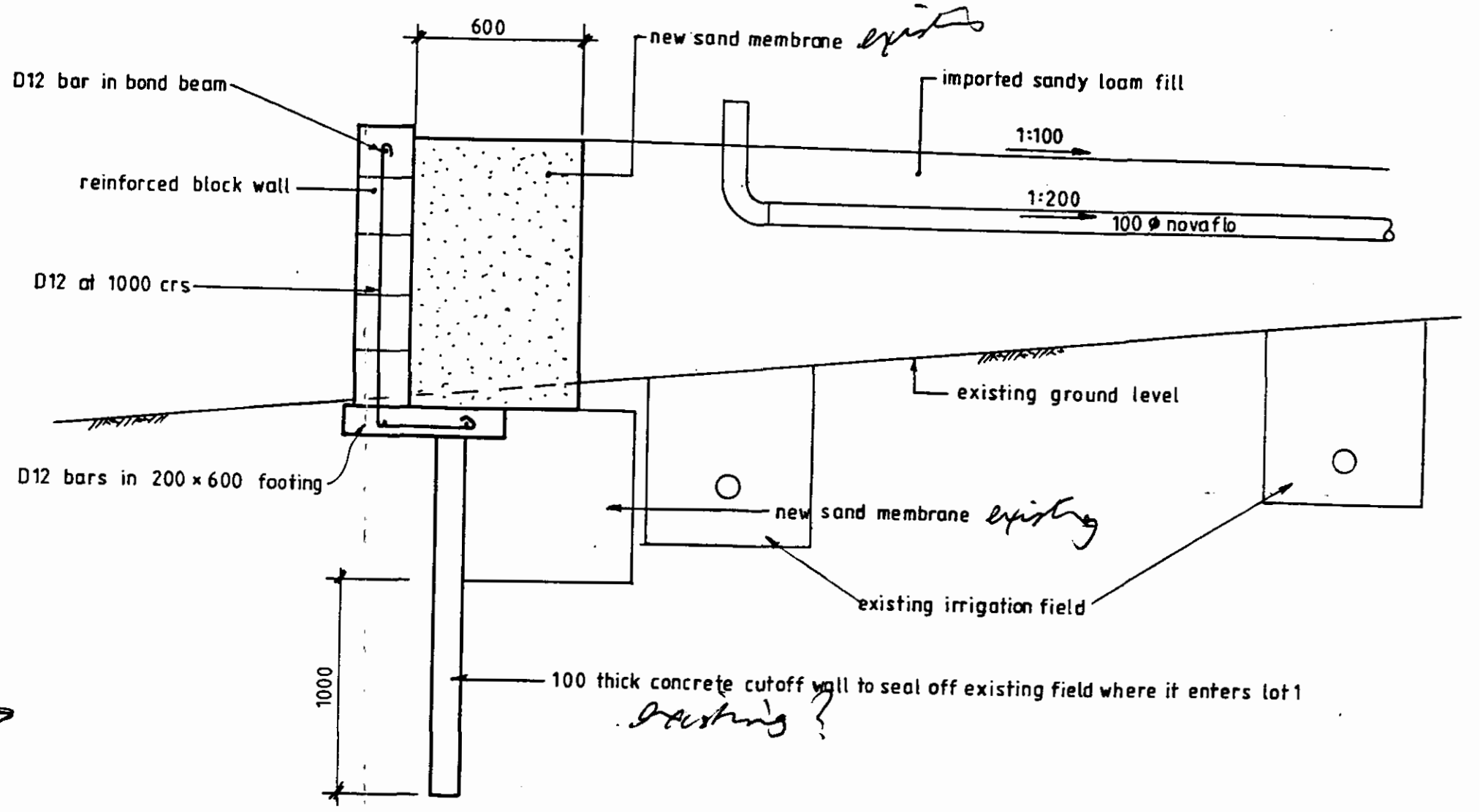


SITE PLAN
1:500



GE MANHOLE
1:50





SECTION A-A
n.t.s.

1S & SERVICE STATION
ATMENT SYSTEM

AMENDMENTS Added levels, altered pos'n of rootzone marsh (13.5.91) Changed gravity main details. (10.6.91)	DESIGN L.L. PARKER		MAP REFERENCE NZMS 260 Q08 392661	DRAWING NO 91 – 6
	DRAWN W.K. King NZCE	26.4.91		
	CHECKED			

SCHOOL OF ENGINEERING
Department of
Civil Engineering

THE UNIVERSITY OF AUCKLAND

PRIVATE BAG AUCKLAND NEW ZEALAND TELEPHONE 737-999

21 July 1991

To: Bevan Pritchard,
Kaipara District Council
PAPAROA

RECEIVED
22 JUL 1991
KAIPARA DISTRICT
COUNCIL

From: Ian Gunn

BRYNDERWYN SERVICE STATION
ON-SITE WASTEWATER SYSTEM

Original papers as forwarded to me on 2nd July returned herewith. I have retained a set to facilitate discussion by phone.

Regards,

Ian

KAIPARA DISTRICT COUNCIL

BAG, DARGAVILLE
dress all correspondence
to the General

DISTRICT OFFICE
HOKIANGA ROAD, DARGAVILLE, NZ
TELEPHONE (0884) 7059 (5 LINES)
FAX No. (0884) 6756

SERVICE CENTRE
PAPAROA
TELEPHONE (089) 4317019
FAX NO. (089) 4317017

REFER Mr Pritchard

FILE REF 5/2/4

6 May 1991

To URM

Mr Parker 4365791
4352491

Mr Len Parker
7 Hunt Street
WHANGAREI

RECEIVED
7 MAY 1991
KAIPARA DISTRICT COUNCIL

Dear Sir

RE JELICICH BRYNDERWYN TEAROOMS WASTE WATER DISPOSAL PROBLEM

I refer to our meeting on Friday, 3 May, during which we discussed your application for a permit and your calculations and plans that were submitted.

In order to assist, we have listed below items that were agreed to and mentioned during our discussions.

1. The input to the system for a design basis is agreed at $4m^3$ per day.

2. The existing septic tank size is to be confirmed and a detention tank of $4m^3$ capacity is to be installed ahead of the existing septic tank.

3. The calculated storage capacity of the existing bed is to be reduced.

4. Calculations are required to show that the pump chamber will receive a minimum of $4m^3$ per day.

5. An operation manual is required to identify the operation of valves.

6. A bypass line is required from the septic tank outlet to the pump chamber.

7. Scour velocities are to be checked in all of the pipelines.

8. Provision must be made for resting beds and for storage.

In addition, before commissioning the project, we will require written confirmation of :

1. Transit New Zealand approval of any work in the State Highway.

2. A gatisfactory easement endorsement on the land of all works outside Mr Jelicich's title (please denote title boundaries on your plans).

3. Written approval for effluent discharge off site from the Northland Health Board.

.../2...

4. Written approval of a Water Right for the treatment operation.

Because of the sensitive nature of this project, a permit will be issued on submission of satisfactory drawings, specifications and calculations subject to the issue of the approvals listed above.

An estimation of construction time is required, with a firm completion date stated as agreed to by yourself and the owner.

Yours faithfully

B Pritchard
DEVELOPMENT ENGINEER

RECEIVED
23
KAIPARA DISTRICT COUNCIL

1) Because of the possibility of settlement affecting flat grades and silting / growth inside pipes and the existing soakage / capillary field, this area should be disregarded and a bypass line installed.

2) To slow down the velocity through the septic tanks they should be constructed in parallel and not series. The existing tank will have to be relocated.

3) Re alkathene EDS pipeline velocity could be as low as 0.06 m/sec

4) Root zone system calcs require 2 areas 7m×3m but plan shows 1 only. No rationale used.

Voids ratio = 0.7 porosity = $\frac{e}{1+e} = \frac{0.7}{1.7} = 0.41$

∴ retained volume = $2\times(7\times3\times0.6\times0.41) = \underline{10.3\ m^3}$

∴ retention = $\frac{10.3}{4.50} = 2.3$ days for 2 cells

require more rational calculation

Note only one shown on plan.

5) Management manual required and a nominated work with operator class B.

6) Alkathene effluent pipe - velocity of 1.25 m/sec can only be attained by dosing

$$vel = \frac{flow}{CSA} = \frac{1 \times 10^{-3}}{0.8 \times 10^{-3}} = 1.25 \text{ m/sec}$$

but at average flow of 4.5 m^3/day

$$vel = \frac{4.5}{24 \times 60} \times \frac{1000 \times 1000}{} \times \frac{1}{0.8 \times 10^{-3}} = 3.75 \text{ mm/sec}$$

$$= 0.06 \text{ m/sec}$$

7) No calculations on flow through soil from capillary tube outlet to 8 cm x.

8) Equivalent EP beds @ $3m^2$/person = 100 m^2 min
design provides for 7m x 3m x 2 = 42 m^2

9) Test area to be provided

10) Establishment time 2yrs to grow plants

KAIPARA DISTRICT COUNCIL

PAPAROA OFFICE
PO BOX 1, PAPAROA, NORTHLAND

Phone : (089)431 7019
Fax : (089)431 7017

WHEN REPLYING OR CALLING PLEASE REFER TO
.....

In Reply Please Quote :
Your Ref : .....
Our Ref : .....

FROM Bevan Pritchard

TO Colin Ashby Port of Ls

COMPANY

FAX NO

JOB

DATE 28/6/91 NO OF PAGES (including this) 18

Please pass the message to the person designated immediately.

If pages are missing or not clear, please telephone sender.

MESSAGE

Mr. Parkes sales

BRYNDERWYN CALCULATIONS AND OPERATIONAL METHODOLOGY

Levels and Related Storage in Existing Subsurface Irrigation System and Superimposed Aerobic Capilliary Field

Invert of existing septic tank outlet		100.00
Ground level at boundary wall		100.30
Capilliary field invert at wall		100.05
Capilliary field invert at driveway end		99.97
Length of 100 ø capilliary pipes	10 metres	
Gradient from wall to driveway end	1 : 125	

Storage in Capilliary and Existing Subsurface Irrigation Fields

When the capilliary field pipes are 0.33 d the septic tank outlet will be at 0.34 d (insignificant difference).

Depth of capilliary field pipes from surface = 0.29 m

Maximum storage in capilliary field = ($75\ m^2$ x 0.381) 0.2 voids
= $5.715\ m^3$

∴ storage volume to capilliary field invert
= $75\ m^2$ (0.381 - 0.29) 0.2
= $1.365\ m^3$

... When the septic tank outlet is at normal flow level 0.34 d total field storage is $1.365\ m^3$ or 80 percent less than the $5.715\ m^3$ available retention.

Seepage Collection Manhole S.C.M.H.

Ground level	100.48	
Invert	98.50	
Depth from surface	1.98	m
Depth from capilliary field invert	1.51	m

Storage in S.C.M.H. at capilliary field invert = $\frac{\pi D^2}{4}$ x 1.51 d

= $1.186\ m^3$

∴ Total storage volume in field and S.C.M.H. = $2.551\ m^3$

Capilliary Field Layout and Function

The capilliary field consists of 5 x 100mm diameter parallel interceptors laid in imported topsoil and sand overlaying the existing unsatisfactory subsurface irrigation field.

The interceptors are constructed of drain coil 10 metres in length laid parallel at 2 metre spacings 300mm deep at a grade of 1 : 125.

Effluent from the septic tank is directed into the lower anaerobic field and the first of the surface parallel interceptors. Some soakage occurs in the lower field but the excess fluid rises through the sandy loam soil where it receives further treatment by microbial activity. Effluent flowing from the septic tank into the first surface interceptor is distributed across the aerobic soil zone from the openings in the drain coil into each of the four remaining parallel interceptors. To ensure this takes place despite variations in soil moisture the parallel interceptors are interconnected by 50mm diameter grid interceptors drilled at intervals with 6mm Ø holes designed to distribute the fluid uniformly over the active soil interface. The fluid level in the field is controlled by two of the parallel interceptors which are directly connected to a seepage control manhole surrounded by a stone filter section at the edge of the field.

marked

Capilliary Field Transfer to Seepage Collection MH

Transfer across the capilliary field is achieved through 2 of the 5 100mm diameter parallel interceptors which are directly connected to the S.C.M.H. stone filter system. The 3 remaining 100mm diameter parallel interceptors which form the capilliary field are interconnected to the directly connected interceptors by 50mm diameter grid interceptors.

Really!!

Using Mannings equation derived nomographs the rate of flow in a 100mm diameter pipeline at a gradient of 1 : 125 1/3 full is 1 l/sec.

The 50mm diameter grid interceptors at a gradient of 1:500 at 2/3 D can transfer water at 0.2 l/sec across the capilliary field into the 2 100mm diameter parallel interceptors which are directly connected to the S.C.M.H. stone filter system.

Because the 100mm diameter interceptors are constructed from drain coil a conservative value of 0.1 l/sec has been adopted as a realistic continuous transfer rate from the capilliary field for the period when the interceptors are 1/3 full at which time the total field storage will be 1.365 m^3. A transfer rate of 0.1 l/sec gives a transfer capability of 4.32 m^3 during the 12 hour period of maximum loading.

Applying data published in the Trickle Irrigation Design Manual published by the New Zealand Agricultural Engineering Institute, the wetting pattern for the imported sandy loam soil has been calculated and verified by field tests. The wetted area diameter when the total discharge is 4 m^3/day is of the order of 2.5m with a fluid penetration of 0.6m.

The volume of interstitial fluid at saturation and 0.2 voids ratio is 1.365 m^3 to 1/3 interceptor depth. All fluid in excess of this quantity will move directly through the interceptors into the S.C.M.H. stone filter system.

The percolation rate measured over the capilliary field is 30mm/hour. Using a zone of direct influence covered by the individual 100mm diameter interceptors of 0.6m the area of collection neglecting advection from the intermediate areas between the interceptors is 30 m^2. The volume of interstitial fluid at this point directly available to the interceptors is 0.55 m^3 which will be transferred from the field in 10 hours leaving 0.82 m^3 in the lower field area or the equivalent of 150mm water depth at the base of the capilliary field prior to the next loading sequence.

None of this will relieve the hydraulic pressure on the new wall.

Transfer Pipeline System to Tertiary Treatment

The seepage collection manhole has a storage capacity of 1.186 m^3 when the fluid in the capilliary field is at the invert of the capilliary interceptors. The gravity transfer pipeline is to be constructed from 32mm diameter alkathene and will be 170 metres long. The line will be laid in the road berm at a depth of 500mm according to Transit New Zealand requirements. Invert level of S.C.M.H. is 98.50. Ground level at the rootzone location is 95.13 with the final dispersion area at 94.0. A reserve area for possible extension is at 93.60.

The gradient of the gravity line is 1:50 overall. However the topography of the ground is such that there will be an undervertical section in the pipeline where it crosses the berm drain and rises to the plateau where the rootzone system is to be located.

There will therefore be a fill and draw cyclic action governing the discharge from the S.C.M.H. each time the manhole drains leaving the undervertical section full under static loading conditions. This situation will occur during low loading periods at night and possibly during off season periods.

However flow will restart automatically as the gravity line fills above the level of equilibrium and continue at rates commensurate with loading applied to the S.C.M.H.

The velocity of water in the gravity line will vary according to the hydraulic loading and could at times be lower than the desired scour velocity of 0.6m/sec. In order to counter any adverse effects on pipeline efficiency which may arise because of the periods of low velocity a valve will be fitted at the head of the line which will allow water to be retained in the S.C.M.H. to a depth of 1 metre which when released will effectively scour the line. At this depth the capilliary field water will be 0.5 metres below the septic tank invert. A gravity bypass will be fitted to allow for the possibility of operating errors when the scour routine is carried out.

$32\phi = \frac{\pi 32^2}{4} = 8\times10^{-4}\ m^2$

$4.5\ m^3/day = \frac{4.5\times1000\times1000}{24\times60} = 3\times10^{3}\ mls/min$

$\therefore$ vel $= \frac{3\times10^3}{8\times10^{-4}}\ m/hr = 3.75$

$= 0.06\ m/sec$

Rootzone Wetland System.

The rootzone wetland system has been designed using criteria developed from data recorded from the results of water quality analyses carried out during the past 10 years at existing system throughout Northland.

Hydraulic loading has been calculated on the basis of 8 bus loads of 35 persons per day using the stop over facilities. A bus equivalent has been estimated using a water use of 16 litres/capita = 0.56 m^3/unit. = 4.5 m^3/day.

Stormwater runoff from the site has been taken as 60% of total precipitation through redirection. Rainfall values were calculated on the basis of rainfall records for the period 1986-1990 at Brynderwyn site No 640436 - Map reference Q8: 382-719.

Although some percolation into the ground is occurring from the remnant of the original soakage field this has not been taken into consideration for design purposes. The geometric average hydraulic loading on the system assuming 8 bus loads each day is 138.64 cubic metres per month or 4.56 m^3/d.

Refer drawing plan.

The rootzone system will consist of 2 cells in series rather than a single cell which methodology increases efficiency in terms of basic losses from 60% to 84% Each cell is to be 7 x 3 x 0.6 m

The media in each zone will promote a voids ratio of 0.7 giving an effective retained volume of 1.49 m^3 / 8.82 m^3 with a retention at a continuous loading of 4.56 m^3/d of 1.93 days for each cell

The two cells in series will provide a minimum retention of 3.86 days. Water discharging from the second zone is to be directed into a shallow gravel filled trench 10 metres long and 2 metres wide with a depth of 0.3 metres. The gravel will be covered by a layer of geotextile material and superimposed by a mound of soil 300 deep and 4 metres wide. Some percolation will occur through the base and sidewalls of the trench but the main discharge will pass through the soil mound and flow overland into the existing stormwater drain which passes through a naturally swampy area before leaving the property by way of the road

culvert. Retention in the final trench mound system will be 24 hours at the maximum design loading of 4.5 m^3/d.

Hydraulic Retention through the system
Assuming no losses through percolation or transpiration

Loading 8 bus equivalents / day = 4.5 m^3

		Hours	
Septic Tanks.	2 x 4.5 m^3 capacity	48	
Capilliary field		12	0
Stage 1 Rootzone		46	27
Stage 2 Rootzone		46	27
Trench Mound System		24	13
	Total Hours	176	67
	Days	7.3	2.8

Note

Observations during an average trading week indicated that the following loading pattern could be expected.
6 buses can be expected for 30 percent, 8 buses for 30 percent and 4 buses for 40 percent of any one week period. Should this loading pattern remain consistent the design loading would be reduced by 30 percent increasing hydraulic retention to 9.5 days.

Background Bacterial Levels

Bacterial levels in the drain, derived from 5 samples taken over a 3 hour period returned values of 1500, 1360, 2250, 900 and 3,800 faecal coliform colonies / 100 ml. The geometric average of these values is 1734 faecal coliform colonies / 100 ml which is consistent with rural land use in the area. A further monitoring series will be carried out during construction prior to commissioning the system to establish a baseline for future performance monitoring.

I have no doubt that one of the main conditions placed on any water right granted by the Northland Regional Council in respect of this system will involve faecal coliform levels related to insitu levels.

Projected System Performance in terms of Bacterial Inactivation

		faecal coliform colonies / 100 ml
Septic Tank Effluent		2×10^6
Capilliary feild - Seepage Control.	80%	400,000
Rootzone Cell N°1.	90%	40,000
Rootzone Cell N°2	95%	2,000
Seepage Trench and Mound	80%	400
Back ground level		1734.

Operational Methodology.

Capilliary Feild

The capilliary feild has been extensively planted above the parallel interceptors to foster transpiration and microbial activity in the rootzone area. This will preserve the advection and dispersion conductivity maintaining controlled seepage to the level control manhole. This section should require no maintenance other than gardening.

Rootzones and Seepage trench mound

These sections will be planted with schoenoplectus lacustris which will develop the rootzone regime. Again maintenance should be confined to weeding on a monthly basis. It is essential to keep the media free of weeds.

Transfer Pipeline System and Seepage Control Manhole

The gravity pipeline will require regular monthly inspections to ensure the line integrity. Daily inspection of the level of water in the S.C. MH must be carried out during the commissioning period

The level of water in the manhole must not rise higher than 1.5 m from the invert. This is the capilliary feild irrigation

network invert. If the water does not recede to invert under no load conditions within a period of 25 to 30 minutes the following procedures must be carried out.

1. Check the discharge valve - it must be fully open.

2. Inspect the inlet control chamber at rootzone 1 and note the flow from the gravity main. If the rate of flow is slow or non existant despite the fact that the water level in the SCMH is above the invert the line could be air-locked or blocked.

3. In the event of the above problem, close the discharge valve, remove the cap from the standpipe and flush with fresh water. Do not, under any circumstances use a hose directly connected to the domestic water supply. Observe the flow into the rootzone inlet chamber and cease flushing when flow is established. Replace the standpipe cap and open the SCMH discharge valve. The manhole should drain in 25 to 30 minutes depending on the loading at the time.

4. In order to avoid any sludge or slime build up in the under-vertical section of the gravity line the above flushing procedure must be carried out at least on a monthly basis.

Note: Should operational experience so indicate an auto flushing system using a rainwater supply tank can be fitted and arranged to flush during off loading periods at night

Derivation formula. Total Static Head.

length in 100 metres viz 170 m = x 1·7

1·51 + 3·37 = 4·88

Effective head = Static head − Head loss.

Head loss = 2·87 x 1·7 = 4·879.

∴ flow rate will be 1·0 l/sec.

reducing h by 0·1 m = 4·78 / 1·7

= 2·81 m

Invert chamber = 99.00

Root Zone = 95.17

3.87

Surcharge 1.5

5.37 max head

l = 170 m

∴ Head loss m/100 m = $\frac{5.37}{1.7}$ = 3.16

= 1 lt/sec = 1.25 m²/sec

= 86 m³/day !!

If line dosed eg long arms of flow or pump then velocity of 1 l/sec or greater could be attained.

99.0

Status of gravity main flow from S.C.M.H. invert ~~98.5~~

Static head - friction head - m	Discharge l/sec.	Velocity m/sec	Volume litres	Time minutes
0.00 = 98.5 = 3.37m.	1 metre head intervals 1:50			
1.98	0.65	0.81	-	-
1.39	0.64	0.80	40	0.83
0.80	0.45	0.56	40	1.19
0.22	0.24	0.30	40	2.22
0.10	0.15	0.19	16	1.40

98.5
95.13
3.37

99.0
95.13
3.87

Total t minutes to empty the gravity line assuming load ceases.
= 5.64 minutes

S.C.M.H. refilling at 6 bus equivalents in 3 hour period = 0.19 l/sec
= 64.3 litres = 80.37 metres pipe length full.

Elapsed time for total S.C.M.H drainage = 25.26 minutes.

S.C.M.H refilling at 6 bus equiv = 287.9 litres
= 359.9 metres pipe length full.

Gravity line capacity = 170 m x 0.8 litres = 136 litres.

∴ S.C.M.H contains 288.2 litres

D in S C M H = 0.37 m. = 1.14 m below cast iron field invert.

Flow rate and velocity prediction 32 mm dia gravity line at 0.1 m intervals

1.51 metres water depth in S.C MH = capilliary field and septic tank outlet invert level. Total Static Head 4.88 m gravity line 170 metres long. gradient 1:50

S.C. Manhole Water depth - m.	Static H - friction H-m (4.88 − 1.70)	Discharge l/sec.	Velocity m/sec	Volume litres	Time minutes
1.51	2.87	0.96	1.2		
1.41	2.80	0.92	1.15	78.54	1.42
1.31	2.75	0.90	1.12	78.54	1.45
1.21	2.69	0.88	1.10	78.54	1.49
1.11	2.63	0.86	1.07	78.54	1.52
1.01	2.58	0.84	1.05	78.54	1.56
0.91	2.52	0.82	1.02	78.54	1.60
0.81	2.46	0.80	1.00	78.54	1.64
0.71	2.40	0.79	0.98	78.54	1.66
0.61	2.34	0.77	0.96	78.54	1.70
0.51	2.28	0.75	0.94	78.54	1.74
0.41	2.22	0.73	0.91	78.54	1.79
0.31	2.16	0.71	0.89	78.54	1.84
0.21	2.10	0.69	0.86	78.54	1.89
0.11	2.05	0.67	0.84	78.54	1.95
0.00	1.98	0.65	0.81	78.54	2.01

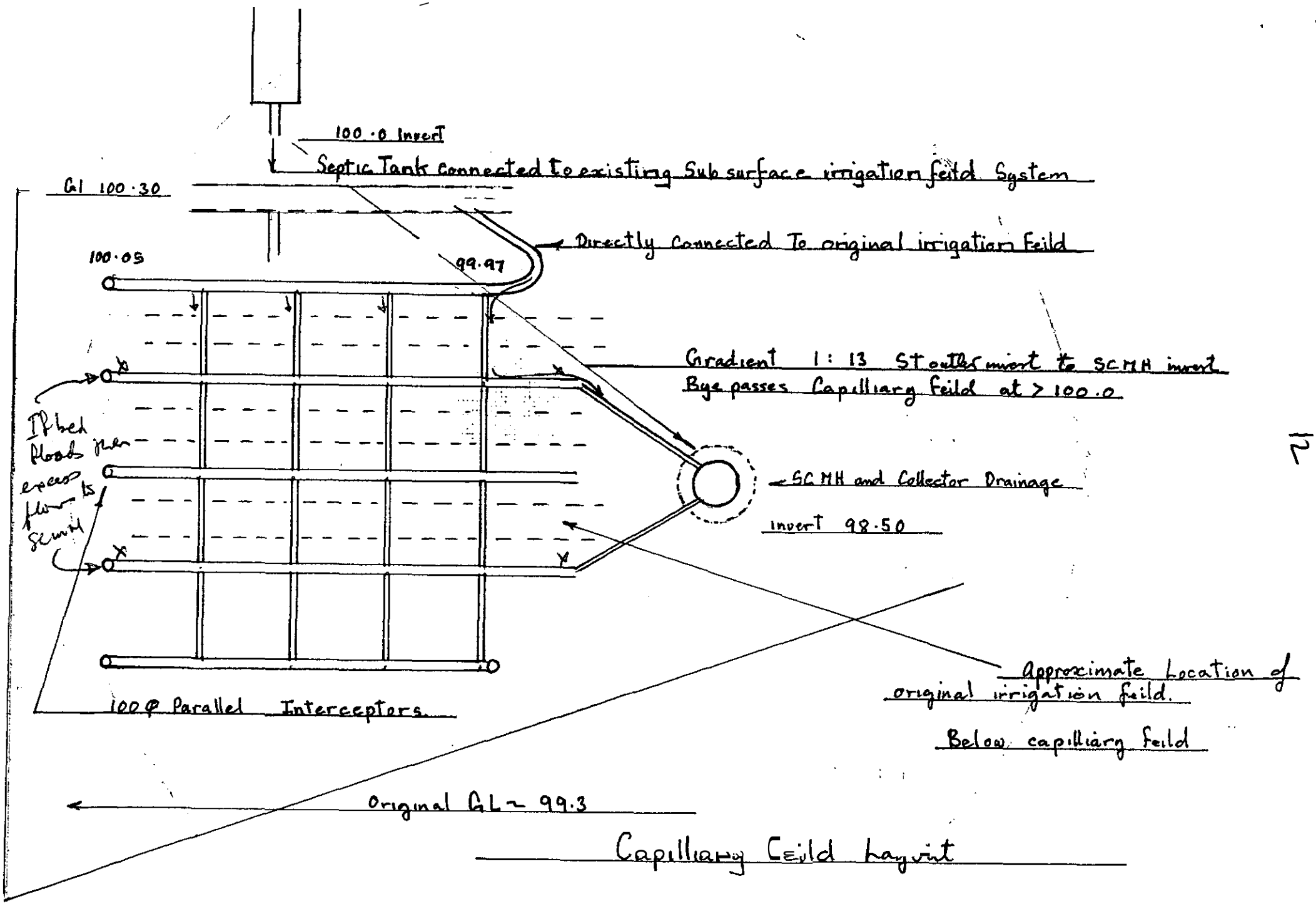
Invert S.C.MH 98.5 (99) = 3.37 m Static Head.

Geometric average	Discharge l/sec.	Velocity m/sec	Time - minutes
	0.79 l/sec.	0.98 m/sec.	1.67

Time required to reduce water level from 1.51 m to 0.00 invert level 98.5 = 25.26 minutes 0.78 l/second

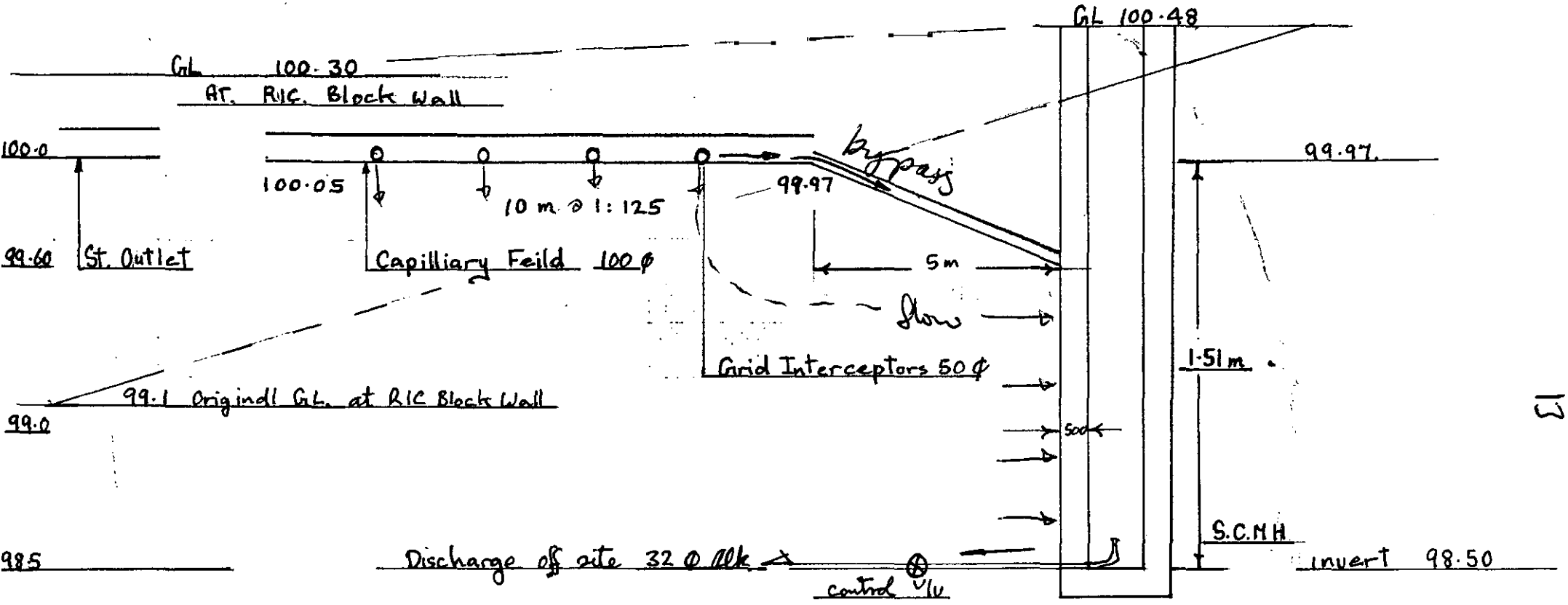
Cost Estimate of Estimates for permit

4.5 m^3 Septic tanks in place			2000.00
Rootzone metal	26 m^3	@ 50.00	1300.00
Mound dispersal	6 m^3	@ 50.00	300.00
Gravity line 32 mm ϕ Alkathene	170 m	@ 12.00	2040.00
S.C.M.H and stone surround			1250.00
Valve chamber and fittings			750.00
Dig and form RZ and dispersal mound			1000.00
Planting RZ.			300.00
Fencing area			500.00
Total			$9,440.00



Capilliary Feild layout

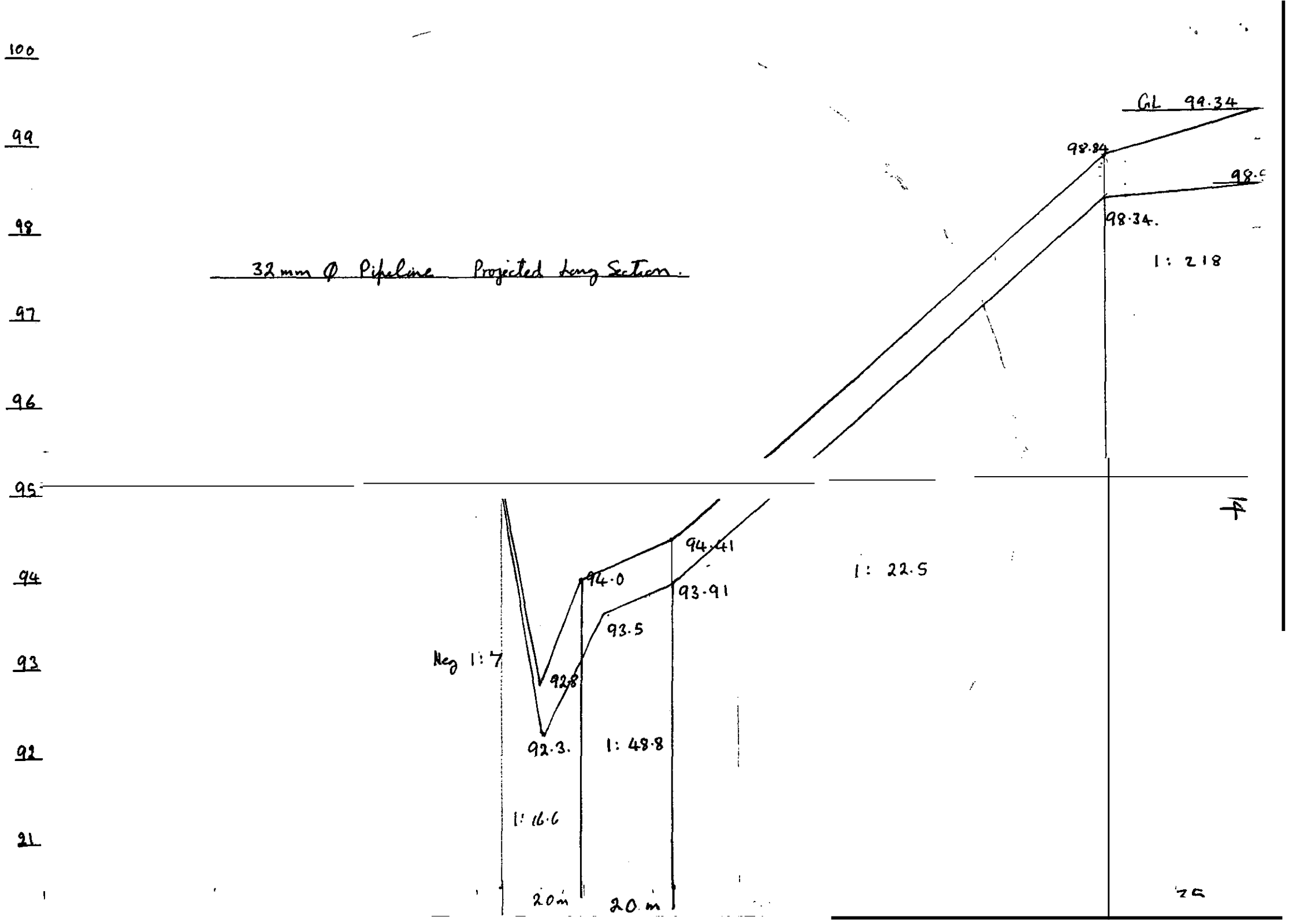
12



Seepage Control HH Porous and surrounded by Drainage Metal.

Capilliary Feild is Bye passed at level > 100 - grading 1:13

Relative levels Through The System on Lot 2 DP 113162


100
99
98
97
96
95
94
93
92
21
32 mm ϕ Pipeline Projected long Section.
GL 99.34
98.84
98.34.
1 : 218
94.41
94.0
93.91
93.5
92.8
92.3.
Neg 1 : 7
1 : 48.8
1 : 16.6
20 m
20 m
1 : 22.5

100

99

98

97

96

95

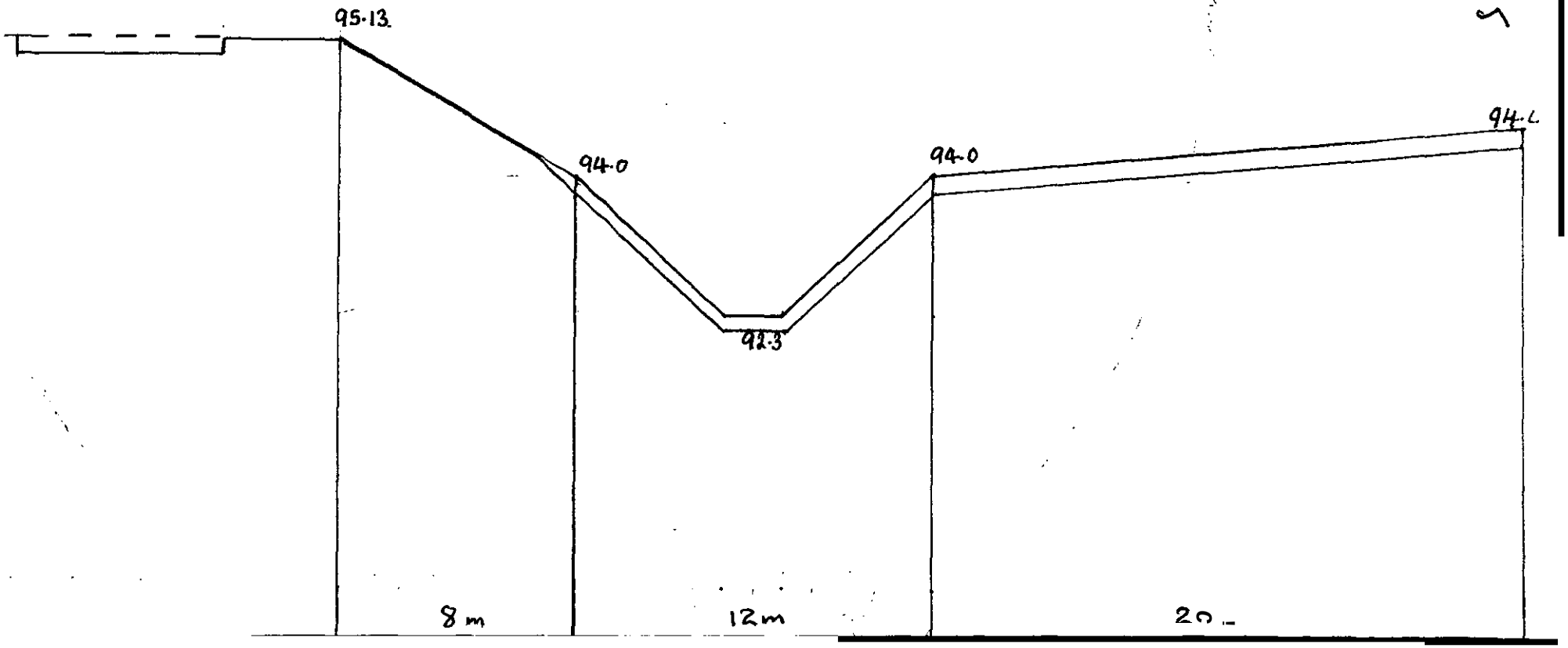
94

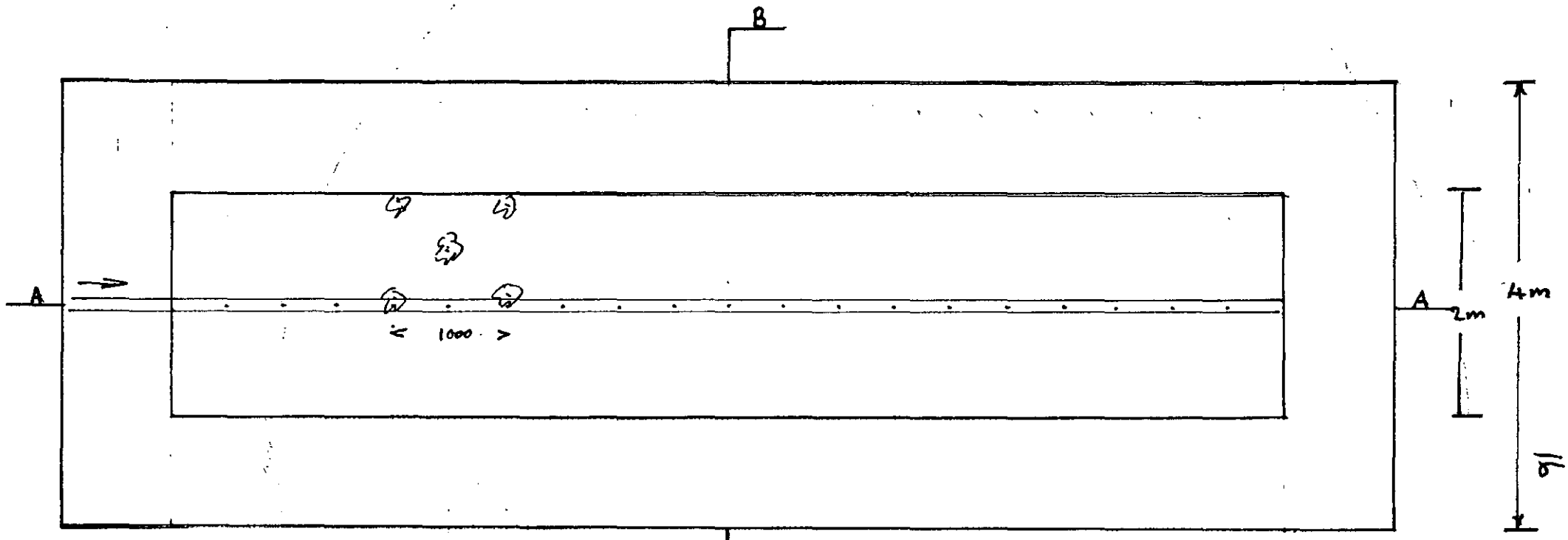
93

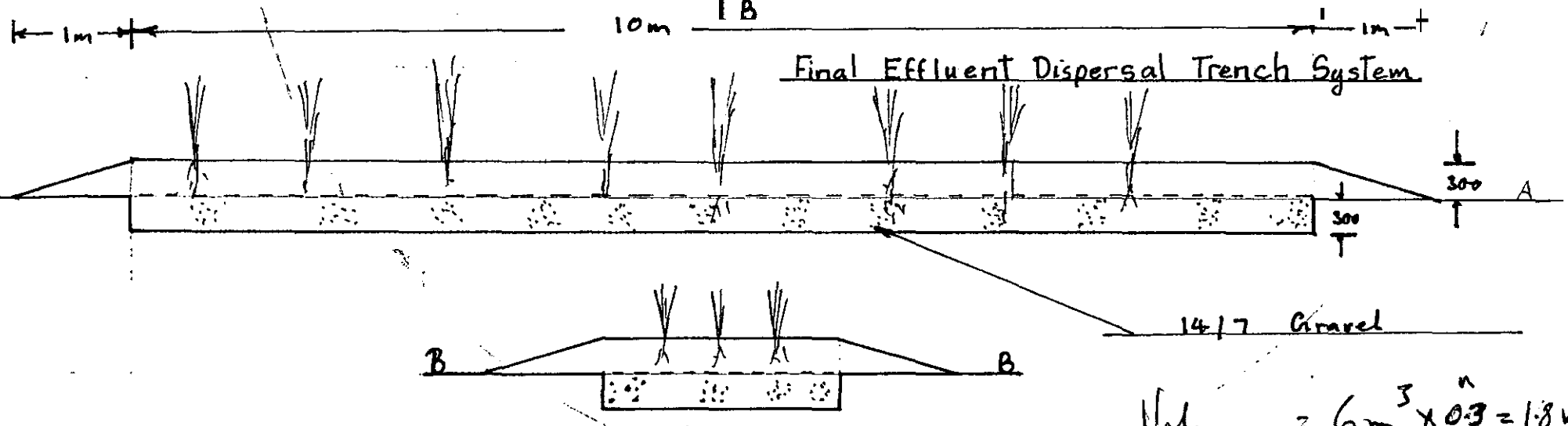
92

91

Drain Crossing Detail







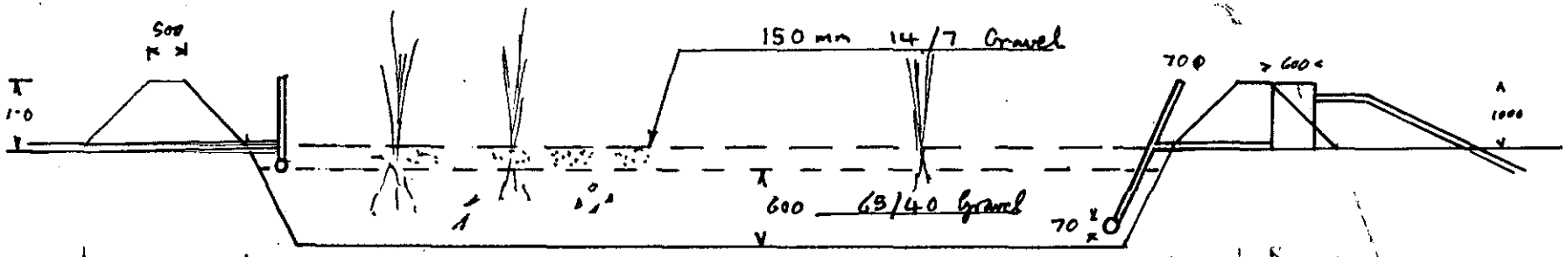
Final Effluent Dispersal Trench System

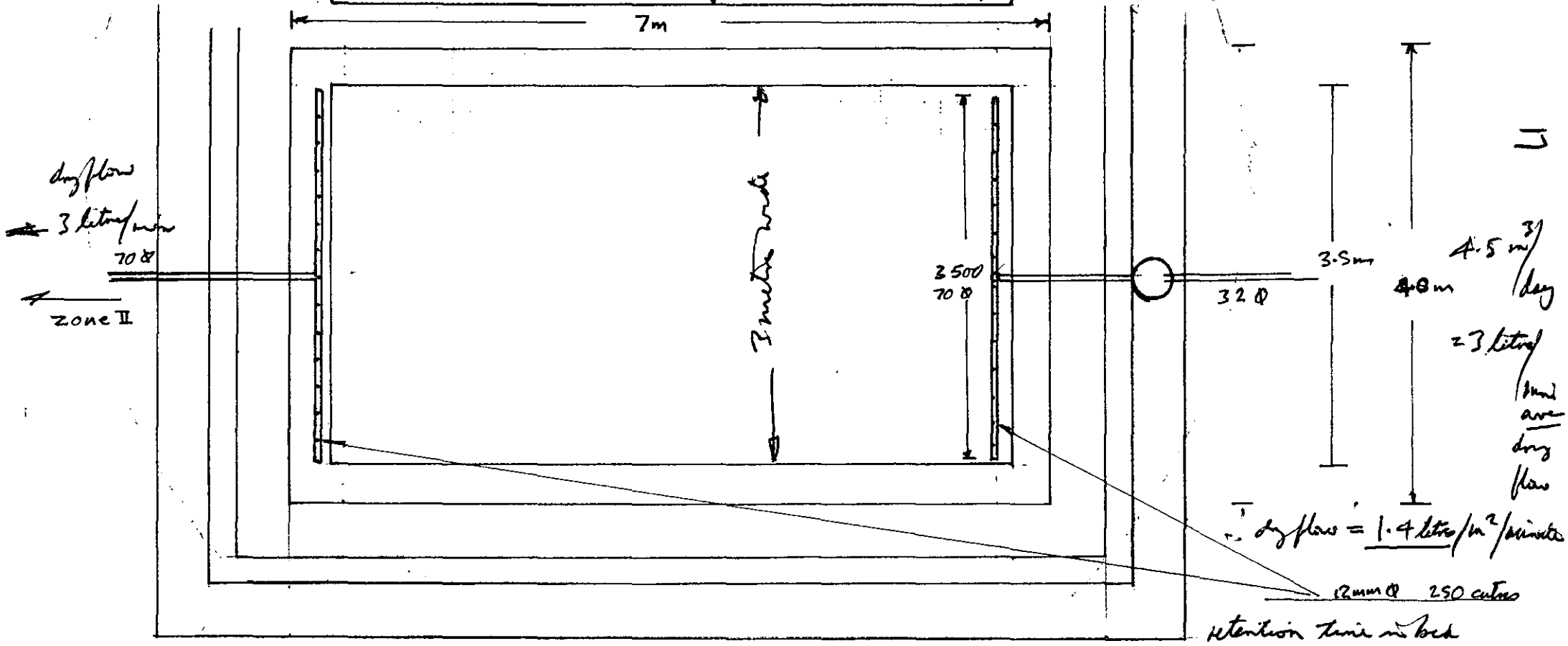
Volume = $6m^3 \times 0.3 = 1.8m^3$

Seepage rate = $\frac{4.5}{240}$ /day = 10 mm/hr

Rootzone Wetland Zone (1)

Schoenoplectus Validus sp. 5 / m²





∴ dry flow = 1.4 litre/m²/minute

retention time in bed

Velocity = .0014 m/min × 1/.3 = 0.005

$\frac{7 \times 3 \times 0.6 \times .3}{4.5} = 0.84$ days

116/1

COMMUNITY HEALTH SERVICES

P.O. BOX 137, WHANGAREI, NEW ZEALAND.
HOSPITAL ROAD, WHANGAREI.
TELEPHONE (09) 438-7019
FAX (09) 438-7019

REPLY REFERENCE
15/16

NORTHLAND AREA
HEALTH BOARD

RECEIVED
17 DEC 1991
Kaipara District Council

13 December 1991

Referred to: MAYOR
Comments G.M.
D.C.S.
D.F.
D.O. + cs.
D.S.
Copy to

General Manager
Kaipara District Council
Private Bag
DARGAVILLE

Attention Bevan Pritchard

Dear Sir

Drainage & Plumbing Regulations 197 Reg. 32(3
Brynderwyn Tearooms and Service Sta .or

I refer to Mr W Inder's letter dated 13 June 1991.

An inspection was recently carried out at the above site. Work has been completed satisfactorily, and all requirements have been met.

Consent is hereby given to discharge waste water from the tearooms on Lot 2 DP113162 to ground on Pt 12, DP 3184, owned by T C & S M Powdrell.

Yours faithfully

Peter G Brown
for Medical Officer of Health

RICT COUNCIL

Sanitary Plumbing Work

nit № 657

have completed at premises

..... Street, owned by

..... the sanitary

the above Permit No.

of .....

t that the work be inspected.

day of .....

..... Plumber.

OF COMPLETION

above work has been exam-

ly completed and in accord-

id PLUMBING REGULATIONS

day of .....

..... Inspector.

KAIPARA DISTRICT COUNCIL

Permit for Sanitary Plumbing or Drainage Work

Permit № 657

Mr G B Slatter a Plumber

No. ..... of .....

Mr G B Slatter a Regd. Drainlayer

No. 10399 of 5 View Rd Maunga Tureto

is/are hereby authorised to carry out the work described herein, as set forth in the plans deposited with me, on the premises owned (or occupied) by

Mr .....

and situated in Crn SH W 1 & 12

Lot 2 DP 113162 Asst. No. 120/80

Description of Work Alteration's and extension's to existing sewerage system as per attached appendage.

Estimated Value of Work $ 200

Receipt No. for Permit Fee 32256 Fee $ 30

Received from Mr Slatters Plumping Service

The work is to be carried out in strict accordance with the Drainage and Plumbing Regulations, 1978, and shall be completed on or before the First day of October 1991.

Date 29.7.91

..... Inspector.

Appendage to Plumbing and Drainage Permit NO 657
Please note the above permit is for the following work only :-

(1) Effluent discharge off site approval be gained from the Northland Regional Health Board Medical Officer of Health.

(2) A water right be obtained from the Northland Regional Council.

(3) Transit NZ approval for any work necessary in SE 12.

(4) The Capilliary field and associated pipework and retaining wall be excluded from this permit.

(5) An additional 4000 litre septic tank be installed with the final septic tank outlet connected directly to the root zone marsh.

(6) The root zone marsh area minimum design basis be 3m²/person equivalent (equals to 66m² of bed) and that this area to be increased as required by the performance of the system with respect to discharge quality standards.

(7) A maintenance schedule is to be established and a person nominated for inspection and adjustment responsibilities.

The system is not to be commissioned until 1 to 7 have been satisfied and the necessary legal documentation completed.

KAIPARA DISTRICT COUNCIL

PRIVATE BAG, RGAVILI
Please address all correspo e
to me General ager

DISTRICT OFFICE
HOKIANGA ROAD. DARGAVILLE, NZ
TELEPHONE (0884) 7059 (5 LINES)
FAX No. (0884) 6756

SERVICE CENTRE
PAPAROA
TELEPHONE (089) 4317019
FAX No. (089) 4317017

REFER Mr i d

FILE REF 5,

22 July 1991

MEMO TO : Plumbing & Drainage Inspector, B Mickell

FROM : Development Engineer

SUBJECT : W Jelicich - Brynderwyn Service Station

I have thoroughly examined the permit application for the alterations to the disposal system. The calculations have been checked by myself and Dr Ian Gunn, Department of Civil Engineering, University of Auckland.

Our conclusions are :

(1) A permit for the Capilliary field cannot be issued because :

(a) Construction has been completed without our supervision.

(b) The retainingwall which is an integral part of the Capilliary field operation is not watertight and has been built on the boundary and not with a 1.5m set back.

(2) Design criteria for root zone marsh systems have not been firmly established for Northland. Therefore a minimum design criteria of $3m^2$/person is to be used with the area to be increased as required to meet the standard as set down by the Northland Regional Council water right conditions.

(3) A maintenance schedule is to be established and a person nominated for inspection and adjustment responsibilities.

RECOMMENDATIONS :

That a permit be issued conditional upon :

(1) Effluent discharge off site approval be gained from the Northland Regional Health Board Medical Officer of Health.

(2) A water right be obtained from the Northland Regional Council.

.../2...

22 July 1991

(3) Transit NZ approval for any work necessary in SH 12.

(4) The Capilliary field and associated pipework and retaining wall be excluded from this permit.

(5) An additional 4000 Litre septic tank be installed with the final septic tank outlet connected directly to the root zone marsh.

(6 The root zone marsh area minimum design basis be $3m^2$/person equivalent (equals to $66m^2$ of bed) and that this area to be increased as required by the performance of the system with respect to discharge quality standards.

(7 A maintenance schedule is to be established and a person nominated for inspection and adjustment responsibilities.

The system is not to be commissioned until 1 to 7 have been satisfied and the necessary legal documentation completed.

B Pritchard
DEVELOPMENT ENGINEER

KAIPARA DISTRICT COUNCIL

PRIVATE BAG, DARGAVILLE
Please address all correspondence to me General Manager

DISTRICT OFFICE
HOKIANGA ROAD, DARGAVIUE, NZ
TELEPHONE (0884) 7059 (5 LINES)
FAX NO. (0884) 6756

SERVICE CENTRE
PAPAROA
TELEPHONE (089) 4317019
FAX No. (089) 4317017

REFER Mr Mirckell

FILE REF 5/2/4

29 July 1991

WI Jelicich & JA Lamont
RD 2
MAUNGATKROTO

Dear Sir/Madam

RE LOT 2 DP 113162

A permit for repairs and extensions to the waste water disposal system has been issued and forwarded to Mr G Slatter.

The permit is subject to the following speciation conditions :

(1) Effluent discharge off site approval be gained from the Northland Regional Health Board Medical Officer of Health.

(2) A water right be obtained from the Northland Regional Council.

(3) Transit NZ approval for any work necessary in SH 12.

(4) The Capilliary field and associated pipework and retaining wall be excluded from this permit.

(5) An additional 4000 litre septic tank be installed with the final septic tank outlet connected directly to the root zone marsh.

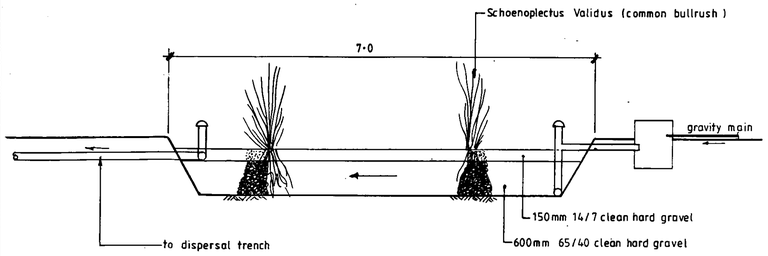
(6) The root zone marsh area minimum design basis be $3m^2$/person equivalent (equals to $66m^2$ of bed) and that this area to be increased as required by the performance of the system with respect to discharge quality standards.

(7) A maintenance schedule is to be established and a person nominated for inspection and adjustment responsibilities.

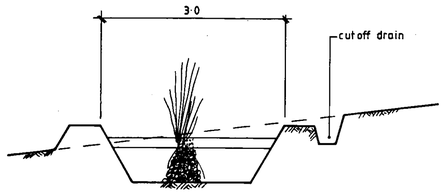
The system is not to be commissioned until 1 to 7 have been satisfied and the necessary legal documentation completed.

Yours faithfully

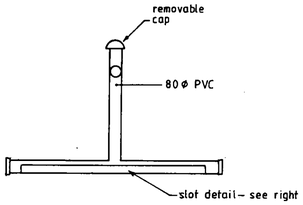
WJ Mickell
BUILDING INSPECTOR (PAPAROA)



LONG SECTION
1:50



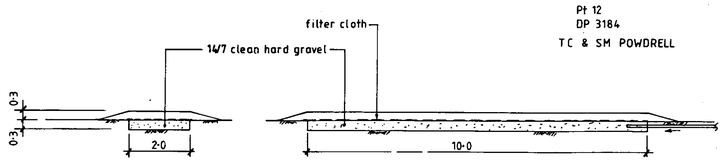
CROSS SECTION
1:50



INLET AND OUTLET PIPES

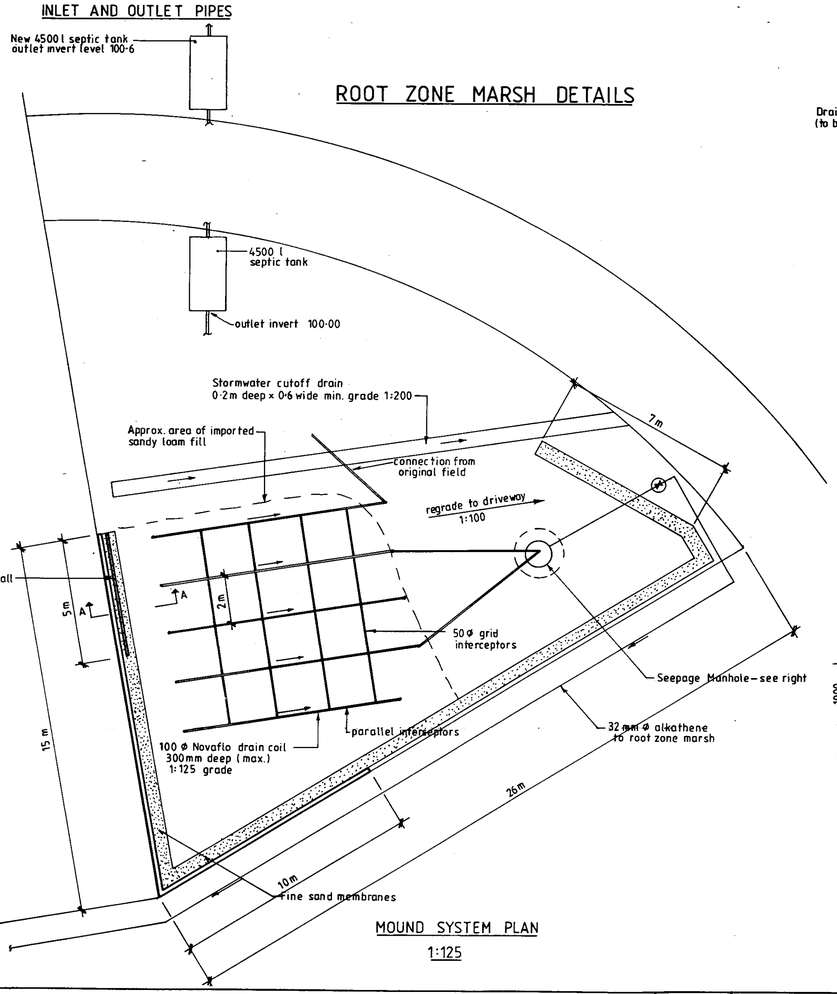


SLOT DETAIL

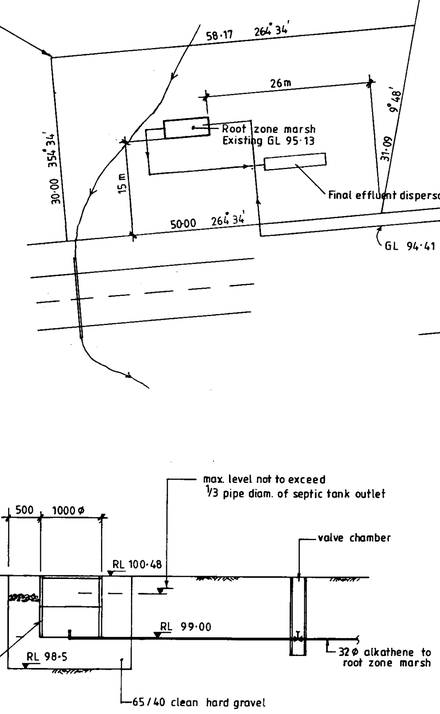


FINAL EFFLUENT DISPERSAL TRENCH

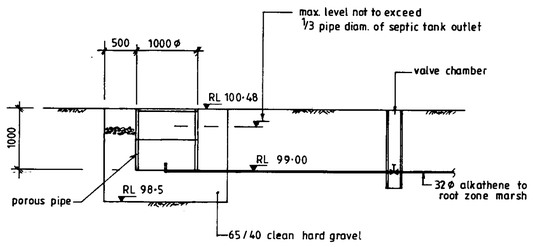
ROOT ZONE MARSH DETAILS



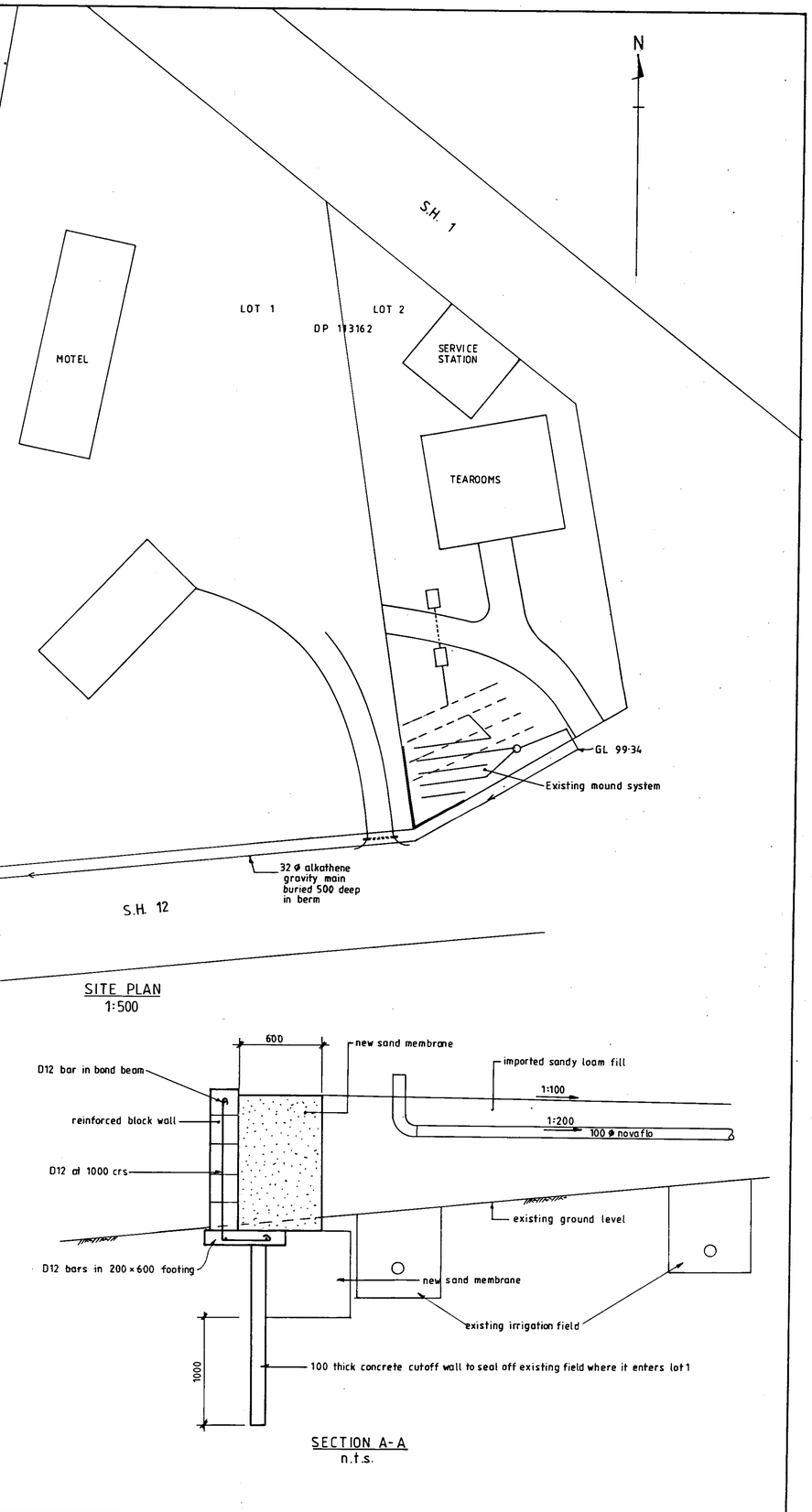
MOUND SYSTEM PLAN
1:125



SITE PLAN
1:500



SEEPAGE MANHOLE
1:50

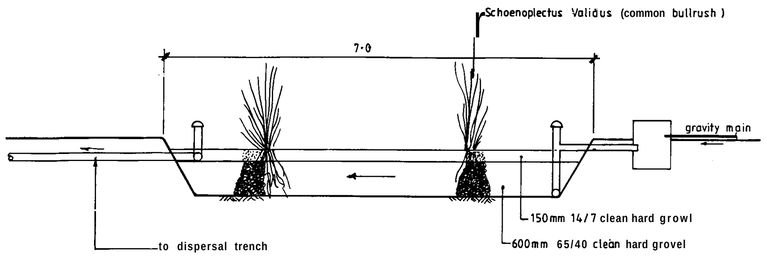


SECTION A-A
n.t.s.

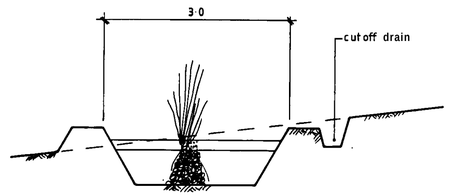
BRYNDERWYN TEAROOMS & SERVICE STATION SEWAGE TREATMENT SYSTEM

AMENDMENTS Added levels, altered	DESIGN L.L. PARKER		MAP REFERENCE NZMS 260 Q08 392661
poo'n of rootzone marsh (13.5.91)	DRAWN W.K. King NZCE	26.4.91	DRAWING NO 91 – 6
Changed gravity main details. (10.6.91)	CHECKED		
general alterations (24.6.91)	SCALE as shown		SHEET NO 1 of 1 A1

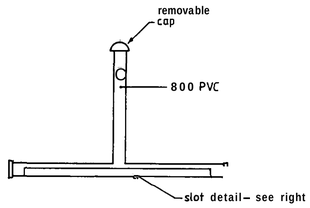
LOCKLEY



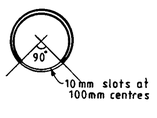
LONG SECTION
1:50



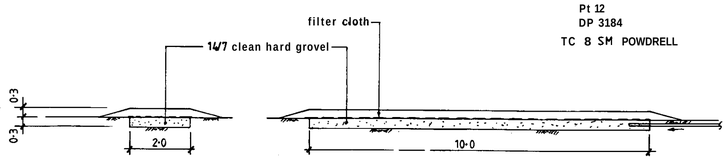
CROSS SECTION
1:50



INLET AND OUTLET PIPES

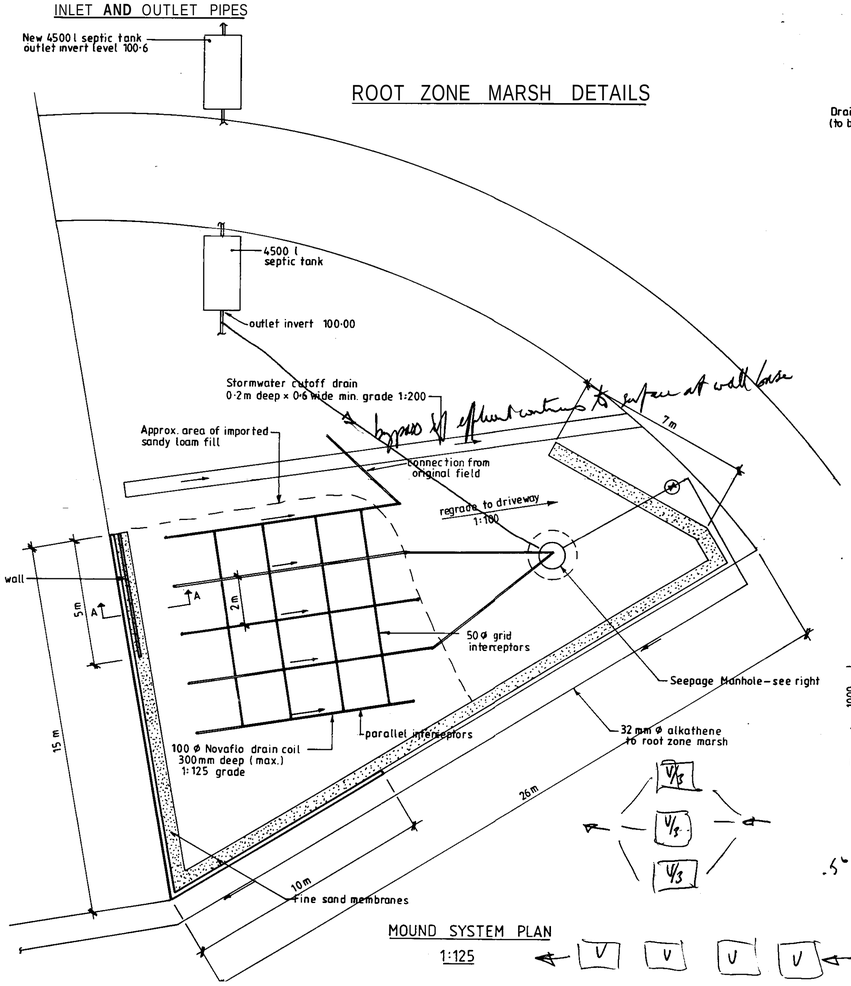


SLOT DETAIL



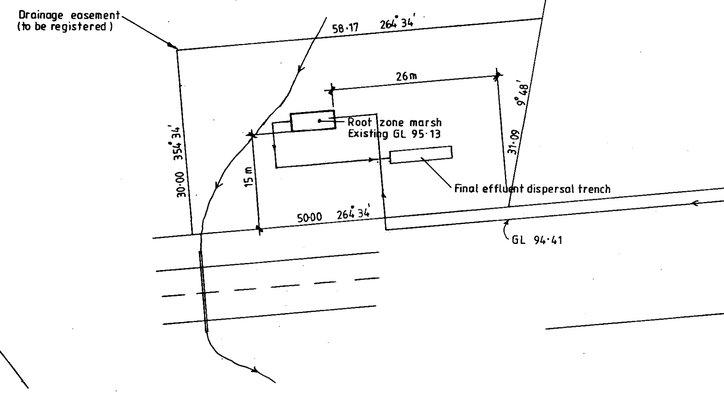
FINAL EFFLUENT DISPERSAL TRENCH

Pt 12
DP 3184
TC 8 SM POWDRELL

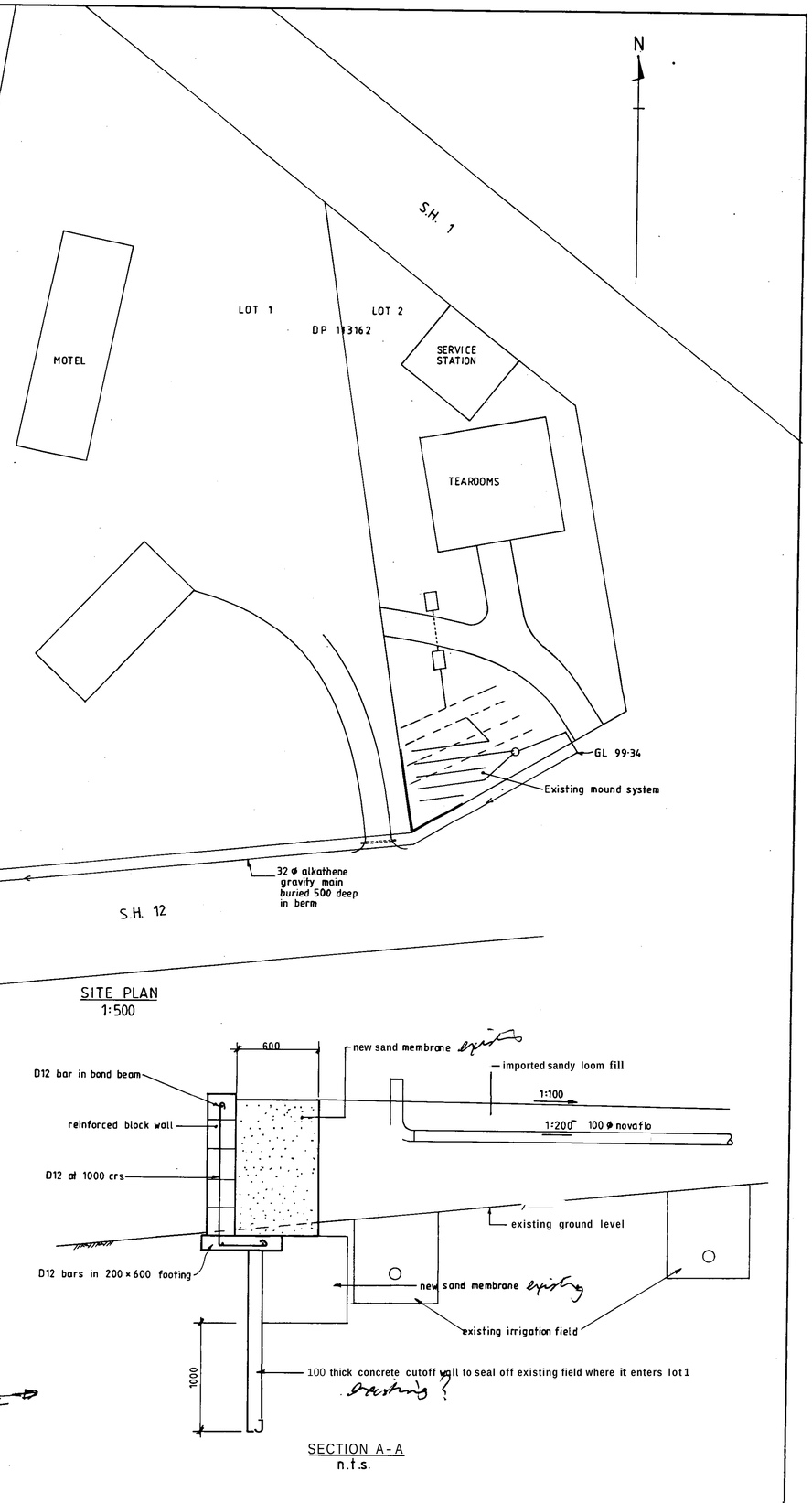


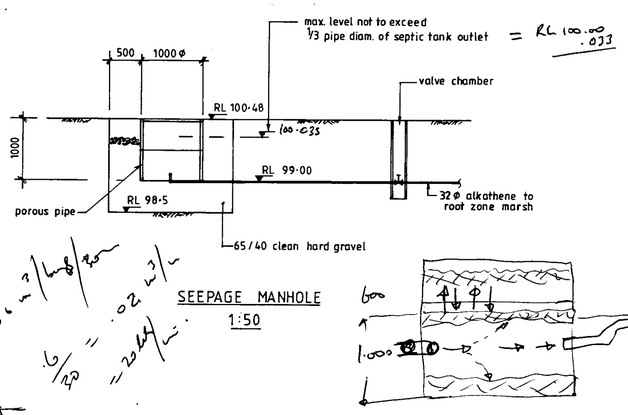
MOUND SYSTEM PLAN
1:125

ROOT ZONE MARSH DETAILS

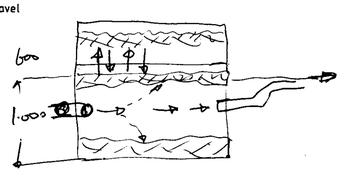


SITE PLAN
1:500





SEEPAGE MANHOLE
1:50



SECTION A-A
n.t.s.

BRYNDERWYN TEAROOMS & SERVICE STATION
SEWAGE TREATMENT SYSTEM

AMENDMENTS Added levels, altered	DESIGN L.L. PARKER		MAP REFERENCE NZMS 260 Q08 392661
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Changed gravity main details (10.6.91)	CHECKED		
general alterations (24.6.91)	SCALE as shown		SHEET NO 1 of 1

KAIPARA DISTRICT COUNCIL 2

APPLICATION FOR A BUILDING CONSENT

Valuation reference : 120 / ~~59~~ 2 BC 01200.2100

Name of Applicant : GD + MM EvenTT

Address of Property : Crm. S..W/ + 12

1.	Consent required for : Relocate a house.		19
2.	Further details sought (if required)	Y/N	19
3. (a)	Kerb (etc) damage deposit application required	Y/N	19
5. (a)	Application for PIM received	5 7	19 95
(b)	Application for Consent received		19
6. (a)	Issue PIM No 950314	Y/N 15 8	19 95
(b)	Issue Consent NO ~	Y/N ~	19
(c)	OBJECTED TO RELEASE OF INFORMATION	YES	NO
(d)	Receipts (various)	Y/N ~	19
(e)	One copy of plan submitted with application	Y/N ~	19
(f)	One copy of specification submitted with application	Y/N ~	19
(g)	One copy of advice to applicant of inspection procedure	Y/N ~	19
(h)	Other (eg copy of Design Certificate, calculations etc)	Y/N	19
•	Foundation inspection carried out by County Inspector		19
0.	Prelining inspection carried out by County Inspector		19
2.	Plumbing and Drainage inspection carried out by County Inspector		19
3.	Compliance, inspection stage _____		19
4.	Issue compliance certificate to stage final	13 12	19 95

15.8.95	County inspection

Register Noted 17/8/95 [illegible]

Register noted 28/11/95 [illegible]

950314

Dargaville Office:
Private bag 1001
DARGAVILLE
Phone 0-9-439-7059
Fax 0-9-439-8756

KAIPARA DISTRICT COUNCIL

APPLICATION FOR A BUILDING CONSENT

Office
P.O Box 1
PAPAROA
Phone 0-9-431-7019
Fax 0-9-431-7017

Section 33, Building Act 1991
(Attach all relevant documents in duplicate)

Name: G D & M.M. EVERETT	Contact Name:
Postal Address RD. 2 MANGATUROTO	Postal Address
Phone Number 094318293	Phone Number
Fax Number 09 431 8293	Fax Number

PROJECT LOCATION

Address: JUNCTION SH1 & SH12

DESCRIPTION OF WORK & INTENDED USE

RESITE OF PART OF A BUILDING TO EXSISTING BUILDING

LEGAL DESCRIPTION

Valuation Number: 1200-00200

Lot:(s) 2 DP:/S DP. 113162

Section _____ Block 1XX WAIPU SD

Survey District _____

AREA OF SITE: 1533 hectares/sqare metres

NATURE OF SOIL:(rock, clay, send. loam. etc) _____

FLOOR AREA. (proposed work - square meters)

	Basement	Ground Floor	Other Floors	Total
~~Main Building~~ Accessory Buildings				

ESTIMATED VALUE OF WORK:

Main Buildings (excluding plumbing & drainage)	$ ~~(35,000)~~
Accessory Buildings (excluding plumbing & drainage)	$ 15000
Plumbing & Drainage - Labour	$
- Materials	$
Total value of Work	$ 15000

☐ Application for building consent only, in accordance with Project Information Memorandum No: _____

☐ Application for Building Consent and Project Information Memorandum

Signed for and on behalf of the owner

Signature _____

Name: _____ Date _____

(Please Print)

NATURE OF CONSENT

☐ New Building - exclude domestic garages & domestic outbuildings

☐ Foundations only

☑ Alterations, repairs, extensions, conversions, resiting, install of heating appliances

☐ Domestic garages & domestic outbuildings

Intended Life:
Indefinite, but not less than 50 yrs ☐ OR
Specified as ___ yrr

Demolition ☐

Being stage..... of an intended..... stages

OFFICE USE ONLY

Property ID:

FEES PAID ON APPLICATION
(including GST)

	$	c
P.I.M.	80	
Building Consent	300	
Street Crossing		
BRANZ Levy		
B I A Levy		
Footpath Deposit		
Photocopying		
Water Connection		
Structural Check		
Plumbing		
Drainage (Labour only)		
	380	

RECEIPT NO: 195627

DATE 5.7.95

PART B : PROJECT DETAILS

(Complete Part B only if you have not applied separately for a Project Information Memorandum)

The project involves the following matters ***(Tick*** ☐ ***each applicable box, if any, and attach relevant information in duplicate)***

- [x] Location, in relation to legal boundaries, and external dimensions of new, relocated, or altered buildings (Site Plan with elevations, Topography, drawn to Scale)
- [ ] Detail;s of any known or potential erosion, avulsion, falling debris, filled ground. subsidence, slippage, alluvion, inundation, hazardous contaminants on or near the site.
- [ ] Provisions to be made for vehicular access, including parking (To be shown on site plan)
- [ ] Provisions to be made in building over or adjacent to any road or public place
- [ ] New provisions to be made for disposing of stormwater and wastewater (To be shown on site plan)
- [ ] Precautions to be taken where building work is to take place over existing drains or sewers or in close proximity to wells or watermains
- [x] New Connections to public utilities i.e. water supply, stormwater system, wastewater system (Note: Council has no agreement with network utility operations to act as their agent)
- [ ] Provisions to be made in any demolition work for the protection of the public, suppression or dust, disposal of debris, disconnection from public utilities, and suppression of noise
- [ ] Details of any cultural heritage significance of the building or building site, including whether it is on a marae, or waahi tapu.
- [ ] Copy or reference to, of any resource consent or planning approval for this project.
- [ ] Details of volume Proposed Excavations: Include volumes for Site Preparation, Basement and Driveway.

(Complete Part C in ail cases]

PART C : BUILDING DETAILS

This application is accompanied by ***(Tick*** ☐ ***each applicable box, attach relevant documents*** *in duplicate)*

- [x] The drawings, specifications. and other documents according to which the building is proposed to be constructed to comply with the provisions of the New Zealand Building Code, with sup porting documents, if any, including -
  - [ ] Building Certificates
  - [ ] Producer Statements
  - [ ] References to accreditation certificates issued by the Buiding Industry Authority
  - [ ] References to determinations issued by the Building Industry Authority
- [ ] Proposed procedures, if any, for inspection during construction

PART D : KEY PERSONNEL

Complete Pan D as far as possible in all cases. Give names, addresses, and telephone numbers. Give relevant registration numbers if known)

DESIGNER(S)
Name GARY. D. BEAZLEY
Address P.O. Box 7002 TIKIPUNGA WHANGAREI
Phone Number 09437 1839 Fax Number 09437 1839

BUILDER
Name MOVER. PETER WILSON.
Address 103 HATEA. DVE. WHANGAREI
Phone Number 09437 6601 Fax Number

DRAINLAYER
Name CRAIG GARNETT
Address 149. HUNDELL ST. MANGAKAHIA
Phone Number 4318185 Fax Number 4318185 Registration No:

PLUMBER
Name AS ABOVE
Address
Phone Number Fax Number Registration No:

CERTIFIERS
Name Reg.No
Address
Phone Number Fax Number
Certifying
Name Reg No
Address
Phone Number Fax Number
Certifying

RELEASE OF INFORMATION

Council provides building consent information to a number of organisations. Included in this is the names of applicants and the locations **of** the projects. Much of this information has to be supplied in terms of the Local Government Information Act, however we can withhold personal identification if you wish. Please indicate below if you object to release of identifying information.

I WISH TO OBJECT TO THE **ISSUE OF** IDENTIFYING INFORMATION ON MY PROJECT. ☐

PART E : COMPLIANCE SCHEDULE DETAILS

E I : SYSTEMS NECESSITATING A COMPLIANCE SCHEDULE

(Complete Part E I *for* all new buildings and alterations, except single residential dwellings)

The building will contain the following (Tick ☐ each applicable box and attach proposed inspectio naintenance. and reporting procedures.

- ☐ Automatic Sprinkler Systems or other systems of automatic fire protection
- ☐ Automatic doors which form part of any fire wall and which are designed to close shut and remain shut on an alar of fire.
- ☐ Emergency warning Systems for fire and other dangers.
- ☐ Emergency lighting systems.
- ☐ Escape route pressurisation systems.Riser
- ☐ Mains for fire service use.
- ☐ Any automatic back-flow preventer connected to a potable water supply.
- ☐ Lifts, escalators. or travelators or other similar systems.
- ☐ Mechanical ventilation or air conditioning system serving all or a major part of the building.
- ☐ Any other mechanical. electrical, hydraulic, or electronic system whose proper operation is necessary fc Compliance with the building code.
- ☐ Building maintenance units for providing access to the exterior and interior walls of buildings.
- ☐ Such signs as are required by the building code in respect of the above-mentioned systems.
- ☑ None of the above.

E2 : OTHER SYSTEMS AND FEATURES TO BE INCLUDED IN THE COMPLIANCE SCHEDULE

(Complete **Part** E2 only if the building contains one or more of the systems listed in Part **El)**

The building **will** contain the following *(Tick* ☐ each applicable box and *attach* proposed *inspectio maintenance,* and reporting *procedures).*

- ☐ Means of escape from fire.
- ☐ Safety barriers.
- ☐ Means of access and facilities for use by persons with disabilities which meet the requirements of Section 25 the Disabled Persons Community Welfare Act 1975.
- ☐ Hand-held hoses for fire fighting.
- ☐ Such signs as are required by the building code or Section 25 of the Disabled Persons Community Welfare Act 197

FEES AND CHARGES

Notice is hereby given that at its meeting held on Thursday 24 June 1993 Council reviewed its schedule of fees and charges and confirmed that those fees and charges contained in the schedule for 1992/93 be retained for the period 1993/94 with the following amendments.

PROJECT INFORMATION MEMORANDUM

A. Where the PIM is applied for as part of the application for a building consent.

Type of Project	cost
New houses and/or new buildings of a similar size or scale..	$80.00
Relocation of building on a new site	$80.00
All garages, similar minor axillary buildings, swimming pools and extensions (including decks) equal to or greater than 3 m^2.	$40.00
External additions less than 3 m_2, internal alterations signs, plumbing and drainage works etc	$00.00

B. Where the request for a PIM not being part of an application for a Building Consent

In all cases..	$100.00

Note: Where an application for a Building Consent or PIM is lodged within two years of the issue of PIM for the same site, there will be no charge for the second PIM unless significant additional work is required by Council.

Other charges which may be applicable are:

1. Vehicle crossing
2. Footpath and street damage deposit
3. Water connection
4. Sewer and stormwater connection

This office prefers an application being submitted with plans etc. then an account can be issued for the relevant fees.

Building Consent Fees

All building consent fees remain unaltered with the following exception.

Where the consent is in the respect of plumbing or drainage work and no structural alterations are taking place to the building only the appropriate Plumbing and Drainage Permit fee will be charged.

The fees for the issue of consents shall consist of the following components:

(i) Basic Building

Estimated value of work: (Value to exclude value of Plumbing and Drainage work)

Values must be calculated at current market rates and include the GST content of the price of the building.

0 to	$2,500	fee	$55.00
$2,501 to	$5,000	fee	595.00
$5,001 to	$9,000	fee	$145.00
$9,001 to	$13,000	fee	$220.00
$13,001 to	$20,000	fee	$300.00
$20,001 to	$30,000	fee	$370.00
$30,001 to	$45,000	fee	$425.00
$45,001 to	$60,000	fee	$485.00
560,001 to	$80,000	fee	5525.00
$80,001 to	$110,000	fee	$585.00
$110,001 to	$150,000	fee	$650.00
$150,001 to	$200,000	fee	$750.00

$200,001 and above - $750.00 for the first $200,000 plus $100.00 for every $50,000.00 or part thereof thereafter.

Where structural checking is required or actual and reasonable costs exceed the basic building consent fees, then an additional charge shall be made.

(ii) Buildina Research Levy

In addition to the above fee, there will also be payable a Building Research Levy in accordance with the Building Research Levy Act 1969, which is set at $1.00 in each $1,000.00 or part thereof of the value of each Building Permit issued. Permits for work of a value less than $20,000.00 are exempted.

(iii) Buildina Industrv Authoritv Levy

In addition to the above fee and the Building Research Levy, every person who obtains a Building Consent for building work with an estimated value of $20,000 or more, will also be liable to pay a Building Industry Authority Levy in accordance with the Building Amendment Act 1993. This levy is set at 80¢ for every $1,000.00 (or part thereof) of the estimated value of building work for which the consent is issued.

(iv) Plumbing and Drainage

A minimum fee of $30.00 for the first $200.00 worth of work (labour without materials). $6.00 per $100.00 worth of work thereafter.

Note: The above charge is based on the work being carried out in conjunction with a standard building. In some instances where actual and reasonable costs are 1ikely to exceed this amount an additional charge will be made.

B U I L D I N G C O N S E N T
Section 35, Building Act 1991

Applicant

GD & MM EVERETT
RD 2
MAUNGATUROTO

Consent Details

Consent/PIM No.: 950314
Date issued: 11/08/95
Date of applicn: 5/07/95
Valn No: 0120000200

Project Descrn: FOUNDATIONS ONLY
BEING STAGE 1 OF AN INTENDED 1 STAGES
RESITE PART OF BUILDING TO EXSISTING BLDG

Intended Life: INDEFINITE, BUT NOT LESS THAN 50 YEARS

Intended Uses: STAFF KITCHEN EXTRA LIVING AREA

Project Location: STATE HWAY 1

Legal Description: LOT 2 DP 113162 BLKS IX X WAIPU SD

Estimated Value: $ 15,000

CHARGES: The Council's charges paid on uplifting this Building Consent, in accordance with the attached details, are:

	$ 380.00
Buildina Research Levy	$ 0.00
Building Industry Authority Levy	$ 0.00
TOTAL:	$ 380.00

This building consent is a consent under the Building Act 1991 to undertake building work in accordance with the attached plans and specifications so as to comply with the provisions of the building code. It is not a consent under the Resource Management Act and does not affect any duty or responsibility under any other Act nor permit any breach of any other Act.

SIGNED FOR AND ON BEHALF OF THE COUNCIL:

_____ Building Inspector Date 15.8.95

P R O J E C T I N F O R M A T I O N M E M O R A N D U M
Section 31, Building Act 1991

Applicant

GD & MM EVERETT
RD 2
MAUNGATUROTO

PIM Details

Consent/PIM No.: 950314
Date issued: 10/08/95
Date of applicn: 5/07/95
Valn No: 0120000200

Project Descrn: FOUNDATIONS ONLY
BEING STAGE 1 OF AN INTENDED 1 STAGES
RESITE PART OF BUILDING TO EXSISTING BLDG

Intended Life: INDEFINITE, BUT NOT LESS THAN 50 YEARS

Intended Uses: STAFF KITCHEN EXTRA LIVING AREA

Project Location: STATE HWAY 1

Legal Description: LOT 2 DP 113162 BLKS IX X WAIPU SD

This project information memorandum is confirmation that the proposed building work may be undertaken, subject to the provisions of the Building Act 1991, and any requirements of the building consent attached.

This project information memorandum includes:

___ Information identifying relevant special features of the land concerned

SIGNED FOR AND ON BEHALF OF THE COUNCIL:

_____ Building Inspector Date 15 8 95

KAIPARA DISTRICT COUNCIL

ATTACHMENT TO PROJECT INFORMATION MEMORANDUM NO 950314

INSPECTORATE

(A) Wind Zone Rating for Site

Low
Medium
High √
Very High

(B) Provisions being made with regard to building over or adjacent to a road or public place are acceptable

Hoardings)
Gantries) **N/A**
Temporary Support)

(C) Provisions made for demolition are adequate

Removal of materials from site)
Dust Extraction) **N/A**

(D) The site is known to be affected by hazardous contaminants which may impact on the proposed project

Chemical Contamination)
Underground Tanks) **None Known**
Asbestos)

(E) Licences required to operate, subject to Building Consent being granted

Health Licences)
Dangerous Goods Licence) **No**

PLANNING

(A) Proposed Project complies with District Plan Zoning

Yes √
No

(B) The bulk and location of the proposed project compl ie with the restrictions of the District Plan

Yes √
No

(C) Special planning restrictions know n to affect the site which impact on the proposed project

Protected Tree Restrictions ▌
Historic Site Restrictions ▌ **None Known**

(D) Proposed vehicle access acceptable

Gradient)
Width) **Existing**
Length)

(E) Resource Consent Required - **No**

Nature of required consent

NOTE: The Northland Regional Council Transitional Regional Rule for small domestic sewage treatment systems, requires that there be a two metre separation between the lowest point of a septic tank effluent field and the highest ground water level. As this can only be determined by an examination of your site it is recommended that you seek professional advice on this point. If you cannot obtain the required separation it will be necessary to apply to the Northland Regional Council for a resource consent to discharge effluent.

ENGINEERING

(A) The site is known to have soil impact on the proposed project

Fill)
Erosion)
Slippage) **None Known**
Poor Bearing Capacity)

(B) Site is known to be prone to flooding or lies within an overland flow path **No**

(C) Proposed methods for ding near servi ipes acceptable?

(D) Proposed connection to services acceptable

Stormwater Disposal **To Storage**
Foulwater Disposal **Existing Septic Tank**
Water Connection (refer note below)

(E) Proposed location of vehicle access acceptable

Location)
Traffic Implications) **N/A**

(F) Restrictions which may be imposed owing to potential impact on traffic

Signs **N/A**

KAIPARA DISTRICT COUNCIL

PRIVATE BAG 1001, DARGAVILLE
Please address all correspondence
to the General Manager

DISTRICT OFFICE
HOKIANGA ROAD, DARGAVILLE, NZ
TELEPHONE 0-9 439 7059 (5 LINES)
FAX NO. 0-9 439 6756

SERVICE CENTRE
PAPAROA
TELEPHONE 0-9 431 7019
FAX No. 0-9 431 7017

REFER Mr Mickell/ERF

FILE REF 15/3

20 July 1995

MEMO TO Manager - Regulatory Services

FROM Building Inspector, Paparoa

SUBJECT : To Relocate Part of a Building

Applicant	GD & MM Everett
Address	RD 2 Maungaturoto
Present Site	Building Removals Yard, Whangarei
Proposed Site	Applicants Tearoom and Service Station, Brynderwyns
Intended Use	Separate Staff Kitchen, Extra Living Space
Zoning	Rural
Description	Lot 2 DP 113162

The proposal here is to attach this 25 year old, 47m^2, building to the existing tearooms to provide a separate staff kitchen and extra living space.

RECOMMENDATION

That the application be approved subject to the following conditions:

1. Completion of the required bond in terms of council's policy; the bond to be set at $5,000.00.

2. That a building consent be obtained.

3. That any defective material found during or resulting from the shift be replaced with new material.

...n...

4. That all work is done in accordance with the Building Act or any other statutes legally in force.

5. That all sanitary and waste water fixtures are connected to the existing septic tank.

6. That all work is completed to the satisfaction of Council within twelve (12) months of the consent being issued.

AND THAT the applicant be advised *that* a discharge permit may be required from the Northland Regional Council if the wastewater disposal system is unable to satisfy the Regional Council's rule relating *to* domestic wastewater *discharges.*

WJ Mickell
BUILDING INSPECTOR (PAPAROA)

Mark rooms have a discharg
water 8

KAIPARA DISTRICT COUNCIL

PRIVATE BAG 1001, DARGAVILLE
Please address all correspondence
to the General Manager

DISTRICT OFFICE
HOKIANGA ROAD, DARGAVILLE, NL
TELEPHONE 0-9 439 7059 (5 LINES)
FAX No. 0-9 439 6756

SERVICE CENTRE
PAPAROA
TELEPHONE 0-9 431 7019
FAX No. 0-9 431 7017

REFER *Mr Vincent:JAC*

FILE REF LU151/OCC

Mr G D and Mrs M M *Everett*
R D 2
MAUNGATUROTO

27 July, 1995

Dear Mr and Mrs Everett

RELOCATION OF BUILDING. LOT **2** *DP* **113162**

The Management Team has considered your application for Land Use Consent to relocate a secondhand building and has resolved as follows:

THAT pursuant to Section 105(1)(b) of the Resource Management Act 1991, the application by G D and M M Everett to relocate an existing building onto Lot 2 DP 113162 be granted generally in terms of the application submitted but subject to the following conditions:

1) *Completion of the required bond in terms of Council policy, the bond to be set at $5,000.*
2) *That a building consent be obtained.*
3) *That any defective material found during or resulting from the shift be replaced with new material.*
4) *That all work is done in accordance with the Building Act or any other statutes legally in force.*
5) *That all sanitary and waste water fixtures are connected to the existing septic tank.*
6) *That all work is completed to the satisfaction of Council within twelve **(12)** months of the consent being issued.*

AND THAT the applicants be advised that it may be necessary to seek an amendment to the terms of their discharge permit from the Northland Regional Council if the additional waste water generated from the new building exceeds the volume allowed in their discharge permit.

Reasons for Decision

The district plan makes provision for relocation of existing dwellings and this application is considered to satisfy the criteria for assessing these. The environmental effects arising from this activity are considered to be minor.

You have fifteen working days from the date of receiving this letter **to** object back to Council in respect of any part of this decision. In addition to this, you will also need to complete your building consent application with the Building Inspector based in the Paparoa Office. A copy of this letter has been forwarded to him for his information. Further to my letter of 19 July 1995, it appears that Council costs have not exceeded $200 *so* there is no need **to** pay the additional $20.00 requested in that letter.

Yours faithfully

M G VINCENT
ADMINISTRATION OFFICER

Building Inspector
PAPAROA

Copy for your information.

H:\USERS\JAC\WP\27EVERET.MGV

C O D E C O M P L I A N C E C E R T I F I C A T E
Section 43(3), Building Act 1991

Applicant

GD & MM EVERETT
RD 2
MAUNGATUROTO

Consent Details

Consent/PIM No.: **950314**
Date issued: 11/12/95

Valn No: 0120000200

Project Descrn: FOUNDATIONS ONLY
BEING STAGE 1 OF AN INTENDED 1 STAGES
RESITE PART OF BUILDING TO EXSISTING BLDG

Intended Life: INDEFINITE, BUT NOT LESS THAN 50 YEARS

Intended Uses: STAFF KITCHEN EXTRA LIVING AREA

Project Location: STATE HWAY 1

Legal Description: LOT 2 DP 113162 BLKS IX X WAIPU SD

Estimated Value: $ 15,000

The Council's total charges paid on the uplifting of this Code Compliance Certificate in accordance with the following details are $ 0.00

This is a final code compliance certificate issued in respect of all the building work under the above building consent.

SIGNED FOR AND ON BEHALF OF THE COUNCIL:

_____ Building Inspector Date 13.12.95

GEMINI DIMENSIONS

GARY D. BEAZLEY

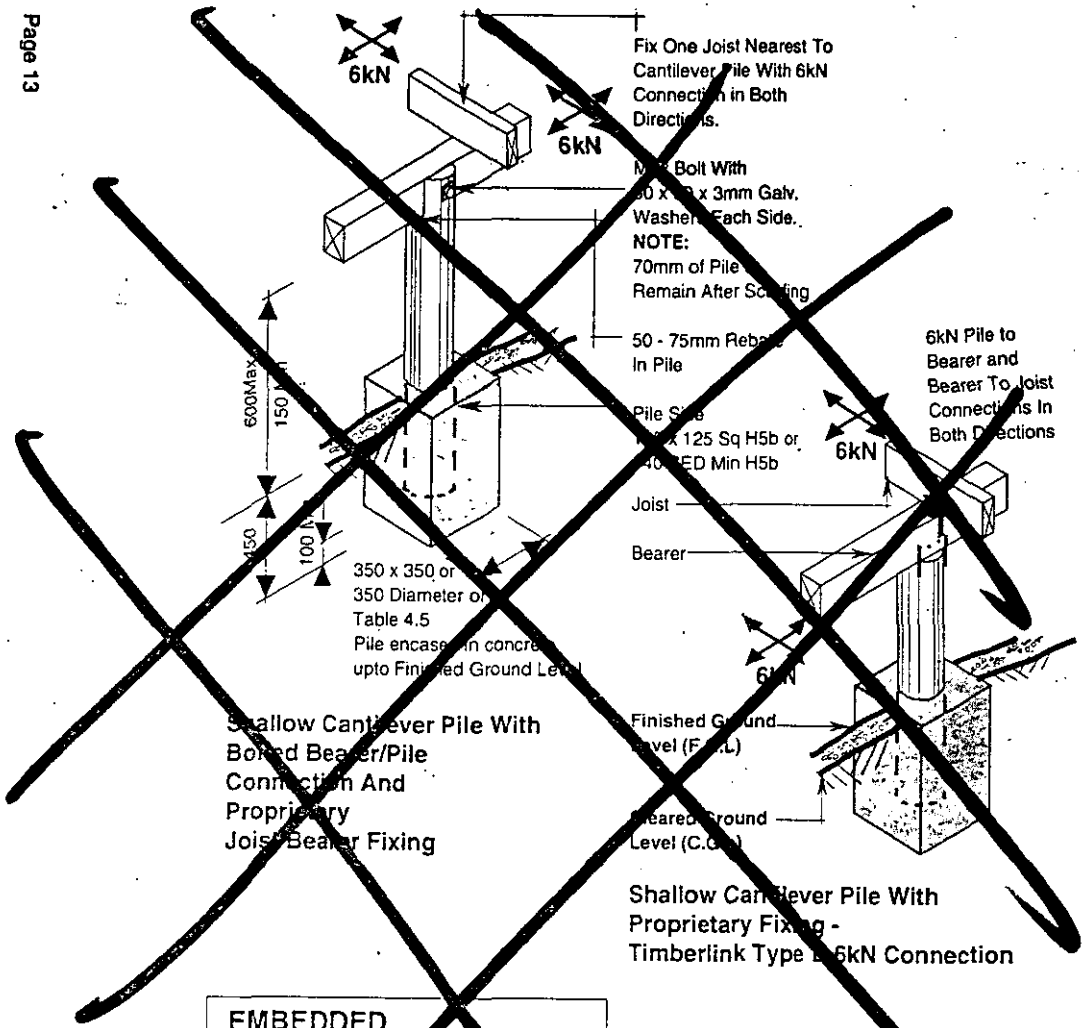
ARCHITECTURAL DESIGNER A.D.N.Z.I
P O BOX 7002, TIKIPUNGA, WHANGAREI
PHONE and FAX 09 437 1839

SPECIFICATION - JOB NO. 592

CATI of BUILDING

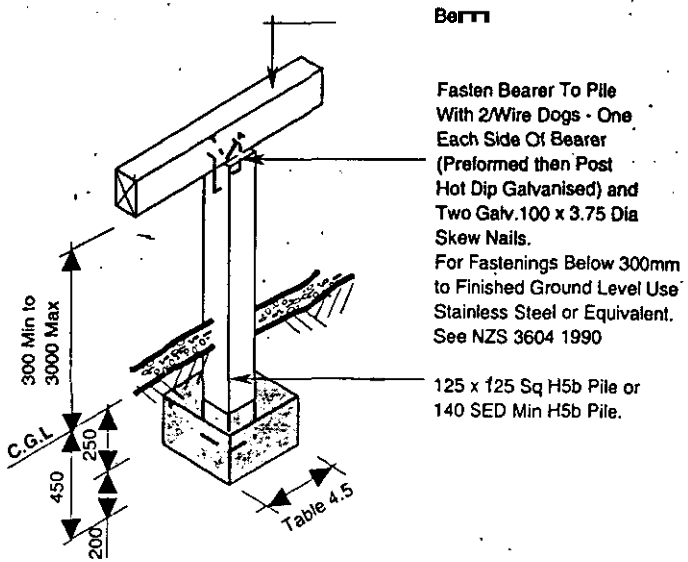
to

BR TEA OMS



Shallow Cantilever Pile With Bolted Bearer/Pile Connection And Proprietary Joist Bearer Fixing

Shallow Cantilever Pile With Proprietary Fixing - Timberlink Type 6kN Connection



Ordinary Pile With Pile to Bearer Connection

EMBEDDED SHALLOW CANTILEVER PILES

ORDINARY PILE

PRINCIPLES OF FOUNDATION SUPPORT AND BRACING AS PER NZS 3604 1990

Embedded Shallow Cantilever Piles and Ordinary Piles

Complies to NZS3604 1990

TIMBERLINK FOUNDATION TIMBER CONNECTORS

© COPYRIGHT TIMBERLINK INDUSTRIES LTD 1991

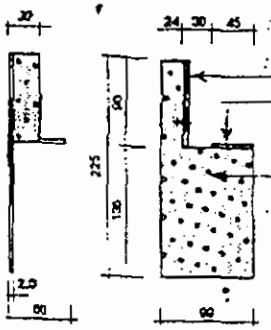
SHEET NO. P3/CO

designed by REELICK ASSOCIATES LTD to TIMBERLINK INDUSTRIES LTD
P O Box 55037, Mission Bay
Auckland New Zealand
PH. (09) 5211539

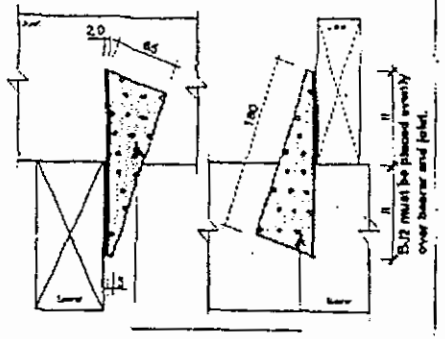
NAILING REQUIREMENTS

Timberlink 40 x 3.30 Annular Grooved Hot Dip Galvanised Steel Nails (NZ Design Application) must be used with these Timberlink Connectors as indicated.
Further Design/Technical Information is available.

Timberlink Annular Grooved nails are easily recognised by the concentric circles and the letter 'T' on the head of the nail.



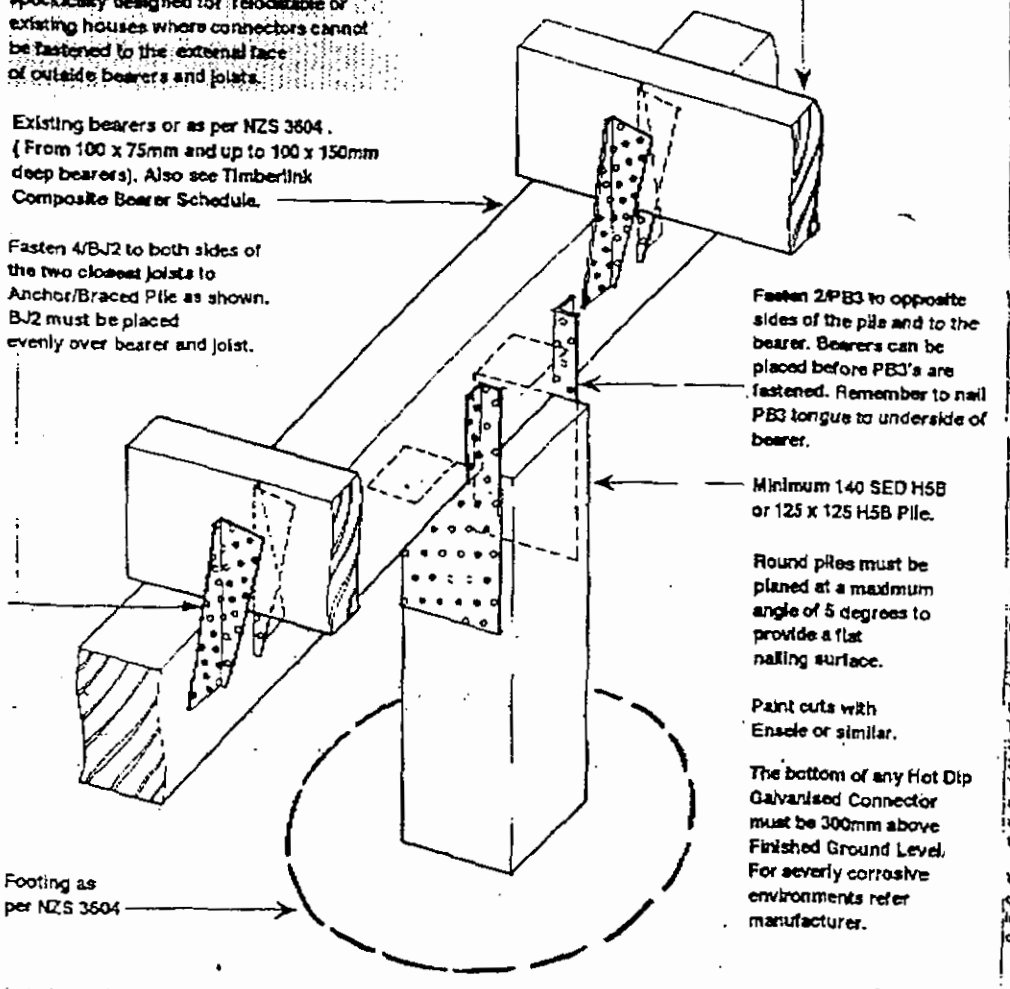
PB3 Pile to Bearer Connector
NZ Design Application
2.0mm Mild Steel Plate. Preformed then Post Hot Dip Galvanised.
For bearers nominally from 100 x75mm to 100 x 150mm Deep



8 Nails each to top flange and bottom flange into bearer and joist.
TOTAL 16 NAILS PER BJ2 CONNECTOR

BJ2 Bearer to Joist Connector
2.0mm Mild Steel Plate. Preformed then Post Hot Dip Galvanised.
Overall plate size is 72 x 180mm.

NOTE:
The Type C 12kN Connection has been specifically designed for relocatable or existing houses where connectors cannot be fastened to the external face of outside bearers and joists.



FEATURES

COMPLIES TO NZS3604 1984/1990
Complies to the "12kN Alternative Fixing" Requirement of Clause 4.5.7.1 of NZS3604 1984 and Clause 4.7.2.3 of NZS 3604 1990.
Also complies with the Braced Pile Fixing Strength requirements of Clauses 4.7.4 and 4.7.7.5 of NZS 3604 1990.
Connectors are manufactured from Mild Steel Plate G250 to NZS 4231.
Zinc Coating Weight as per NZS 3604 (A8 1650).
Designed and independently tested in accordance with NZS 3603 Appendix A and NZS 4203.

POST HOT DIP GALVANISED
All Timberlink Subfloor Connectors are Preformed then Post Hot Dip Galvanised as per NZS 3604 1990. Any Pile to Bearer Connector has a minimum thickness of 1.6mm for extra corrosion protection.

INDEPENDENTLY TESTED
Auckland UniServices Test Report May1991

SIMPLE TO USE
No bolts or off setting piles.
A nailed fixing shrinks with the timber whereas a bolted one requires periodic tightening.

RESEARCH and DEVELOPMENT
Timberlink are the leaders and innovators in the field of subfloor timber connectors. Our objective is to develop connectors that are designed and tested for their end use.

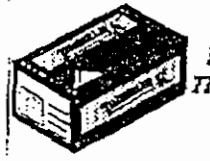
PACKAGING
The Type C Anchor/Braced Pile Connections are Packaged as One Connection per Box.
This Includes:
2 - PB3 , 4 - BJ2 (C12AP/BP)
Nails and Instructions. Store Dry.
Timberlink were the first to introduce this system some five years ago. It ensures the connection is constructed as tested and saves valuable time in trying to locate the various components.

Timberlink Industries Ltd are responsible for the quality of the components. Workmanship during site installation is the responsibility of the Installer or contractor.

Provides a 12kN Connection in Tension or Compression Along the Line of the Bearer or Joist in Timber Piled Foundations.

For bearers from nominally 100 x 75mm to 100 x 150mm deep. Ideal for House Removers and House Repliers.

FOUNDATION — AN INTEGRATED SYSTEM OF CONNECTIONS SPECIFICALLY DESIGNED FOR SUBFLOOR CONNECTIONS



INSIST ON TIMBERLINK

TIMBERLINK FOUNDATIONS TIMBER CONNECTORS

TYPE C 12kN ANCHOR or BRACED PILE CONNECTION
(C12AP/BP)

© COPYRIGHT TIMBERLINK INDUSTRIES LTD 1991

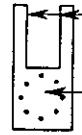
SHEET NO. C12AP/BP

MAY 1991

designed by
REELICK ASSOCIATES LTD for
TIMBERLINK INDUSTRIES LTD
P O Box 35037, Mission Bay
Auckland, New Zealand
PH. 0-9 - 521-1539

CONNECTION FOR PERIMETER WALLS

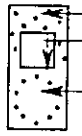
NAIL PATTERNS



4 Nails to Each Flange

8 Nails in Circular Pattern

BJ1 **TOTAL 16 Nails per Connector**



10 Nails

4 Nails to Tongue

10 Nails in Circular Pattern With No Nail Closer than 25mm to Top of Pile.

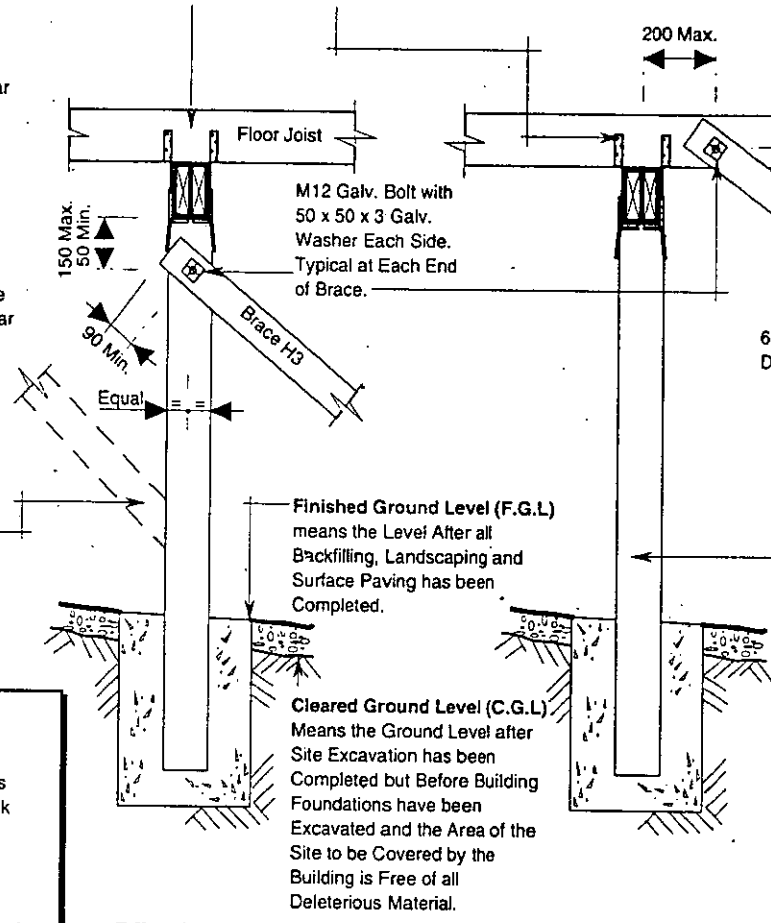
PB1 **TOTAL 24 Nails per Connector**

One Brace May Be Fixed to the Top of the Pile and One to the Bottom of the Same Pile.

NOTE:
Only Timberlink 35 x 3.55 Galvanised Dome Head Nails are to be used with Timberlink Connectors as specified.

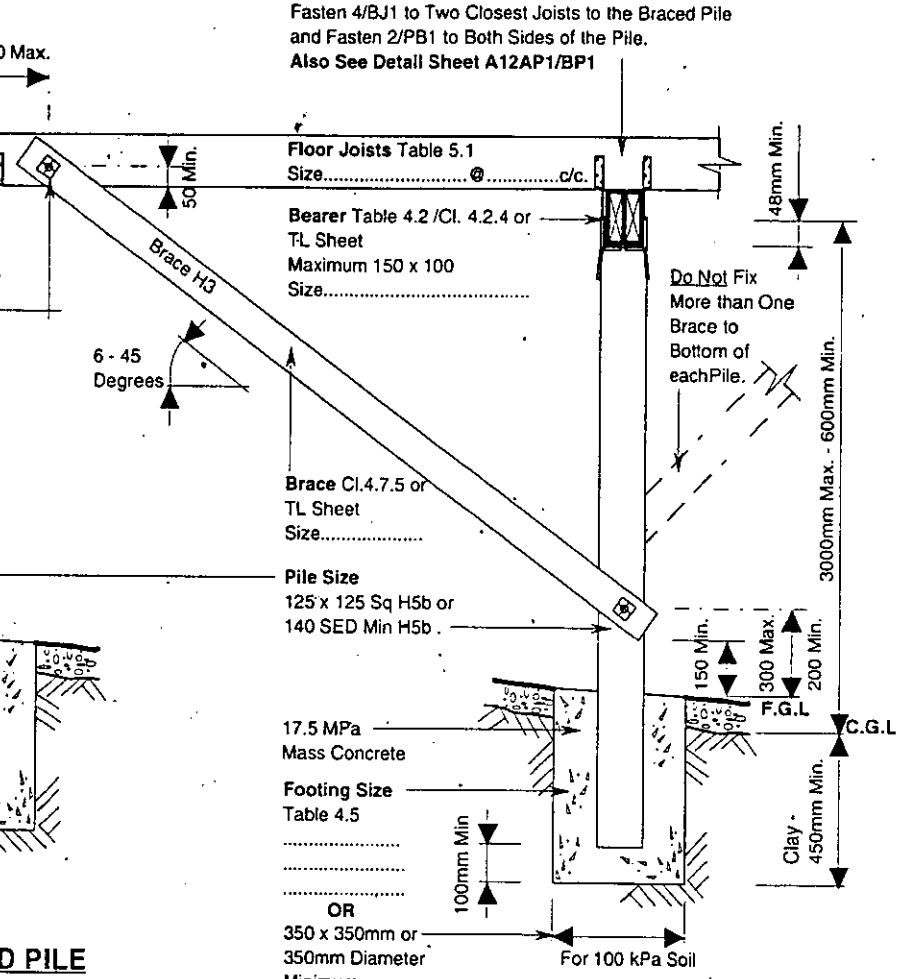
All Timberlink Subfloor Connectors are Preformed then Post Hot Dip Galvanised.

Paint all cut pole surfaces with ENSELE or similar approved.



BRACED PILE
With Brace to Top of Pile and 12kN Connection.

BRACED PILE
With Brace to Joist and 12kN Connection.



BRACED PILE
With Brace to Bottom of Pile and 12kN Connection.

TYPE 1 BRACE ACROSS BEARER -150mm Deep x 100mm Wide Max.Bearer With Type A 12kN Braced Pile Connection (2 - PB1, 4 - BJ1)

Embedded Piles

Complies to NZS3604 1990

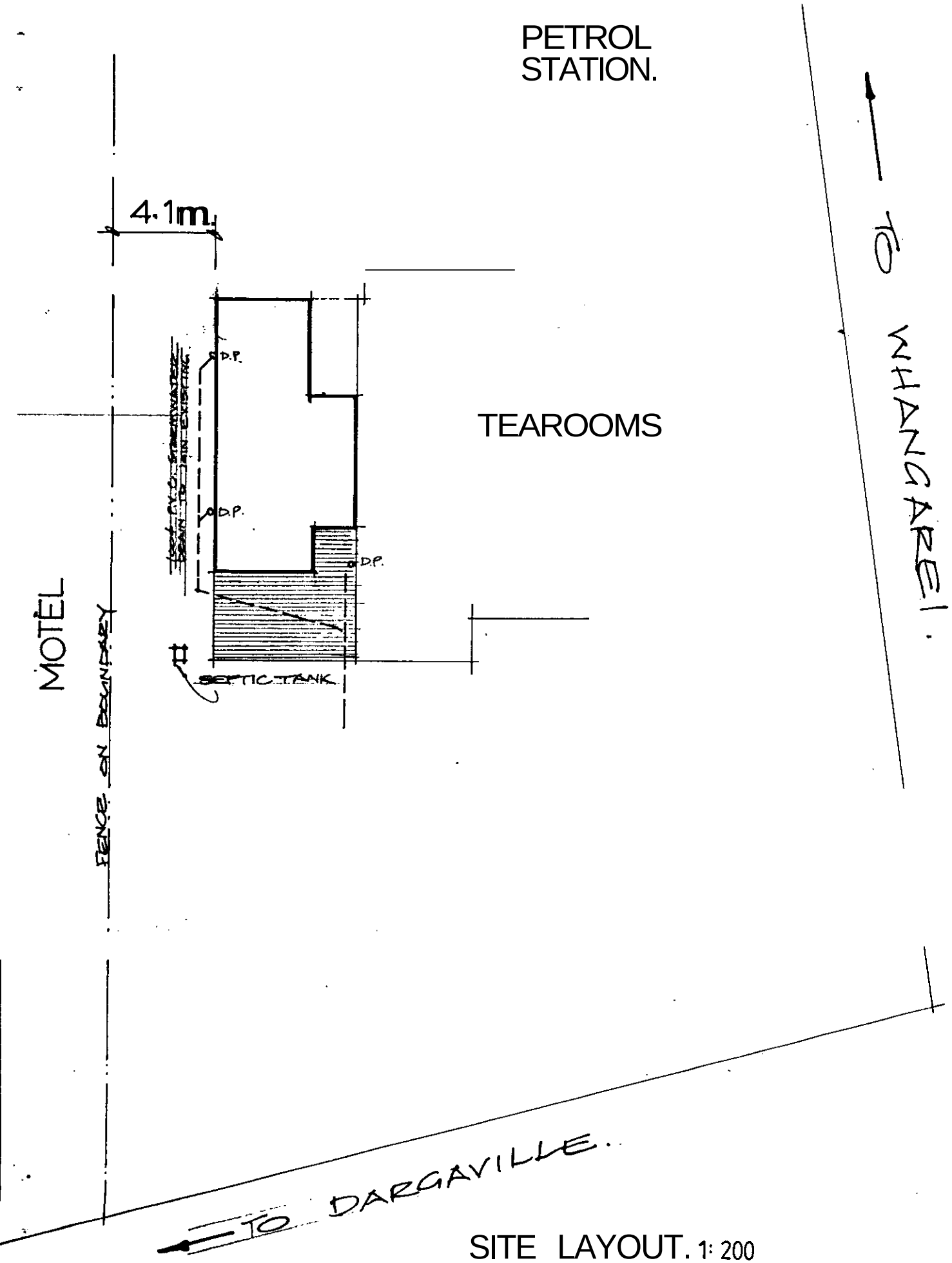
TIMBERLINK FOUNDATIONS TIMBER CONNECTORS

For *Typical Example of Foundation and Subfloor Framing Details from the Timberlink Design Manual.* *Can be used as Details to submit with Permit Drawings.*

SHEET NO. **101E/A**

Also Refer Sheets **A12AP1/BP1**

designed by REELICK ASSOCIATES LTD for TIMBERLINK INDUSTRIES LTD
P O Box 55037, Mission Bay
Auckland, New Zealand
PH. (09) 5211539



SITE LAYOUT. 1: 200

DRAINLAYER

General

All materials shall be the best of their several kinds and all work and materials shall meet the requirements of the New Zealand Building Code, 1992 and amendments, and NZS 7649.

The sub-contractor shall obtain all necessary permits, etc. and shall allow for costs of same in his bid.

Excavation

Excavate all trenches, cut traps, sumps, drains, etc. to depths required for approved laying of sanitary and stormwater drains, and backfill after testing.

Drainage

Provide and lay all new drainage work and connect up to existing drains in 100mm internal diameter PVC socket pipes with all necessary bends, junctions, etc. of similar quality. All joints are to be to the manufacturer's specifications. Leave the pipework with a smooth and clean interior surface.

Drainlaying

Lay and solidly bed all drains to sizes and gradients as required. The whole of the drains are to he accurately laid and jointed. Connect to all traps, vents, and other fittings as required by the local authorities. Build in gully traps as required. Build in all discharge pipes.

Sewer Drainage

Allow to lay all sewer drainage as shown and/or as required by local authority to the correct gradients, complete with man-hole inspection pipes, inspection bends and the like.

Stormwater Drainage

At the base of downpipes, provide 100 PVC bend. Then lay 100 PVC pipes. Lay as indicated to an even gradient and fall to outlet.

Provide lidded pipes to bends and junctions as required by the regulations or local authorities.

Gully Traps

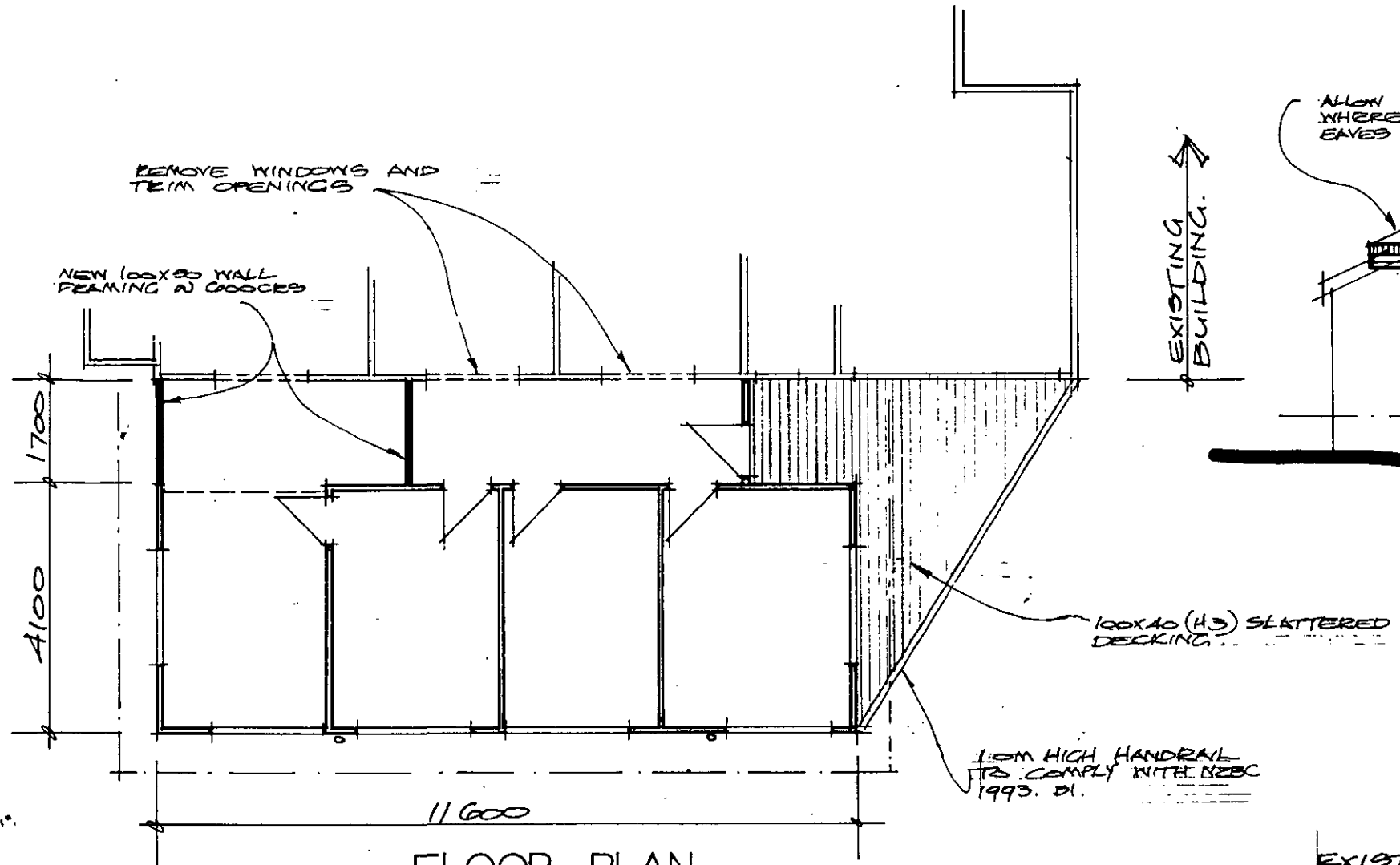
Provide PVC discharge to gully traps set in five-to-one concrete.

Encasing

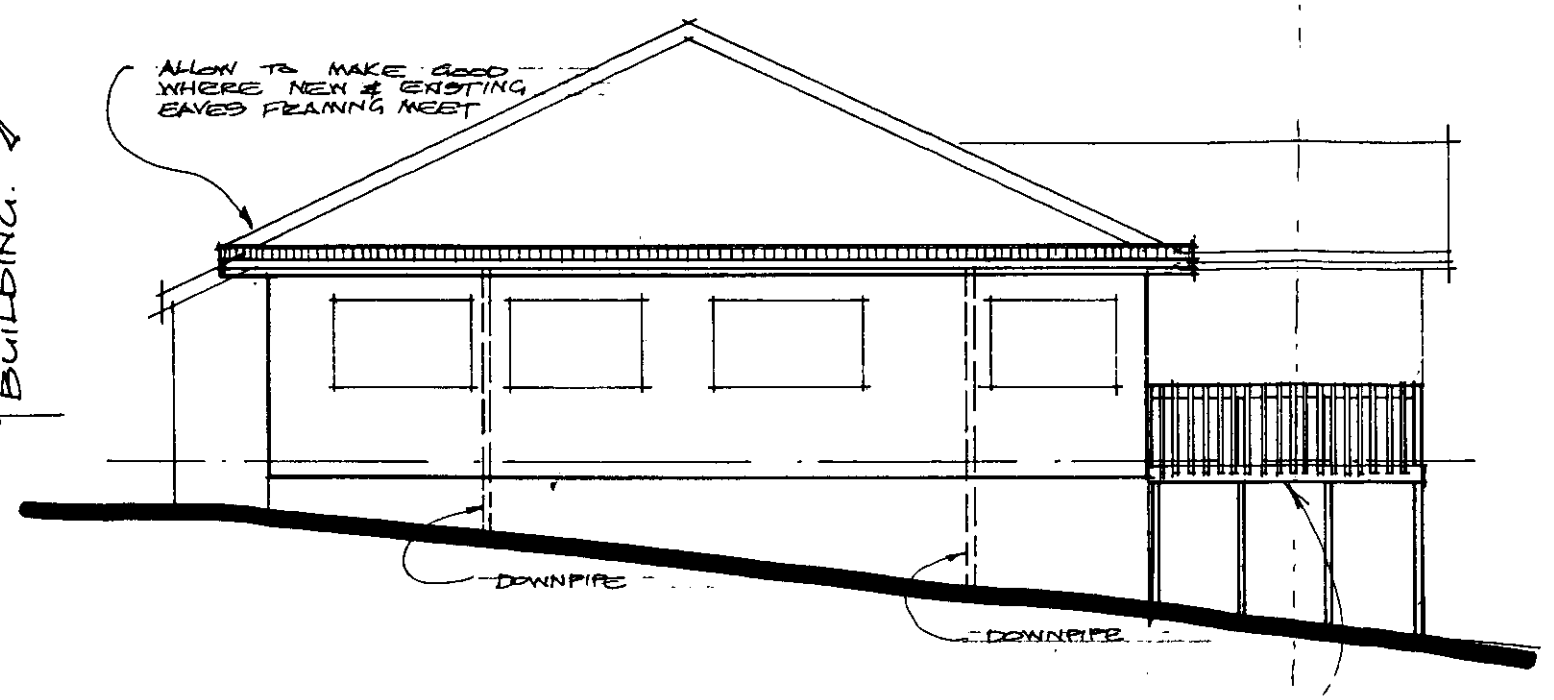
All drains under buildings shall be encased in concrete.

Testing

All drains shall be fully tested prior to backfilling.

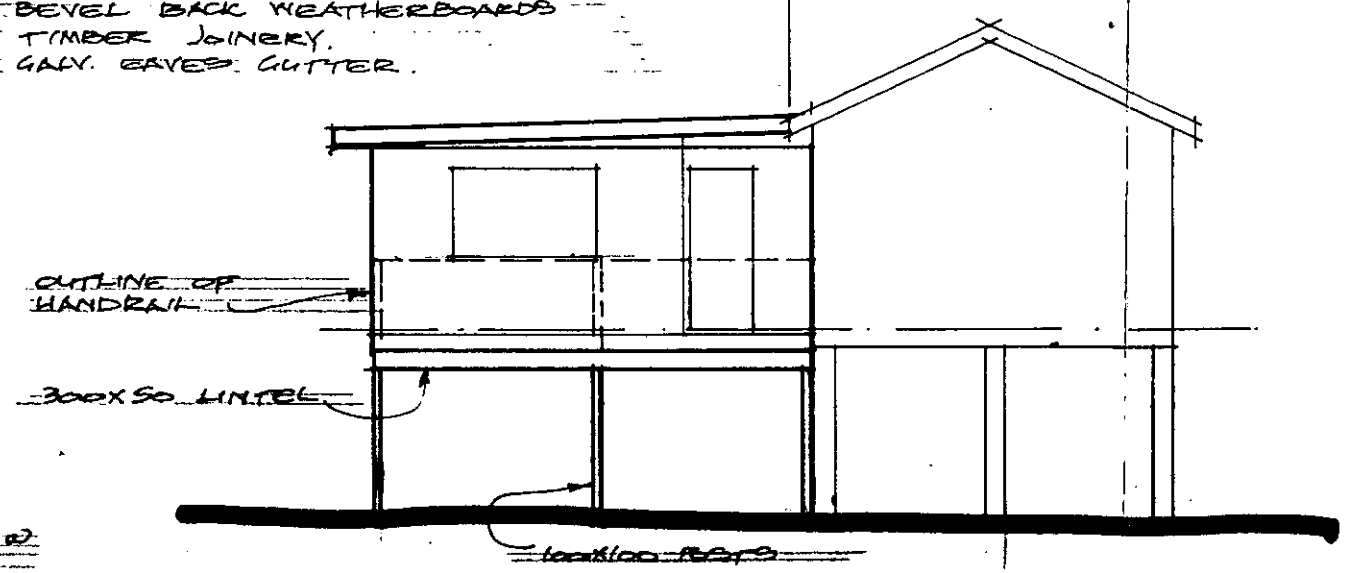


FLOOR PLAN.

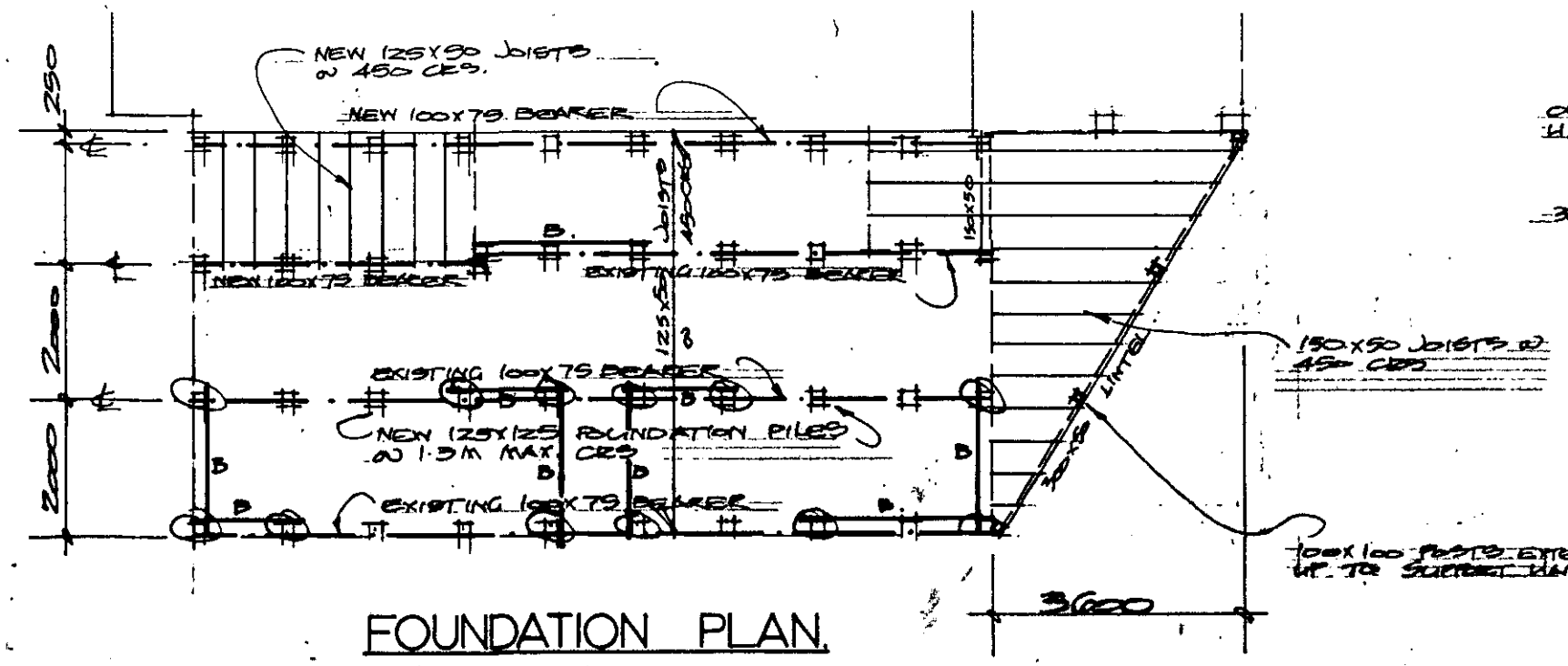


ELEVATION. 1.

EXISTING BUILDING.
- TROUGH SECTION ROOFING.
- BEVEL BACK WEATHERBOARDS
- TIMBER JOINERY.
- GALV. EAVES GUTTER.

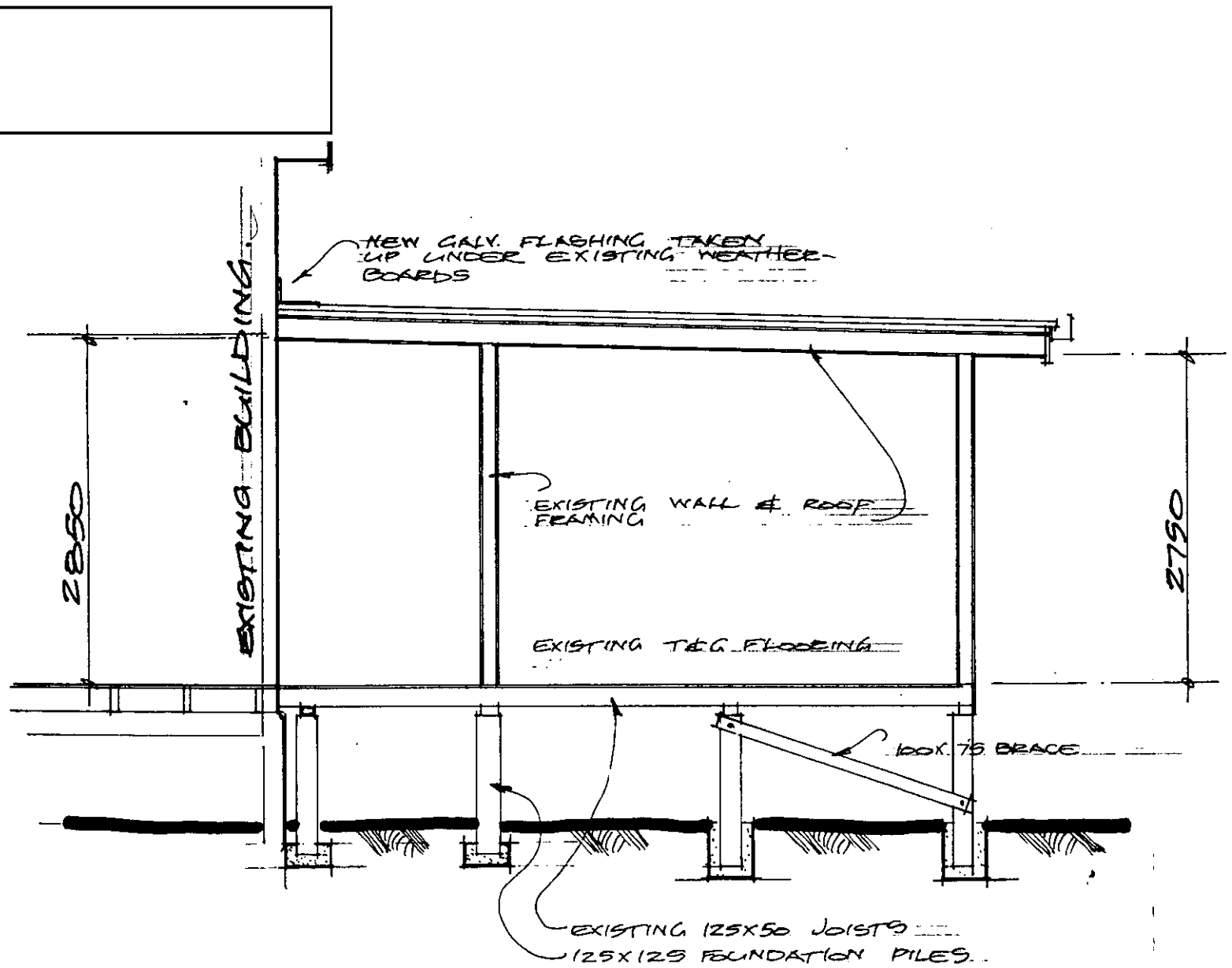


ELEVATION 2.

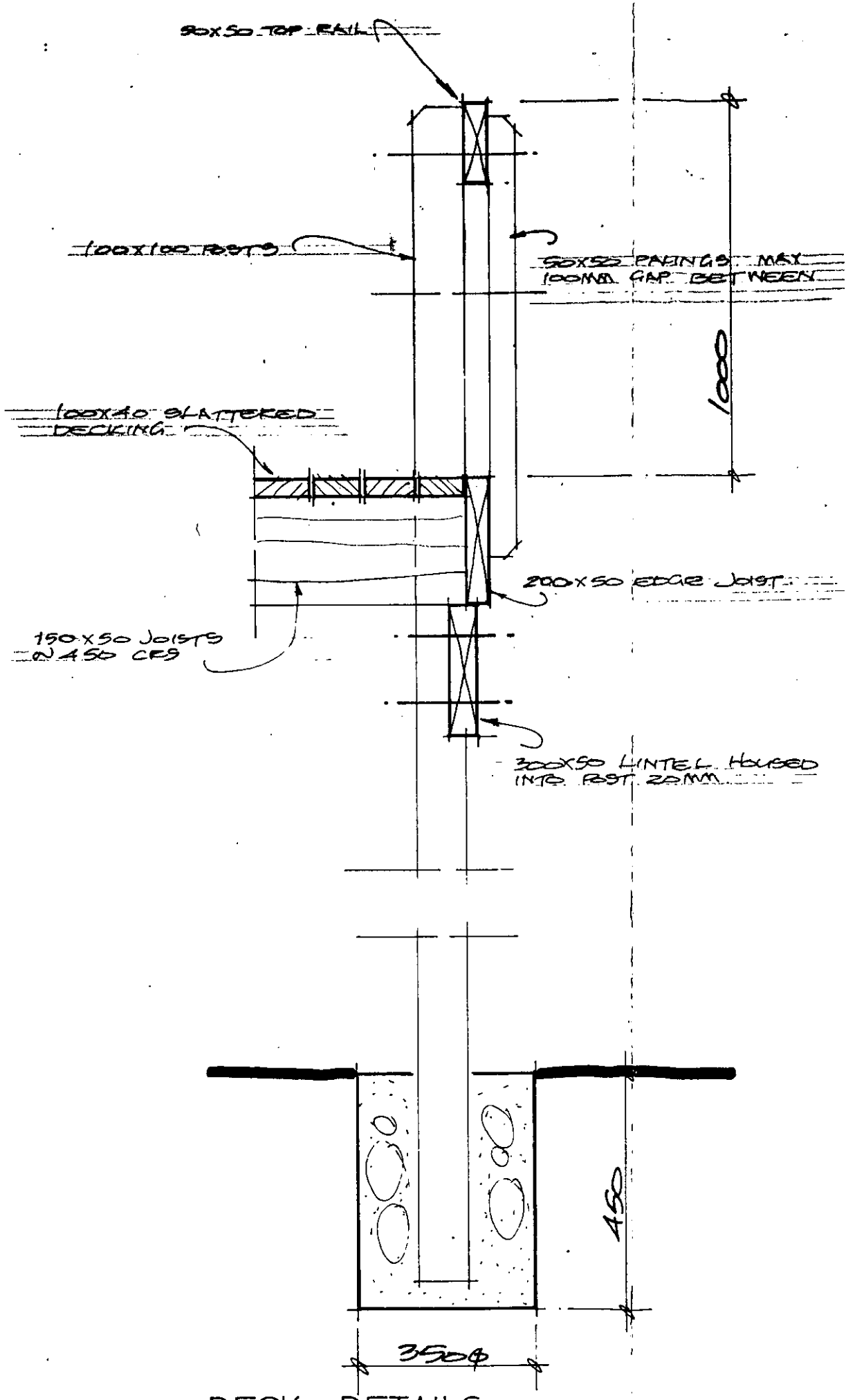


FOUNDATION PLAN.

B= 100X75 BEARERS.



CROSS SECTION.
1: 50



DECK DETAILS 1: 10

KAIPARA DISTRICT COUNCIL

Private Bag 1001, Dargaville. Please address all correspondence to the General Manager.

Refer

File Ref

C O D E C O M P L I A N C E C E R T I F I C A T E
Section **43(3),** Building Act **1991**

Applicant

GD & MM EVERETT
RD **2**
MAUNGATUROTO

Consent Details

Consent/PIM No.: **950314**
Date issued: **11/12/95**

Valn No: **0120000200**

Project Descrn: FOUNDATIONS ONLY
BEING STAGE 1 OF AN INTENDED **1** STAGES
RESITE PART OF BUILDING TO EXSISTING BLDG

Intended Life: INDEFINITE, BUT NOT LESS THAN 50 YEARS

Intended Uses: STAFF KITCHEN EXTRA LIVING AREA

Project Location: STATE HWAY **1**

Legal Description: LOT **2** DP **113162** BLKS IX X WAIPU SD

Estimated Value: **$** 15,000

The Council's total charges paid on the uplifting of this Code Compliance Certificate in accordance with the following details are $ 0.00

This is a final code compliance certificate issued in respect of all the building work under the above building consent.

SIGNED FOR AND ON BEHALF OF THE COUNCIL:

_____ Building Inspector Date 13.12.95

DISTRICT OFFICE
Hokianga Road, Dargaville
Telephone 09-439-7059 (8 lines)
Fax 09-439-6756

SERVICE CENTRE
Main Road, Paparoa
Telephone 09-431-7019
Fax 09-431-7017

KAIPARA DISTRI[redacted]TCIL

PRIVATE BAG
DARGAVILLE

PHONE 7059
DARGAVILLE

Date 4:8:93

ACCOUNTS COPY

NU 445

G+J Beeghan
Box 89
Mangawhai

Debtor No. D

This is to advise that your application for a ~~permit~~ consent to extend kitchen and add Two new bedrooms Lot 8 DP 132952 Kanuka ST Mangawhai

will be processed and the relevant permits, subject to compliance, will be available for issue upon payment of the following fees:

B 1 0 1 0 1 A	Building ~~Permit~~ Consent	$ 300.00
	P IM	40 00
W 1 1 1 0 1 A	Building Research Levy	$
B 1 0 1 0 2 A	Plumbing and Drainage Permit	$ 30 00
W 1 4 1 0 2 A	Footpath and Street Damage Deposit	$ 500.00
M 1 1 1 0 2 A	Sewer Connection	$
T 1 0 1 0 4 A	Water Connection	$
L 1 0 1 0 2 A	Stormwater Inspection	$
W 1 4 1 0 3 A	Vehicular Crossing	$
		$870.00

Total Includes $ 41.10 GST

BUILDING INSPECTOR

KAIPARA DISTRICT COUNCIL

Dargaville Office
Private Bag, Dargaville
Phone (0884) 7059

Paparoa Office
P.O. Box 1, Paparoa
Phone (089) 4317019

APPLICATION FOR BUILDING PERMIT 14839

To the Engineer (ATTENTION: Building Inspector)

I hereby make application to ~~erect/re-erect/extend/alter/repair~~ the building(s) according to the site plan, detailed plans, elevations, cross sections and specifications deposited herewith in duplicate.

Particulars of the land and buildings are:

OWNER Name G J & G P HODSELL
Postal Address RD 2 MAUNGATUROTO
Phone 4318 178

BUILDER Name L.J. HODSELL
Postal Address RD 2 MGTO
Phone 4318 178

EXISTING USE OF SITE AND BUILDINGS _____

NATURE OF PROPOSED BUILDING WORK NEW 3 B/R HOUSE

e.g. additions to Dwelling, Bedroom, Lounge extensions etc.

VALUATION DEPT. ASSESSMENT No: (from rate demand) 1180-13000

LEGAL DESCRIPTION OF SITE: (from rate demand or title deeds) PT LOT 2 DP 25251 BLK IX WAIPU SD.

ADDRESS OF SITE BRYNDERWYN RD, RD 2 MGTO SH12.

AREA OF SITE _____ Hectares 300 sq. metres'

NATURE OF SOIL (rock, clay, sand, loam etc) CLAY

FLOOR AREA (proposed work-square metres)'

	Basement	Ground Floor	Other Floors	Total
Main Building	—	109.44	—	109.44 sq m
Accessory Buildings	—	—	—	—

ESTIMATED VALUE OF WORK AND FEES

	VALUE
Main Buildings (excluding plumbing and drainage)	$ 425.00
Accessory Buildings (excluding plumbing and drainage)	$ —
Plumbing	$ 78.00
Drainage	$ 78.00
Sub Total	5
Building Levy Fee (on Sub Total Value)	47.00
Vehicle Crossing Deposit	
Vehicle Crossing Payment	$ 628.00
Footpath and Street Damage Deposit	
Sewer Connection	
Water Connection	
Other: e.g. Hoarding Licence, Stormwater Inspection, Off Street Parking	
TOTAL FEE	$

FOR OFFICE USE ONLY

Fees	Receipt No.	Date	Permit No.
$	61676	15/2/92	
		/ /	
$		/ /	
$		/ /	
$		/ /	
$		/ /	
5		/ /	
5		/	
$		/ /	
$		/ /	
$		/ /	
$		/ /	

CERTIFICATE

I hereby certify that the above information is correct in every pe an do hereby agree to abide by all p ris i of th Kaipara District Council By-laws governing and regulatir g all matters the subject of the f i

Signature of Applicant G J Hodsell Date 2/12/91

FOR OFFICE USE ONLY

TO TOWN PLANNING OFFICER

Checked and approved Signature .....
Date .....

TO BUILDING INSPECTOR

Checked and approved Signature ... .
Date ....

TO STRUCTURAL ENGINEER

Checked and approved Signature .....
Date .....

TO FIRE INSPECTOR:

Checked and approved Signature,, ...
Date .....

TO HEALTH INSPECTOR

Checked and approved Signature .....
Date .....

REMARKS

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PERMIT TO BE ISSUED SUBJECT T O

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PERMITS

Building Permit No. ..... Signature ..... Date .....
Plumbing Permit No. ..... Signature ..... Date .....
Drainage Permit, No. ..... Signature ..... Date .....

.....

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GENERAL INFORMATION

(1) The following MUST accompany this Application:

PLANS AND SPECIFICATIONS TO BE SUBMITTED IN DUPLICATE in ink or on print paper to an acceptable metric scale (eg. Plans and Elevations 1:100, Cross sections 1:50, Details 1:10, Site Plan 1:200 would be normal) and drawings shall be drawn or printed on quality paper preferably of Standard A1, A2 or A3 size.

The following shall be included:

(a) A floor plan of each floor level showing position of all sanitary fittings and names and sizes of various rooms.

(b) Where the building is on a sloping site the correct height of foundations must be shown.

(c) An elevation of each external wall.

(d) Cross-sections showing framing, the type and location of cladding, insulation, sheathing and lining.

(e) The type and location of each' foundation element (for example: reinforced masonry foundation wall, anchor pile, cantilevered pile, and so on).

(f) Adequate information on all subfloor, floor, wall, and roof framing, including the type and location of each subfloor brace, diagonal brace, and wall bracing element and the number of bracing units assigned to each wall bracing element.

(g) Where a building requires Plumbing and Drainage work a separate Application form must be filled in and fee paid before a Building Permit can be issued.

(h) Such drawings and information in details as may be necessary to indicate that the proposed building or other work or change of use of land or buildings will comply in all respect with the District Planning Scheme and with the By-laws.

(i) A report and calculations showing how the design complies with the By-laws in the case of buildings requiring specific designs.

(j) Applications for (in so far applicable):

(1) Drainage and Plumbing
(2) Sewer Connections
(3) Water Supply Connection
(4) Footpath Damage Deposit
(5) Hoarding Licence
(6) Vehicle Crossing
(7) Stormwater Connection

(k) In duplicate a location drawing showing the site (all four boundaries) the buildings already on the site and the new proposed building shown in black. The measurements from the proposed buildings to all buildings on the site and the boundary lines should be given.

(2) FEES may be forwarded later on advice of availability of permit and the amount of fees required.

SCALE OF FEES

For the examination of plans and specifications of any building and for the inspection of such building the following fees shall be payable according to the estimated value of the work.

In any dispute as to value, the Engineer shall have the absolute determination of the value of the proposed work or building.

BUILDING PERMIT FEES

ESTIMATED VALUE OF WORK: (Value to exclude value of Plumbing and Drainage work).

Values must be calculated at current market rates and include the **GST** content of the price of the building.

0 to $ 2,500	fee	$ 55.00
$ 2,501 to $ 5,000	fee	$ 95.00
$ 5,001 to $ 9,000	fee	$145.00
$ 9,001 to $ 13,000	fee	$220.00
$ 13,001 to $ 20,000	fee	$300.00
$ 20,001 to $ 30.000	fee	$370.00
$ 30,001 to $ 451000	fee	$425.00
$ 45,001 to $ 60,000	fee	$485.00
$ 60,001 to $80,000	fee	$525.00
$80,001 to $110,000	fee	$585.00
$110,001 to $150,000	fee	$650.00
$150,001 to $200,000	fee	$750.00

$200,001 and above — $750.00 for the first $200,000 plus $100.00 for every $50,000 or part thereof thereafter

That where a design certificate or structural checking is required, that the fee be increased by 25%.

BUILDING RESEARCH LEVY FEE

In addition to the above fee, there will also be payable a Building Research Levy in accordance with the Building Research Levy Act 1969, which is set at $1.00 in each $1,000 or part thereof of the value of each Building Permit issued. Permits for work of a value less than $20,000 are exempted.

PLUMBING AND DRAINAGE PERMIT FEE

See Drainage and Plumbing Application Form

A minimum fee of $30.00 for the first $200 worth of work (labour without materials).

$6.00 per $100.00 worth of work thereafter.

All the above fees include **GST.**

[redacted]IPARA DISTRICT COUNCIL

~~OTAMATEA COUNTY COUNCIL~~

DRAINLAYER N H Macnay

Permit No. 718

Date 8th May 1992

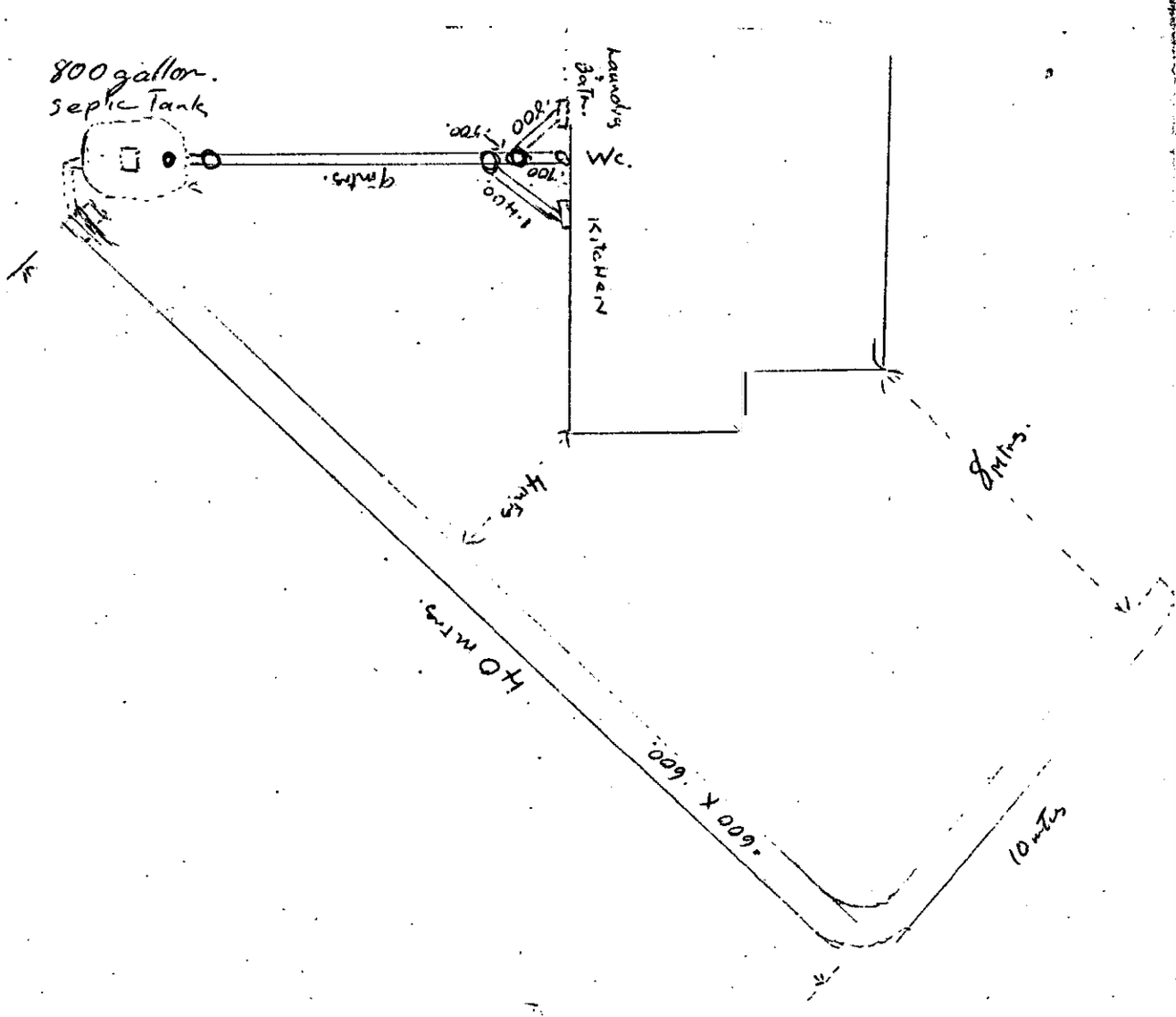
SITE DRAINAGE PLAN

* New Sewerdrains	RED
Stormwater	DOTTED BLACK
Old Drains	FULL BLACK

ACTUAL measurements between inspection pipes, changes of direction, etc; are to be clearly shown. This applies to stormwater drains also. The DEPTH of all cleaning eyes, is also to be shown.

Material Used

SEWER	✓PVC/CERAMIC
STORMWATER	PVC/CERAMIC
	DELETE

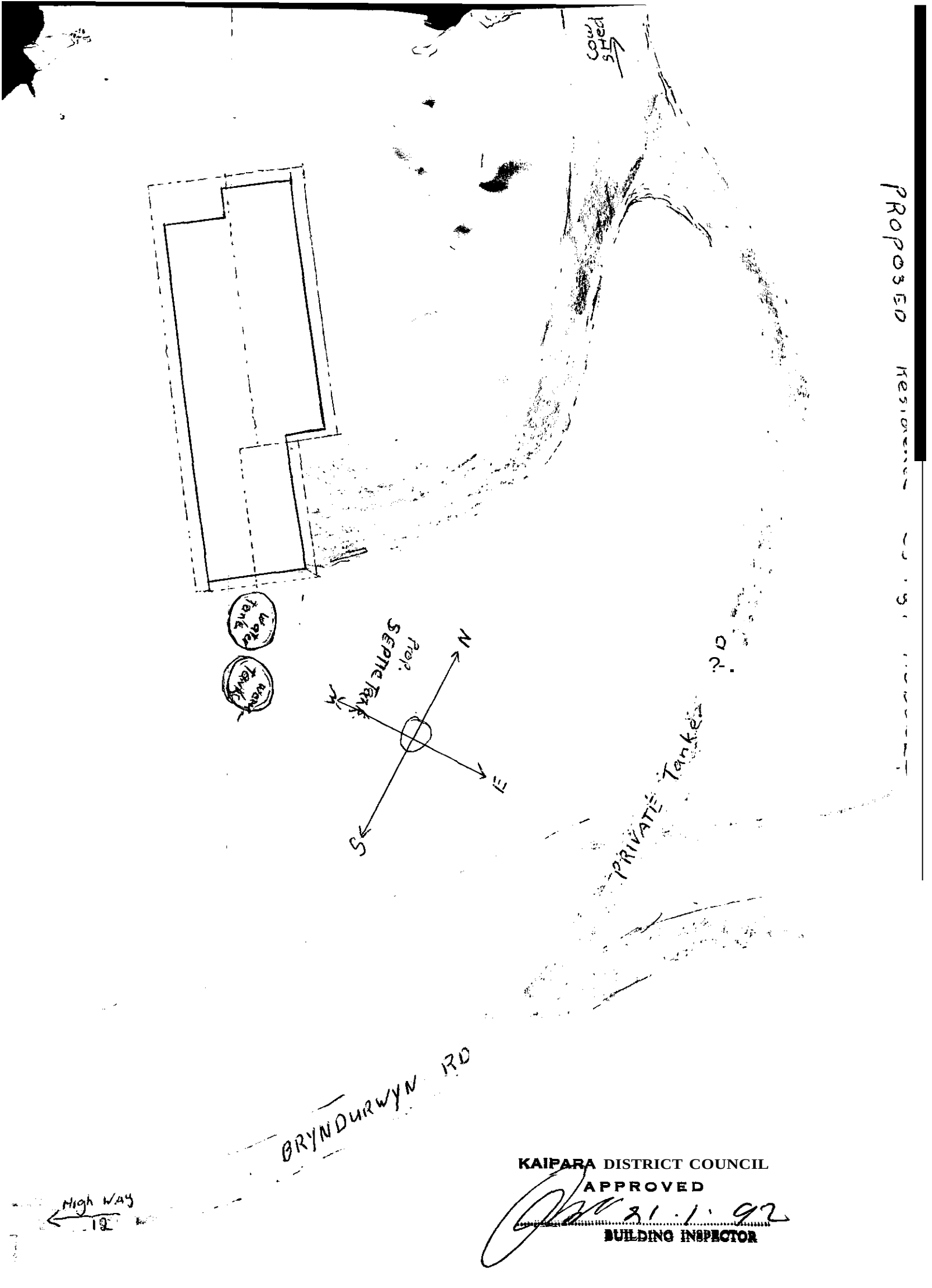


OWNER : CJ GP HODSELL LOT No. PT LOT 2

STREET : BRYDERWYN RD MGTO DP No. 25251 /ASS 118/13

Baigent Print. Whangarei

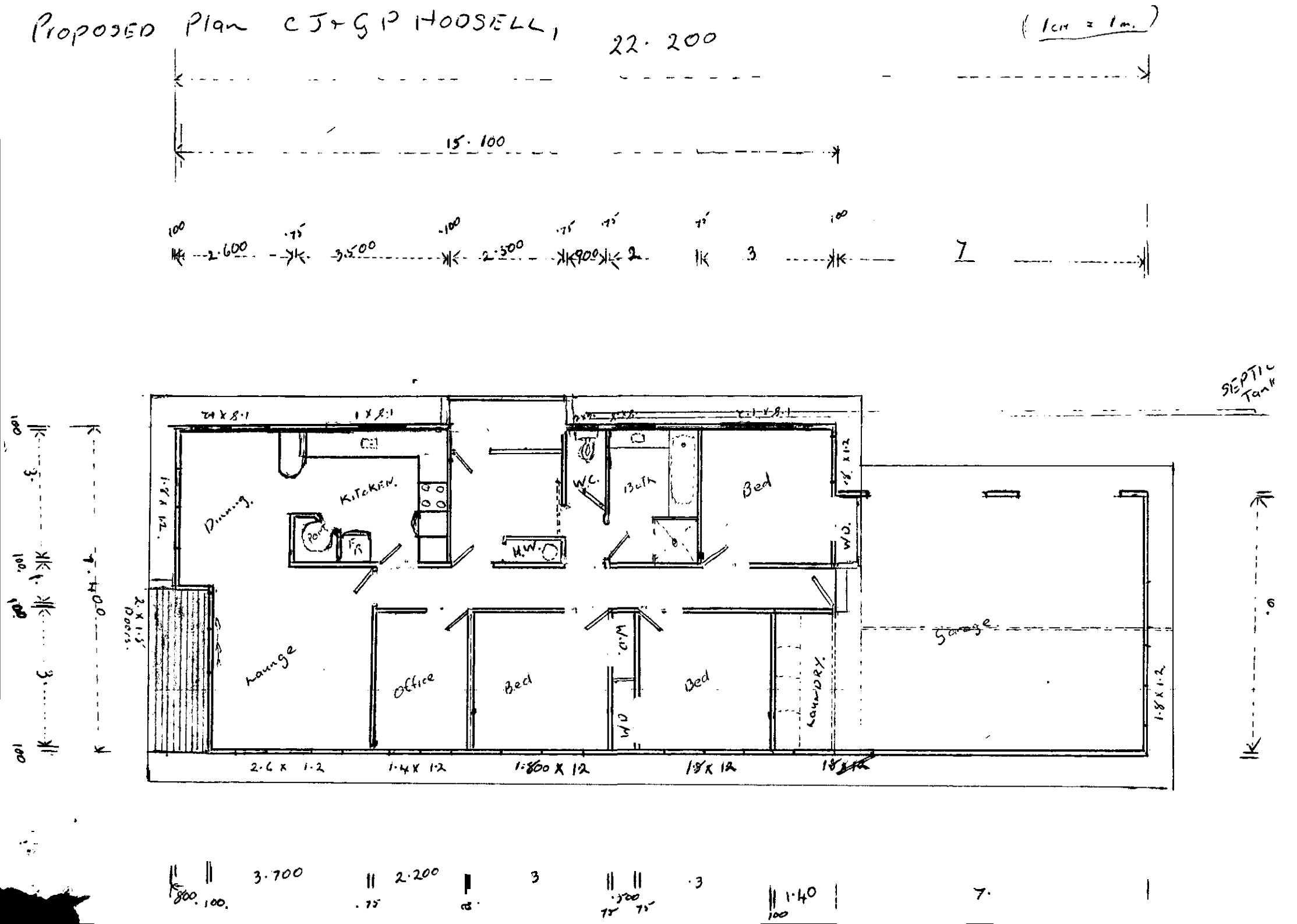




KAIPARA DISTRICT COUNCIL
APPROVED
31.1.92
BUILDING INSPECTOR

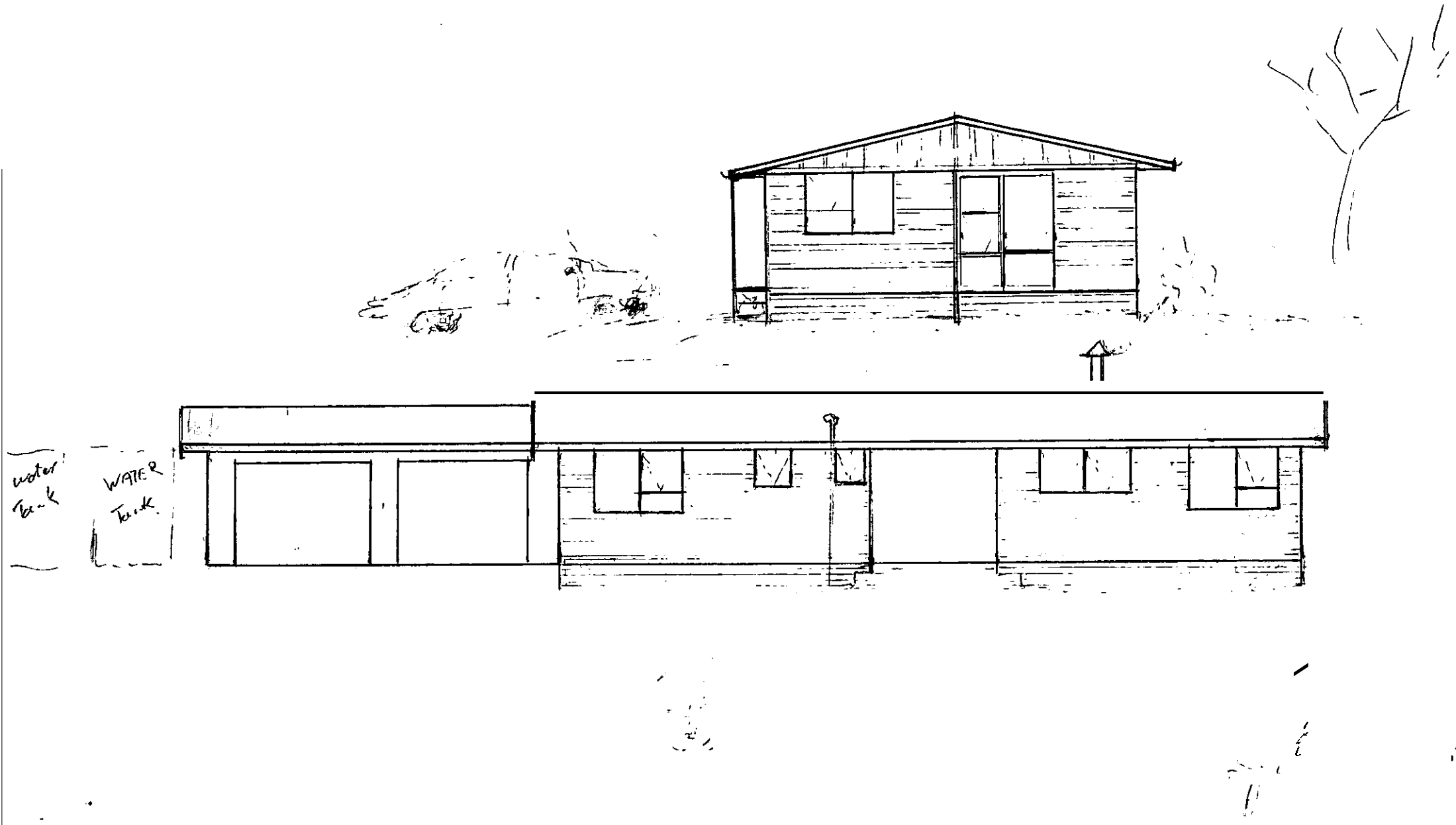
Mrs Hodsell brought
these plans in.
She has got
permit forms to
fill in and will
post them in.

PROPOSED PLAN CJ+GP HOOSELL, 22.200 (1cm = 1m.)

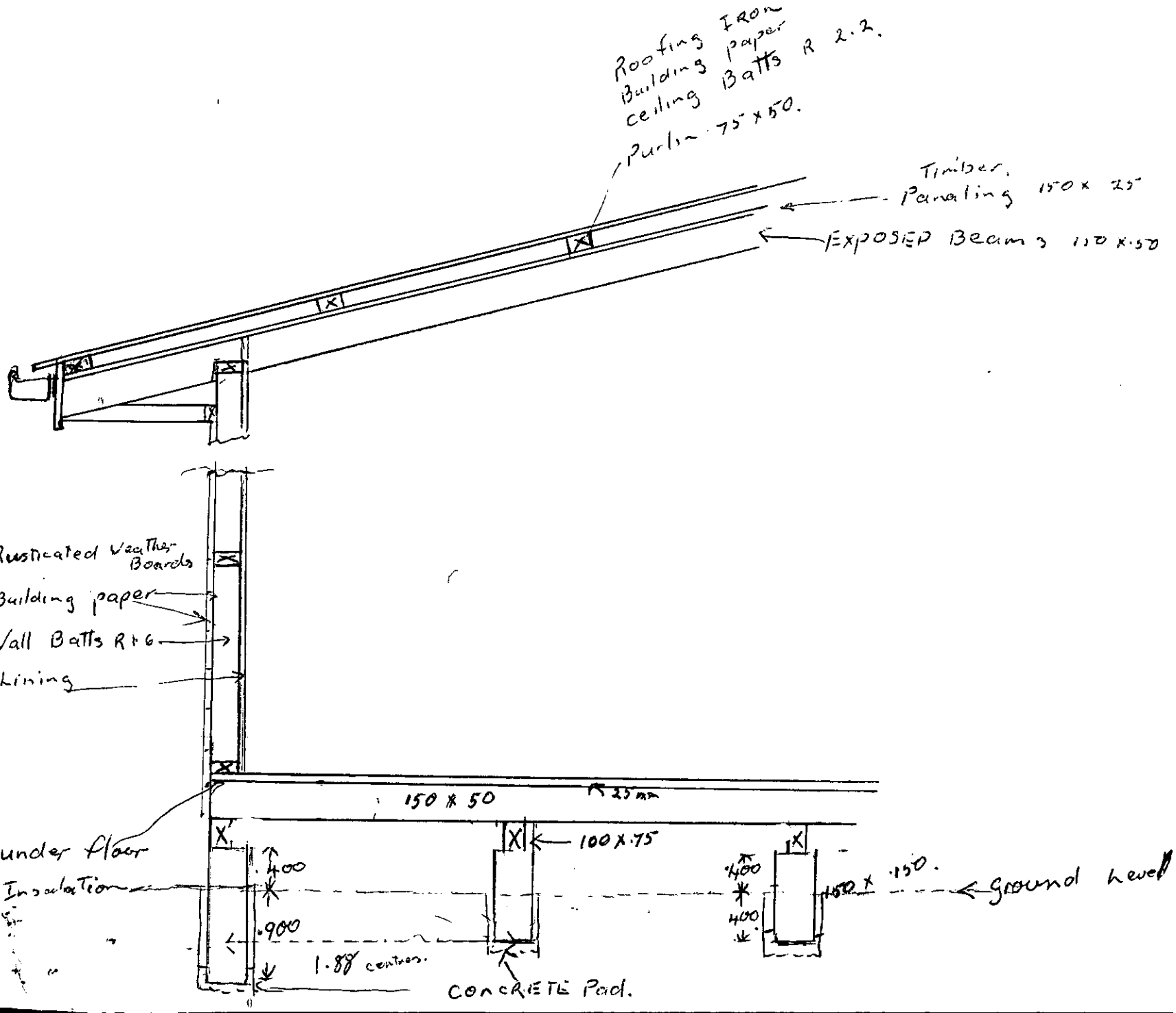


Benchmark
Hardies
CMH
Balfour
Placemakers

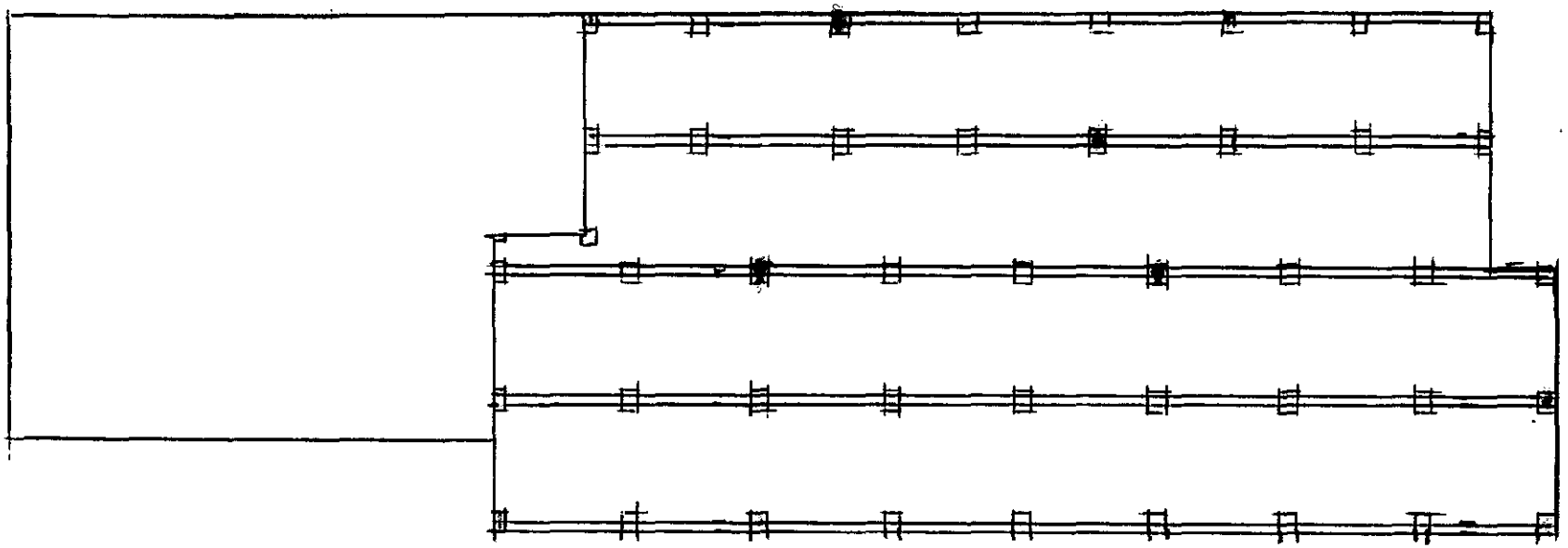
PROPOSED PLAN CJ & GP HODSELL

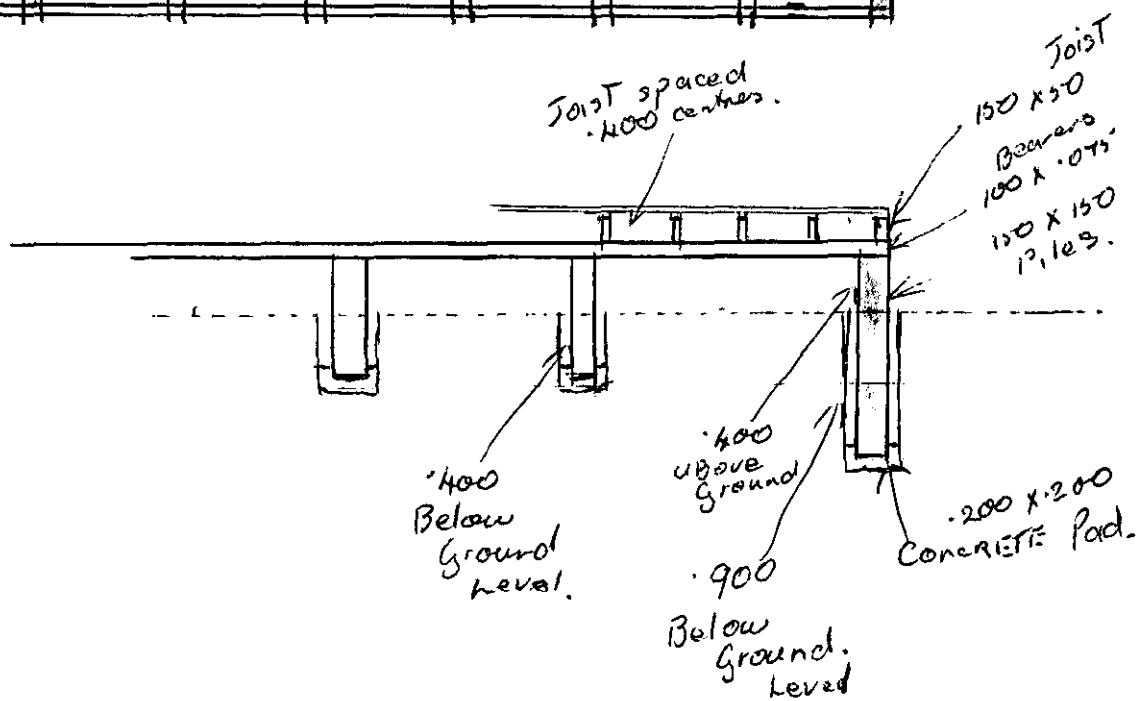


Proposed Plan C J & G P Hoosell



Proposed Plan C/T & G.P. HODSELL





Concrete Footing for Garage
·300 x ·200 with (2) 10mm steel rods.

SPECIFICATIONS FOR CJ & GP HODSELL, RESIDENCE MAUNGATUROTO

1. EXCAVATION

1.1 EXCAVATION:

All foundations shall bear upon solid bottom in undisturbed material or upon firm fill where a certificate of stability has been used in the terms of N.Z.S. **4431.**

1.2 CONCRETE WORK:

Generally concrete shall be ordinary grade concrete attaining a compressife strength of 17.5 mpa at 28 days and may be either mixed on site or obtained from any approved with N.Z.S. 1900 Ch 9.

2. CARPENTRY

1.2 GRADING TIMBER:

All timber shall be graded in accordance with N.Z.S. **3631** (1971) and amendments.

2.2 FINISH OF TIMBERS:

Except for timbers required to be rough sawn, all external timbers shall be machine gauged.

All internal finishing timbers shall be machine dressed and prepared to a smooth finish without knots or checks.

2.3 TIMBER TREATMENT:

All framing timber shall be No. 1 framing grade radiata pine, treated to commodity specification C8 (pressure of diffusion treated).

Timber piles shall be of natural round timber complying with N.Z.S. 3605 and treated to TPA C2 provided that where a timber pile has been cut after treatment in accordance with TPA requirements and such surface shall be not less than 150mm above finished ground level.

2.4 TIMBER SCHEDULE:

Bearers	Continuous over 2 or more spans	100 x 75
Joists	at **450** centres	150 x 50
Bearer wall & plates		100 x 50
Wall framing		75 x 50
Rafters	at **1200** centres	100 x 50
Purlins	on edge at 900 centres	75 x 50
Fascia board		**200** x **25**
Exposed beams (rafters)		150 x 50

Match lining T&G	150 x 15
Rusticated weather board	200 x 20

2.5 DAMP - PROOF COURSE:

Between ail faces of timber in contact with concrete place full width layer of malthoid or equivalent damp proof courses.

2.6 FRAMING:

Frame up for sub floor, floor, walls and roof. Fix bearer to top of timber pile strapping with 4mm galvanised wire or builders trap over bearer fixed each side of pile with two staples to each end. Nail with four 1000mm galvanised nails. Lay floor joists gauged level over bearers and cut in solid blocking as shown. Wall framing shall be true to line plumb and square. Stud spacing to be at 600 centres with three rows of dwangs. Brace wall and roof in accordance with N.Z. 3604 calculations sheets.

2.7 FLOORING:

Lay 20mm 'flooring in large sheet to detailed set-out and fixed to manufacturers recommendations.

At completion floors shall be cleaned off with one cut flush and clean sanding machine.

2.8 EXTERIOR SHEATHING:

Shall consist of rusticated weather boarding from the bearers or hardie plank weather boards fixed in accordance with the manufacturers recommendations over light weight building paper.

2.9 BASD SHEATHING:

Sheath base below bearer level with 150 X 25 tanalised timber base boards fixed horizontally and supported where necessary.

2.10 SOFFITTS:

Fix 4.5mm hardieflex soffitts in large size sheets. Joint with P.V.C jointing strips.

2.11 INSULATION:

Unifoil 422 breather type sisalation for under floor. R1.6 batts insulation to all exterior walls, R2.2 batts insulation to all roofing ceiling areas.

2.12 INTERNAL LININGS:

Line all walls with 9.5mm Gibralter board or gib foil where applicable fixed with galvanised clouts, with nail heads and joints stopped flush. Line inside wardrobes and other cupboards.

Line ceilings with standard 9.5mm Gibralter board with joints stopped flush. Stop all nail holes. Use largest practicable sheet sizes. Microcarpa match lining where indicated.

2.13 INTERNAL TRIM:

Scotia, architrave (where applicable) and skirting shall be TRADA mouldings.

2.14 SHELVING:

Refer to detail sheet and fix dressing grade radiata pine shelving where indicated. Fit slattered shelves to Hot water cupboard. Support shelves on neatly fitted bearers.

2.15 BATH:

Provide bath supports and build in front of bath. Line with Gibralter board. Fit ex 150 x 25 trim board around bath.

3. JOINERY

All joinery shall be constructed to detail and to sizes shown in workman like manner. Parts shall be back grooved, rebated and housed to prevent opening up by shrinkage and shall be thoroughly glued and fixed without visible nails where possible. No hammer bruises or other marks shall show in the finished work. Where nails, brads or screws are used they shall be stopped with approved stopping.

3.1 WINDOWS: Aluminium

Windows and exterior doors where shown shall be Fisher Terratone aluminium to standard metric sizes shown in accordance with detail sheet, supplied glazed with hardware fitted. Jamb liners to grooved to take Gib-board wall linings.

Windows and doors shall be installed in accordance to manufacturers recommendations complete with head flashings and scribers.

3.2 DOORS:

Interior doors shall be hollow core doors (type as per Addenda) nominal 38mm thick the following sizes where indicated:
1980 x 760
1980 x 660
1980 x 610

Jamb liners to be grooved to take Gib-board wall linings. Provide hinged under floor access door complete with padbolt.

3.3 DOOR HARDWARE:

To be decided by owner.

3.4 FITTINGS:

To be decided by owner.

4. ROOFING

4.1 MATERIALS:

Shall be corrugated galvanised iron.

4.2 WORKMANSHIP:

Purlins shall be installed by roofer, set out to manufacturers requirements. Roofing is to be installed by registered roofing contractor in strict accordance with manufacturers requirements.

Provide lead edged ridge capping, finish verges with flashings or rolled edge sheet.

5. PLUMBING

5.1 GENERALLY:

Materials and workmanship shall comply with the requirements of the Drainage and Plumbing Regulations 1959 and amendments and in accordance with the Department of Health and Local Body Requirements.

5.2 MATERIALS:

Where appoved by the Local Authority all cold and hot water services shall be placed in Polytherm P.B. tubing and fittings or similar appoved products and are to be installed in strict accordance with the manufacturers instructions.

U.P.V.C. pipes shall conform to N.Z.S. 1338 and be installed according to the "Code of Practice for the Installation of Unplasticesed P.V.C. Pipes".

5.3 WORKMANSHIP:

Pipes are to be set out in straight runs with easy bends and supported to prevent sagging. Where possible, pipes shall be out of sight.

5.4 PIPE FLASHING:

Flash all vent pipes with 1.8kg lead.

5.5 SPOUTING AND DOWNPIPES:

Spouting and downpipes shall be .6mm gauge galvanised iron. Spouting shall be supported on double 25mm x 1.2mm gauge galvanised iron with clips at 900 centres, provide stiffening gussets to all angles in spouting or downpipes. Two 75mm diameter downpipes shall be provided, seamed with slip joints and fixed to walls with .7mm gauge straps.

5.6 COLD WATER SUPPLY:

Connect cold water supply from a point provided by the Local Authority in minimum 12mm Alkathene laid in a trench.

Provide on branch for an external hose tap. Cold water services within the building shall be U.P.V.C. pipes conforming to N.Z.S. 138.

If a shower is provided take cold supply from low pressure side of P.R.W.

5.7 HOT WATER SUPPLY:

Provide and install a hot water cylinder (size as stated in Addenda) complete with lagging and casing to comply with N.Z.S.S. 720. Fit thermo-stat and element supplied by Electrical Contractor. Provide a copper sludge pipe with stop cork below the hot water cylinder and copper vent.

Hot water services within the building shall be U.P.V.C. to comply with N.Z.S. 138.

5.7 TAPS:

Owners choice.

5.8 SOIL, WASTE AND VENT PIPES:

Soil and waste pipes shall be in P.V.C. adequately supported.

6. DRAINAGE

6.1 GENERAL:

Supply all materials and labour necessary for all drainage work which shall be strictly in accordance with Local Authority By-laws and the Drainage and Plumbing Regulations 1959. Check levels of the drainage system and ascertain depths of drains with the contractor before work commences.

6.2 MATERIALS:

All pipes and fittings shall be those generally employed in the trade and conforming with the Local Councils requirements and to the applicable N.Z. standards.

6.3 INSPECTION FITTINGS:

All inspection fittings shall be sealed and occur at each branch every change of direction and at not more than 12 metres apart.

6.4 GULLY TRAPS:

Shall be encased in concrete and specified in the concrete work trade section and including cast iron gratings.

6.5 TESTING AND BACKFILLING:

Before backfilling the drains shall be inspected and tested by the Local Authority Inspector and any defects rectified.

Backfill and leave all neat and tidy on completion.

7. ELECTRICAL WORK

7.1 GENERAL:

All work shall be carried out by Registered Electricians and to the requirements of the Electrical Wiring Regulations 1961, their amendments and interpretations and in compliance with the ordinances of any other relevant or Government Authority.

Electrical fittings to be decided by owner.

8. PAINTING

Painting shall be carried out by the owner.

BUILDING INSPECTOR'S FIELD SHEET

AUTHORITY

Stats. No. J No. 20163

Inspector: M _____ File No. _____

Receipt No. _____ Date Permit Issued 22/1/92

OWNER

Name CJ + GP Hodsell

Mailing Address RD 2
Maungaturoto

BUILDER

Name LJ Hodsell

Mailing Address RD 2
Maungaturoto

PROPERTY ON WHICH BUILDING IS TO BE ERECTED/DEMOLISHED

SITE

Street No. _____

Street Name Bryndlerwyn Rd

Town/District Maungaturoto

Riding _____

LEGAL DESCRIPTION

Valuation Roll No. 118/13.2

Lot PT Lot 2 D.P. 25251

Section _____ Block IX

Survey District Waipu.

DESCRIPTION OF PROPOSED WORK AND MAIN PURPOSE OF USE

Dwelling

FLOOR AREA

Whole Sq. Metres 109

DWELLING UNITS

Number Erected 1

ESTIMATED VALUES $		
	Building	45000
	Plumbing	1000
	Drainage	1000
	G.S.T.	
	TOTAL	47000

PURPOSE

- [x] NEW BUILDING – exclude domestic garages and domestic outbuildings
- [ ] FOUNDATIONS ONLY
- [ ] ALTERED, REPAIRED, EXTENDED, CONVERTED, RESITED – include installation of heating appliances
- [ ] NEW CONSTRUCTION OTHER THAN BUILDINGS – include demolitions
- [ ] DOMESTIC GARAGES AND DOMESTIC OUTBUILDINGS

FEES APPLICABLE

Building Permit	$ 425	Water Connection	$
Street Damage Deposit	$		$
Building Research Levy	$ 47		$
Plumbing	$ 23		$
Drainage	$ 75		$
Sewer Connection	5		$
Vehicle Crossing Levy	$	G.S.T.	$
M.S. Plumbing	5	TOTAL:	5 625

Receipt No. 61676

Date of Payment 15/1/92

Authorised Officer J Michell

Special Conditions:

Construction to be subject to the inspections listed on the attached sheet

Date Inspected	REMARKS (e.g. stage reached with work)

(CONTINUED OVER)

Date Inspected	

28/12/91

The Building Inspector,
PO Box 1
PAPAROA.

15 JAN 1992
KAIPARA DISTRICT COUNCIL

Dear Sir,

Re: Building Permit.

Please find enclosed Application for Bldg Permit & a cheque for $628 00 as advised by you over the phone recently.

(p.s. You already have 2 copies of the proposed plan of our new house).

Many thanks

Gaenyn Hadsell.

Ph. 4318-178.

WILJEF MF1t

KAIPARA DISTRICT COUNCIL

PRIVATE BAG, DARGA
Please address all corre
to the General Manager

DISTRICT OFFICE
HOKIANGA ROAD, DARGAVILLE. NZ
TELEPHONE 0-9 439 7059 (5 LINES)
FAX NO. 0 9 439 6756

SERVICE CENTRE
PAPAROA
TELEPHONE (0 9) 4317019
FAX No. (0 9) 4317017

REFER Mr

FILE REF 118/13

21 August 1992

Mr L J Hodsell
R D 2
MAUNGATUROTO

Dear Sir

RE BUILDING PERMIT NO J 20133

The above permit was issued for the erecting of a new house on your farm at Brynderwyn Road.

During a recent inspection of progress on this house, I noted that some of the pine weather boards used to sheath the exterior of the house did not conform with NZ 3602 : 1900, the standard for wood-based and timber products for use in building.

I noted several large bark encased spike-knots, some loose and others already dropped out.

Please contact the writer with regard to rectifying the problem.

Yours faithfully

WJ Mickell
BUILDING INSPECTOR (PAPAROA)

KAIPARA DISTRICT COUNCIL

APPLICATION FOR PERMIT FOR SANITARY PLUMBING OR DRAINAGE WORK

RECEIVED
15 JAN 1992
KAIPARA DISTRICT COUNCIL
P.O. Box 1
PAPAROA

To: The Engineer (Attn. Plumbing & Drainage Inspector)
Kaipara District Council

Private Bag
OARGAVILLE

I, the undersigned CRAIG JOHN HODSELL of RD 2 Maungaturoto.
(full name) (full postal address)
hereby apply for a permit for the work described herein, and set but in the plans attached hereto, to be carried out in the premises situated at:

Valuation Number: 1180-13000

Street or Road: BRYNDERWYN RD

District: MAUNGATUROTO

Legal Description:
Lot No.: 2
Deposited Land: 25251
Block: 1X
Survey District: WAIPU SD

Name and Address of Person for whom work is to be carried out:

C.J. & G.A. HODSELL
RD 2 MGTO

Name and Address of Registered Craftsman Plumber, or Registered Drainlayer:

Plumber: Matty MacNay
View Rd
Maungaturoto

Drainlayer: Matty MacNay
View Rd
Mato.

Registration Number: 979

Registration Number: 979

DESCRIPTION OF WORK

State type of premises: House

State extent of work: Complete plumbing & drainage for new house
U I

ESTIMATED VALUE OF WORK

	Materials	Labour	Subtotal
Drainage	1000	900	1900
Plumbing	2500	1200	3700
		TOTAL	5600

Signed: G Hodsell Date: 31/12/91

- SEE NOTES ON REVERSE -

.....

OFFICE USE ONLY

Fee Paid:_____ Receipt Number:_____ Date:_____

SCALE OF PERMIT FEES PAYABLE

Labour Value — Up to $200.00 ..... $30.00

Plus $6.00 for every $100.00 or part thereof

NOTE:

Fees are calculated on the total value of the work less the cost of materials. Such items as digger hire should not be included in the value of materials. Where the value of materials is not stated these will be calculated at 60% of the total value of plumbing work and 40% of the total value of drainage work. The Council reserve the right to alter the estimated value of all work for permit fee purposes at the discretion of the Plumbing and Drainage Inspector.

Water Conservation Bylaw (Dargaville Only)

Dual Flush Toilets

All water closet flushing cisterns in new installations or where the cistern is being replaced shall be of a dual flush type approved by the engineer.

On Demand Urinal Flush Controllers

The flushing of all urinals in new installations or where the cistern is being replaced, shall be controlled by an on-demand controller or a type approved by the Engineer.

Work is to be carried out by a registered plumber or drainlayer.

A plan of the proposed work is to be submitted with this application.

"As built" plans of the completed work will be the responsibility of the Drainage and Plumbing Inspector.

All testing gear to be supplied by the Drainlayer and drains are to be pretested by air.

Permit fees are payable on sanitary plumbing and drainage, but not on roofing, spouting etc.

Plan

A suitable plan should be provided here indicating position, and length of the walls of the building, the position of sanitary fittings, the proposed position of drainage and septic tank, distances from boundaries and the position and dimensions of effluent disposal.

SPECIFICATION OF WORKS

TO BE DONE AND MATERIALS

TO BE USED IN ERECTING

A RESIDENCE.

AT BRYNDERWYN ROAD, MAUNGATUROTO.

FOR MR & MRS R.K. & J.M. THOMAS.

RODNEY DESIGN SERVICE
Designers, Draughtsmen,
Culpans Building,
WELLSFORD.

PRELIMINARY & GENERAL

(Applying to all Trades.)

SCOPE:
The Contract shall be carried out and completed in strict accordance with and to the true intent and meaning of this Specification, accompanying Drawings and to the entire satisfaction of the Employer. The Contract includes the provision of all labour, material and plant cartage etc. necessary for the proper and expeditious completion of work described hereunder, and as shown to give complete and finished work in every aspect.

SITE:
The Contractor shall visit the site before tendering to satisfy himself regarding access, levels etc; and the conditions generally, as no extra will be allowed under this heading for insufficient or wrong description.

PERMITS
The whole of the work shall comply with all relevant labour and building by-laws. The Contractor shall serve all statutory notices and apply for and obtain all necessary permits and pay all fees for the same.

INSURANCE:
The Contractor shall have all his employees covered against accident by a correct Workers' Compensation Policy and take out a correct insurance against fire and/or earthquake for a sum sufficient to cover the full Contract Sum. both policies to remain in force until the building is taken over by the Employer. The Contractor must also be covered by a Public Risk Policy to the value of at least $20,000 during the course of the Contract.

LIENS ACT:
The Contract is subject to the "Wages Protection and Contractors' Liens Act, 1939" and its amendments.

DEFAULT AND BANKRUPTCY:
The usual laws of default and bankruptcy apply to this Contract.

ARBITRATION:
Any dispute between the Owner-Employer and Contractor-Builder. not soluble by the terms of the Contract, shall be referred to Arbitration within the meaning of the "Arbitration Act, 1908".

PROGRESS PAYMENTS:
Progress payments, unless otherwise agreed upon, will be paid monthly up to 90% of the estimated value of the work performed and materials on the site. Up to 95% of the value of the work will be paid within 30 days after possession by Owner/Employer, the balance of 5% will be paid at the end of the maintenance period, which will be 90 days after completion.

SUB-CONTRACTORS:
This Specification is sub-divided into trade sections for ease of reference only and it shall not be construed that each section is complete in itself. Hence no claims will be admitted from sub-contractors for work not specifically mentioned in a trade section but which is provided for,-expressed" or implied elsewhere in this Specification.

PRICE FLUCTUATIONS:
Should there be either a rise or fall in the prices of labour or material from the date the tender is submitted until final payment, an adjustment to the Contract Sum is to be made accordingly, provided that the Contract Sum has been affected by such rise or fall.

P.C. SUMS:
A P.C. or Prime Cost Sum means the actual amount (sales tax included) paid to the supplier. Should the P.C. Suns ultimately expended vary from the P.C. Sums specified a proportionate adjustment shall be made in the Contract Sum.

Items under P.C. Sums will be approved by the Employer.

PERUSAL OF PLANS AND SPECIFICATIONS:
The Contractor shall thoroughly peruse the Drawings and this Specification in order that he my include all appurtenances and each and every item to make a thorough and complete work in every detail, specified or not, as no extra will be allowed for insufficient or wrong description herein.

Any work indicated on Plans but not specifically mentioned in this Specification or vice versa shall be taken as if no error or omission existed.

Materials shown but not specified must be of the kind commonly employed for the service it is intended to perform.

On the drawings all dimensions, unless clearly otherwise, shall be talcen as being in the rough and figured dimensions shall be taken in preference to scale.

INTERPRETATION:
The words "provide" and "fix" whether used separately or in conjunction shall be interpreted as meaning "provide and fix".

The words "work" or "works" shall include ail things to be done and all material to be supplied as shown on the Drawings and as described herein.

VARIATIONS AND EXTRAS:
No claim for extras will be agreed to on final settlement of accounts if authority for such extra or extras has not been given to the Contractor in writing by the Employer, and it is incumbent on the Contractor to obtain such written authority.

No variation, made in writing or by means of drawings supplied, shall vitiate the Contract.

MAKE GOOD:
Repair all contiguous property, footpaths or footings where damaged by any operations connected with this Contract.

BAD WEATHER:
Cover up and protect the works as required and suspend all 'wet' construction and painting during bad weather which would be detrimental to the work.

POWER AND WATER:
Provide electric power and water as required for the use of the works.

CLEAN UP:
Leave the building and surrounds thoroughly clean at completion.
Clean ail windows and floors.

CONTINGENCY SUM:
Allow the sum of ,400.00 to cover any additional work the Employer may authorise, or for any deepening of foundations, or skirting wall.

The whole or portion of the sum unexpended at completion shall be deducted from the Contract sum for the purpose of payment.

EXCAVATION

(See also Preliminary and General)

Excavate for all foundation footings, pads etc; to min. depth of 12" onto good solid bearing, keeping trenches in straight and level runs and stepped if required in 8" modules to suit gradient.

Provide post hole bores under foundation to south wall of garage.

Backfill and ram carefully around footings consolidating as work proceeds and make up to natural levels.

Hardfill under floor slabs, shall compose of brown rock, thoroughly compacted, by a powered vibrating roller then screened off with a layer of sand, before laying .005 Permathene film.

C O N C R E T O R

(See also Preliminary and General)

GENERAL;
Carry Out the mixing and placing of all concrete footings, slab floors, and pads, all reinforced as specified and as detailed.

CONCRETE MIX:
Concrete shall be 1 part of cement, 2 parte of sand, to 4 parts of coarse aggregate (1:2:4). It shall be mixed in a power mixer and each batch shall be mixed for a minimum period of 2 minutes, until it is an even colour and Uniform consistency throughout. Allow 1 cubic foot of cement to weigh 94 lbs.

CONCRETE GRADE:
Infill to block cores : 3,000 p.s.i.
Floor slabs & foundations: 2,500 p.s.i.

CONCRETE MATERIALS:
(a) Cement shall be normal Portland cement, complying in all respects with the requirements of N.Z.S.S. 43. Cement shall be properly stored at all times so as to be protected from moisture.

(b) Fine aggregate shall be clean, coarse silicous sand free from silt, organic or other deleterious matter.

(c) Coarse aggregate shall be clean, hard crushed bluestone graded from 3/16" to 3/4".

(d) Water shall be clean drinking quality from an approved supply.

REINFORCEMENT:
Reinforcing steel shall consist of plain round bars bent, cranked and tied in aocordance with the best trade practice. Concrete cover to bars shall generally be, not less than 3". Steel shall be lapped at least 40–rod dia.

FORMWORK:
All formwork shall be of sound timber, and shall be fixed in perfect alignment, level and plumb and securely braced.
The inside of the formwork shall be wetted before concreting is commenced.

SKIRTING WALL FOUNDATION:
To periphery of house, and garage, pour 15" x 12" oontinous concrete foundations, reinforced with three 1/2" dia. bars and 3/8" dia. ties at 24" ctrs. Hook, starters to foundation steel at 16" ctrs.
Keep footings in straight and level runs and step if required to suit block sizes and grade.

POST HOLE BORES:
Shall be 8" dia. concrete post hole bores onto solid bearing. Reinforce with 2:1/2" dia. bars with 1/4" dia. links at 8" ctrs. Lap–vertical steel into foundation steel.

SKIRTING WALLS:
Shall be built up from foundations to periphery of house and garage [illegible] as shown with 10" and 8" bond beam blocks solid filled.
Beintorce as detailed, with 3/8" dia. starters at 16" ctrs. continuous from foundations and lapped 15" into floor slab.

PIER PADS:
shall be 24" x 24" x 12" ooncrete pad, reinforced with 1/2" dia. rods at 6" ctrs. both ways.

FLOOR SLABS: (Including garage)
Lay .005 Permathene film over prepared hardfill to entire house and garage area. Sheets to overlap a minimum of 10", the edges being fastened down with an approved adhesive tape, with care being taken to seal around pipes or other prejections, and that the film is in no way punctured.

CONCRETOR (CONT'D)

FLOOR SLABS: (Cont'd)
Pour 4" concrete floor slab, reinforced with 665 C.R.C. mesh. Pour slab in approximately 12'0" squares, without breaking the continuity of the steel mesh. Thicken slab at bearing points in house as shown on foundation plan.

Finish floor slab with a wood float and finally with a steel trowel. The slab shall be finished free from hollows and ridges with a tolerance of 1/8" in 10'0" maximum. Keep slab moist, seven days after inital set.

Form 1½" rebates at exterior openings, and full length joinery as detailed. Work in with other trades for installation of pipes , easy clean floor, trap in laundry etc. and heating cables, supplied and Installed by Electrician.

PATIO AND ENTRY SLABS:
Shall be 4" concrete slabs reinforced with 668 C.R.C. with thickened slab edges as detailed reinforced with two 1/2" dia. rods.
Hack surfaces ready for Plasterer.

CONCRETE BLOCKLAYER

(See also Preliminary and General)

MATERIALS:

Skirting walls		16" x 8" x 8" & 16" x 8" x 10" bond beam Decrapac
Piers	:	8" x 8" x 8" Decrapac
Veneer to house	:	16" x 8" x 4" Decrapac
Garage walls	:	16" x 8" x 8" Decrapac

WORKMANSHIP:
Concrete blocks shall be stored dry and laid dry in fresh mortar, as specified. Finish blockwork with 3/8" joints with full coverage on the face shells. Finish joints in neat ruled concave, not more than 1/4" and tool smooth after inital set. Fill cores where reinforced with concrete. Damaged or chipped blocks shall not be used in any work. Should any damaged blocks be laid the Blocklayer will be required to replace and make good at his own expense.
Note: The block veneer and garage walls have been set out in module, so that there is no cutting of blocks required, other to rake at gable ends.

MORTAR:
Cement and sand shall be as specified for Concretor. Mortar shall be 1 part cement, 2 parts sand, gauged with approved fattening admixture, as defined in N.Z.S.S. 1900, Chapter 9.2.4. and 9.2.5.

SKIRTING WALL:
Refer 'Concretor'.

GARAGE WALLS:
Build up blocks from skirting wall to top course as detailed. Top course shall be a bond beam. Reinforce bond beam with two 1/2" dia. bars, with 1/4" dia. ties at 24" ctrs. For lintels up to 8'0" openings, lay an additional bond beam, reinforced with two 5/8" dia. bars, with 1/4" dia. ties at 8" ctrs. tied to bond beam steel above.
Reinforce vertically, with a 1/2" dia. bar at each corner, jamb and at 4'0" ctrs. extending from foundation to bond beam.
Finish to window jambe and sills with purpose made rebated jamb blocks and rebated sill blocks.

VENEER WALLS:
Build up 16" x 8" x 4" Decrapac block veneer walls, where shown on plan and elevations.
All courses shall be level, carried up uniformily, keeping perpendiculars, angles etc. true and plumb and the whole bonded together.
Secure blocks to wall framing with approved 'Pryde' veneer wall ties. From mortar joints, sloping upward across cavity, built-in at every second course, at angles, openings and end walls.
Five ties shall be provided to each square yard, bedded well into blockwork and Secured to alternate studs with two galv. clouts.

Finish to jambs, and rake of roof as detailed. Provide weep holes at 4'0" ctrs. to bottom course. Finish to window sills with block sill slabs and support window heads in block veneer with a M.S. galv. angle iron. Imtol.

PIER BLOCKS:
Shall be 8" x 8" x 8" pier blocks solid filled and reinforced with four 1/2" dia. bare, with 1/41' dia. links at 8" ctrs.

Allow for M.S. galv. dowels for timber beams.

CARPENTER and JOINER

(See also Preliminary and General)

WORKMANSHIP:
The whole of the building is to be properly framed and the various sections securely spiked together. All framing timber shall be full size specified, cut true and square. Plates shall be halved together at all joints.

AS the nail-holding properties of Radiata Pine framing timbers are generally inferior to those of indigenous timbers, extra nailing shall be used.
All nails in exposed work shall be punched.

GRADING OF TIMBERS:
Grade all timbers listed in the Schedule of Timbers in accordance with N.Z.S. 3631 and amendments.

SEASONING:
All timbers are to be seasoned to a moisture content appropriate to the end use of the timber concerned. Refer to N.Z.S.S. 632 for guidance.

FINISH OF TIMBERS:
All external timbers shall be machine dressed (other than shiplap) and primed by Owner before fixing.

All internal finishing timbers, joinery fittings, and shelvings shall be machine dressed and machine glass-papered to a smooth finish.

Unless otherwise shown on detail drawings, backs of all internal finishing timbers are to be hollow run. Remove all arrises rough or uneven patches, hemmer marks and other surface defects.

BUILDERS IRONMONGERY:
Provide all nails, brads, screws, bolts and other sundry ironmongery required.
Plates attached to concrete slab shall be fixed at 3'0" max. ctrs. with approved power driven 1/4" dia. fixing pins.
Fix plates to bond beams in garage, with 1/2" dia. bolts, bedded a minimum 5" into concrete. Provide large washer under nut.

All screws used externally or where exposed to the weather shall be either galvanised steel or solid brass. Only galvanised nails and brass or galvanised screws shall be used in exterior timbers.

WORK FOR OTHER TRADES:
Cut for, attend on, and make good after all trades, and provide and fix all necessary bearers and blocks for securing work of other trades.

Keep to a minimum the cutting and checking of framing timbers for the accomodation of pipes, conduits etc. Where possible bore the framing at the centre line of depth for such pipes.

Provide any access traps required by the Plumber or the Electrician. Dwangs for fixing taps and lavatory basin brackets shall be the same grading as adjoining framing.

PROTECTION OF YORK:
Protect materials-generally and all finished or partly finished work from weather or damage from other cause. Protect finishing timbers from discolouration and other surface injury. Make good any affected work to the satisfaction of the Owner.

DAMP PROOF COURSE:
Between all faces of timber near or in contact with concrete, or blockwork, place a full length and height layer of 2 ply "Malthoid".

CARPENTER & JOINER (CONT'D)

WALL FRAMING:
Gauge all studs to a uniform width. Plates shall be in long lengths and gauged to a width and thickness. Plates may be halved together at all connection points. Joints are to be made mid-way between studs. See Timber Schedule for spacings. Check lintols for spans over 3'6" and not exceeding 6'8" into studs 1/2".
Support lintols over 6'8" on full length 4" x 2" studs at each end, spiked securely to general wall framing.

Check braces in flush with face of studs at an angle of approximately 45 degrees. Brace all walls up to 15'0" long with one brace, from 15'0" to 35'0" with two braces, Where this bracing is not possible on short sections of external walls cut 4" x 1" dog leg bracing into studs. For internal non-bearing partitions, 2" cut in braces may be used-

If on account of openings, the total number of full length studs in any one wall is reduced by more than third, the size of spacing of the full length studs in the wall shall be adjusted so that the total cross sectional area of the full-length studs in the wall is not reduced by more than one third.

At angles and intersections use packing blocks and spike walls together at not less than 1'6" ctrs. To all walls provide three rows of dwangs, one row being centred 6'6" from floor level.

Whenever a door opens against a wall fix a 6" x 1" dwang at lock height.

ROOF FRAMING:
Frame for roof as detailed with 6" x 2" rafters at 3'0" max. ctrs. and at 1'8" ctrs. to sloping ceiling. Set rafters at pitch shown, supporting break, patio soffit, sloping ceiling etc. all as detailed on plans. Cut in 10" x 1" ridge board and birdsmouth rafters over and securely spike to all beams plates etc.

Provide under purlins to break of roof at rear wall, supported from bearing partitions on 4" x 2" struts. Fix 6" x 1" collar ties to each third pair of rafters.

Build in 14" x 4" beam at junction of 8'0" ceiling and sloping ceiling and finish over patio with a bondeck beam, with neatly scarfed joints over pier blocks. Build in exposed 8" x 4" beam over kitchen.

Allow to cantilever 8" x 4" tan. pine beams to soffit at gable ends as shown.
Finish to surround with a 9" x 1" fascia board, neatly mitred at joins and fixed true and plumb.
Fix 3" x 2" purlins at 3'0" nominal ctre.

GARAGE ROOF:
Frame for garage roof, with 6" x 2" rafters at 3'0" max. ctrs. set at 24° pitch. Cut in 10" x 1" hip boards, and tie at third points with 2: 6" x 2" collar ties to each side of rafter.

Birdsmouth rafter over plates at bond beams and finish fascia board, flush over blockwork as detailed.

8'0" CEILING FRAMING:
Frame for 8'0" ceiling with 4" x 2" ceiling joists at 1'8" max. ctrs. Securely spike to wall plates. Provide solid nailing for all scotia and to suit-ceiling linings; with 2" x 2" noggs. Ceiling joists spanning more than 8'0" shall be secured to a 6" x 2" runner at mid-span and at right angles to joists.

Finish to dining kitchen lounge roof break as detailed.

CARPENTER & JOINER (CONT'D)

TIMBER SCHEDULE:

All timber listed in this schedule shall be supplied by Owner.

ITEM	SIZE	GRADE	REMARKS
Bearing Walls and Roof:			
Plates	4" x 2"	No.1 Fr. Tr. Pine	-
Studs	4" x 2"	" " " "	1'8" max. ctrs.
Dwangs	4" x 2"	" " " "	2'3" " "
Trimmers	4" x 2"	" " " "	-
Lintels not exceeding	4'6" = 3"	" " " "	
From 4'6" to	6'0" = 4"	" " " "	
" 6'0" to	7'6" = 6"	" " " "	
" 7'6" to	9'0" = 8"	" " " "	
Ceiling Joists	4" x 2"	No.1 Fr. Tr. Pine	1'8" max. ctrs.
Ceiling Noggs	2" x 2"	" " " "	1'6" " "
Rafters	6" x 2"	" " " "	3'0" " "
Rafters (sloping)	6" x 2"	" " " "	1'8" " "
Purlins	3" x 2"	" " " "	3'0" nom. ctrs.
Ridge Board	10" x 1"	" " " "	-
Strong Backs	6" x 2"	" " " "	-
Under Purlins	4" x 3"	" " " "	Break in pitch
Collar ties	6" x 1"	" " " "	6'0" max. ctrs.
Struts	4" x 2"	" " " "	-
Exposed beam (Kitchen)	8" x 4"	D.G. Pine	See plan
Ceiling beam	14" x 4"	No.1 Fr. Tr. Pine	See plan
Patio beam	8" x5½"	Bondeck Beam	See plan
Gable end sprokets	8" x 4"	D.G. Tan. Pine	Eee plan
Garage:			
Plates	4" x 2"	No. 1 Fr. Tr. Pine	B/beams
Rafters	6" X 2"	" " " "	3'0" max. ctrs.
Collar ties	2: 6" x 2"	" " " "	3rd points
Hip	10" x 1"	" " " "	
Purlins	3" X 2"	" " " "	3'0" nom. ctrs.
Partitions:			
Plates	3" X 2"	" " " "	-
Studs	3" X 2"	" " " "	1'8" max. ctre.
Noggs	3" X 2"	" " " "	2'3" " "
Finishing Linea:			
Fascia Board	ex 9" X 1"	Heart or Treated Native	
Shiplap	ex 8" x 1"	Band sawn Tan. Pine	
Architraves	1½" X ½"	D.G. Pine	Square
Skirting	2½" X ½"	" " "	Bevelled
Scotia	1" x ½"	" " "	"
Quarter round	½" X ¼"	" " "	Interior of cupbds. only
Soffit bead	¾" x [illegible]	Ht. or Tr. Native	Bevelled

NOTE: Treated Tine shall be Boric or equal timber.
Tan. Pine shall be approved salt preservative process.

EXTERIOR SHEATHING:

(a) Walls where shown shall be sheathed with ex 8" x 1" band sawn shiplap vertical boarding. Fit boards in single lengths plumb and true with approximately 1½" cover over slab edge. [illegible]. Scribe neatly to soffit. Boards, including laps, shall be primed Dark Oak shade, Timba-Maste stain by Owner before fixing.

(b) Cover face of studs walls with building paper before fixing shiplap, and concrete block veneer.

(c) Finish to window heads and shiplap as detailed with an ex 3" x 2" rebated head capping.

SOFFIT LINING:

Roof overhangs shall be lined with 3/16" Hardiflex. Fix with galv. clouts, with joins covered with P.V.C. jointing strips. Soffit, shall be grooved into back of fascia boards a minimum of 1/4".

CARPENTER & JOINER (CONT'D)

SOFFIT LINING: (Cont'd)
Finish to top course of veneer and soffit with 3/4" bevelled bead.

DOOR FRAMES:
Exterior door frames and sidelights at front entry, shall be of 6 x 2 D.A.Ht. Rimu, Totara or Matai, weathered and throated with ex 8" x 2" sills complete with galv. iron sill trays at jambs, with fixed glazing beaded into rebates with 1½" x 1/2" fin. glazing beads.

Internal door frames shall be out of 6" x 1" or 4" x 1" Rimu with square planted stops. Hang interior doors on 1½ pr. of 3½" butts with loose pins. Hang sliding doors on 'Henderson' sliding door gear, complete with a plain Rimu pelmets.
Hang each exterior door on 1½ pr. of 3½" butts with brass pins.
Hang rumpus raom, doors and W.R. doors to bed rm. 2 and 3; on Henderson 'Twin-Fold' 2 door gear.

DOOR SCHEDULE:

CODE	SIZE	TYPE
A	6'6" x 2'8"	Solid core flush R.B. paint qual.
B	6'6" x 2'8"	Fig 10 A oba. glazed Rimu
C	6'6" x 2'6"	Allenson louvre paint qual.
C1	6'6" x 2'0"	" " " "
C2	6'0" x 2'0"	" " " "
D	6'6" x 2'6"	Hollow core flush paint qual.
E	6'6" x 2'2"	" " " " "
F	6'6" x 2'0"	" " " " "
F1	6'0" x 2'0"	" " " " "
H	2'6" wide	Allenson louvre batt wing door with bomber hinges.
J	6'0" x 2'6"	Coreboard paint qual.

Doors above W.R. to bed room 1 shall be Allenson louvre.
Doors above each remaining W.R. shall be sliding coraboard paint qual.

GARAGE DOORS:
shall be Tiltadoors to suit 6'8" x 8'0" block openings. Doors shall be timber framed, sheathed with Temp. hd.bd. and with ex 4" x 1" Cedar or Redwood battens positioned as shown.

ALUMINIUM SLIDING DOORS AND WINDOWS:
Doors and windows shall be ROLLS, to sizes and code type as shown on elevatione. Install glazed, complete with 1" Rimu jamb liners.

NOTE: Frames to windows and doors shall be anodised, SILVER.(other than garage.) Sashes to windows, top and bottom rails, crash rails and stiles to doors; shall be anodised BRONZE.
Crash rails to doors - selected colour Formica insert.
Garage window frames & sashes - anodised BRONZE.

INSULATION:
To all exterior stud walls on internal face and immediately above ceilings linings throughout house, provide and fit R13 Fibreglass batts.

SCHEDULE OF INTERIOR LININGS:

Ceilings:

Entry, dining, kitchen, lounge & rumpus room.	:	Fibrous Plaster
Remainder & cupbd. interior	:	Gibraltar board

Walls:

General		Gibraltar board
Exterior walls	:	Gibfoil
Bath rm, W.C.	:	Selected Formica W/board
Shr box only - laun.		
Shr box & Shr. lobby.		Selected Formica W/board
Laundry & laun. W.C.	:	Pinex hardboard

Gibraltar Board. Gibfoil, & Fibrous Plaster:
Shall be 3/8" Gibraltar board, Gibfoil, and 1st qual. Fibrous Plaster fixed with 1½" galv. clouts at 6" ctrs at sheet edges, and 12" ctrs down studs. All joints shall be stopped flush with the best Plaster of Paris, and filled to an even surface with all spots and risers removed.

CARPENTER & JOINER (CONT'D)

Formica Wallboard:
Shall be 3/16", selected Formica wallboard, complete with purpose made Formica wallboard mouldings.' Mouldings shall be fixed at 12" Centres with 1½ flat head nails.
Lap edges of the sheets a min. 3/4", inside the shower bases and leave a gap of 1/8", between sheet and base. Finish ceiling to showers with Formica. To bath surround finish with a Formica bath flashing, sealing joint between moulding and sheet with approved non-hardening type sealer.

Pinex Hardboard:
shall be 3/16" Pinex hardboard and fixed with 1" Oxoseal Hardboard nails, complete with Formica wallboard mouldings at joins. Nail at intermediate studs and noggins at 6" - 9" centres.

CORNICES:
(a) Provide and fix a 1" x 3/4" bevelled timber scotia around all flat and eloping ceilings except where otherwise mentioned.
(b) Fix quarter round bead against ceilings of all wardrobes, cupboards etc

Fix the above in single straight lengths and neatly mitre joins at corners. Bevell back to suit rake of ceiling at beam in kitchen.

PANELLING:
To rear of kitchen units at lounge and dining room. Sheath with selected Pine plywood. Butt joins and glue to gib bd. 'Sheets shall not be nailed.'

ACCESS IN CEILING:
Form trapdoor to roof in ceiling of laun. 20" square out of Pinex hardboard and provide 1/2" Planted stops and finish around margin with architrave. mitred at angles.

KITCHEN FITTINGS:
provide and fix kitchen fittings in Dressing Grade Pine to details shown. Construct cupboards, fittings and benches with ex 1" solid ends, divisions and base. Form 3½" high recessed toe space.
Provide and fit a 9' 3" B.&F. De luxe S.S. sink bench with waste master bowl- Other benches shall have flat tops lined with selected Formica with matching edges, 1¼" thick. Finish counter tops and edges in selected Formica as detailed.
Construct drawers with 1/2" finished back and sides with hardboard bottoms grooved in ex 1" fronts, faced with seleoted Pine plywood. All properly framed, housed and dovetailed together. Divide up cutlery drawers.
Hang kitchen cupboard doors on 1 pair 2" butts with cupboard and drawers fitted with selected catches and pulls. All kitchen cupboards doors to be flush panel out of selected Pine ply coreboard not less than 7/8" thick- Build archways as detailed.

BATHROOM VANITY AND BATH:
Allow the P.C. sum of $200.00 for supply for a custom built vanity unit. Provide and build in a 5' 6" A.H.I. selected colour Athenian bath. Install to Manufacturers instructions. Build in formica bench 20" wide to position shown. Finish with ¢ 1¾"/ formica edges.

MIRRORS:
Shall be first quality mirrors fixed on fibre packs and approved mirror screws and caps.

Bedroom 1 :	1 off	6'0" x 1'4"
Bedroom [illegible]:	1 off	1'6" x 3'0"
Vanity room:	1 off	1'6" x 7'0"

BEDROOM 1 DRAWER UNIT:
Build in drawers, top, etc. generally as specified for above and as per detail.

DESK UNIT AND SHELVES:
Build desk, shelves etc. generally as specified for above and as detailed.

CARPENTER & JOINER (CONT'D)

LAUNDRY FITTINGS:
Provide a cupboard under tub with recessed toe space, one ex 1" shelf and 7/8" door to front fitted with selected handle and catch. Tub shall be LL6 B.&F. S.S. Provide and fit 20" wide formica bench to position shown.

HOT WATER CUPBOARD:
Provide 2 rows of ex 3" x 1" slatted removable shelving above cylinder. Bevel edge of slats.

WARDROBES:
Line wardrobes with gibraltar board. Fit 1 - 12" x 1" full length shelf at 5'3" height, and 1 - 3/4" galv. rail. Support hanging rail on neat wooden fillets 2" below upper shelf, allow for doors over. (Refer door schedule). To bedroom 1 W.R. only, at each end provide full width ex 12" x 1" shelves at 12" ctrs.

LINEN PRESS:
Shall be lined with Gibraltar board and divided into ex 12" x 1" shelves at 12" centres, supported on wall by neat bevelled timber fillets.

BRM. CUPBOARD:
Shall be lined with gibraltar board and fitted with three 12" x 1" full length shelves at spacing to suit Owner.

COATS CUPBOARD;
Same as for wardrobes but delete hanging rail.

PANTRY:
Line with Gibraltar board and fit 12" x 1" timber shelves at 12" centres. Fix shelves to wall on neat wooden fillets. Provide gauze vent to ceiling.

HARDWARE:
All hardware shall be selected by Owner, which shall include all door handles, locks, cupboard catches, draw pulls, coat hooks, soap recesses, toilet roll holders, towel rails, shr. rails etc.
This does not include hinges and sliding door gear.

Allow the P.C. sum of $240.00 for supply.
Allow for fixing the above and remove for Painter. Replace after the Painter has completed his work and ensure all hardware is left in good working order.

FINISH:
Architraves shall be generally 1½" x ½" as specified. Fit skirting around all rooms, etc; with 2½" x 1/2" of bevelled pattern.
Mitre architraves throughout including skirtinge.

ROOFER

(See also Preliminary and General)

GENERAL:
Carry out the supply and fixing of the whole of the roof to house and garage as shown on plan and elevations and herein specified, to provide a thoroughly water tight surface.

UNDERLAY:
Shall be 252 unifoil to underside of purlins to house only.

MATERIALS:
Shall be Dimondeck 16 0.025 galv. iron, fixed in single lengths parallel to the roof framing and 90 degrees to the Purlins.
Fix with galv. fixing bracket secured with four 1½" x 10 g. galv. screws nails at each purlin per length of Dimondeck.
Finish to gutters and ridge with approved fluting tools either up or down.

SPOUTING AND FASCIA CAPPING:
Provide and fix purpose made Dimondeck spouting and finish to gable ends with a square fascia capping as shown.

CANTERBURY PRICKLES:
Finish to all ridges throughout with ridge prickles and at internal angle to house roof with internal angle prickles.
Carry out the whole of this work, strictly in accordance with section 05 details 42 and 45 B of the Manufacturers instruction manual.

GARAGE HIP:
Shall be purpose made Dimond sharks Teeth, fixed strictly in accordance with details shown in section 05 - 1 construction details - 2, of the Manufacturers inetruction manual.

DRAINLAYER

(See also Preliminary and General)

GENERAL:
The whole of the drainlaying work is to be carried out by a registered drainlayer, and shall be in accordance with by-laws and regulations, and to the approval of the Council Inspectors.

EXTENT OF WORK:
Excavate for, supply and lay all drains, fittings, etc; necessary for the complete drainage of the buildings.
Obtain all permits. Subject the whole of the work to the tests and inspections as required, by the Council Inspector.

MATERIALS:
Shall be all good quality approved lines.

(a) Pipes: First quality 4" dia. glazed earthware, socketed, with rubber ring joints.

(b) Concrete: Materials as for 'Concretor'.

(c) Fittings: Glazed earthware gullies, dished to C.I. grating in cement plaster.

LAYING:
Excavate for and lay pipe lines to even falls, complete with necessary bends, junctions, cleaning eyes and inspections.
Fit rubber ring joints and clean out pipes as work proceeds.

SEPTIC TANK AND EFFLUENT:
Construct a septic tank to suit a four bedroom home.
This tank will have 4" reinforced concrete floor, walls and removable concrete slab top. Complete with all appurtenances set on concrete bed and connect to sanitary drain.
Allow to complete sanitary system with 150'0" of Effluent trench, 18" wide x 24" deep. Bed tiles in 2" - 3" scoria, and arrange for inspection before backfilling.

STORMWATER DRAINS:
From each downpipe to where shown, lay 4" field tiles, drain to even gradient and fall clear of house by 20'0", to approved soakage pits.
TO junction of downpipes and drains finish in cement plaster.

P L U B E R

(See also Preliminary and General)

MATERIALS:
All materials shall ba the best of their respective kinds.

1. Copper tubing shall comply with the requirements of N.Z.S.S. 546 and gauges shall be in accordance with the relevant tables.

2. P.V.C. piping shall be installed strictly in accordance with Manufacturers instructions.

3. Galvanized iron flashings shall be as specified and detailed.

CONNECTIONS:
Joints in pipes. fittings and flashings shall be water and airtight and made in accordanae with-the Drainage and Plumbing Regulations 1959.

LAY-OUT AND FIXING OF PIPES AND TUBES:
Set out water pipes and tubes in straight runs of even gradients avoiding all places where wir-locks are possible, and carry around wall framing. Use easy bends and sweep all branches in the direction of flow. Do not use elbows or square tees. All hot water piping shall be copper.

Secure copper piping in the building by copper straps or clips not less than 1" wide and at 4'6" max. ctrs. fixed to framing with brass screws or Muntz metal clouts. Do not use steel nails for tempoary fixing of copper pipe. Take care that galv. iron and copper tubing are nowhere in contact with eaoh other.
Fix hanger straps for hot water pipes over the lagging and not in aontact with the pipe. Conceal from view. P.V.C. shall be installed as recommended by Manufacturers.

TESTS:
Before wall linings are fixed, subject hot and cold water pipe systems to the full head of water constituting normal cold supply. Test for not less than 12 hours and make good any leaks or faults.

FLASHING:
Take care in the fitting and fixing of flashings to secure maximum efficiency. Flashings shall be machine bent and cut to accurately fit the work and shall be in single lengths, with due regard to resist weather and contain water, expansion etc.

Provide and fix thoroughly weather tight 24 g. galv. iron flashings over all window heads, in shiplap. Flash sills at floor as detailed, with full length 20 g. galv. iron. Fix flashings with 3/4" flat head galv. nails at 3" ctrs. Flash all vents etc. passing through roof with sheet lead.

DOWNPIPES AND SPOUTING:
Provide and fix 24g. galv. downpipes. Strap downpipes at 4'6" ctrs. with 22 g. galv. straps. Downpipes shall be 3" rectangular.

Spouting: See under 'Roofer'.

VENT PIPES AND SOIL STACK:
Soil stack shall be P.V.C. or approved. Terminal vents shall be concealed in partitions and shall be in P.V.C. or approved, to size as required by Council Inspector.
Fix soil pipes and main sufficiently clear of walls to allow the Drainlayer to connect the drain. Provide P.V.C. wire balloons to top of all vent Pipes.

WASTE DISPOSAL UNIT:
provide and fit 'wastemaster' to sink bowl.

FLOOR TRAP:
To floor slab in laundry provide and fit 'Easyclean' floor trap.

PLUMBER (CONT'D)

TRAPS AM) WASTES:
All wastes shall be P.V.C. of 1½" bore. Traps shall be Dux polypropolean, making joints with solvent cement all strictly according to Manufacturer's specifications. Waste from sink and dishmaster shall be COPPER.

COLD WATER SUPPLY:
Connect supply at house site and run in with 3/4" alkathene to a pressure valve. Provide and fit, pre-cast concrete toby box with water meter. Extend in 1/2" pipe to W.C. Cisterns, vanity, U/sink heater, sink, W.M; W.C's; h/b; tub and two outside taps, to each side of house. Take 1/2" to showers to suit a Dialmix valves. Take off 3/4" pipe to H.W. cylinder and bath.

HOTWATER SUPPLY:
Supply and install one 40 gallon Hunson hot water cylinder, complete with element and thermostat. Provide with sludge complete with valve to discharge over nearest gulley trap. Carry up exhaust from top of cylinder in 3/41' copper. Take off branches to vanity, laun; h/b; showers, washing machine and tub. Take 3/4" to bath.
Tightly lag all hot water pipes with spirally wound plumbers felt, secured with copper wire.
Form an approved bridge in copper at showers to suit 'Dialmix' valves.

UNDER SINK HEATER:
Provide and install in kitchen at position shown a 9 gal. undersink heater complete with thermostat. Connect service to sink and Dishmaster. Fit victor relief valve and position overflow over G.T.

TAPS AND CONTROL VALVES:

Bath	3/4" C.L. 94 'Crystaline' bath faucet
Vanity & H./B.	1/2" C.L. 16 'Crystaline' pillar cocks
Sink	1/2" C.L. 88 'Crystaline' sink faucet
Tub	1/2" C.L. 51 'Crystaline' bib cocks
W.C. Cisterns & W.M.	1/2" C.L. 28 'Crystaline' stop cocks
Hose Taps	1/2" Brass cocks with hose connections.
Showers	'Dialmix' shower valves with 7415 shower roses.

C.P. taps shall be marked 'Hot' and 'Cold' as required.
Both hot and cold taps shall have fibre washers and hot taps shall have captive jumbers.

SANITARY FITTINGS:

Bath	Supplied and installed by Carpenter
Vanity	Supplied and installed by Carpenter
W.C.Pans & cisterns	White 1st quality earthenware complete with white 'Dux' plastic flushing cisterns and silencer tube. Selected colour plastic double flap seats.
Laun H./B.	W.B. 21 Clearlite plastic.
Tub	Supplied and installed by Carpenter.
Sink	Supplied and installed by Carpenter
Showers	36" X 30" S.S. B.&F. with Pinex and timber base.

Dishmasterr Allow to connect waste services etc. for dishmaster supplied by Owner.
All fittings shall be free from blemish. Fit bath, sink, vanity, and tub with c.p. on brass chains, plugs and grated waste connections. Fix fitting with brass screws to dwangs. Clean all fittings on completion removing paper labels etc.

ELECTRICIAN

(See also Preliminary and General)

GENERAL:
Work shall comply with the Electrical Wiring Regulations 1935 and the local Supply Authority's by-laws. Materials and fittings shall be best quality and in accordance with relevant N.Z.S.S. or B.S.S.

All wiring must be conoealed where possible. Tender must cover for all costs in running to site.

WIRING MATERIALS:
Service Mains:
Shall be underground from pole approximately 150'0" from House.
Cable, depth etc. shall be as instructed by the N.A.E.P.B.

Circuit Wiring:
Tough plastic sheathed cable.

SERVICE MAINS:
Service mains shall be 3 phase to suit loading and installed in accordance with Supply Authority's requirements. Provide a pilot-wire for control of water heating. Terminate service mains in *an* approved mains entry box.

POINT OF ENTRY:
Allow for supply with point of entry from service mains as determined by Supply Authority in collaboration with the Employer.

METER CABINET:
Provide an approved type all metal recessed where directed in exterior wall of garage.

SWITCHBOARD:
Approved hinged panel with cabinet door fuses etc. clearly marked, positioned in garage.

EARTHING:
Provide and install main earth connection to earthed metal water supply system, or approved.

SWITCHES:
Switches used for controlling lighting or socket outlets shall be ivory 10 amp flush type and comply with N.Z.S.S. 931.
Lighting switches shall be mounted 4'0" above floor level.
Allow for four sets of two-way snitching, to bedrm, 1. lounge, garage - entry and passage.
To pantry, provide door jamb switch.

SOCKET OUTLETS:
Plug sockets shall be ivory 10 amp flush type complying with N.Z.S.S. 198.
Allow to fix 16 single and 2 double power points in positions to be decided during the course of the Contract.

LIGHTING:
Allow to fix 34 internal light points total, including eight bracket lights in positions to be decided during the course of the Contract. Leave all light out lets complete with approved lamps and opal shades.
Provide and fit five approved type ball fittings at entry, patio at each end, garage and laundry.
Allow to suspended light fittings on round black suspension flex to uniform height in kitchen, dining and lounge.
Allow for future 5 recessed fittings to 8'0" ceiling in the above rooms.

WATER HEATERS: (Incld Undersink Heater)
Wire water heating Circuit from Switchboard as required by the Supply Authority. Connect element and thermostat using plastic pipe to enclose conductors between the fixed wiring and the water heater terminal box. Earth water heater independantly of the water piping connections to the cylinder, by connecting to earthing lead incorporated in the water heating circuit.

ELECTRICIAN (CONT'D)

ELECTRIC RANGE:
Install electric range. Allow the P.C. sum of $250.00 for supply. Provide point with ivory flush mounted isolating switch in convenient position. Connect range to 2'6" of fixed wiring.

AERIAL AND EARTH PLATE AND T.V:
Supply and fix a 2-pin aerial plug with ivory flueh plate engraved 'aerial' and 'earth' in lounge. Run and couple earth wire to nearest cold water pipe with approved earthing clip. Provide and fit T.V: plug and socket and 30' of T.V. aerial concealed in partition and carried through roof to the lounge.

SHAVING POINT:
provide and fit one approved type shaving point in vanity room.

RANGE HOOD:
Allow the P.C. sum of $90.00 for supply of a selected range hood. Allow to install.

DISHWASHER:
Allow to install dishwasher supplied by Owner at position shown.

WASTEMASTER:
Wire to switch to wastemaster installed by Plumber.

HEATING CABLES:
Provide and install before construction of floor slab, Pyrotenar heating cables throughout entire house other than laundry pantry and bathroom, as manufactured by Giles & Elliot Ltd.
Carry out the whole of the work in accordance with Manufacturers instructions, complete with thermostats etc.

G L A Z I E R

(See also Preliminary and General)

FIXED GLAZING AT ENTRY:
Cut glass to fit rebates allowing for expansion, secure with sprigs, bed and back putty and fix with square 1/2" finished glazing beads.

NOTE: Glass to entry shall be selected coloured.

GLAZING TO ALUMINIUM JOINERY AND TIMBER DOORS:
Glaze follows:

Under 3½ sq.ft.	18 oz. ordinary glazing quality
3½ to 7 sq.ft.	24 oz. ordinary glazing quality
Over 7 sq. ft.	32 oz. ordinary glazing quality
Over 10 sq.ft.	1/4" sheet plate glaze

Glazing to W.C. windows, [illegible] bathroom and shower windows, shall be selected obs. glass.

NOTE: F.g. above transome, west wall : Spectrafloat (bronze)

P L A S T E R E R

(See also Preliminary and General)

MATERIALS:
Cement shall be fresh dry Portland cement. Water shall be clean, fresh drinking water. Sand shall be hard, sharp, clean, salt-free silver sand.

PATIO AND ENTRY SLAB:
Clean and hack concrete surfaces. Soak thoroughly with water and immediately render and straighten with 2 : 1 sand and cement comp. Finish with a steel float to a smooth and even surface, forming a small cove at sill.
Score plaster in approximately 2'0" squares after intial hardening takes place.

SLAB EDGE AT WINDOW SILLS AND SHIPLAP:
[illegible] 1 be finished with smooth plaster, coving edges under sill, flashings and shiplap, and carried out to edge of skirting wall-

Whangarei District Council
Private Bag 9023, Whangarei 0148, New Zealand
P +64 9 430 4200 | 0800 WDC INFO | 0800 932 463 F +64 9 438 7632
E mailroom@wdc.govt.nz www.wdc.govt.nz

Report of the outcome of a "Potentially Contaminated Site" Property search under Section 6 of the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011.

Application No: PCS200016

Reyburn and Bryant 1999 Limited
PO Box 191
Whangarei 0140

Date report compiled: 04/03/2020

Property Search Details:
Address: 4245 State Highway 1
Waipu 0582
Legal Description: SEC 29 SO 510398, ALOT 113 PSH WAIPU, Part ALOT 115 PSH WAIPU
PID NO: 168814

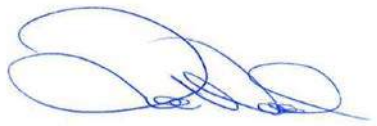
The search undertaken on Council records for this property has not identified any indication of current or previous activities in the area of the site that are included on the current version of the Hazardous Activities and Industries List (HAIL) issued by the Ministry for the Environment.

****

DISCLAIMER

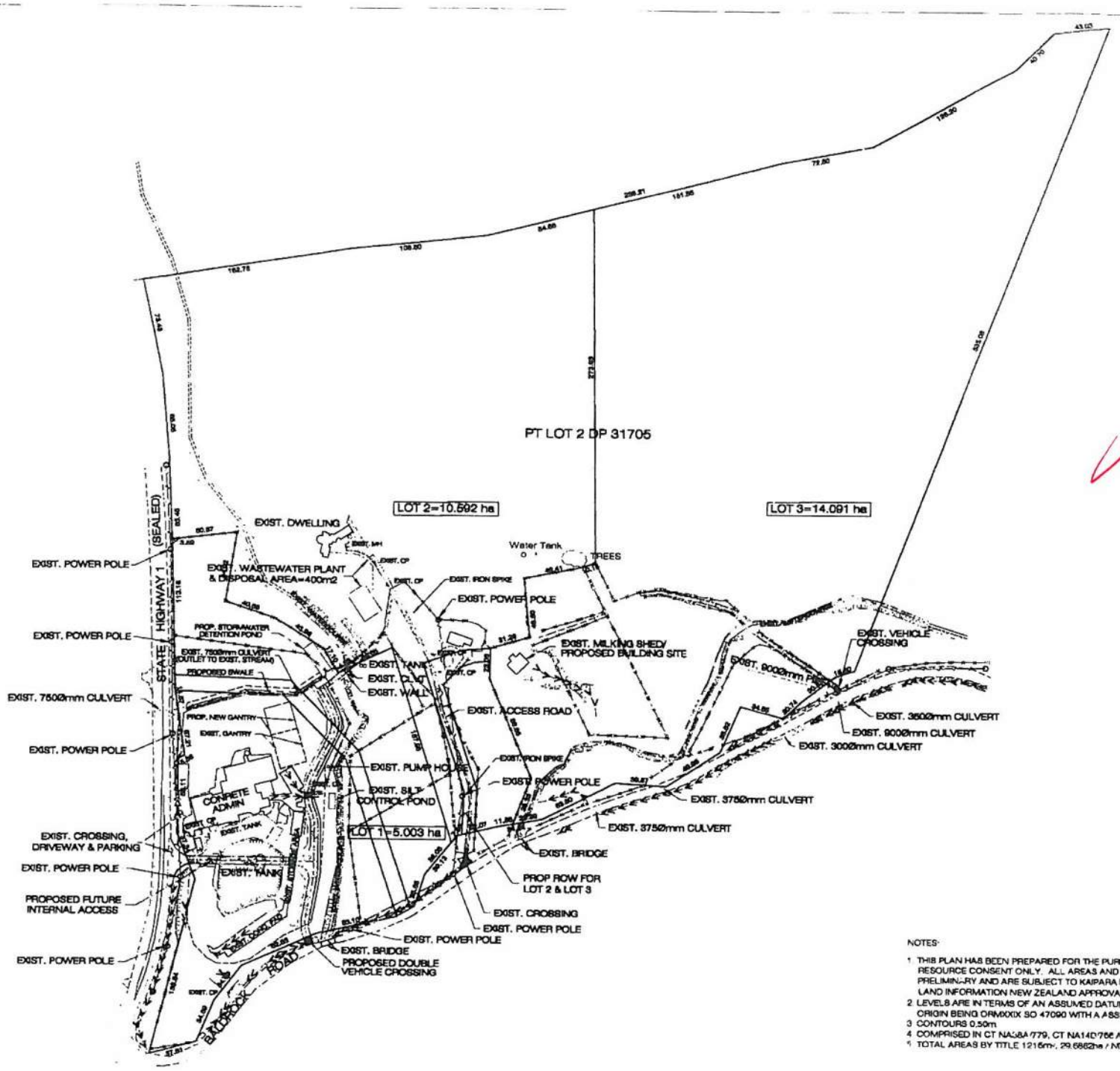
This Report has been prepared for the purposes of Section 6 of the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 and contains all information known to the Whangarei District Council to be relevant to the land as described. It is based on a search of Council records only and there may be other information relating to the land which is unknown to Council. The Council has not undertaken any inspection of the land or any building on it for the purposes of preparing this report.

Signed



Lee Wood

Property Assessment Officer



RM090098

APPROVED
16 MAR 2010
Kaipara District Council

NOTES:

1. THIS PLAN HAS BEEN PREPARED FOR THE PURPOSES OF OBTAINING A RESOURCE CONSENT ONLY. ALL AREAS AND MEASUREMENTS ARE PRELIMINARY AND ARE SUBJECT TO KAIPARA DISTRICT COUNCIL AND LAND INFORMATION NEW ZEALAND APPROVAL
2. LEVELS ARE IN TERMS OF AN ASSUMED DATUM. ORIGIN BEING ORMXXIX SO 47090 WITH A ASSUMED HEIGHT OF 83.16m
3. CONTOURS 0.5Om
4. COMPRISED IN CT NA38A/779, CT NA140/76E AND CT NA140/78A
5. TOTAL AREAS BY TITLE 1215m², 29.6862ha / NO 1146m

REVISION				
ISSUE	DATE	DETAILS	CHKD	DRN
A	11/09/09	RESOURCE CONSENT	GC	AD
B	13/09/09	SECTION 32	GC	AD

STAGE: RESOURCE CONSENT

PROJECT CONSULTANT: KEA CONSULTANTS LTD.

CLIENT: A & E REDDY

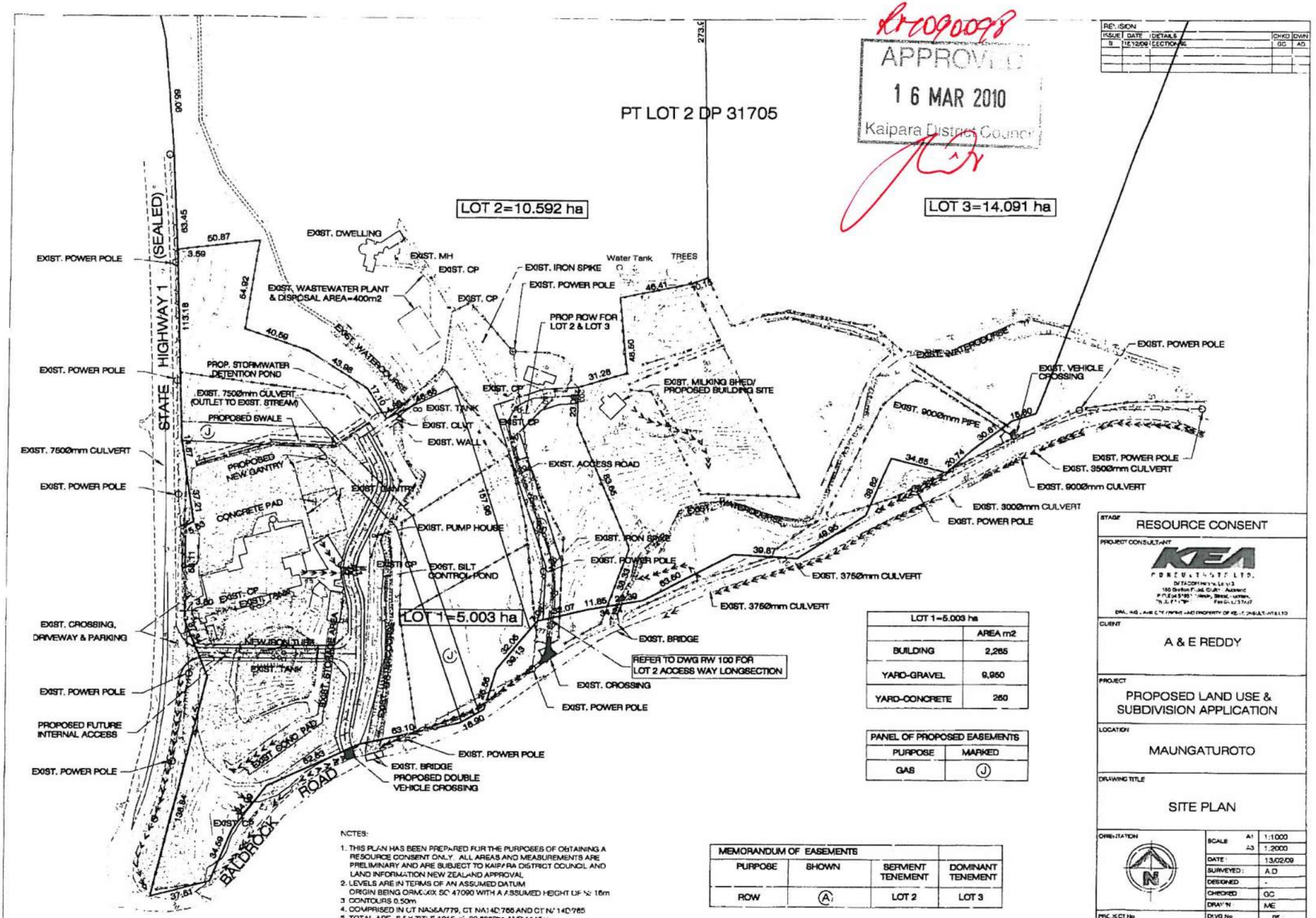
PROJECT: PROPOSED LAND USE & SUBDIVISION APPLICATION

LOCATION: MAUNGATUROTO

DRAWING TITLE: SCHEME PLAN 1 LAND USE FOR SUBDIVISION

ORIENTATION: N

SCALE A1	1:1500
SCALE A3	1:3000
DATE	13/07/09
SURVEYED	A.D
DESIGNED	-
CHECKED	GC
DRAWN	ME
PROJECT No	32607
DRG No	SP100
REV	B



LOT 1=5.003 ha	
	AREA m2
BUILDING	2,265
YARD-GRAVEL	9,950
YARD-CONCRETE	250

PANEL OF PROPOSED EASEMENTS	
PURPOSE	MARKED
GAS	(J)

MEMORANDUM OF EASEMENTS			
PURPOSE	SHOWN	SERVIENT TENEMENT	DOMINANT TENEMENT
ROW	(A)	LOT 2	LOT 3

NOTES:

1. THIS PLAN HAS BEEN PREPARED FOR THE PURPOSES OF OBTAINING A RESOURCE CONSENT ONLY. ALL AREAS AND MEASUREMENTS ARE PRELIMINARY AND ARE SUBJECT TO KAIPARA DISTRICT COUNCIL AND LAND INFORMATION NEW ZEALAND APPROVAL
2. LEVELS ARE IN TERMS OF AN ASSUMED DATUM ORIGIN BEING ORMOXIX SO 47090 WITH A ASSUMED HEIGHT OF 50.16m
3. CONTOURS 0.50m
4. COMPRISED IN CT NA36A/779, CT NA14D/766 AND CT NA14D/765
5. TOTAL AREA BY TITLE 1210m², 29.6862ha AND 1145m

REVISION				
ISSUE	DATE	DETAILS	CHKD	DWN
B	16/12/09	SECTIONING	GC	AD

STAGE: RESOURCE CONSENT

PROJECT CONSULTANT: KEA CONSULTANTS LTD.

CLIENT: A & E REDDY

PROJECT: PROPOSED LAND USE & SUBDIVISION APPLICATION

LOCATION: MAUNGATUROTO

DRAWING TITLE: SITE PLAN

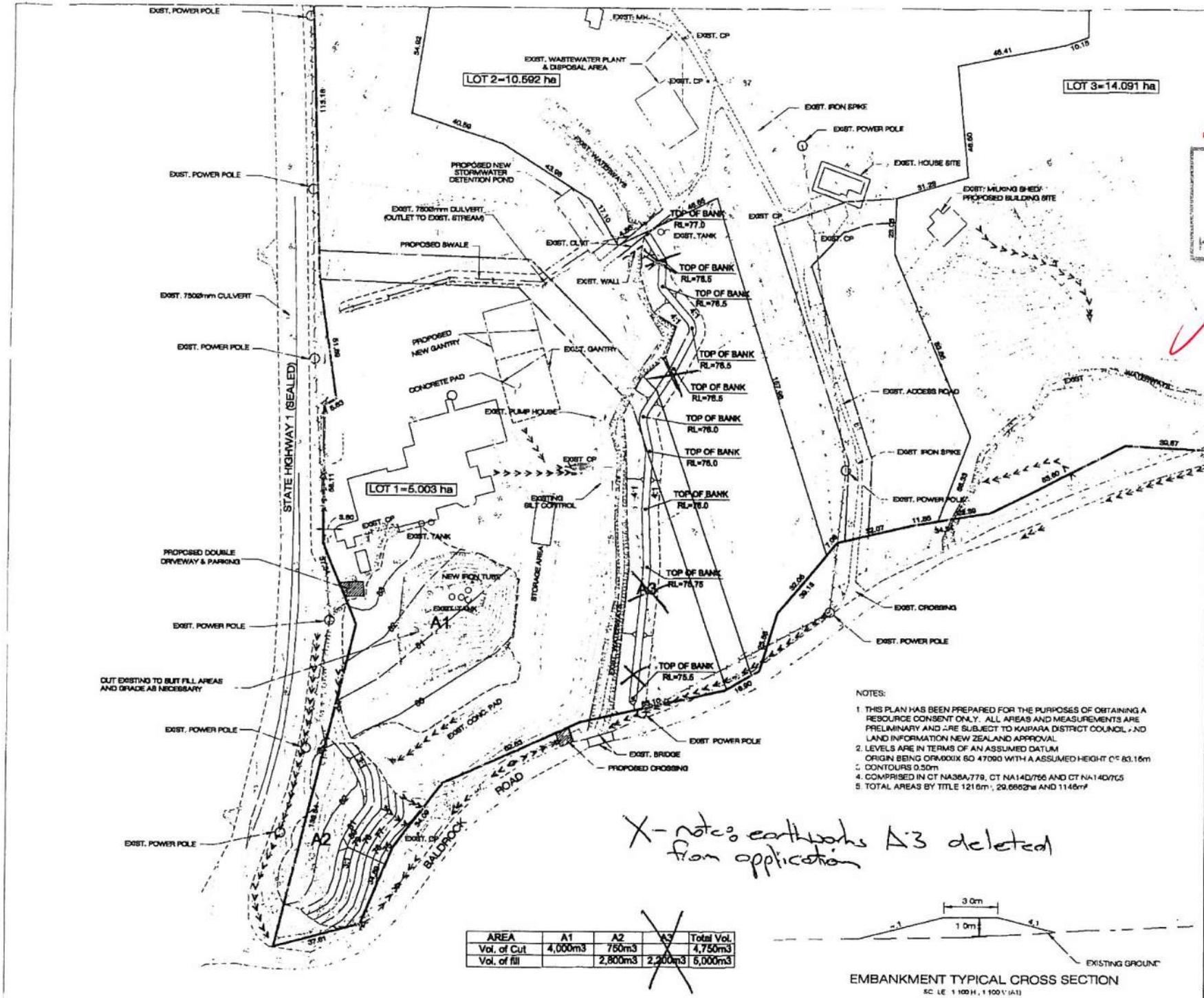
ORIENTATION: N

SCALE	A1	1:1000
	A3	1:2000
DATE:		13/02/09
SURVEYED:		A.D
DESIGNED		-
CHECKED		GC
DRAWN		ME

PROJECT No: 32607

DWG No: SP102

RE: B



NOTES:

1. THIS PLAN HAS BEEN PREPARED FOR THE PURPOSES OF OBTAINING A RESOURCE CONSENT ONLY. ALL AREAS AND MEASUREMENTS ARE PRELIMINARY AND ARE SUBJECT TO KAIPARA DISTRICT COUNCIL AND LAND INFORMATION NEW ZEALAND APPROVAL
2. LEVELS ARE IN TERMS OF AN ASSUMED DATUM ORIGIN BEING ORMXXIX 60 47090 WITH A ASSUMED HEIGHT OF 83.15m
3. CONTOURS 0.50m
4. COMPRISED IN CT NA36A/779, CT NA14D/756 AND CT NA14D/755
5. TOTAL AREAS BY TITLE 1216m², 29.6662ha AND 1146m²

X - Note: earthworks A3 deleted from application

AREA	A1	A2	A3	Total Vol.
Vol. of Cut	4,000m3	750m3		4,750m3
Vol. of fill		2,800m3	2,200m3	5,000m3

EMBANKMENT TYPICAL CROSS SECTION

SCALE 1:100 H, 1:100 V (A1)
1:200 H, 1:200 V (A3)

RM090098

APPROVED
16 MAR 2010
Kaipara District Council

REVISION				
ISSUE	DATE	DETAILS	CHKD	DRN
A	17.06.09	RESOURCE CONSENT	GC	AD
B	13.12.09	SECTION 92	GC	AD

STAGE: RESOURCE CONSENT

PROJECT CONSULTANT: KEA CONSULTANTS LTD

CLIENT: A & E REDDY

PROJECT: PROPOSED LAND USE & SUBDIVISION APPLICATION

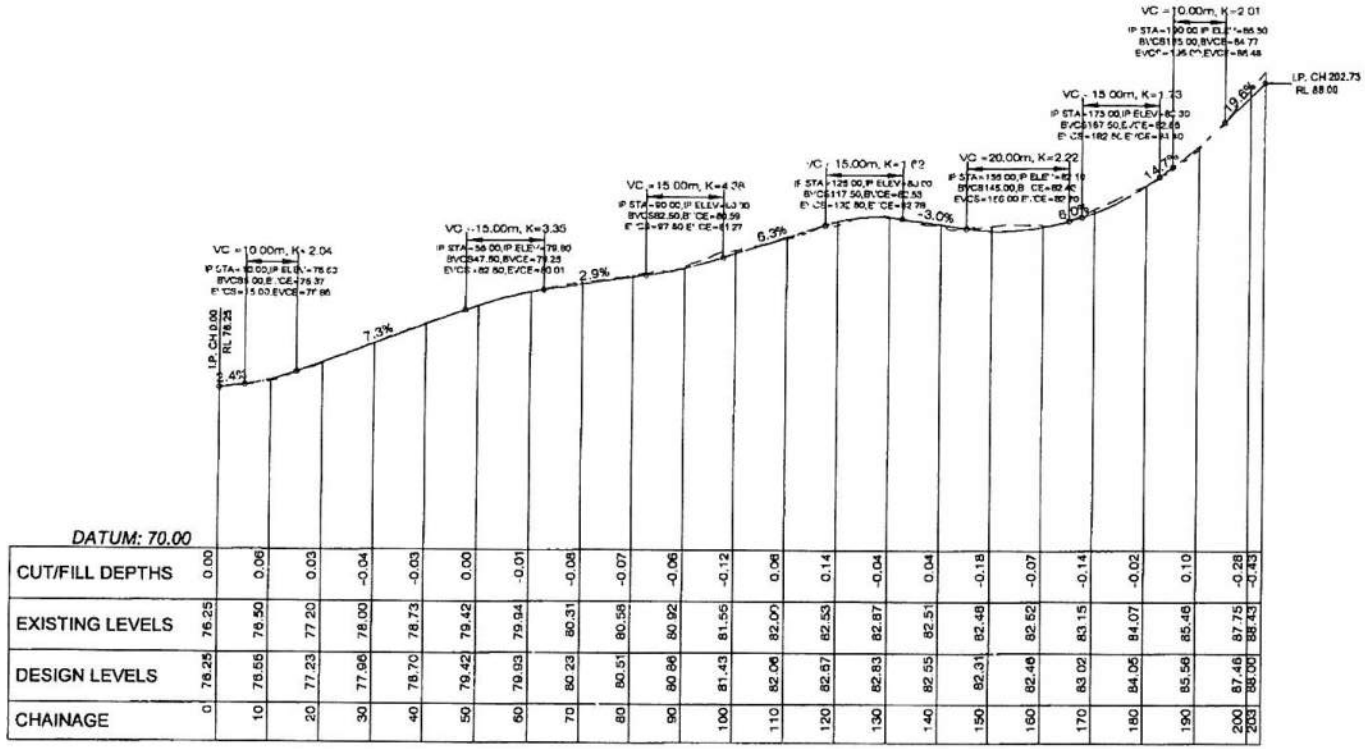
LOCATION: MAUNGATUROTO

DRAWING TITLE: EARTHWORKS CUT-FILL PLAN

ORIENTATION: N

SCALE	A1	1:750
	A3	1:1500
DATE		13/02/09
SURVEYED		A.D
DESIGNED		ME
CHECKED		GC
DRAWN		ME

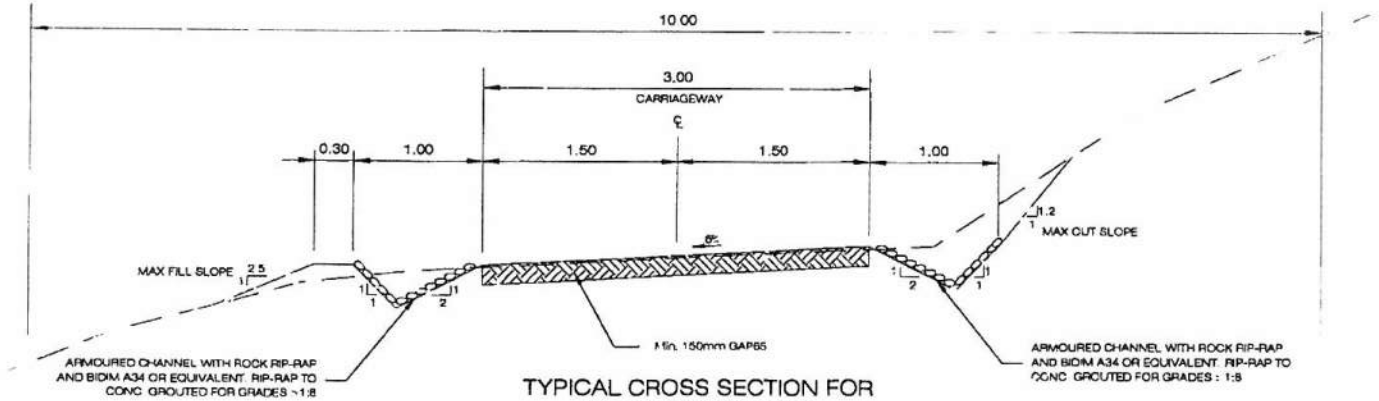
PROJECT No	DWG No	REV
32607	EW100	B



CUT/FILL DEPTHS	0.00	0.06	0.03	-0.04	-0.03	0.00	-0.01	-0.05	-0.07	-0.06	-0.12	0.06	0.14	-0.04	0.04	-0.18	-0.07	-0.14	-0.02	0.10	-0.28	-0.43
EXISTING LEVELS	76.25	76.50	77.20	78.00	78.73	79.42	79.94	80.31	80.58	80.92	81.55	82.00	82.53	82.87	82.51	82.48	82.52	83.15	84.07	85.46	87.75	88.43
DESIGN LEVELS	78.25	78.56	77.23	77.96	78.70	79.42	79.93	80.23	80.51	80.86	81.43	82.06	82.67	82.83	82.55	82.31	82.46	83.02	84.05	85.59	87.46	88.00
CHAINAGE	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200	203

ROAD CENTERLINE

SCALE 1:500 H, 1:100 V (A1)
1:1000 H, 1:200 V (A3)



TYPICAL CROSS SECTION FOR LOT 2 ACCESS WAY

SCALE 1 : 20 (A1)
1 : 40 (A3)

SUBGRADE CLEGG TEST = 15
TOP LAYER CLEGG TEST = 35

REVISION				
ISSUE	DATE	DETAILS	CHKD	DN BY
B	15.12.09	SECTION 'E'	GC	AD

RM090098

APPROVED
16 MAR 2010
Kaipara District Council

STAGE: RESOURCE CONSENT

PROJECT CONSULTANT: KEA CONSULTANTS LTD.

[illegible] KEA House, Level 3
[illegible] Quality A.P.I. Orwell, L. Anglesea
P.O.B. [illegible] Whangarei
Ph 09 [illegible] Fax [illegible]

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CLIENT: A & E REDDY

PROJECT: PROPOSED LAND USE & SUBDIVISION APPLICATION

LOCATION: MAUNGATUROTO

DRAWING TITLE: ROW LONGSECTION FOR LOT 3

ORIENTATION	SCALE A1	AS SHOWN
	A3	AS SHOWN
	DATE	13/07/09
	SURVEYED	A.D
	DESIGNED	-
	CHECKED	GC
	DRAWN	ME
PROJECT No. 32607	DWG No RW100	REV B

KAIPARA DISTRICT

Kaipara te Oranganui • Two Oceans Two Harbours

KAIPARA DISTRICT COUNCIL

In the Matter of:	*The Resource Management Act 1991*
And	
In the Matter of:	*An application under Section 88 of the Resource Management Act 1991 made by A & E Reddy*
File Reference:	*RM 090098*

Decision on Resource Consent Application

Pursuant to section 95A of the Resource Management Act 1991 ("the Act" (as amended 1 October 2009)), the Kaipara District Council ("the Council"), resolves that this application be processed without notice because:

- ***In accordance with section 95D of the Act, the adverse effects of the activity on the environment will be no more than minor.***
- ***In accordance with section 95E of the Act, there are no persons who may be adversely affected by the proposal.***
- ***In accordance with section 95A(2)(b) the applicant did not request the public notification of the application.***
- ***In accordance with section 95A(4) there are no special circumstances that warrant the public notification of the application.***

Pursuant to section 104, 104A, 106, 108, 220 and 221 of the Act, the Council grants discretionary activity subdivision resource consent to A and E Reddy to subdivide the property by way of boundary relocation into three rural lots at the corner of State Highway 1 and Baldrock Road, Kaiwaka, legally described as Pt Lot 2 DP 31705 (CFR NA14D/766); Lot 1 DP 45538 and Lot 1 DP 41410 (CFR NA26A/629); Lot 1 DP 47111 (CFR NA14D/765); Allotment 344 Parish of Kaiwaka (CFR NA35B/738); and Allotment 342 Parish of Kaiwaka (CFR NA38A/779).

Reasons for the Decision

The reasons for this controlled activity consent are as follows:

(a) The adverse effects of the proposal are considered to be no more than minor.

(b) The imposition of the conditions below will ensure that any potential adverse effects are avoided, remedied or mitigated.

(c) The proposed activity is considered to be consistent with the relevant objectives and policies of the Operative Kaipara District Plan 1997.

(d) The proposed activity is considered to be consistent with the sustainable management purpose of the Resource Management Act 1991.

Conditions

Pursuant to section 108 of the Act, this consent is issued subject to the following conditions:

1) Prior to the sealing of the Survey Plan pursuant to Section 223 the following conditions shall be complied with:

a) The survey plan shall be generally in accordance with the plan of subdivision prepared by Kea Consultants Ltd referenced 32607 SP100 revision B revised on 18 December 2009 and submitted in support of the application.

b) Written confirmation shall be provided from the appropriate network utility providers that satisfactory arrangements can be made for the provision of electricity and telecommunications services, in particular with respect to any required easements.

c) The Survey Plan shall show all necessary easements to provide for legal access and servicing to all lots.

d) The survey plan shall show all necessary vesting of road in order to provide complying sight distances from the vehicle crossings along Baldrock Road.

e) Engineering plans, specifications and calculations relating to the formation of the vehicle crossings and right of way shall be prepared in accordance with Council's Engineering Standards 2009 and submitted to Council for approval and approved before the construction of these works commences.

The design shall provide for the following:

- *The new second crossing to Lot 1 shall be located so that the one lane bridge is no closer than the end of the 1:10 taper next to the eastern side of the crossing entrance, ie. approx. 39m to the centre of the crossing from the*

start of the bridge

- *The crossing to Lot 1 shall be designed in accordance with the KDC Engineering Standards 2009 drawing S09, S10 and S11.*
- *The crossing to Lot 1 shall be sealed at least 25m back from the lane edge to avoid metal being tracked on to the road.*
- *The vehicle crossing to Lots 2 and 3 shall be designed and constructed in accordance with KDC Engineering Standards 2009 drawing S06, S10 and S11.*
- *The vehicle crossing to Lots 2 and 3 shall be sealed at least 10m back from the lane edge.*
- *Any culverts required shall be constructed in accordance with KDC Engineering Standards 2009 drawing S11 and S25.*
- *The drawings shall identify the area of land required to be vested as road to ensure that sight lines for at least 105m visibility from the vehicle crossings are contained within the road reserve.*
- *Right of Way A shall have a minimum legal width of 12m and be upgraded as required to comply with Council's Engineering Standards 2009 Table 5.1, drawing S01 and a design speed of 35 km/hr.*
- *Passing bays shall be provided no further apart than 100m and wherever sight distance along the right of way is less than 75m. Passing bay dimensions shall comply with Engineering Standards 2009 drawing S04*
- *Additional carriageway widening shall be provided on curves in accordance with Engineering Standards 2009 drawing S04*
- *A combination of corner widening and passing bay at CH 55 – 60 shall be used.*
- *The intersection of the driveways to Lots 2 and 3 on ROW A, shall be upgraded to a S06 crossing at an angle of 80 to 90 degrees as required under the Council's Engineering Standards 2009 5.2.6 Note 2.*
- *Right of Way A shall be sealed for a distance of 10m from Baldrock Road and wherever the longitudinal gradient exceeds 12.5%. The remainder of Right of Way A may be unsealed.*
- *Pavement design shall be in accordance with Council's Engineering Standards 2009 clause 5.2.13 and drawing S03.*
- *Appropriate stabilisation, stormwater drainage facilities and scour protection*

shall be provided

- *Any necessary permit procedures shall be complied with.*

The plans, specifications and calculations shall specifically address the following matters:

- *Horizontal and vertical geometry*
- *Cross-falls and superelevation*
- *Sight distances*
- *Pavement design*
- *Surfacing*
- *Drainage facilities*
- *Earthworks and Retaining Structures*
- *Extent of land required for rights of way / road to vest.*

f) Engineering plans shall be submitted and accompanied by written evidence from Vector that the plans comply with Vector requirements in respect of the gas pipeline easement.

2) Before a Certificate is issued pursuant to Section 224(c) of the Act, the following conditions are to be complied with:

a) Prior to commencement of any construction work, the consent holder shall provide written verification that the person responsible for carrying out construction work holds public liability insurance to the value of $1,000,000.00.

b) Prior to the commencement of any construction work, the consent holder shall provide written verification that the consent holder's engineer responsible for design and supervision of the roading works holds professional indemnity insurance to the value of $1,000,000.00

c) Prior to commencement of any construction work, the consent holder shall enter into a Bond in a form to the approval of Council guaranteeing that in the event of damage to existing Council assets or abandonment of the work by the consent holder, that all existing Council assets will be returned to a condition at least equal to that which existed prior to the commencement of work. The bond shall be for the sum of $25,000 and shall remain in full force and effect until such time as all work has been completed and any necessary remedial work completed to the satisfaction of Council.

Access

d) *The right of way, vehicle crossing and entrances shall be constructed in accordance with the design approved under condition 1(e) and in accordance with Table 5.7 of Council's Engineering Standards 2009. Any necessary permit procedures shall be complied with.*

e) *The crossing points and right of way shall be constructed in accordance with the design approved above and Kaipara District Council's Engineering Standards 2009. Pavement construction shall meet the testing requirements of Council's Engineering Standards 2009 Table 5.7.*

Any necessary permit procedures shall be complied with.

The consent holder shall ensure adequate construction monitoring of all construction works in accordance with Council's Engineering Standards 2009. This shall include as a minimum:

i) *Detailed supervision and certification upon completion as complying with the required standards by the consent holder's engineer.*

ii) *Council's engineers undertaking suitable inspections during construction at key hold-points to enable them to confirm that the certification provided by the consent holder's engineer matches the design submitted. As a minimum, hold points shall include:*

- *Inspection and approval of subgrade, including review of subgrade testing*
- *Inspection and approval of compacted basecourse prior to sealing if sealing required*
- *If concrete is to be used, pre pour and boxing inspection*

No work shall proceed beyond the above hold points until specifically approved by Council's engineers.

In addition to quality control testing undertaken by the contractor and by the consent holder's Engineer, Council's Engineers will undertake random verification testing of materials and construction standards throughout the construction period.

The consent holder's engineer shall be a suitably qualified competent engineer or surveyor with recent and ongoing experience in road design and construction to the specific approval of Council.

f) *The Consent Holder shall provide evidence that approval from New Zealand Transport Agency under Section 93 of the Transit NZ Act 1989 has been given, such that the State Highway Limited Access Road, insofar as it affects the land in question, may be declared a road for the purposes of subdivision.*

g) *The Consent Holder provide evidence from New Zealand Transport Agency that the requirements outlined in the New Zealand Transport Agency letter dated 23 December*

2009 have been satisfied.

h) *Consent Notices pursuant to Section 221 of the Act shall be prepared for registration against the title of Lots 1-3 of the subdivision. The consent notices shall draw attention to and require compliance with respect to the following matters:*

   i) *(Lots 2 and 3) Consent Notice requirement for earthworks, the location of buildings, building foundations and stormwater and wastewater disposal to be subject to specific engineering design by a suitably qualified Chartered Professional Engineer having regard to any soil instability/saturation issues that may exist or arise as a result of the development*

   ii) *(Lots 2 and 3) Consent Notice requiring the floor level of new any habitable building to be at least 0.5m above the 100yr ARI flood level.*

   iii) *(Lots 2 and 3) Consent Notice requiring that the existing vehicle crossing at the eastern end of the Baldrock Road frontage shall not be used as an access to any dwelling or building*

   iv) *(Lot 1) At the time the vehicle crossing place onto Baldrock road obtains final approval all heavy vehicle traffic accessing proposed Lot l shall use the Baldrock Road entrance; no heavy vehicle shall access proposed Lot 1 via crossing places CP14/15.*

i) *A solicitor's undertaking shall be provided to Council confirming that all consent notices prepared for registration under the relevant conditions of this resource consent will be duly registered against the new titles to be issued for the subdivision.*

   All consent notices to be prepared for registration under the relevant conditions of this resource consent shall be prepared by Council's Solicitor at the applicant's expense and shall be complied with on a continuing basis by the subdividing owner and subsequent owners after the deposit of the Survey.

j) *The consent holder shall pay all charges set by the Council under Section 36 of the Resource Management Act 1991, including any administration, inspection and supervision charges relating to the conditions of this resource consent. The consent holder will be advised of the charges as they fall.*

Monitoring

Condition 2)e)(ii) will require monitoring by the Council after the conditions certificate has been issued. There will be a Council fee for this monitoring.

Advice Notes

1. *The owner's attention is drawn to Rule 9.5.5 of the Operative District Plan which specifies minimum driveway standards, including a maximum gradient of 20%.*
2. *An approval/agreement from NZTA to undertake the construction works on State Highway l will be required in terms of section 51 of the Government Roading Powers Act 1989 in relation to the PPM Diagram D entrance upgrade. This construction works also include closure of the existing CP 11 and CP 13. An application to undertake the required work can be made to the Area Engineer Northland. (Attention: John Kooge, New Zealand Transport Agency, Northland Satellite Office, PO Box 1899, Whangarei 0140; Ph: 027223 8 15). NZTA will process the application within a reasonable time frame. No works on the State highway shall commence until the approval for the works has been given by NZTA.*
3. *All archaeological sites are protected under the provisions of the Historic Places Act 1993. It is an offence under that act to modify, damage or destroy any archaeological site, whether the site is recorded or not. Application must be made to the New Zealand Historic Places Trust for an authority to modify, damage or destroy an archaeological site(s) where avoidance of effect cannot be practised.*
4. *If subsurface archaeological evidence (shell, midden, hangi, storage pits, etc) should be unearthed during construction, work should cease in the immediate vicinity of the remains and the Historic Places Trust should be contacted.*
5. *In the event of koiwi (human remains) being uncovered, work should cease immediately and the tangata whenua of the area shall be contacted so that appropriate arrangements can be made.*

Signed: ……..... *…. /…. / ….*

Development Manager

Kaipara District Council

Signed under delegated authority pursuant to Section 34A of the Resource Management Act 1991.

Kaipara te Oranganui
KAIPARA DISTRICT
Two Oceans Two Harbours

42 Hokianga Road,
Private Bag 1001,
Dargaville, Northland,
New Zealand
p +09 439 7059
f +09 439 6756
e council@kaipara.govt.nz
www.kaipara.govt.nz

19 March 2015

A&E Reddy
C/- Dream Planning
PO Box 123
Mangawhai 0540
- Via Email

Dear Sir/Madam,

RM 150047 – Extension of Time of RM090098 – Baldrock Road, Mangawhai
Decision on Resource Consent Application

Please find attached the decision made under delegated authority on the above application.

You are advised that if you have any concerns about this decision, you have 15 working days from the date of receiving this notification to object to the Kaipara District Council in respect of any part of this decision pursuant to Section 357 of the Resource Management Act.

Yours faithfully

Katrina Roos
Kaipara District Council
Enclosed: Decision on Resource Consent

Resource Management Act 1991

Report for an Application to Extend a Consent

APPLICATION & PROPERTY DETAILS

Consent Number	*RM150047*
Applicant's Name	*A & E Reddy*
Site Address	*Corner of State Highway One and Baldrock Road, Kaiwaka*
Legal Description	*PT Lot DP 31705, Lot 1 DP 45538, Lot 1 DP 41410, Lot 1 DP 4711, Allotment 344 Parish of Kaiwaka and Allotment 342 Parish of Kaiwaka*
Description of Application	*Extension of time application for RM090098 pursuant to Section 125 of the Resource Management Act 1991*

PLANNING FRAMEWORK

District Plan	*Kaipara District Plan (2013)*
Zoning	*Rural*
Planning Map	*20*
Designations/ Limitations	-

PROCESSING DETAILS

Date Received	*17/03/2015*	Date of Report	*18/03/2015*	Site Visit	*NA*
MWH Comments	*NA*				

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1 Description of Proposal and Existing Environment

1.1 Background

On 17 March 2010 a non-notified consent (RM090098) was granted to the applicant for subdivision of a 29.686 hectare site to create three new allotments with areas in excess of 4ha from five existing allotments by way of boundary relocation/adjustment, including the site of an existing concrete factory and storage yard on the corner of Baldrock Road and State Highway One. The intention of the development is to retain the concrete factory and develop the other lots for residential sale. Progress has been made in implementing the subdivision, but an extension of time is sought for completion to obtain the Section 223 and 224 certificates and new titles.

1.2 The Proposal

The applicant has made an application to extend the consent's lapse period by 24 months (2 years), on the grounds that the substantial progress has been made towards giving effect to the work required by conditions, with the following works having been completed:

- Since the resource consent was granted, the applicant has submitted engineering plans for the vehicle crossings and right of way in accordance with Condition 1(e) and constructed the crossings and right of way in accordance with Conditions 2(d) and 2 (e).

Given the recent economic downturn and state of the local property market, the applicant has requested the time extension to provide flexibility for the development to be completed. The survey plan has not yet been completed and a number of other conditions need to be complied with.

The request will extend the lapse date for the final sign date of the 223 stage of the subdivision to **17 March 2017.**

2 Statutory Context

2.1 Section 125

Section 125 of the Act provides for a consent holder to make an application to extend the timeframe within which to give effect to a resource consent. Such application may be made at any time before a consent lapses.

In considering such an application, s125(1A)(b) states that the Council may grant or refuse an extension after taking into account:

- Whether substantial progress or effort has been, and continues to be, made towards giving effect to the consent; and

- Whether the applicant has obtained approval from persons who may be adversely affected by the granting of an extension; and

- The effect of the extension on the objectives and policies of any plan or proposed plan.

3 Section 125 Assessment

3.1 Substantial Progress or Effort

Since the resource consent was granted, the applicant has been working to give effect to the consent and substantial progress has been made in respect of the work required, with the design and construction of a right of way and vehicle crossings for the proposed lots. It is considered this can be regarded as substantial progress.

3.2 Adversely Affected Persons

There are no persons considered to be adversely affected by the proposed extension because the fundamental characteristics of the subdivision development, including lot layout and access (as originally proposed and approved) is not being altered. The proposal merely extends the time period for giving effect to the proposed subdivision.

3.3 Objectives and Policies of the Plan

The provisions of the District Plan have changed from those considered when the original consent was granted. The relevant provisions of the Kaipara District Plan (2013) are now considered operative and are given full weight.

It should be noted that the boundary adjustment would be considered a Non Complying Activity under Rule 12.12.3 of the current District Plan as a boundary adjustment involving a change in lot sizes greater than 15%. However one of the proposed lots created would be in accordance with the controlled activity minimum lot size of 12 hectares (Lot 3 -14.091) in Rule 12.12.1.

The following objectives and policies of the Kaipara District Plan (2013) are considered relevant: 12.5.2, 12.5.4, 12.5.6, 12.5.7, 12.5.8, 12.6.4, 12.6.5, 12.6.9, 12.6.12, 12.6.13, 12.6.14, 12.6.16 and 12.6.17.

The proposed development will be in accordance with these provisions:

- The proposed subdivision will create allotments in keeping with the surrounding development pattern, therefore the development will not adversely affect the existing rural character and amenity of the surrounding area.

- The disposal of stormwater and wastewater will still be contained within the respective lot boundaries and managed in a sustainable manner to ensure there will be no impact on sensitive receiving environments.
- An adequate water supply for drinking and firefighting purposes can be established on site.
- The increase in daily traffic movements can be comfortably absorbed by the existing roading network.
- Local Iwi expressed no concerns regarding the original consent.

4 Conclusion

It is considered, after taking account of the matters specified in s125(1A)(b), that the application should be **GRANTED**.

5 Section 125 Recommendation

That for the reasons stated in the above assessment this application to extend consent RM090098 to 17 March 2017, and otherwise subject to the same conditions as applied in those consents, be granted consent.

Reporting Planner — Katrina Roos — 19/03/15 — Date

Planning Review — Fran Mikulicic — 19/03/15 — Date

General Manager, Regulatory and District Planning — Fran Mikulicic — 19/03/15 — Date

In the Matter of:	*The Resource Management Act 1991*
And	
In the Matter of:	*An application under Section 125 of the Resource Management Act 1991 made by A & E Reddy*
File Reference:	*RM150047*

Decision on Resource Consent Application

a) *That the application by A & E Reddy to extend the timeframe within which to give effect to approved subdivision consent RM090098 to carry out a boundary adjustment to create 3 lots being legally described as PT Lot DP 31705, Lot 1 DP 45538, Lot 1 DP 41410, Lot 1 DP 4711, Allotment 344 Parish of Kaiwaka and Allotment 342 Parish of Kaiwaka by a period of 24 months (2 years)* ***BE GRANTED*** *pursuant to Section 125 of the Resource Management Act 1991 for the following reasons:*

1. *Substantial effort has been made in giving effect to the consent. In particular:*

   - *Since the resource consent was granted, the applicant has submitted engineering plans for the vehicle crossings and right of way in accordance with Condition 1(e) and constructed the crossings and right of way in accordance with Conditions 2(d) and 2 (e).*

2. *No persons are considered to be adversely affected by the extension because the fundamental characteristics, including lot layout and access of the subdivision development (as originally proposed and approved) is not being altered, the proposal merely extends the time period for giving effect to the proposed subdivision by 2 years.*

3. *The extension will be in accordance with the objectives and policies of the Kaipara District Plan 2013:*

   - *The proposed subdivision would be considered a non complying boundary adjustment under the current District Plan. However the lots created are generally consistent with the pattern of development in the area, therefore it is considered that less than minor adverse character and amenity effects will be experienced in the wider environment.*

   - *The disposal of stormwater and wastewater will still be contained within the respective lot boundaries and managed in a sustainable manner to ensure there will be no impact on sensitive receiving environments.*

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- *An adequate water supply for drinking and fire fighting purposes can be established on site.*
- *The increase in daily traffic movements can be comfortably absorbed by the existing roading network.*
- *Local Iwi have expressed no concerns regarding the proposal.*

b) *Pursuant to Section 125(1A)(b) of the Resource Management Act 1991, subdivision consent RM090098 SHALL LAPSE on* ***17 March 2017.***

Advice Notes

1. *That consent holder is advised that the conditions that resource consent RM090098 were granted subject to are still required to be complied with and the development must be in accordance with the plan of subdivision prepared by Kea Consultants Ltd referenced 32607 SP100 revision B revised on 18 December 2009 and submitted in support of the application.*

2. *The consent holder shall ensure that all fixed charges relating to the receiving, processing, granting and monitoring of this resource consent under section 36(1) of the Resource Management Act 1991 (RMA); and), plus all additional charges imposed under section 36(3) of the RMA are paid to enable the Council to recover its actual and reasonable costs in respect of this application, which are beyond challenge.*

Signed: Fran Mikulicic 19/03/15

General Manager, Regulatory and District Planning

Kaipara District Council

Signed under delegated authority pursuant to Section 34A of the Resource Management Act 1991.

21 January 2020

A & E Reddy
C/- Paralax Surveyors and Planners
P O Box 266
Warkworth 0941

Kaipara te Oranganui
KAIPARA DISTRICT
Two Oceans Two Harbours

42 Hokianga Road,
Private Bag 1001,
Dargaville 0340, Northland,
New Zealand
p 09 439 3123
p 0800 727 059
f 09 439 6756
e council@kaipara.govt.nz
www.kaipara.govt.nz

Dear Sir/Madam,

RM 150047A - SECS 4 6 10 SO 456515 - 33 Baldrock Road, Kaiwaka - Decision

Please find attached the decision made under delegated authority on the above application. You are advised that if you have any concerns about this decision, you have 15 working days from the date of receiving this notification to object to the Kaipara District Council in respect of any part of this decision pursuant to Section 357 of the Resource Management Act.

We would like to remind you that conditions must be complied with. It is important that you or your client reads, understands and complies with all conditions of this Resource Consent to avoid enforcement action. Please send correspondence relating to consent conditions to monitoring@kaipara.govt.nz.

Please note that in the absence of an objection, and pursuant to Section 125 of the Resource Management Act 1991, this consent will lapse on the expiry of five years after the date of commencement of the consent, unless either the consent is given effect to before the end of that period, or a request is made to the Kaipara District Council to extend that period. For your information I enclose a copy of the planning report and notification report on the application.

Yours faithfully



Nadia D'Hart
Kaipara District Council
Enclosed: Decision on Resource Consent

In the Matter of:	*The Resource Management Act 1991*
And	
In the Matter of:	*An application under Section 125 of the Resource Management Act 1991 made by Elaine Reddy and EBP Trustees 2016 Limited.*
File Reference:	*RM150047A*

Decision on Resource Consent Application

a) *That the application by Elaine Reddy and EBP Trustees 2016 Limited to extend the timeframe within which to give effect to approved subdivision consent RM090098 to carry out a boundary adjustment to create 3 lots being legally described as PT Lot DP 31705, Lot 1 DP 45538, Lot 1 DP 41410, Lot 1 DP 4711, Allotment 344 Parish of Kaiwaka and Allotment 342 Parish of Kaiwaka by a period of 3 years* ***BE GRANTED*** *pursuant to Section 125 of the Resource Management Act 1991 (the Act) for the following reasons:*

1. *Substantial effort has been made in giving effect to the consent. In particular, since RM150047 was granted the applicant has:*

   - *Obtained 223 Certificate;*
   - *Provided bond and insurances in accordance with Conditions 2(a), (b) and (c); and*
   - *Completed physical works in relation to the construction of a Right of Way (ROW) and vehicle crossing in accordance with Conditions 2(d) and (e).*

2. *No persons are considered to be adversely affected by the extension because the fundamental characteristics, including lot layout and access of the subdivision development (as originally proposed and approved) is not being altered, the proposal merely extends the time period for giving effect to the proposed subdivision by 3 years.*

3. *The extension will be in accordance with the objectives and policies of the Kaipara District Plan 2013:*

   - *The proposed subdivision would be considered a non complying boundary adjustment under the current District Plan. However, the lots created are generally consistent with*

the pattern of development in the area, therefore it is considered that less than minor adverse character and amenity effects will be experienced in the wider environment.

- *The disposal of stormwater and wastewater will still be contained within the respective lot boundaries and managed in a sustainable manner to ensure there will be no impact on sensitive receiving environments.*
- *An adequate water supply for drinking and fire fighting purposes can be established on site.*
- *The increase in daily traffic movements can be comfortably absorbed by the existing roading network.*
- *Local Iwi have expressed no concerns regarding the proposal.*

b) *Pursuant to Section 125(1A)(b) of the Act, subdivision consent RM090098 SHALL LAPSE on* ***20 December 2022.***

Advice Notes

1. *The consent holder is advised that resource consent RM090098 was granted to subject to conditions. Those conditions are still required to be complied with and the development must be in accordance with the plan of subdivision prepared by Kea Consultants Ltd referenced 32607 SP100 revision B revised on 18 December 2009, and all information submitted in support of the application.*

2. *The consent holder should ensure that all fixed charges relating to the receiving, processing, granting and monitoring of this resource consent under section 36(1) of the Act.*

3. *Any additional charges imposed under section 36(3) of the Act should be paid to enable the Council to recover its actual and reasonable costs in respect of this application, which are beyond challenge.*



Vishal Chandra *Date: 20 January 2020*

Planning Manager, Resource Consents

Kaipara District Council

Signed under delegated authority pursuant to Section 34A of the Resource Management Act 1991.

09 Jun 2016

Adrian and Elaine Reddy
PO Box 17
Kaiwaka 0542

Dear Sir or Madam,

Request for Further Information on PIM / BC Application

Reference Number: 160334
Project Location: 33 Baldrock Road, Kaiwaka
Project Description: Upgrade existing septic system

This letter is to advise that we are in receipt of your application for a Project Information Memoranda (PIM) / building consent for the above project.

Our lodgement vetting process identifies that not all of the information required to accompany a PIM / Building Consent application has been provided. Until adequate information is provided the application cannot be formally received. Your application has been allocated a consent number, but is suspended until the list of further information listed below is provided.

You can re-start this process and move your application to "formally received status" by submitting the following further information:

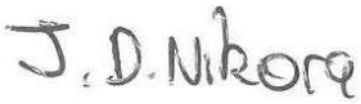
Site Plan:

1. Please provide a site plan to show your boundaries in relation to these systems and disposal fields. The site plan does not need to detail driveways etc just the boundaries in relation to the proposed work.

My apologies if any of the above matters are already covered by the documents but have been overlooked.

Should you have any queries regarding this letter, please phone our Customer Services Team on Phone 0800 727 059.

Yours Sincerely,



Jamie Nikora
Technical Support
On behalf of: Kaipara District Council

Kaipara District Council Bank Details
BNZ Dargaville
[redacted]

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RECEIVED
07 JUN 2016
MANGAWHAI
Kaipara District Council

KAIPARA DISTRICT COUNCIL

Application for Project Information Memorandum and/or Building Consent (Form 2) Section 33 or section 45, Building Act 2004

For Official use
Project Number: 160334
Date Received:

Items marked * are mandatory for all applications. **Complete this form in BLOCK CAPITALS using BLACK or BLUE ink.**

1. Type of Application

I request that you issue a*: (*Tick one box only*) for the building work described in this application

- ☐ Project Information Memorandum (PIM) only
- ☐ Building Consent only **OR** Amendment to Building Consent:
- ☑ Building Consent including PIM Minor works
- ☐ Exemption from the need for Building Consent *(e.g Marquee. Refer Schedule 1 of BA04)*

2. The Building

Valuation Roll Number: 01200 - 03403

Street Address*: 33 Baldrock Road, Kaiwaka

Legal Description*: Lot: Pt Lot 2 DP: 31705

Building Name *(if applicable)*:

Number of Levels:

Level/Unit Number:

Number of Occupants*:

Floor Area* *(all floors incl.)*: Existing: m²

Additional: m²

Current lawfully authorised use: *(refer NZBC A1 "Classified Use)*

Approx year building first constructed: *(if an addition or alteration)*

3. The Owner [*include preferred form of address, eg. Mr, Miss, Dr, if an individual*]

Owner's Name*: [redacted]

Contact Person: *(if owner is a company)*

Mailing/ Billing Address*: P.O. Box 17 Kaiwaka 0542.

Street Address/ Registered Office: 33 Baldrock Rd. Kaiwaka.

Phone Number: [redacted] Cell Phone: Fax:

e-mail: [redacted] website:

4. The Agent (if applicable)

The Agent will be the first point of contact for communications with the Council / Building Consent Authority regarding this application / building work and will receive all correspondence including all invoices.

Agent's Name:

Contact Person: *(if agent is a company)*

Mailing/ Billing Address:

Street Address/ Registered Office:

Telephone Number: Cell Phone: Fax:

e-mail: website:

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5. Fencing of Swimming Pools Act 1987
Is a Swimming Pool, or Spa Pool, on this Site or associated with this Project*?

☐ YES ☑ NO

6. The Project

Description of the building work* Upgrade of Existing Septic As per attached design.

Will the building work result in a change of use of the building? * ☐ YES → Provide details of the new use: *(Refer NZBC A1 Classified Uses)*

☑ NO

Intended life of the building* ☑ Indefinite but not less than 50 years,

OR ☐ Specified as: ☐ Years (if less than 50 years)

List building consents (BC) previously issued for this project (if any):

BC Number:	Description:

Estimated value of the building work on which the building levy will be calculated* (including goods and services tax) [state estimated value as defined in section 7 of the Building Act 2004] $ 9,500

7. Restricted Building Work*

Will the building work include any restricted building work? ☐ YES ☐ NO

Please provide the following details of all licenced building practitioners who will be involved in carrying out or supervising the restricted building work (continue on another page is necessary). If these details are unknown at the time of the application, they must be supplied before the work begins. Include LBP number or registration number if treated as being licenced under section 291 of the Building Act 2004.

Name: Markii Drainage. LBP Number:

Licencing Class:

Mailing Address: Phone (day):

E Mail Address:

Name: LBP Number:

Licencing Class:

Mailing Address: Phone (day):

E Mail Address:

Name: LBP Number:

Licencing Class:

Mailing Address: Phone (day):

E Mail Address;

KAIPARA DISTRICT

Name:		LBP Number:	
Licencing Class:			
Mailing Address:		Phone (day):	
Name:		LBP Number:	
Licencing Class:			
Mailing Address:		Phone (day):	
Name:		LBP Number:	
Licencing Class:			
Mailing Address:		Phone (day):	
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Licencing Class:			
Mailing Address:		Phone (day):	
Name:		LBP Number:	
Licencing Class:			
Mailing Address:		Phone (day):	
Name:		LBP Number:	
Licencing Class:			
Mailing Address:		Phone (day):	

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8. Project Information Memorandum ***(Applicable only if applying for a PIM or combined PIM & Building Consent)***

The following matters are involved in the project:

- ☐ Subdivision
- ☐ Alterations to land contours
- ☐ New or altered connections to public utilities
- ☐ New or altered locations and/or external dimensions of buildings
- ☐ New or altered access for vehicles
- ☐ Building work over or adjacent to any road or public place
- ☑ Disposal of stormwater and wastewater
- ☐ Building work over any existing drains or sewers or in close proximity to wells or water mains
- ☐ Other matters known to the applicant that may require authorisations from the territorial authority: [specify] *(use additional sheets if required)*

9. Building Consent ***(Not applicable if applying for Project Information Memorandum (PIM) only)***

The following plans, specifications and supporting documents are attached to this application*:

[All plans and specifications must meet the minimum requirements set out in the regulations or required by the building consent authority.]

KAIPARA DISTRICT

10. Means of Compliance with the New Zealand Building Code

(Not applicable if applying for Project Information Memorandum (PIM) only)

The building work will comply with the building code as follows* *(use additional sheets if required)*:

NZBC Clause	Means of compliance¥ Acceptable Solution *(eg. AS1, AS2 etc)*	Means of compliance¥ Alternative Solution	Waiver/modification required¤	
B1 (Structure)				**B1**
B2 (Durability)				**B2**
C (Protection from Fire)				**C1**
D1 (Access Routes)				**D1**
D2 (Mechanical Installations for Access)				**D2**
E1 (Surface Water)				**E1**
E2(External Moisture)				**E2**
E3 (Internal Moisture)				**E3**
F1 (Hazardous agents on site)				**F1**
F2 (Hazardous building materials)				**F2**
F3 (Hazardous substances and processes)				**F3**
F4 (Safety from falling)				**F4**
F5 (Construction and demolition hazards)				**F5**
F6 (Visibility in Escape Routes)				**F6**
F7 (Warning systems)				**F7**
F8 (Signs)				**F8**
G1 (Personal hygiene)				**G1**
G2 (Laundering)				**G2**
G3 (Food prep. and prevention of contamination)				**G3**
G4 (Ventilation)				**G4**
G5 (Interior environment)				**G5**
G6 (Airborne and impact sound)				**G6**
G7 (Natural light)				**G7**
G8 (Artificial light)				**G8**
G9 (Electricity)				**G9**
G10 (Piped services)				**G10**
G11 (Gas as an energy source)				**G11**
G12 (Water supplies)				**G12**
G13 (Foul water)				**G13**
G14 (Industrial liquid waste)				**G14**
G15 (Solid waste)				**G15**
H1 (Energy efficiency provisions)				**H1**

¥ **Provide reference to the relevant compliance document(s) or detail of alternative solution in the plans and specifications.**

¤ **State nature of waiver or modification of building code required.**

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11. Compliance Schedule ***(Not applicable if applying for Project Information Memorandum (PIM) only)***

Are there any specified systems associated with this project? *

☐ **YES**, the following specified systems are being altered, added to, or removed in the course of the building work: *(specified systems are defined in regulations)*

☐ **NO**, there are no specified systems associated with this project. [Go to Section 12]

	Existing	New	Modified	Removed	
SS1	☐	☐	☐	☐	Automatic systems for fire suppression (for example, sprinkler systems)
SS2	☐	☐	☐	☐	Automatic or manual emergency warning systems for fire or other dangers (other than a warning system for fire that is entirely within a household unit & serves only that unit).
SS3/1	☐	☐	☐	☐	Electromagnetic or automatic doors or windows (for example, ones that close on fire alarm activation)
SS3/2	☐	☐	☐	☐	Access Controlled Doors
SS3/3	☐	☐	☐	☐	Interfaced fire or smoke doors or windows
SS4	☐	☐	☐	☐	Emergency lighting systems
SS5	☐	☐	☐	☐	Escape route pressurisation systems
SS6	☐	☐	☐	☐	Riser mains for fire service use
SS7	☐	☐	☐	☐	Automatic back-flow preventers connected to a potable water supply
SS8/1	☐	☐	☐	☐	Passenger Carrying lifts
SS8/2	☐	☐	☐	☐	Service Lifts
SS8/3	☐	☐	☐	☐	Escalators and moving walks
SS9	☐	☐	☐	☐	Mechanical ventilation or air conditioning systems
SS10	☐	☐	☐	☐	Building maintenance units for providing access to the exterior and interior walls of buildings
SS11	☐	☐	☐	☐	Laboratory fume cupboards
SS12	☐	☐	☐	☐	Audio loops or other assistive listening systems
SS13/1	☐	☐	☐	☐	Mechanical Smoke Control
SS13/2	☐	☐	☐	☐	Natural Smoke Control
SS13/3	☐	☐	☐	☐	Smoke Curtains
SS14	☐	☐	☐	☐	Emergency power systems for, or signs relating to, a system or feature specified in any of the clauses SS1 to SS13
SS14/1	☐	☐	☐	☐	Emergency Power Systems for a system or feature specified in any of the clauses SS1 to SS13
SS14/2	☐	☐	☐	☐	Signs relating to Specified Systems SS1 to SS13
SS15/1	☐	☐	☐	☐	Systems for communicating spoken information intended to facilitate evacuation
SS15/2	☐	☐	☐	☐	Final exit (as defined by A2 of the Building Code; and
SS15/3	☐	☐	☐	☐	Fire separations
SS15/4	☐	☐	☐	☐	Signs for communicating information intended to facilitate evacuation
SS15/5	☐	☐	☐	☐	Smoke separations
SS16	☐	☐	☐	☐	Cable Cars

Purpose Group:		**Fire Hazard Category:**		**Max Occupant Load:**	

KAIPARA DISTRICT

12. Attachments

The following documents are attached to this application:

- ☐ Plans and specifications* *(refer to list at section 8)*
  1 copy for Residential
  1 copy for Commercial / Industrial
  PIM only – 1 copy only of: Site plan, floor plan and elevations
- ☐ Compliance Schedule *(for items identified at Section 10)*
- ☐ Project information memorandum
- ☐ Evidence of ownership* *(Certificate of Title or Sale & Purchase Agreement and the inclusion of any Consent Notice/s listed on Certificate of Title)*
- ☐ Development contribution notice
- ☐ Building Consent Application Checklist* *(Form 2R for Residential or Form 2C for Commercial work)*
- ☐ Planning Assessment form
- ☐ Memoranda (Certificate of Design Work) from licenced building practitioner who carried out or supervised the design work that is restricted building work*
- ☐ Application Fee (refer Form 2R or Form 2C) $

13. Value of Work and Fees (GST incl)

Main Buildings	$
Accessory building	$
Plumbing and Drainage	$ 9500-00
Total Value of Work	$ 9500-00
Office Use Only	
PIM	$
Building Consent	$ 1100-00
ALPHA Processing Fee	$
BRANZ Levy	$
DBH Levy	$
Certificate of Acceptance	$
TOTAL	$ 1100-00
Receipt N°:	
Date:	

14. Other notes or comments which you as the applicant may wish to add

15. Signature

Signed by*: [redacted]

Full Name*: [redacted]

Date*: 7/6/16.

I am the*: ☑ **Owner** ☐ **Agent** on behalf of, and with the authority of, the owner.

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Note: The Agent, if nominated, will be the first point of contact for communications with the Council/Building Consent Authority regarding this application / building work and will receive all correspondence including all invoices.

Prepared by Cameron Shaw [redacted] May 2016

CLIENT: A Reddy. **WGL 16144.**

Section 4, 6, 10 Survey office plan 456515, 286,906m².

On-site 'Secondary' Wastewater treatment/Disposal system for a 4-bedroom house and workshop at 33 Baldrock Road Kaiwaka.

This document is to form part of building consent application for minor building works at 33 Baldrock Road, Kaiwaka. Currently the property is 28.7ha and includes the 'Absolute Concrete plant', a 4-bedroom house and a workshop/storage shed (with toilet and shower). The owner plans to subdivide this property and retain the 4-bedroom house and workshop on one lot and the concrete plant on the other lot. Exact boundary locations of the lots are yet to be determined. Currently the wastewater from the existing 4-bedroom house and workshop are treated by separate traditional primary septic tanks with the effluent fields for both located somewhere on the proposed Absolute Concrete Plant lot. The proposal is to retain the primary septic tank for the house and put its outlet and the raw sewage from the workshop into a new D10 a secondary wastewater treatment system (see attached D10 specifications) and create a new effluent field well inside the new property boundary of the house and workshop.

This document outlines the design and technical specifications for the on-site wastewater treatment and disposal system for this 4-bedroom house and workshop and ensures the chosen wastewater system meets all the relevant NRC and KDC requirements as outlined in AS/NZS 1547:2012 and G13 of the NZ building code.

The GNS geological unit QMAP shows the soils at the proposed site of the effluent field as being 'Undifferentiated Melange' of the Northland Allochthon. Our borelog confirmed this, see attached.

Re: AS/NZS 1547:2012

Soils are category 4 with a DIR of 3.6mm/day.

4-bedroom house (6 people) + workshop (2 people) = 8 people, 8 x 165L/day (roof collection) = 1320L/day. 1320/3.6 = 366.6. **Effluent Field = 367m2.**

Because effluent field is to be to covered in mulch a reserve area 33% the size of the effluent field must be made available adjacent to the effluent field in case of field failure. 367 x .33 = 121.1. **Reserve area = 122m2.**

A swale or cut off drain is not required above effluent field. Where the effluent field is not placed in existing bush it must be planted and mulched. Effluent field is to be fenced from stock. It is important to ensure effluent field to be at least 15m from any water body.

Assessment of Environmental Effects AEE.

(a) **The Impact on ground-water *quantity*** from the system will be close to zero as no more water will arrive on the Lot as supply is roof-water, and effluent will be taken up by the trees & shrubs on the effluent field and stimulate growth. Ground water *quality* will be protected by these taking up the nutrients (nitrates and phosphates) and by micro-organisms in the soil digesting any *e coli*.

(b) **The Impact on surface-water** from the system will also be small because water supply is roof-water and evapotranspiration by the plants on the effluent field will ensure that soil infiltration rates are preserved. Having some of the roof water applied to the effluent field on fine days will even out the application of water to the ground on the Lot, thereby tending to reduce peak flows to ground. This is a desirable effect.

(c) **The Impact on soils.** The effect on the soils will be beneficial as the nutrients will not only promote plant growth but also increase the micro-biological activity in the soils themselves and slowly convert any inorganic clays to organics. The topsoil depth will therefore increase over the years as the subsoils become more organic.

(d) **The Impact on Flora.** The effects will be positive in that an area previously in pasture will be re-planted in natural vegetation. The effects on Fauna will also be positive in that the additional trees and shrubs will provide a habitat attractive to birds and insects.

(e) **Potential odour and noise**. A slight hum can be heard from the aerator which operates 24/7. When the irrigation pump operates a very small noise can be heard as the effluent fills the dripper lines, this sound is negligible. When operating correctly the system is odourless.

(f) **Measures to protect against system failure.** In the case of a mechanical failure, a high level float is installed in the irrigation chamber of all secondary and advanced systems with a visible alarm located on the plant. This will allow plenty of time to rectify any faults with plenty of emergency storage available (usually > 2500L). In the case of a dripper line failure in the effluent field, a greater than 122m2 (>33%) reserve area is available adjacent to the effluent field.

(g) **Previous site use.** No evidence was seen or heard of the site being used for activities which could have led to site contamination.

(h) **Maintenance plan.** An annual service is recommended for all secondary wastewater systems. This should be organised with the supplier, Absolute Concrete.

Wastewater Summary for Drainlayer

1 Install a new D10 wastewater system at least 3m away and downhill and west from the workshop site.

2 Locate the existing 100mm line feeding the existing septic tank at the workshop and redirect it to the new D10. Pump out existing workshop septic tank and smash it in or dig it out.

3 Located the outlet from the septic tank from the house and redirect it into the new D10.

4 Install a new effluent field in the area shown on the wastewater site plan. Use 367m (minimum) of surface pressure compensating drip irrigation line with an emitter flow rate of 1.6lph, 500mm dripper spacing and 1.0m spacing between laterals. Install a screen or arkal filter just prior to the field and install a flushing valve at the lowest point.

5 The dripper lines may curve to ensure each remains on its contour. Interconnect these lines at the ends. At no point should the lines be closer than 1.5m from any boundary or 15m from any water course.

6 Effluent field is to be planted, mulched and fenced from stock.

7 System to be installed and maintained as per manufacturers recommendations, including regular de-sludging of the primary treatment tank and dripper line flush.

8 The system will benefit from the use of water reduction fixtures, i.e. dual flush toilets (6/3), front loading auto washing machine, low water use dishwasher, and no garbage grinder.

C J Shaw

Cameron Shaw
Wiley Geotechnical Ltd.

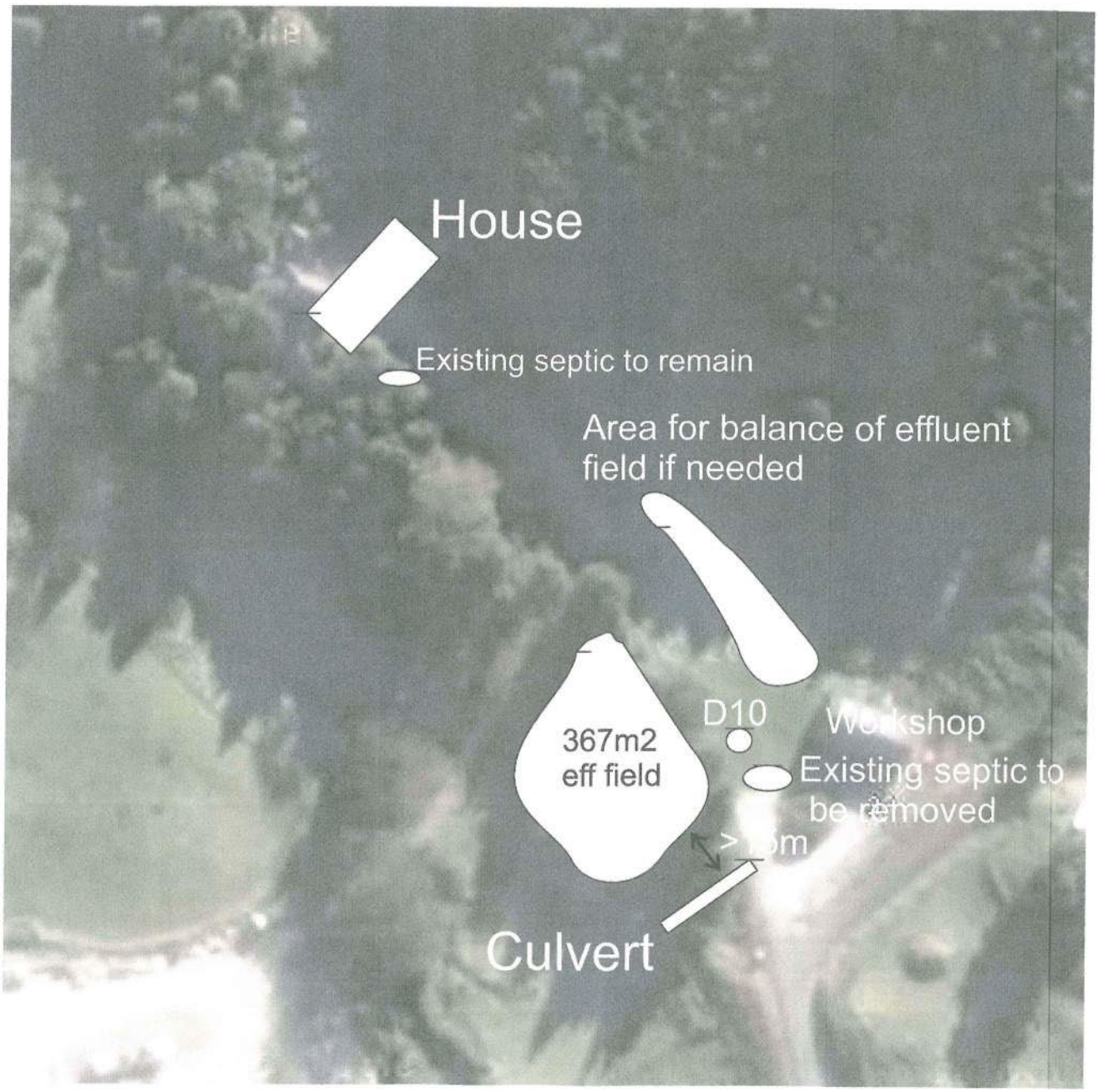
WILEY GEOTECHNICAL LTD

Prepared by Cameron Shaw, [redacted], May 2016

CLIENT: A Reddy. **WGL 16144.**

Section 4, 6, 10 Survey office plan 456515, 286,906m².

On-site 'Secondary' Wastewater treatment/Disposal system for a 4-bedroom house and workshop at 33 Baldrock Road Kaiwaka.



Producer Statement

Design: On-Site Effluent Disposal Systems (AS/NZS 1547:2000)

Issued by : Cameron Shaw..... (approved qualified design professional)

To : [redacted]..... (owner)

To be supplied to: Kaipara District Council.....

Property Location: 33 Baldrock Road, Kaiwaka.....

Legal description: Section 4, 6, 10 Survey Office Plan 456515

To Provide: **Design an on-site effluent disposal system that will comply with the principles and procedures of AS/NZS 1547:2000 and provide a schedule to the owner for the system's maintenance.**

The Design: **Has been in accordance with G13 (Foul Water) G14 (Industrial Liquid Waste) B2 (durability 15 years) of the Building Regulations 1992 in Compliance with the New Zealand Building Code**

As an independent approved design professional, **I believe on reasonable grounds** that subject to:

1 Site verification

2 The proposal All proprietary products met the performance requirements.

the proposed design will meet the relevant provisions of the Building Code and Northland Regional Council discharges rules.

C J Shaw

... . (Signature of approved design professional)

BSc..... (Professional qualifications)

..... (Licence Number or professional Registration number)

Address Unit 4, The Hub, 6 Molesworth Drive, Mangawhai.

Telephone Number [redacted].....

Fax Number

Cellphone .....

Date 30 May 2016.....

KAIPARA DISTRICT

Kaipara te Oranganui • Two Oceans Two Harbours

KAIPARA DISTRICT COUNCIL

Note: This form is to accompany every application for a Building Consent incorporating AS/NZS 1547:2000 Approval as a design professional is at Council's discretion.

Kaipara District Council

AS/NZS 1547:2000

On-site Wastewater Disposal Site and Soil Evaluation

Part A: Owners Details

1 Applicant Details:

Applicant Name	Adrian Reddy		
Company Name			
	First Name(s)		Surname
Property Owner Name(s)	[redacted]		
Nature of Applicant* Owner			

*(*i.e. Owner, Leaser, Prospective Purchaser, Developer)*

2 Consultant / Site Evaluator Details:

Consultant/Agent Name	Wiley geotechnical Ltd		
Site Evaluator Name	Cameron Shaw		
Postal Address	Unit 4 The Hub, 6 Molesworth Drive, Mangawhai.		
		Area Code:	
Telephone Number	Business [redacted]	Private	
	Mobile	Fax	
Name of Contact Person	Cameron Shaw		
E-mail Address	[redacted]		

3 Are there any previous existing discharge consents relating to this proposal or other waste discharge on this site?

Yes		No	x	(Please tick)

If yes, give Reference Numbers and Description

4 List any other consent in relation to this proposal site and indicate whether or not they have been applied for or granted

If so, specify Application Details and Consent N°.
(e.g. Land Use, Water Take, Subdivision, Earthworks Stormwater Consent)

Part B: Property Details

1: Location Details

Physical Address of Property	33 Baldrock Road, Kaiwaka
Territorial Local Authority	**Kaipara District Council**
Regional Council	**Northland Regional Council**
Legal Status of Activity	Permitted x Controlled: Discretionary:
Relevant Regional Rule(s)	NRC
Total Property Area (m²)	286,906m2
Map Grid Reference of Property If Known	36 07 12.70 S 174 26 16.46 E

2 Legal description of land (as shown on Certificate of Title)

Lot N°		DP		CT N°	
Other (specify)		Section 4, 6, 10 Survey office plan 456515			

Please ensure copy of Certificate of Title is attached.

Part C: On-Site Evaluation

(Refer AS/NZS 1547:2000 See Fig 4.1C2)

Has a relevant property history study been conducted?

Yes	x	No		(Please tick one)

If yes, please specify the findings of the history study, and if not please specify why this was not considered necessary.

Site walk over WGL April 2016
"No signs of pre-European occupation or activities were seen on the property.
No signs of European activities of historic interest were seen on the property."

1 Has a Slope Stability Assessment been carried out on the property?

Yes		No	x	Please tick

If **No**, why not?

Only Minor building works consent

If **Yes**, please give details of report (if possible, please attach report):

Author	
Company/Agency	
Date of Report	
Brief Description of Report Findings:	
Visual inspection	
Works not likely to cause instability. New treatment plant on flatish easy accessible ground.	
New eff field will promote plant growth	

2 Site Information (See Table 1 attached):

Provide descriptive details below:
Performance of Adjacent Systems:
Secondary working well.
Estimated Rainfall and Seasonal Variation:
Information available from **N.I.W.A MET RESEARCH**
NRC rain gauge at Tara Road 1600mm/yr.
Vegetation / Tree Cover:
grass
Slope Shape: (Please provide diagrams)
convex
Slope Angle:
12 degrees max on effluent field.
Surface Water Drainage Characteristics:
Downhill and to the Sw.
Flooding Potential: ~~Yes x~~ / **No**
If **Yes**, specify relevant flood levels on appended site plan i.e. one in five years and/or 20 year and/or 100 year return period flood level, relative to disposal area.
Surface Water Separation:
>15m
Site Characteristics: or any other limitation influencing factors
No soil cracking

3 Site Geology **Check Rock Maps**

Undifferentiated Melange of the Northland Allochthon

Geological Map Reference Number	**The GNS Map**

4 What Aspect(s) does the proposed disposal system face? (please tick)

North		**West**	
North-West		**South-West**	x
North-East		**South-East**	
East		**South**	

5 Site clearances (Indicate on site plan where relevant)

Separation Distance from	Proposed Clearances (m)	Septic Tank Treated Allowed(KDC+ NRC)	Secondary Treated Allowed (KDC+NRC)
Boundaries	>1.5 m	1.5 m	1.5 m
Surface water (i.e. permanent or intermittently flowing rivers, creeks, streams etc)	>15 m	20 m	15 m
Groundwater Bores horizontal distance	na	20 m	20 m
Subsurface water vertical separation distance (Winter)	600 mm	1.2 m	600 mm
Embankments/retaining walls	na	1.5 m	1.5 m
Other			
Reserve area set aside	33 %	100 %	30 %

Part D: Site Assessment - Subsoil Investigation

(Refer AS/NZS 1547:2000 clause 4.2A4.2 Site and Soil Evaluation Report)

1 Please identify the soil profile determination method:

Test Pit		(Depth _____m)	N° of Test Pits	
Bore Hole		(Depth 1300mm)	N° of Bore Holes	1
Other (specify):				

Soil Report attached?

Yes	x	No		Please tick

2 Was fill material intercepted during the subsoil investigation?

Yes		No	x	Please tick

If yes, please specify the effect of the fill on wastewater disposal

3 Percolation testing (Recommended for conventional trenches in all clay soils)

Please specify the method (refer to Appendix 4.1F AS/NZS 1547:2000)					
na					
Test Report Attached?	Yes		No		Please tick

4 Are surface water interception/diversion drains required?

Yes		No	x	Please tick

If yes, please show on site plan

4a Are subsurface drains required

Yes		No	x	Please tick

If yes enter details

5 Please state the depth of the seasonal water table:

Winter	>.60	m	Measured		Estimated	x
Summer	>1.00	m	Measured	x	Estimated	

6 Are there any potential storm water short circuit paths?

Yes		No	x	Please tick

7 Estimated soil category *(Refer AS/NZS 1547:2000 Table 4.1.1 and clause 4.1.4.1)*

4

Is Topsoil Present?	yes	If so, Topsoil Depth?	200(mm)

Classification	Properties	Tick One
Sand	Very little to no coherence, cannot be moulded., single grains	
Loamy sand	Slightly coherence, give a short ribbon 5mm that breaks easy	
Sandy loam	Forms a cast but will not roll in a ball. Individual sand grains can be seen	
Fine sandy loam	As for Sandy loam. Individual sand grains cannot be seen	
Loam	As for Sandy loam. But cast feels spongy	
Silty loam	As for loams but not spongy. Very smooth and silky	
Sandy clay loam	Can be rolled into a ball. Sand grains can be felt	
Fine sandy clay loam	As for sandy clay loam but no sand grains visible	
Clay loam	Can be rolled into a ball with spongy feel, slightly plastic	
Silty clay loam	As for clay loams but not very spongy. Very smooth and silky	x
Sandy clay	Forms a plastic ball in which sand grains can be seen, felt and heard	
Light clay	Smooth plastic ball that can be rolled into a rod. Slight resistance to	

	shearing	
Silty clay	As for light clay but very smooth and silky	
Medium clay	Smooth plastic ball like plasticine. Can be moulded. Some resistance to ribboning	
Heavy clay	Smooth plastic ball like plasticine. Can be moulded. Firm resistance to ribboning	

Reasons for placing in stated category

See borelog

PART E: Discharge Details

1 Water supply source for the property (please tick):

Rainwater (roof collection)	x
Bore/well	
Public supply	

2 Calculate the maximum daily volume of wastewater to be discharged, unless accurate water meter readings are available

(Refer AS/NZS 1547:2000 Appendix 4.2D)

Number of Bedrooms	1 - 2 - 3 - 4 - 5 - 6			4 + 1
Design Occupancy	8			(Number of People)
Per capita Wastewater Production	145	165x	180	(tick Litres per person per day)
Other - specify	200	220		
Total Daily Wastewater Production	1320			(litres per day)

3 Do any special conditions apply regarding water saving devices

a) Full Water Conservation Devices?	Yes x		No		(Please tick)
b) Water Recycling - what %?	0%				(Please tick)

If you have answered yes, please state what conditions apply and include the estimated reduction in water usage

Duel flush toilets (6/3), front loading washing machine, low water use dishwasher, and no
Waste disposal unit.

4 Is Daily Wastewater Discharge Volume more than 3000 litres per day:

Yes		(Please tick)
No	x	(Please tick)

Note if answer to the above is yes, an N.R.C wastewater discharge permit will be required

PART F: Primary Treatment

(Please also refer to NRC rules)

1 Please indicate below the no. and capacity (litres) of all septic tanks including type (single/dual chamber grease traps) to be installed or currently existing: If not 4500 litre dual chamber, explain why not.

Number of Tanks	Type of Tank	Capacity of Tank (Litres)

2 Type of Septic Tank Outlet Filter to be installed?
(min 3.5mm screen required see NRC rules)

PART G: Secondary and Tertiary Treatment

(Please also refer to NRC rules)

1 Will the discharge effluent have a 5-day biochemical oxygen demand (BOD5) that is less than or equal to 30 grams per cubic metre and the total suspended solids (TSS) concentration that that is less than or equal to 45 grams per cubic metre?
(Manufacturers specifications required see NRC rules)

Yes	x	No		(Please tick)
No means this is considered a primary system				

2 Please indicate the type of additional treatment, if any, proposed to be installed in the system: (please tick)

Secondary Treatment	x		
Home aeration plant			
Commercial aeration plant			
Intermediate sand filter			
Recirculating sand filter			
Recirculating textile filter			
Clarification tank			
Tertiary Treatment			
Ultraviolet disinfection			
Chlorination			
Other		Specify	

PART H: Land Disposal Method

(Refer AS/NZS 1547:2000 appendix 4.2C)

1 Please indicate the proposed loading method: (please tick)

Gravity	
Dosing Siphon	
Pump	x

2 High water level alarm to be installed in pump chamber(s)

Yes x	No

If not to be installed, explain why

3 If a pump is being used, please provide the following information:

Total Design Head	12	(m)
Pump Chamber Volume	700	(Litres)
Emergency Storage Volume	2500	(Litres)

4 Please identify the type(s) of land disposal method proposed for this site: (please tick)

(Refer AS/NZS 1547:2000 appendix 4.2A)

Surface Dripper Irrigation	x		
Sub-surface Dripper irrigation			
Standard Trench			
Deep Trench			
Mound			
Evapo-transpiration Beds			
Other		Specify	

5 Please identify the loading rate you propose for the option selected in the above, stating the reasons for selecting this loading rate:

(Refer to AS/NZS 1547:200 appendix 4.2A)

Loading Rate	3.6		(Litres/m2/day)
Disposal Area	Design	367	(m2)
	reserve	121	(m2)

Explanation

8 people x 165(per person effluent) = 1320L (total daily effluent)
1320 / 3.6 = 367m2 effluent field

6 What is the available reserve wastewater disposal area?

Reserve Disposal Area (m²)	121
Percentage of Primary Disposal Area (%)	33

7 Please provide a detailed description of the design and dimensions of the disposal field and attach a detailed plan of the field relative to the property site:

Description and Dimensions of Disposal Field:

See Wastewater site plan

Plan Attached?	Yes	x	No		(Please tick)

If not, explain why not

PART I: Maintenance & Management

(Please also refer to NRC rules)

1 Has a maintenance agreement been made with the treatment and disposal system suppliers?

Yes	Will be	No		(Please tick)

Name of Suppliers

Absolute Concrete

PART J: Assessment of Environmental Concerns

1 Is an assessment of environmental concerns included with application?

(Refer Fig 4.1C3)

Yes	x	No		(Please tick)

If Yes, list and explain possible effects

See attached

PART K: Is Your Application Complete?

1 Is a Northland Regional Council Discharge Consent Required?

Yes		No	x	(Please tick)

2 In order to provide a complete application you have remembered to:

Fully Complete this Assessment Form	x
Include a *Location Plan* and *Site Plan* (with Scale Bars)	x
Attach an Assessment of Environmental Concerns	x

3 Declaration

I hereby certify that, to the best of knowledge and belief, the information given in this application is true and complete.

Name	Cameron Shaw	Signature	C J Shaw
Position	Certified Designer KDC	Date	30 May 2016

Note:

Any alteration to the site plan or design after approval will result in non compliance.

A commissioning statement is required for any Pumped system, Alternative solution and Secondary treated system before the Code Compliance Certificate can be issued.

PCC PACIFIC COAST CONSULTANTS

Suitable Plant Species for Wastewater Management Areas.

Shallow Rooted Plants (Suitable for All Management Areas.)

- NZ Blueberry/Turutu (Dianella Nigra) **
- Begonias
- Canna Lily (Canna sp.) #
- Flax (Phormium Tenax), ((Phormium Cookianum) **
- Fuchsia
- Geraniums
- Koromiko (Hebe Stricta)**
- Philodendrons
- Rangiora (Brachyglottis Repanda)**
- Rhubarb
- Astelia (Astelia Grandis)**
- Manuka (Leptospernum Scoparium)**
- Taro (Colocasia Esculenta, C. Niue) **
- Black Taro (Xanthosma Violacea)
- Alocasia sp.
- Coprosma sp. (C.Popinqua, C.Tenicaulis, C.Rhamnoides, C.Rigida, C.Robusta, C.Lucida, C.Macrocarpa)**

Grasses/Sedges/Rushes

- Yorkshire Fog
- Red Clover
- Gahnia/Tupari Maunga (Gahnia Xanthocarpa), (Gahnia Setifolia)
- Purei/Makura (Carex secta, C. Flagellifera, C.Germinata, C. Lessoniana, C.Virgata)**
- Machaerina Sinclairii **
- Giant Umbrella Sledge/Toetoe Upoko-Tangata (Cyperus Ustulatus)**
- Sharp Spike Edge (Eleocharis Acuta)**
- Toetoe (Cortaderia Fulvida)**
- Oioi or Jointed Wire Rush (Apodasmia Similis)**

Larger Deeper Rooted Plants (Suited to Drip Irrigation Fields)

- Mamaku (Cyathea Medullaris)^**
- Wheki (Dicksonia Squarrosa)^**
- Karaka (Corynocarpus Laevigatus)**
- Kowhai (Sophora Microphylla)
- Pukatea (Laurelia Novae-Zealandiae)**
- Ribbonwood or Manatu (Plagianthus Regius)**
- Cabbage Tree or Ti Kouka (Cordyline Australis)**
- Kahikatea (Dacrycarpus Dacrydioides)**
- Swamp Maire (Syzygium Marie)**
- Banana Species (Musa Paradisiacal, M.Zebrine, M.Cochineu)#
- Estete Maurellii #
- Shell Ginger (Non-invasive) (Alpinia Zerumbet)
- Gunnera Tinctoria
- Cyperus Papyrus

KEY: ** NATIVE ^ SHADED AREAS # FROST TENDER







EARTHSAFE D10 SPECIFICATIONS

Product Description

The Earthsafe D10 model is housed in a single concrete tank, with adequate capacity to treat waste water for up to 10 persons. The system features unique surge reduction and advanced aeration but the advantages of the remarkably simple process of the D10 system are how well it works and how little maintenance is required. The treated water is clear, odourless and can be reused on-site (subject to local authority approval) for applications such as watering the gardens and lawn.

Accredited Performance

In technical terms the D10 has been designed to process waste water to achieve typically 95% reduction in both suspended solids (TSS) and biological oxygen demand (BOD5). Additional sterilisation (chlorination) reduces the faecal coliforms to virtually zero. The Earthsafe D10 system is accredited by the NSW Department of Health and has been designed and tested to ensure that treatment exceeds the requirements of New Zealand and Australian standards as 154.2.2001 and as 1547.200. The system has also been accredited by the Queensland Department of Natural Resources and has been designed after over twenty years of research.

Features

- The Earthsafe D10 manufactured by Absolute Concrete is an aerated treatment tank system which uses totally natural biological processes to treat the waste water. It consists of a set of 5 chambers which perform various treatment processes on the waste stream.
- The Earthsafe D10 uses high quality components, and all internal chambers are built in polypropylene.
- All internal fixings are marine grade 316 stainless steel to ensure long life, and not simply galvanized like competitors systems.
- The electrical control component is simple and hard wired and does not contain complex summer or winter modes, or a PLC. The Earthsafe control boxes are overload protected and like the rest of the system, are extremely reliable.
- The Earthsafe D10 systems use a 100-litre blower (others use only 80) and also either a 14-metre head (standard) or 34-metre head (optional) irrigation pump. Two (2) clarification chambers are utilised within the system (most opposition systems have one), and as a result even the standard Earthsafe system will treat up to 3000 litres per day to a very high standard. (Most other standard systems will only do 1500 to 2000 litres.)
- Manufactures by Absolute Concrete the Earthsafe systems are delivered as a complete S/C is a compact sewage treatment system housed in one concrete tank. It is intended to treat domestic waste water from singe households with adequate capacity to treat waste water for up to 10 people. The Absolute Concrete precast tanks. They are simply installed in-ground and then connected to the household plumbing system and to the power to run the air blower, electronic alarm control unit and the irrigation pump (with one connection). The system is then ready to irrigate to an area usually approved by local council.

The Earthsafe units are available with three discharge quality levels:

1. "STANDARD" – Suitable for most household sites, and producing 'secondary' treated water;

2. "ADVANCED SECONDARY" – This is the most common unit that we sell as it produces a very high quality discharge suitable for sites that are near a waterway or are environmentally sensitive, and demanded by some councils;

3. "Advanced secondary" with NUTRIENT REDUCTION" – Again, a very high quality discharge but also with a significant reduction in Nitrogen and Phosphorous levels. This is usually only needed where there is possible run-off during rain events, or sensitive waterways nearby, or a reduction in dispersal area is required. (This system uses technology from our commercial treatment units)

Care and Maintenance

It is important to realise that on-site waste water systems require regular inspection and maintenance to ensure that they function effectively and the system must be operating correctly to ensure that the health of your family and the community are protected at all times.

Absolute Concrete can arrange for the ongoing maintenance of your septic system for your peace of mind. This will ensure that your system continues to operate as designed, warranties are protected and the unit will continue to function correctly in the long term. That being said, generally speaking the D10 is automatic in operation and requires very little owner intervention. It is useful however for you to familiarize yourself with the system so that you understand the general operation of the unit.

Water first enters the primary pre-treatment chamber where organic and inorganic solids settle to the bottom and fats and other floating matter forms a scum layer on top of the liquid in the chamber. A sludge layer builds up in the chamber and a biological process takes place i.e anaerobic bacteria digest the sludge and break down some of the organic matter.

Fluid is decanted from the pre-treatment chamber through a baffle or filter to eliminate the passage of grease and floating matter. Whenever liquid enters the pre-treatment chamber, waste water flows by hydraulic displacement into the aeration chamber. In this chamber air is introduced through fine diffusers which serve to stir the contents of the tank whilst some air dissolves to provide oxygen for aerobic bacteria to thrive. These bacteria form as a bio-film on the submerged media and float in the solution. Aerobic bacteria are far more efficient than their anaerobic counterparts and the effluent is converted into clean, clear water through aerobic digestion and oxidisation. This process is odour-free.

Liquid from the aeration chamber flows into the clarifiers where the solution slows to enable any suspended particles to settle to the bottom. Periodically the accumulated sludge is returned to the primary treatment chamber to ensure more complete digestion. This return process is automatic. Treated water now flows through a lower chamber where it is chlorinated before passing into the final irrigation area. At this point clean waste water is automatically and silently discharged into the land application system.

Land application systems vary according to individual situations and can be in form of surface sprinklers, subsurface irrigation, sand filters or other innovative systems. Your local council will decide this.

Excavation Dimensions and Relevant Facts

Depth Approx. 2200mm	Width Approx. 3000mm	Invert below ground 500mm
Weight 4.5 tonne	Diameter 2.4m	Air Blower 100 litres/min
Volume 8000 ltrs		

Owners/Tenants Responsibilities

- Absolute Concrete can suggest a maintenance person in your area if required, or you could contact your local council for a full list of licensed service personnel.
- The owner/tenant of the property should ensure safe passage for the Service Technician. Any animals that may pose a danger to the service technician should be locked up or penned during servicing.
- The owner/tenant should provide a key for the Service Technician if there are any locked gates which prevent entry to your property.
- The owner/tenant should ensure that the area around the Earthsafe System is kept neat and tidy at all times.
- The owner/tenant should monitor the irrigation sprinkler system to ensure all spray jets are working properly. (The owner/tenant will be required to replace or clear any blocked or broken sprinklers). This work can also be arranged to be completed by a maintenance technician.
- The owner/tenant should ensure that any inline filters on the irrigation sprinkler system are checked and cleaned on a regular basis if required. The service technician will clean the filter every three months.
- The owner/tenant should ensure prompt payment of any service or repair accounts.
- The owner/tenant should not allow painters / cleaners etc.. to dump paint chemicals etc.. into the drains whilst working on site.
- If you have any further questions please contact us directly or refer the Earthsafe website on the link below http:\\www.ecowaterholings.com

- See more at: http://www.absoluteconcrete.co.nz/product/concrete-precast-sewage-system-earthsafe-d10/#sthash.IJ6NFTNO.dpuf

WILEY GEOTECHNICAL LTD

BOREHOLE No. 2

SITE: 33 Baldrock Road

REF: 16144

Sheet 1 of 1

REDUCED LEVEL (RL) / INFERRED GEOLOGY	DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	WATER CONTENT (%	WATER LEVEL	CORRECTED VANE SHEAR STRENGTH (kPa) ● Peak Field Vane ○ Remoulded Field vane 50 100 150	SCALA PENETROMETER BLOWS / 100 mm 5 10 15
	SILT Topsoil dark brown to 200mm. Some fill moderately clayey, slightly sandy (fine) moderately plastic, light brown/grey with orange/brown mottling		1					
	EOH at 1.3m		2					
			3					
			4					
			5					

NOTES No ground water at time of investigation, BH done after a period of heavy rain.
GNS map shows Undifferentiated Melange of the Northland. Allochthon

LOGGED BY: CS
DATE DRILLED: 25-May-16
DRILL METHOD 50 mm Hand Auger

Sender: [redacted]
Date Received: **21 June 2016 3:15:01 pm**
Subject: **Information Received Via Email: FW: Message from**

Message:

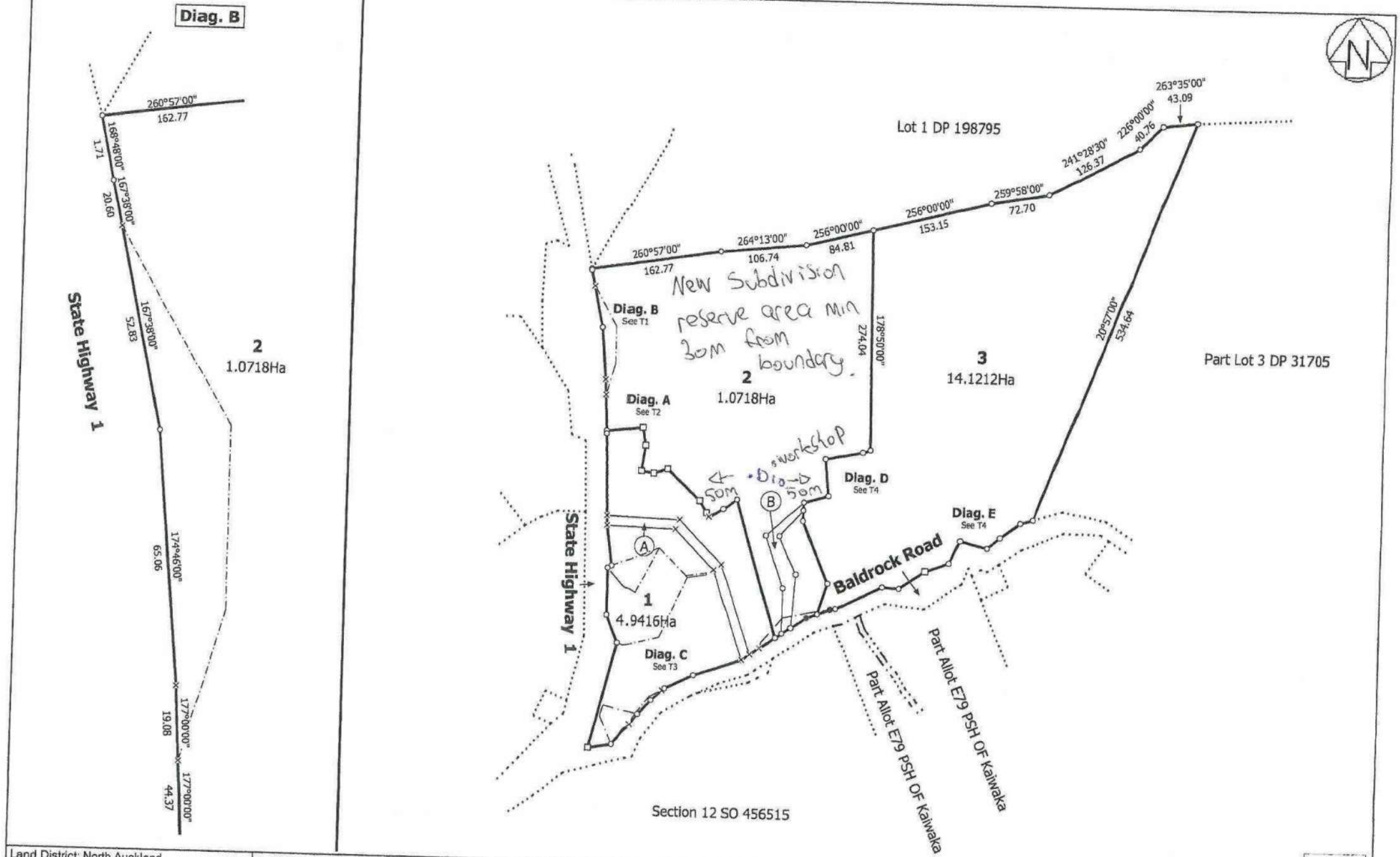
Site plan for file.

[cid:image002.jpg@01D1CBCF.1D87E890]

Jamie Nikora | Trainee Building Control Officer
Kaipara District Council, Private Bag 1001, Dargaville 0340
Mangawhai Office: Unit 6, The Hub, 6 Molesworth Drive
Freephone: [redacted]
| council@kaipara.govt.nz | www.kaipara.govt.nz

From: [redacted]
Sent: Wednesday, 22 June 2016 3:45 a.m.
To: Jamie Nikora
Subject: Message from

160334.



Land District: North Auckland Digitally Generated Plan Generated on: 20/06/2016 10:15am Page 2 of 5	Lots 1 - 3 Being a subdivision of Allotment 344 parish of Kaiwaka, Sections 3, 4, 6, 10 & 11 SO 456515, Allotment 342 parish of Kaiwaka & Lot 1 DP 45538	Surveyor: Andrew Alistair Dunlop Firm: Parallax Consultants Ltd	Title Plan LT 494384 DRAFT

T 1/4



KAIPARA DISTRICT



KAIPARA
DISTRICT

Project Information Memorandum 160334P

Section 34, Building Act 2004

Application

Owner	[redacted]	**Number**	160334P
	PO Box 17	**Issue Date**	21 Jun 2016
	Kaiwaka 0542	**Formally Received Date**	08 Jun 2016

Project

Description	Upgrade existing septic system
Intended Life	50 years
Intended Use	7.0.1 Outbuildings
Estimated Value	$9500
Location	33 Baldrock Road, Kaiwaka
Legal Description	lot 2 DP 31705
Valuation Number	0120003403

Building work can proceed following formal notification of Building Consent Approval being received from the Kaipara District Council Building Consent Authority and approvals being obtained from the agencies identified in this project information memorandum.

This Project Information Memorandum does NOT constitute a Building Consent.

Other Information

Once a Building Consent is issued, the Council will follow up on building work not completed within two years of building consent issue.

A Building Consent lapses and is of no effect if the building work has not been started within 12 months of the date of issue.

If the building is public premises it may not be occupied until either a Code Compliance

Certificate or Certificate for Public Use has been issued.

If the building is wholly or partly a dam, a Project Information Memorandum and Building Consent must be obtained from the regional authority.

The Northland Regional Council has a register of contaminated sites. Please contact them on 0800 002 004 if you suspect that your property may be contaminated e.g. historic timber treatment sites, service stations, landfill sites etcetera.

Please check your Certificate of Title for any encumbrances (such as easements, section 73 notice etcetera) before you make an application for a Building Consent.

All archaeological sites are protected under the provisions of the Historic Places Act 1993. If subsurface archaeological evidence (shell, midden, hangi, storage pits, etc) should be unearthed during construction, work should cease in the immediate vicinity of the remains and the Historic Places Trust should be contacted.

Notes:

1. The information supplied in the sections of this PIM report is specific to the building project to which the application relates by reference to Council files and records. No property inspection, or title search, has been undertaken. To enable the Council to measure the accuracy of this PIM document based on our current records we would appreciate your response should you find any information contained herein which may be considered to be incorrect or omitted. Please telephone the Council (09) 439 3123.

2. The Council has used its best endeavors to ensure that all information provided in this PIM report is correct and complete in all material respects. In the event that a material error or omission can be proven the Council's liability, whether in contract or in tort shall be limited to the fee paid to Council to obtain this report.

3. This information reflects the Kaipara District Council's current understanding of

information which is relevant to the project. This is based only on the information thus far provided to it and held on record. As a result the Council is not in a position to warrant that the information is complete or without error and accepts no liability for any inaccuracy in, or omission from, this information.

4. The information contained in this Project Information Memorandum is current at the date the memorandum is issued. Further relevant information may come into the Council's possession subsequent to the date of issue.

Building Consent - BC160334

Section 51, Building Act 2004

The Building

Street address of building: 33 Baldrock Road, Kaiwaka
Legal description of land where building is located: lot 2 DP 31705
Building name:
Location of building within site/block number: 33 Baldrock Road, Kaiwaka
Level/unit number:

The Owner

Name of owner: Adrian and Elaine Reddy
Contact person:
Mailing address: PO Box 17, Kaiwaka 0542
Street address/registered office: 33 Baldrock Road, Kaiwaka 0542
Phone number: Landline: 094312338 Mobile:
Facsimile number:
Email address: elainepreddy@gmail.com
First point of contact for communications with the council/building consent authority:

Building work

The following building work is authorised by this building consent:

Upgrade existing septic system

This building consent is issued under section 51 of the Building Act 2004. This building consent does not relieve the owner of the building (or proposed building) of any duty or responsibility under any other Act relating to or affecting the building (or proposed

building).

This building consent also does not permit the construction, alteration, demolition, or removal of the building (or proposed building) if that construction, alteration, demolition, or removal would be in breach of any other Act.

Conditions

This building consent is subject to the following conditions:

There are no conditions associated with this consent.

Endorsements

On-Site Effluent Disposal Systems - An Installation and commissioning report verifying the system and all components have been installed and operate in conformity with the design is required upon completion in accordance with 6.2.5.4, AS/NZS1547(2012).

Inspections

The following inspections are required:

- Drainage
- Final

Compliance Schedule

A compliance schedule is not required for the building.

Attachments

Copies of the following documents are attached to this building consent:

Project Information Memorandum (PIM): 160334P



David Hughes
Senior Building Control Officer
On behalf of: Kaipara District Council
Issue Date: 08 Jul 2016

ADDENDA TO THIS BUILDING CONSENT:

- This building consent will lapse and be of no effect if the building work to which it relates does not commence within 12 months after the date of issue. The consent may be extended for any further period at the discretion of council.
- No deviation or alteration from the original plans and specifications can be carried out without written approval of Council and no building may be converted to any other use other than that stated on the building consent.
- IMPORTANT: YOU ARE FULLY RESPONSIBLE FOR ANY DAMAGE DONE TO ANY WORKS SUCH AS TELEPHONE CABLES, POWER CABLES, WATER MAINS, GAS MAINS, SEWERS, PIPES, FOOTPATHS, ROADS OR OTHER SERVICES.
- As the property owner is responsible for the correct siting of all works in accordance with the NZ Building Code and the Resource Management Act, the owner must ascertain the true position of the survey pegs before work commences.
- NOTICE THAT BUILDING WORK IS READY FOR INSPECTION. For the purposes of Section 222 of the Building Act 2004, and unless otherwise provided by the building consent, the owner or other person undertaking any building work shall give:
- At least 2 working days notice of the covering up of any
- i) drainage or plumbing
- ii) excavation for a foundation
- iii) reinforcing steel for a foundation
- iv) timber required to have a specific moisture content
- v) other work required to give notice as a condition
- Council MUST be notified at the completion of building work on the attached form.
- Every household unit requires smoke alarms in accordance with NZBC Clause F7/AS 1.3.1. Smoke alarms may be battery powered but shall have a hush facility and must comply with at least one of the following: UL 217, CAN/ULC S531, AS 3786, BS 5446: Part 1. Smoke alarms shall be installed near the ceiling and located on escape routes, in every sleeping space or within 3.0m of every sleeping space door.
- A Compliance Schedule is NOT required for the building.

BUILDING CONSENT FEES:

Please note that further fees may be required to be paid before a Code Compliance Certificate is issued for this Building Consent. All fees must be paid before a Code Compliance Certificate will be issued.

Project Information Memorandum 160334P

Section 34, Building Act 2004

Application

Owner	[redacted]	**Number**	160334P
	PO Box 17	**Issue Date**	21 Jun 2016
	Kaiwaka 0542	**Formally Received Date**	08 Jun 2016

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4. The information contained in this Project Information Memorandum is current at the date the memorandum is issued. Further relevant information may come into the Council's possession subsequent to the date of issue.

Approved Building Consent Documents

Please Note: A copy of the stamped approved documents must be available on site for all inspections.

KDC - Approved Building Consent Document - BC160334 - Pg 1 of 23 - 8/07/2016 - kdh

Prepared by Cameron Shaw, [redacted] May 2016

CLIENT: A Reddy. **WGL 16144.**

Section 4, 6, 10 Survey office plan 456515, 286,906m².

KDC - Approved Building Consent Document - BC160334 - Pg 2 of 23 - 8/07/2016 - kdh

On-site 'Secondary' Wastewater treatment/Disposal system for a 4-bedroom house and workshop at 33 Baldrock Road Kaiwaka.

This document is to form part of building consent application for minor building works at 33 Baldrock Road, Kaiwaka. Currently the property is 28.7ha and includes the 'Absolute Concrete plant', a 4-bedroom house and a workshop/storage shed (with toilet and shower). The owner plans to subdivide this property and retain the 4-bedroom house and workshop on one lot and the concrete plant on the other lot. Exact boundary locations of the lots are yet to be determined. Currently the wastewater from the existing 4-bedroom house and workshop are treated by separate traditional primary septic tanks with the effluent fields for both located somewhere on the proposed Absolute Concrete Plant lot. The proposal is to retain the primary septic tank for the house and put its outlet and the raw sewage from the workshop into a new D10 a secondary wastewater treatment system (see attached D10 specifications) and create a new effluent field well inside the new property boundary of the house and workshop.

This document outlines the design and technical specifications for the on-site wastewater treatment and disposal system for this 4-bedroom house and workshop and ensures the chosen wastewater system meets all the relevant NRC and KDC requirements as outlined in AS/NZS 1547:2012 and G13 of the NZ building code.

The GNS geological unit QMAP shows the soils at the proposed site of the effluent field as being 'Undifferentiated Melange' of the Northland Allochthon. Our borelog confirmed this, see attached.

Re: AS/NZS 1547:2012

Soils are category 4 with a DIR of 3.6mm/day.

4-bedroom house (6 people) + workshop (2 people) = 8 people, 8 x 165L/day (roof collection) = 1320L/day. 1320/3.6 = 366.6. **Effluent Field = 367m2.**

Because effluent field is to be to covered in mulch a reserve area 33% the size of the effluent field must be made available adjacent to the effluent field in case of field failure. 367 x .33 = 121.1. **Reserve area = 122m2.**

A swale or cut off drain is not required above effluent field. Where the effluent field is not placed in existing bush it must be planted and mulched. Effluent field is to be fenced from stock. It is important to ensure effluent field to be at least 15m from any water body.

Assessment of Environmental Effects AEE.

(a) **The Impact on ground-water *quantity*** from the system will be close to zero as no more water will arrive on the Lot as supply is roof-water, and effluent will be taken up by the trees & shrubs on the effluent field and stimulate growth. Ground water *quality* will be protected by these taking up the nutrients (nitrates and phosphates) and by micro-organisms in the soil digesting any *e coli*.

(b) **The Impact on surface-water** from the system will also be small because water supply is roof-water and evapotranspiration by the plants on the effluent field will ensure that soil infiltration rates are preserved. Having some of the roof water applied to the effluent field on fine days will even out the application of water to the ground on the Lot, thereby tending to reduce peak flows to ground. This is a desirable effect.

(c) **The Impact on soils.** The effect on the soils will be beneficial as the nutrients will not only promote plant growth but also increase the micro-biological activity in the soils themselves and slowly convert any inorganic clays to organics. The topsoil depth will therefore increase over the years as the subsoils become more organic.

(d) **The Impact on Flora.** The effects will be positive in that an area previously in pasture will be re-planted in natural vegetation. The effects on Fauna will also be positive in that the additional trees and shrubs will provide a habitat attractive to birds and insects.

(e) **Potential odour and noise**. A slight hum can be heard from the aerator which operates 24/7. When the irrigation pump operates a very small noise can be heard as the effluent fills the dripper lines, this sound is negligible. When operating correctly the system is odourless.

(f) **Measures to protect against system failure.** In the case of a mechanical failure, a high level float is installed in the irrigation chamber of all secondary and advanced systems with a visible alarm located on the plant. This will allow plenty of time to rectify any faults with plenty of emergency storage available (usually > 2500L). In the case of a dripper line failure in the effluent field, a greater than 122m2 (>33%) reserve area is available adjacent to the effluent field.

(g) **Previous site use.** No evidence was seen or heard of the site being used for activities which could have led to site contamination.

(h) **Maintenance plan.** An annual service is recommended for all secondary wastewater systems. This should be organised with the supplier, Absolute Concrete.

KDC - Approved Building Consent Document - BC160334 - Pg 3 of 23 - 8/07/2016 - kdh

Wastewater Summary for Drainlayer

1 Install a new D10 wastewater system at least 3m away and downhill and west from the workshop site.

2 Locate the existing 100mm line feeding the existing septic tank at the workshop and redirect it to the new D10. Pump out existing workshop septic tank and smash it in or dig it out.

3 Located the outlet from the septic tank from the house and redirect it into the new D10.

4 Install a new effluent field in the area shown on the wastewater site plan. Use 367m (minimum) of surface pressure compensating drip irrigation line with an emitter flow rate of 1.6lph, 500mm dripper spacing and 1.0m spacing between laterals. Install a screen or arkal filter just prior to the field and install a flushing valve at the lowest point.

5 The dripper lines may curve to ensure each remains on its contour. Interconnect these lines at the ends. At no point should the lines be closer than 1.5m from any boundary or 15m from any water course.

6 Effluent field is to be planted, mulched and fenced from stock.

7 System to be installed and maintained as per manufacturers recommendations, including regular de-sludging of the primary treatment tank and dripper line flush.

8 The system will benefit from the use of water reduction fixtures, i.e. dual flush toilets (6/3), front loading auto washing machine, low water use dishwasher, and no garbage grinder.

C J Shaw

Cameron Shaw
Wiley Geotechnical Ltd.

KDC - Approved Building Consent Document - BC160334 - Pg 4 of 23 - 8/07/2016 - kdh

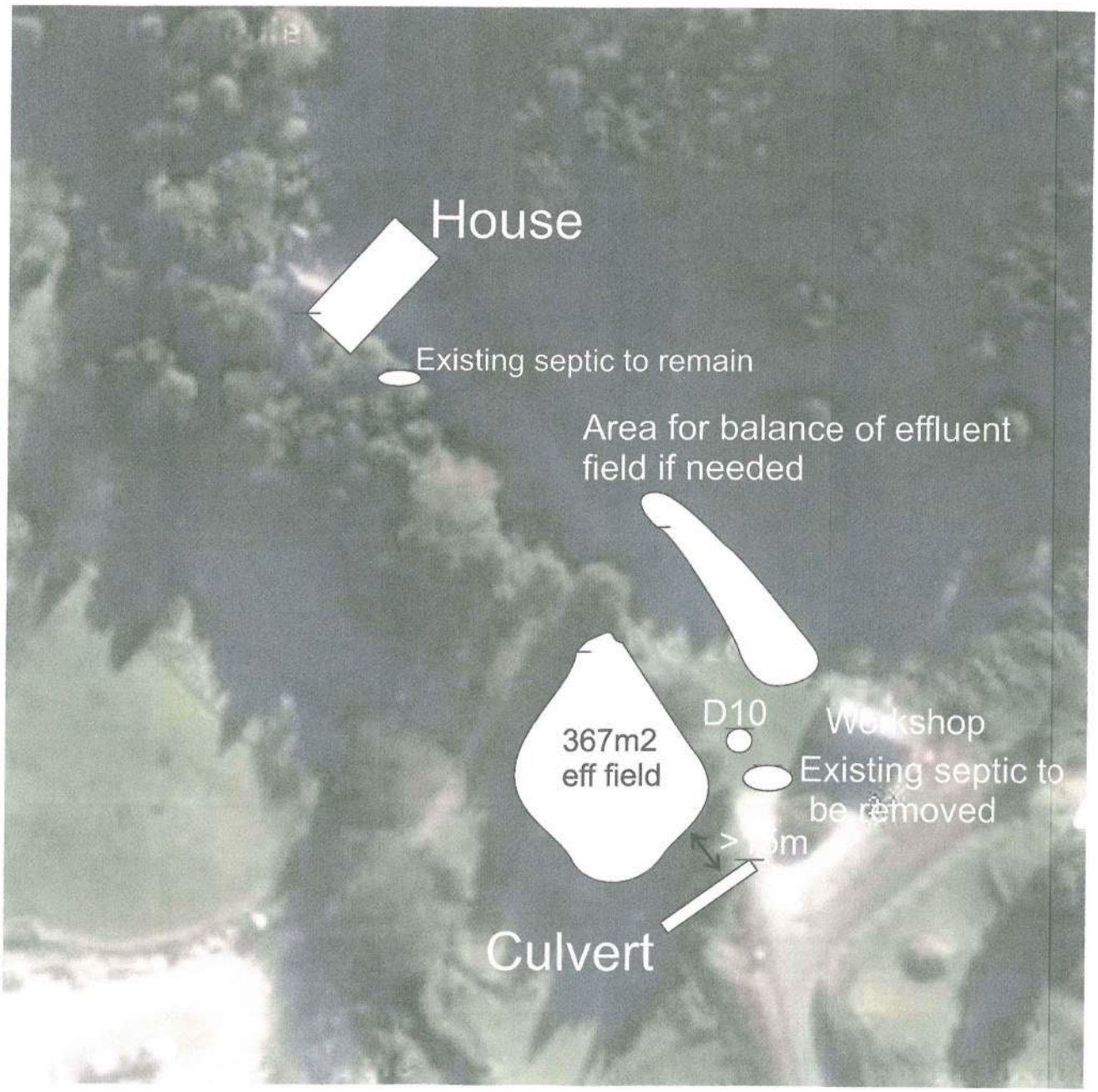
WILEY GEOTECHNICAL LTD

Prepared by Cameron Shaw, [redacted], May 2016

CLIENT: A Reddy. **WGL 16144.**

Section 4, 6, 10 Survey office plan 456515, 286,906m².

On-site 'Secondary' Wastewater treatment/Disposal system for a 4-bedroom house and workshop at 33 Baldrock Road Kaiwaka.



KDC - Approved Building Consent Document - BC160334 - Pg 5 of 23 - 8/07/2016 - kdh

KAIPARA DISTRICT

Kaipara te Oranganui • Two Oceans Two Harbours

KAIPARA DISTRICT COUNCIL

Producer Statement

Design: On-Site Effluent Disposal Systems (AS/NZS 1547:2000)

KDC - Approved Building Consent Document - BC160334 - Pg 6 of 23 - 8/07/2016 - kdh

Issued by : Cameron Shaw..... (approved qualified design professional)

To : [redacted] ..... (owner)

To be supplied to: Kaipara District Council.....

Property Location: 33 Baldrock Road, Kaiwaka.....

Legal description: Section 4, 6, 10 Survey Office Plan 456515

To Provide: Design an on-site effluent disposal system that will comply with the principles and procedures of AS/NZS 1547:2000 and provide a schedule to the owner for the system's maintenance.

The Design: Has been in accordance with G13 (Foul Water) G14 (Industrial Liquid Waste) B2 (durability 15 years) of the Building Regulations 1992 in Compliance with the New Zealand Building Code

As an independent approved design professional, **I believe on reasonable grounds** that subject to:

1 Site verification

2 The proposal All proprietary products met the performance requirements.

the proposed design will meet the relevant provisions of the Building Code and Northland Regional Council discharges rules.

C J Shaw

... . (Signature of approved design professional)

BSc..... (Professional qualifications)

..... (Licence Number or professional Registration number)

Address Unit 4, The Hub, 6 Molesworth Drive, Mangawhai.

Telephone Number 09 4315353.....

Fax Number .....

Cellphone 021417331.....

Date 30 May 2016.....

Note: This form is to accompany every application for a Building Consent incorporating AS/NZS 1547:2000 Approval as a design professional is at Council's discretion.

KDC - Approved Building Consent Document - BC160334 - Pg 7 of 23 - 8/07/2016 - kdh

Kaipara District Council

AS/NZS 1547:2000

On-site Wastewater Disposal Site and Soil Evaluation

KDC - Approved Building Consent Document - BC160334 - Pg 8 of 23 - 8/07/2016 - kdh

Part A: Owners Details

1 Applicant Details:

Applicant Name	[redacted]	
Company Name		
	First Name(s)	Surname
Property Owner Name(s)	[redacted]	[redacted]
Nature of Applicant* Owner		

*(*i.e. Owner, Leaser, Prospective Purchaser, Developer)*

2 Consultant / Site Evaluator Details:

Consultant/Agent Name	Wiley geotechnical Ltd			
Site Evaluator Name	Cameron Shaw			
Postal Address	Unit 4 The Hub, 6 Molesworth Drive, Mangawhai.			
			Area Code:	
Telephone Number	Business	[redacted]	Private	
	Mobile		Fax	
Name of Contact Person	Cameron Shaw			
E-mail Address	[redacted]			

3 Are there any previous existing discharge consents relating to this proposal or other waste discharge on this site?

Yes		No	x	(Please tick)
If yes, give Reference Numbers and Description				

4 List any other consent in relation to this proposal site and indicate whether or not they have been applied for or granted

If so, specify Application Details and Consent Nº.
(e.g. Land Use, Water Take, Subdivision, Earthworks Stormwater Consent)

KDC - Approved Building Consent Document - BC160334 - Pg 9 of 23 - 8/07/2016 - kdh

Part B: Property Details

1: Location Details

Physical Address of Property	33 Baldrock Road, Kaiwaka
Territorial Local Authority	**Kaipara District Council**
Regional Council	**Northland Regional Council**
Legal Status of Activity	Permitted x Controlled: Discretionary:
Relevant Regional Rule(s)	NRC
Total Property Area (m²)	286,906m2
Map Grid Reference of Property If Known	36 07 12.70 S 174 26 16.46 E

2 Legal description of land (as shown on Certificate of Title)

Lot N°		DP		CT N°	
Other (specify)		Section 4, 6, 10 Survey office plan 456515			

Please ensure copy of Certificate of Title is attached.

Part C: On-Site Evaluation

(Refer AS/NZS 1547:2000 See Fig 4.1C2)

Has a relevant property history study been conducted?

Yes	x	No		(Please tick one)

If yes, please specify the findings of the history study, and if not please specify why this was not considered necessary.

Site walk over WGL April 2016
"No signs of pre-European occupation or activities were seen on the property.
No signs of European activities of historic interest were seen on the property."

KDC - Approved Building Consent Document - BC160334 - Pg 10 of 23 - 8/07/2016 - kdh

1 Has a Slope Stability Assessment been carried out on the property?

Yes		No	x	Please tick

If **No**, why not?

Only Minor building works consent

If **Yes**, please give details of report (if possible, please attach report):

Author	
Company/Agency	
Date of Report	
Brief Description of Report Findings:	
Visual inspection	
Works not likely to cause instability. New treatment plant on flatish easy accessible ground.	
New eff field will promote plant growth	

2 Site Information (See Table 1 attached):

Provide descriptive details below:
Performance of Adjacent Systems:
Secondary working well.
Estimated Rainfall and Seasonal Variation:
Information available from **N.I.W.A MET RESEARCH**
NRC rain gauge at Tara Road 1600mm/yr.
Vegetation / Tree Cover:
grass
Slope Shape: (Please provide diagrams)
convex
Slope Angle:
12 degrees max on effluent field.
Surface Water Drainage Characteristics:
Downhill and to the Sw.
Flooding Potential: ~~Yes x~~ / ~~No~~
If **Yes**, specify relevant flood levels on appended site plan i.e. one in five years and/or 20 year and/or 100 year return period flood level, relative to disposal area.
Surface Water Separation:
>15m
Site Characteristics: or any other limitation influencing factors
No soil cracking

KDC - Approved Building Consent Document - BC160334 - Pg 11 of 23 - 8/07/2016 - kdh

3 **Site Geology** **Check Rock Maps**

Undifferentiated Melange of the Northland Allochthon

Geological Map Reference Number	**The GNS Map**

4 **What Aspect(s) does the proposed disposal system face? (please tick)**

North		**West**	
North-West		**South-West**	x
North-East		**South-East**	
East		**South**	

5 **Site clearances (Indicate on site plan where relevant)**

Separation Distance from	**Proposed Clearances (m)**	**Septic Tank Treated Allowed(KDC+ NRC)**	**Secondary Treated Allowed (KDC+NRC)**
Boundaries	>1.5 m	1.5 m	1.5 m
Surface water (i.e. permanent or intermittently flowing rivers, creeks, streams etc)	>15 m	20 m	15 m
Groundwater Bores horizontal distance	na	20 m	20 m
Subsurface water vertical separation distance (Winter)	600 mm	1.2 m	600 mm
Embankments/retaining walls	na	1.5 m	1.5 m
Other			
Reserve area set aside	33 %	100 %	30 %

Part D: Site Assessment - Subsoil Investigation

(Refer AS/NZS 1547:2000 clause 4.2A4.2 Site and Soil Evaluation Report)

1 **Please identify the soil profile determination method:**

Test Pit		(Depth _____m)	Nº of Test Pits	
Bore Hole		(Depth 1300mm)	Nº of Bore Holes	1
Other (specify):				

Soil Report attached?

Yes	x	No		Please tick

2 **Was fill material intercepted during the subsoil investigation?**

Yes		No	x	Please tick

If yes, please specify the effect of the fill on wastewater disposal

KDC - Approved Building Consent Document - BC160334 - Pg 12 of 23 - 8/07/2016 - kdh

3 Percolation testing (Recommended for conventional trenches in all clay soils)

Please specify the method (refer to Appendix 4.1F AS/NZS 1547:2000)					
na					
Test Report Attached?	Yes		No		Please tick

4 Are surface water interception/diversion drains required?

Yes		No	x	Please tick

If yes, please show on site plan

4a Are subsurface drains required

Yes		No	x	Please tick

If yes enter details

5 Please state the depth of the seasonal water table:

Winter	>.60	m	Measured		Estimated	x
Summer	>1.00	m	Measured	x	Estimated	

6 Are there any potential storm water short circuit paths?

Yes		No	x	Please tick

7 Estimated soil category *(Refer AS/NZS 1547:2000 Table 4.1.1 and clause 4.1.4.1)*

4

Is Topsoil Present?	yes	If so, Topsoil Depth?	200(mm)

Classification	Properties	Tick One
Sand	Very little to no coherence, cannot be moulded., single grains	
Loamy sand	Slightly coherence, give a short ribbon 5mm that breaks easy	
Sandy loam	Forms a cast but will not roll in a ball. Individual sand grains can be seen	
Fine sandy loam	As for Sandy loam. Individual sand grains cannot be seen	
Loam	As for Sandy loam. But cast feels spongy	
Silty loam	As for loams but not spongy. Very smooth and silky	
Sandy clay loam	Can be rolled into a ball. Sand grains can be felt	
Fine sandy clay loam	As for sandy clay loam but no sand grains visible	
Clay loam	Can be rolled into a ball with spongy feel, slightly plastic	
Silty clay loam	As for clay loams but not very spongy. Very smooth and silky	x
Sandy clay	Forms a plastic ball in which sand grains can be seen, felt and heard	
Light clay	Smooth plastic ball that can be rolled into a rod. Slight resistance to	

	shearing	
Silty clay	As for light clay but very smooth and silky	
Medium clay	Smooth plastic ball like plasticine. Can be moulded. Some resistance to ribboning	
Heavy clay	Smooth plastic ball like plasticine. Can be moulded. Firm resistance to ribboning	

Reasons for placing in stated category

See borelog

KDC - Approved Building Consent Document - BC160334 - Pg 13 of 23 - 8/07/2016 - kdh

PART E: Discharge Details

1 Water supply source for the property (please tick):

Rainwater (roof collection)	x
Bore/well	
Public supply	

2 Calculate the maximum daily volume of wastewater to be discharged, unless accurate water meter readings are available

(Refer AS/NZS 1547:2000 Appendix 4.2D)

Number of Bedrooms	1 - 2 - 3 - 4 - 5 - 6			4 + 1
Design Occupancy	8			(Number of People)
Per capita Wastewater Production	145	165x	180	(tick Litres per person per day)
Other - specify	200	220		
Total Daily Wastewater Production	1320			(litres per day)

3 Do any special conditions apply regarding water saving devices

a) Full Water Conservation Devices?	Yes x		No		(Please tick)
b) Water Recycling - what %?	0%				(Please tick)

If you have answered yes, please state what conditions apply and include the estimated reduction in water usage

Duel flush toilets (6/3), front loading washing machine, low water use dishwasher, and no
Waste disposal unit.

4 Is Daily Wastewater Discharge Volume more than 3000 litres per day:

Yes		(Please tick)
No	x	(Please tick)

Note if answer to the above is yes, an N.R.C wastewater discharge permit will be required

PART F: Primary Treatment

(Please also refer to NRC rules)

1 Please indicate below the no. and capacity (litres) of all septic tanks including type (single/dual chamber grease traps) to be installed or currently existing: If not 4500 litre dual chamber, explain why not.

Number of Tanks	Type of Tank	Capacity of Tank (Litres)

2 Type of Septic Tank Outlet Filter to be installed?
(min 3.5mm screen required see NRC rules)

PART G: Secondary and Tertiary Treatment

(Please also refer to NRC rules)

1 Will the discharge effluent have a 5-day biochemical oxygen demand (BOD5) that is less than or equal to 30 grams per cubic metre and the total suspended solids (TSS) concentration that that is less than or equal to 45 grams per cubic metre?
(Manufacturers specifications required see NRC rules)

Yes	x	No		(Please tick)
No means this is considered a primary system				

2 Please indicate the type of additional treatment, if any, proposed to be installed in the system: (please tick)

Secondary Treatment	x		
Home aeration plant			
Commercial aeration plant			
Intermediate sand filter			
Recirculating sand filter			
Recirculating textile filter			
Clarification tank			
Tertiary Treatment			
Ultraviolet disinfection			
Chlorination			
Other		Specify	

KDC - Approved Building Consent Document - BC160334 - Pg 14 of 23 - 8/07/2016 - kdh

KDC - Approved Building Consent Document - BC160334 - Pg 15 of 23 - 8/07/2016 - kdh

PART H: Land Disposal Method

(Refer AS/NZS 1547:2000 appendix 4.2C)

1 Please indicate the proposed loading method: (please tick)

Gravity	
Dosing Siphon	
Pump	x

2 High water level alarm to be installed in pump chamber(s)

Yes x	No

If not to be installed, explain why

3 If a pump is being used, please provide the following information:

Total Design Head	12	(m)
Pump Chamber Volume	700	(Litres)
Emergency Storage Volume	2500	(Litres)

4 Please identify the type(s) of land disposal method proposed for this site: (please tick)

(Refer AS/NZS 1547:2000 appendix 4.2A)

Surface Dripper Irrigation	x		
Sub-surface Dripper irrigation			
Standard Trench			
Deep Trench			
Mound			
Evapo-transpiration Beds			
Other		Specify	

5 Please identify the loading rate you propose for the option selected in the above, stating the reasons for selecting this loading rate:

(Refer to AS/NZS 1547:200 appendix 4.2A)

Loading Rate	3.6		(Litres/m2/day)
Disposal Area	Design	367	(m2)
	reserve	121	(m2)

KDC - Approved Building Consent Document - BC160334 - Pg 16 of 23 - 8/07/2016 - kdh

Explanation

8 people x 165(per person effluent) = 1320L (total daily effluent)
1320 / 3.6 = 367m2 effluent field

6 What is the available reserve wastewater disposal area?

Reserve Disposal Area (m²)	121
Percentage of Primary Disposal Area (%)	33

7 Please provide a detailed description of the design and dimensions of the disposal field and attach a detailed plan of the field relative to the property site:

Description and Dimensions of Disposal Field:

See Wastewater site plan

Plan Attached?	Yes	x	No		(Please tick)

If not, explain why not

PART I: Maintenance & Management

(Please also refer to NRC rules)

1 Has a maintenance agreement been made with the treatment and disposal system suppliers?

Yes	Will be	No		(Please tick)

Name of Suppliers

Absolute Concrete

KDC - Approved Building Consent Document - BC160334 - Pg 17 of 23 - 8/07/2016 - kdh

PART J: Assessment of Environmental Concerns

1 Is an assessment of environmental concerns included with application?

(Refer Fig 4.1C3)

Yes	x	No		(Please tick)

If Yes, list and explain possible effects

See attached

PART K: Is Your Application Complete?

1 Is a Northland Regional Council Discharge Consent Required?

Yes		No	x	(Please tick)

2 In order to provide a complete application you have remembered to:

Fully Complete this Assessment Form	x
Include a *Location Plan* and *Site Plan* (with Scale Bars)	x
Attach an Assessment of Environmental Concerns	x

3 Declaration

I hereby certify that, to the best of knowledge and belief, the information given in this application is true and complete.

Name	Cameron Shaw	Signature	C J Shaw
Position	Certified Designer KDC	Date	30 May 2016

Note:

Any alteration to the site plan or design after approval will result in non compliance.

A commissioning statement is required for any Pumped system, Alternative solution and Secondary treated system before the Code Compliance Certificate can be issued.

KDC - Approved Building Consent Document - BC160334 - Pg 18 of 23 - 8/07/2016 - kdh

PCC PACIFIC COAST CONSULTANTS

Suitable Plant Species for Wastewater Management Areas.

Shallow Rooted Plants (Suitable for All Management Areas.)

- NZ Blueberry/Turutu (Dianella Nigra) **
- Begonias
- Canna Lily (Canna sp.) #
- Flax (Phormium Tenax), ((Phormium Cookianum) **
- Fuchsia
- Geraniums
- Koromiko (Hebe Stricta)**
- Philodendrons
- Rangiora (Brachyglottis Repanda)**
- Rhubarb
- Astelia (Astelia Grandis)**
- Manuka (Leptospernum Scoparium)**
- Taro (Colocasia Esculenta, C. Niue) **
- Black Taro (Xanthosma Violacea)
- Alocasia sp.
- Coprosma sp. (C.Popinqua, C.Tenicaulis, C.Rhamnoides, C.Rigida, C.Robusta, C.Lucida, C.Macrocarpa)**

Grasses/Sedges/Rushes

- Yorkshire Fog
- Red Clover
- Gahnia/Tupari Maunga (Gahnia Xanthocarpa), (Gahnia Setifolia)
- Purei/Makura (Carex secta, C. Flagellifera, C.Germinata, C. Lessoniana, C.Virgata)**
- Machaerina Sinclairii **
- Giant Umbrella Sledge/Toetoe Upoko-Tangata (Cyperus Ustulatus)**
- Sharp Spike Edge (Eleocharis Acuta)**
- Toetoe (Cortaderia Fulvida)**
- Oioi or Jointed Wire Rush (Apodasmia Similis)**

KDC - Approved Building Consent Document - BC160334 - Pg 19 of 23 - 8/07/2016 - kdh

Larger Deeper Rooted Plants (Suited to Drip Irrigation Fields)

- Mamaku (Cyathea Medullaris)^**
- Wheki (Dicksonia Squarrosa)^**
- Karaka (Corynocarpus Laevigatus)**
- Kowhai (Sophora Microphylla)
- Pukatea (Laurelia Novae-Zealandiae)**
- Ribbonwood or Manatu (Plagianthus Regius)**
- Cabbage Tree or Ti Kouka (Cordyline Australis)**
- Kahikatea (Dacrycarpus Dacrydioides)**
- Swamp Maire (Syzygium Marie)**
- Banana Species (Musa Paradisiacal, M.Zebrine, M.Cochineu)#
- Estete Maurellii #
- Shell Ginger (Non-invasive) (Alpinia Zerumbet)
- Gunnera Tinctoria
- Cyperus Papyrus

KEY: ** NATIVE ^ SHADED AREAS # FROST TENDER







KDC - Approved Building Consent Document - BC160334 - Pg 20 of 23 - 8/07/2016 - kdh

EARTHSAFE D10 SPECIFICATIONS

Product Description

The Earthsafe D10 model is housed in a single concrete tank, with adequate capacity to treat waste water for up to 10 persons. The system features unique surge reduction and advanced aeration but the advantages of the remarkably simple process of the D10 system are how well it works and how little maintenance is required. The treated water is clear, odourless and can be reused on-site (subject to local authority approval) for applications such as watering the gardens and lawn.

Accredited Performance

In technical terms the D10 has been designed to process waste water to achieve typically 95% reduction in both suspended solids (TSS) and biological oxygen demand (BOD5). Additional sterilisation (chlorination) reduces the faecal coliforms to virtually zero. The Earthsafe D10 system is accredited by the NSW Department of Health and has been designed and tested to ensure that treatment exceeds the requirements of New Zealand and Australian standards as 154.2.2001 and as 1547.200. The system has also been accredited by the Queensland Department of Natural Resources and has been designed after over twenty years of research.

Features

- The Earthsafe D10 manufactured by Absolute Concrete is an aerated treatment tank system which uses totally natural biological processes to treat the waste water. It consists of a set of 5 chambers which perform various treatment processes on the waste stream.
- The Earthsafe D10 uses high quality components, and all internal chambers are built in polypropylene.
- All internal fixings are marine grade 316 stainless steel to ensure long life, and not simply galvanized like competitors systems.
- The electrical control component is simple and hard wired and does not contain complex summer or winter modes, or a PLC. The Earthsafe control boxes are overload protected and like the rest of the system, are extremely reliable.
- The Earthsafe D10 systems use a 100-litre blower (others use only 80) and also either a 14-metre head (standard) or 34-metre head (optional) irrigation pump. Two (2) clarification chambers are utilised within the system (most opposition systems have one), and as a result even the standard Earthsafe system will treat up to 3000 litres per day to a very high standard. (Most other standard systems will only do 1500 to 2000 litres.)
- Manufactures by Absolute Concrete the Earthsafe systems are delivered as a complete S/C is a compact sewage treatment system housed in one concrete tank. It is intended to treat domestic waste water from singe households with adequate capacity to treat waste water for up to 10 people. The Absolute Concrete precast tanks. They are simply installed in-ground and then connected to the household plumbing system and to the power to run the air blower, electronic alarm control unit and the irrigation pump (with one connection). The system is then ready to irrigate to an area usually approved by local council.

The Earthsafe units are available with three discharge quality levels:

1. "STANDARD" – Suitable for most household sites, and producing 'secondary' treated water;

2. "ADVANCED SECONDARY" – This is the most common unit that we sell as it produces a very high quality discharge suitable for sites that are near a waterway or are environmentally sensitive, and demanded by some councils;

KDC - Approved Building Consent Document - BC160334 - Pg 21 of 23 - 8/07/2016 - kdh

3. "Advanced secondary" with NUTRIENT REDUCTION" – Again, a very high quality discharge but also with a significant reduction in Nitrogen and Phosphorous levels. This is usually only needed where there is possible run-off during rain events, or sensitive waterways nearby, or a reduction in dispersal area is required. (This system uses technology from our commercial treatment units)

Care and Maintenance

It is important to realise that on-site waste water systems require regular inspection and maintenance to ensure that they function effectively and the system must be operating correctly to ensure that the health of your family and the community are protected at all times.

Absolute Concrete can arrange for the ongoing maintenance of your septic system for your peace of mind. This will ensure that your system continues to operate as designed, warranties are protected and the unit will continue to function correctly in the long term. That being said, generally speaking the D10 is automatic in operation and requires very little owner intervention. It is useful however for you to familiarize yourself with the system so that you understand the general operation of the unit.

Water first enters the primary pre-treatment chamber where organic and inorganic solids settle to the bottom and fats and other floating matter forms a scum layer on top of the liquid in the chamber. A sludge layer builds up in the chamber and a biological process takes place i.e anaerobic bacteria digest the sludge and break down some of the organic matter.

Fluid is decanted from the pre-treatment chamber through a baffle or filter to eliminate the passage of grease and floating matter. Whenever liquid enters the pre-treatment chamber, waste water flows by hydraulic displacement into the aeration chamber. In this chamber air is introduced through fine diffusers which serve to stir the contents of the tank whilst some air dissolves to provide oxygen for aerobic bacteria to thrive. These bacteria form as a bio-film on the submerged media and float in the solution. Aerobic bacteria are far more efficient than their anaerobic counterparts and the effluent is converted into clean, clear water through aerobic digestion and oxidisation. This process is odour-free.

Liquid from the aeration chamber flows into the clarifiers where the solution slows to enable any suspended particles to settle to the bottom. Periodically the accumulated sludge is returned to the primary treatment chamber to ensure more complete digestion. This return process is automatic. Treated water now flows through a lower chamber where it is chlorinated before passing into the final irrigation area. At this point clean waste water is automatically and silently discharged into the land application system.

Land application systems vary according to individual situations and can be in form of surface sprinklers, subsurface irrigation, sand filters or other innovative systems. Your local council will decide this.

Excavation Dimensions and Relevant Facts

Depth Approx. 2200mm	Width Approx. 3000mm	Invert below ground 500mm
Weight 4.5 tonne	Diameter 2.4m	Air Blower 100 litres/min
Volume 8000 ltrs		

Owners/Tenants Responsibilities

- Absolute Concrete can suggest a maintenance person in your area if required, or you could contact your local council for a full list of licensed service personnel.
- The owner/tenant of the property should ensure safe passage for the Service Technician. Any animals that may pose a danger to the service technician should be locked up or penned during servicing.
- The owner/tenant should provide a key for the Service Technician if there are any locked gates which prevent entry to your property.
- The owner/tenant should ensure that the area around the Earthsafe System is kept neat and tidy at all times.
- The owner/tenant should monitor the irrigation sprinkler system to ensure all spray jets are working properly. (The owner/tenant will be required to replace or clear any blocked or broken sprinklers). This work can also be arranged to be completed by a maintenance technician.
- The owner/tenant should ensure that any inline filters on the irrigation sprinkler system are checked and cleaned on a regular basis if required. The service technician will clean the filter every three months.
- The owner/tenant should ensure prompt payment of any service or repair accounts.
- The owner/tenant should not allow painters / cleaners etc.. to dump paint chemicals etc.. into the drains whilst working on site.
- If you have any further questions please contact us directly or refer the Earthsafe website on the link below http:\\www.ecowaterholings.com

- See more at: http://www.absoluteconcrete.co.nz/product/concrete-precast-sewage-system-earthsafe-d10/#sthash.IJ6NFTNO.dpuf

KDC - Approved Building Consent Document - BC160334 - Pg 22 of 23 - 8/07/2016 - kdh

WILEY GEOTECHNICAL LTD

BOREHOLE No. 2

SITE: 33 Baldrock Road

REF: 16144

Sheet 1 of 1

REDUCED LEVEL (RL) / INFERRED GEOLOGY	DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	WATER CONTENT (%	WATER LEVEL	CORRECTED VANE SHEAR STRENGTH (kPa) ●Peak Field Vane ○Remoulded Field vane 50 100 150	SCALA PENETROMETER BLOWS / 100 mm 5 10 15
	SILT Topsoil dark brown to 200mm. Some fill moderately clayey, slightly sandy (fine) moderately plastic, light brown/grey with orange/brown mottling		1					
	EOH at 1.3m		2					
			3					
			4					
			5					

KDC - Approved Building Consent Document - BC160334 - Pg 23 of 23 - 8/07/2016 - kdh

NOTES No ground water at time of investigation, BH done after a period of heavy rain.
GNS map shows Undifferentiated Melange of the Northland. Allochthon

LOGGED BY: CS
DATE DRILLED: 25-May-16
DRILL METHOD 50 mm Hand Auger

12 Apr 2017

[redacted]

PO Box 17

Kaiwaka 0542

Dear Sir or Madam,

Reference Number: BC160334

Project Location: 33 Baldrock Road, Kaiwaka

Legal description of land where building is located: lot 2 DP 31705

Project Description: Upgrade existing septic system

IR Number: 1

Inspection Results:

DRAINAGE - 12 Apr 2017 @ 16:00 by Steve Corkin

Inspection Outcome: INCOMPLETE - Some aspects of the building work pertaining to this inspection have yet to be checked and confirmed as complying with the building consent.

Formal Directive: Commissioning statement and as built drawing required

Inspection Summary: new secodary treatment system and s/s drainage to it complies with the consented design ok to cover.

Your next inspection will be: **Final**

Please contact us 48 hours before you require this to book your inspection.

History

Inspection Name	Summary
Drainage	IN-PROGRESS - 12 Apr 2017
Final	-

Yours Sincerely,



Steve Corkin
Senior Building Control Officer
On behalf of: Kaipara District Council

10 July 2017

[redacted]

PO Box 17

Kaiwaka 0542

Dear Sir or Madam,

Reference Number: BC160334

Project Location: 33 Baldrock Road, Kaiwaka

Legal description of land where building is located: lot 2 DP 31705

Project Description: Upgrade existing septic system

IR Number: 2

Inspection Results:

DRAINAGE - 10 Jul 2017 @ 08:00 by Matthew Williams

Inspection Outcome: PASS - The BCA is satisfied, on reasonable grounds, that the aspects of building work pertaining to this inspection demonstrate compliance with the building consent.

FINAL - 10 Jul 2017 @ 08:00 by Matthew Williams

Inspection Outcome: PASS - The BCA is satisfied, on reasonable grounds, that the aspects of building work pertaining to this inspection demonstrate compliance with the building consent.

Site Communication: Septic system installed as per consent. Effluent field is planted.

Inspection Summary: Pass. OK to issue CCC

Your next inspection will be: **No further inspection required**

History

Inspection Name	Summary
Drainage	**PASS** - 10 Jul 2017
Final	**PASS** - 10 Jul 2017

Yours Sincerely,



Matthew Williams

BCO

On behalf of: Kaipara District Council

KAIPARA DISTRICT

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KAIPARA DISTRICT COUNCIL

Application for Code Compliance Certificate (Form 6) Section 92, Building Act 2004

For Official use
Date Received:

Items marked * are mandatory. **Complete this form in BLOCK CAPITALS using BLACK or BLUE ink.**

1. The Building Consent

Building Consent Number*:		Site Address*:	

2. The Project

Description of the building work*:

Floor Area*: m²

Has the intended use of the building changed since the Building Consent was issued/granted? *

○ YES → Provide details of the new use: [*refer NZBC A1 Classified Uses*]

○ NO

3. The Owner [*include preferred form of address, eg, Mr, Miss, Dr, if an individual*]

Owner's Name*:		Contact Person (*if owner is a company*):	
Mailing/ Billing Address*:		Street Address/ Registered Office:	
Phone Number:		Cell Phone:	Fax:
E-mail address:			
Website:			

4. The Agent (Note - Only required if application is being made on behalf of the owner. The Agent, if nominated, will be the first point of contact for communications with the Council/Building Consent Authority regarding this application/building work and will receive all correspondence including all invoices)

Agent's Name:		Contact Person (*if agent is a company*):	
Mailing/ Billing Address:		Street Address/ Registered Office:	
Phone Number:		Cell Phone:	Fax:
E-mail address:			
Website:			

5a. The Application

All building work to be carried out under the above building consent was completed on*:

KAIPARA DISTRICT

5b. The Application (Restricted Building Work) *

The licenced building practitioner(s) who carried out, or supervised, the restricted building work is/are as follows:

Note: Enter the licenced building practitioner (LBP) number or registration number if treated as being licenced under section 291 of Building Act 2004.

Name		**Licence Class**		**LBP number**	
Particular work carried out or supervised:					
Name		**Licence Class**		**LBP number**	
Particular work carried out or supervised:					
Name		**Licence Class**		**LBP number**	
Particular work carried out or supervised:					
Name		**Licence Class**		**LBP number**	
Particular work carried out or supervised:					
Name		**Licence Class**		**LBP number**	
Particular work carried out or supervised:					
Name		**Licence Class**		**LBP number**	
Particular work carried out or supervised:					
Name		**Licence Class**		**LBP number**	
Particular work carried out or supervised:					
Name		**Licence Class**		**LBP number**	
Particular work carried out or supervised:					
Name		**Licence Class**		**LBP number**	
Particular work carried out or supervised:					
Name		**Licence Class**		**LBP number**	
Particular work carried out or supervised:					

5c. The Application (Key Personnel) *

The personnel who carried out the building work other than restricted building work are as follows:

Builder:		Registration Number:	
Mailing Address:			
e-mail:		Phone (day):	
Certifying Plumber:		Registration Number:	
Mailing Address:			
e-mail:		Phone (day):	
Certifying Gasfitter:		Registration Number:	
Mailing Address:			
e-mail:		Phone (day):	
Certifying Drainlayer:		Registration Number:	
Mailing Address:			
e-mail:		Phone (day):	
Registered Electrician:		Registration Number:	
Mailing Address:			
e-mail:		Phone (day):	
Name:		Registration Number:	
Mailing Address:			
e-mail:		Phone (day):	
Name:		Registration Number:	
Mailing Address:			
e-mail:		Phone (day):	

Note: Use additional sheets if required.

Other notes or comments which you as the applicant may wish to add:

5d. The Application (Specified Systems)

Are there any specified systems associated with this project? *

YES NO, there are no specified systems associated with this project.

The following specified systems are contained on the compliance schedule for the building and, in the opinion of the personnel who installed them, are capable of performing to the performance standards set out in the building consent: [*specified systems are defined in regulations*].

SS1 Automatic systems for fire suppression (for example, sprinkler systems)

SS2 Automatic or manual emergency warning systems for fire or other dangers (other than a warning system for fire that is entirely within a household unit & serves only that unit).

SS3 Electromagnetic or automatic doors or windows(for example, ones that close on fire alarm activation)

- **SS3/1** Automatic doors
- **SS3/2** Access Controlled Doors
- **SS3/3** Interfaced fire or smoke doors or windows

SS4 Emergency lighting systems

SS5 Escape route pressurisation systems

SS6 Riser mains for fire service use

SS7 Automatic back-flow preventers connected to a potable water supply

SS8 Lifts, escalators, travelators, or other systems for moving people or goods within buildings

- **SS8/1** Passenger Carrying lifts
- **SS8/2** Service Lifts
- **SS8/3** Escalators and moving walks

SS9 Mechanical ventilation or air conditioning systems

SS10 Building maintenance units for providing access to the exterior and interior walls of buildings

SS11 Laboratory fume cupboards

SS12 Audio loops or other assistive listening systems

SS13 Smoke control systems

- **SS13/1** Mechanical Smoke Control
- **SS13/2** Natural Smoke Control
- **SS13/3** Smoke Curtains

SS14 Emergency power systems for, or signs relating to, a system or feature specified in any of the clauses 1 to 13

- **SS14/1** Emergency Power Systems
- **SS14/2** Signs relating to Specified Systems 1 to 13

SS15 Other Fire Safety Systems or Features

- **SS15/1** Systems for communicating spoken information intended to facilitate evacuation
- **SS15/2** Final exit (as defined by A2 of the Building Code; and
- **SS15/3** Fire separations
- **SS15/4** Signs for communicating information intended to facilitate evacuation;
- **SS15/5** Smoke separations

SS16 Cable Cars

Purpose Group*:		**Fire Hazard Category*:**		**Max Occupant Load*:**	

KAIPARA DISTRICT

5e. The Application (Signatory)

I request that you issue a code compliance certificate for this work under section 95 of the Building Act 2004.

Signed by*:	
FULL NAME*:	
Date*:	
I am the*:	◯ **Owner** ◯ **Agent** on behalf of, and with the authority of, the owner.
Address the code compliance certificate should be sent to:	

6. Attachments

The following documents are attached to this application:

Evidence of ownership* (*Certificate of Title or Sale & Purchase Agreement*)

Certificates that relate to the energy work (*eg Gas & electricity*)

Evidence that the specified systems are capable of performing to the performance standards set out in the building consent

Proof of potability of drinking water from private well, and/or rainwater catchment, supply (refer to New Zealand Drinking Water Standards 2005)

Memoranda (Records of Building Work) from licenced building practitioner(s) stating what restricted building work they carried out or supervised*

Other documents from personnel who carried out the work

For Official use only:

KAIPARA DISTRICT

Kaipara te Oranganui • Two Oceans Two Harbours

KAIPARA DISTRICT COUNCIL

Commissioning Statement (PS3) – AS/NZS 1547

Issued by: Mark Wake being a Registered Drainlayer.

In respect of installation and commissioning report for the onsite wastewater disposal for:

(Owner) [redacted]

At (Address) 33 Baldrock Road

Legal Description: Lot _____ DP _____ Valuation _____

I have sighted the issued building consent (BC 160334) and have tested the onsite wastewater system including the pipes and fittings in accordance with the AS/ NZS 1547 clause 4.5.6, the New Zealand Building Code, and the manufacturers specifications and requirements.

I have tested and checked the onsite waste water system and installed the system as follows:

(✓) Tested the onsite effluent disposal system in accordance with AS/NZS 1547:2000 and provide a schedule to the owner for the systems maintenance.

(✓) Has been installed in accordance with G13 (Foul Water) and G14 (Industrial Liquid Waste) and B2 (durability 15 years) of the Building Regulations 1992.

I believe on reasonable grounds that the work complies with the Building Consent issued.

I also understand that Kaipara District Council in accepting this commissioning report (PS3), will be relying on it to establish compliance at the completion of the building work.

Signature of Registered Drainlayer: MWake

Drainlayer's Registration Number: 17721

Registration Expiry Date: 3/18

Date: 13/4/17

KAIPARA DISTRICT

KAIPARA DISTRICT COUNCIL

Private Utility Service As-Built Record

(Section 216, Building Act 2004)

Part A Consent Details (to be completed in all cases)

Building Consent Number 160334

Applicants Name A & S Reddy

Applicants Mailing Address

Site Address 33 Baldrock Road

Part B As Built Services Information (to be completed in relation to service provided, ticking each box as appropriate)

Wastewater - Pressure

(Pump Make/Model) _____

Connection Diameter		Pipe Material		Connection Type	
	40mm		uPVC		Public Utility Service Connection
	50mm		Vitrified Clay		Septic Tank
	80mm		Concrete		Other _____
	Other _____ mm		Other _____		

Wastewater - Gravity

Connection Diameter		Pipe Material		Connection Type	
	65mm	✓	uPVC		Public Utility Service Connection
	80mm		Vitrified Clay		Soak Hole
✓	100mm		Concrete		Stream
✓	Other 50 mm		Other _____	✓	Other ONSITE

Wastewater - Disposal System Description

Septic Tank

Size: 6000 litres

Type
- Septic tank DECOMMISSIONED
- ✓ Ecotank Earthsafe D10
- Biocycle

Effluent Field

Trench _____ m

- Deep Soakhole
  - Depth _____ m
  - Number of holes _____ m
- ✓ Other 300m Race

Sanitary Facilities

			Waste Disposal Unit	
✓	Toilet	Number 3	✓	No
	Bidet	Number _____		Yes Type _____
	Urinal	Number _____		

Certification

I Mark Richards being

- Owner
- Occupier
- Craftsman plumber
- ✓ Registered drainlayer — Registration Number 17721

certify that this Private Utility Service As-Built Record is an accurate representation of the work carried out.

Signature

13/4/17
Date

Stormwater

Pipe Diameter		Pipe Material		Connection Type	
	80mm		uPVC		Public Utility Service Connection
	100mm		Vitrified Clay		Soak Hole
	150mm		Ductile Iron		Stream
	225mm		Concrete		Drain
	Other _____ mm		Other _____		Other _____

Water Supply

Pipe Material - Cold
- uPVC
- Copper
- Polybutylene
- Other _____

Hot Water Cylinder
- High Pressure _____ Litre
- Low Pressure _____ Litre

Meter Type

Make _____ Model _____

Pipe Material - Hot
- uPVC
- Copper
- Polybutylene
- Other _____

Diameter _____

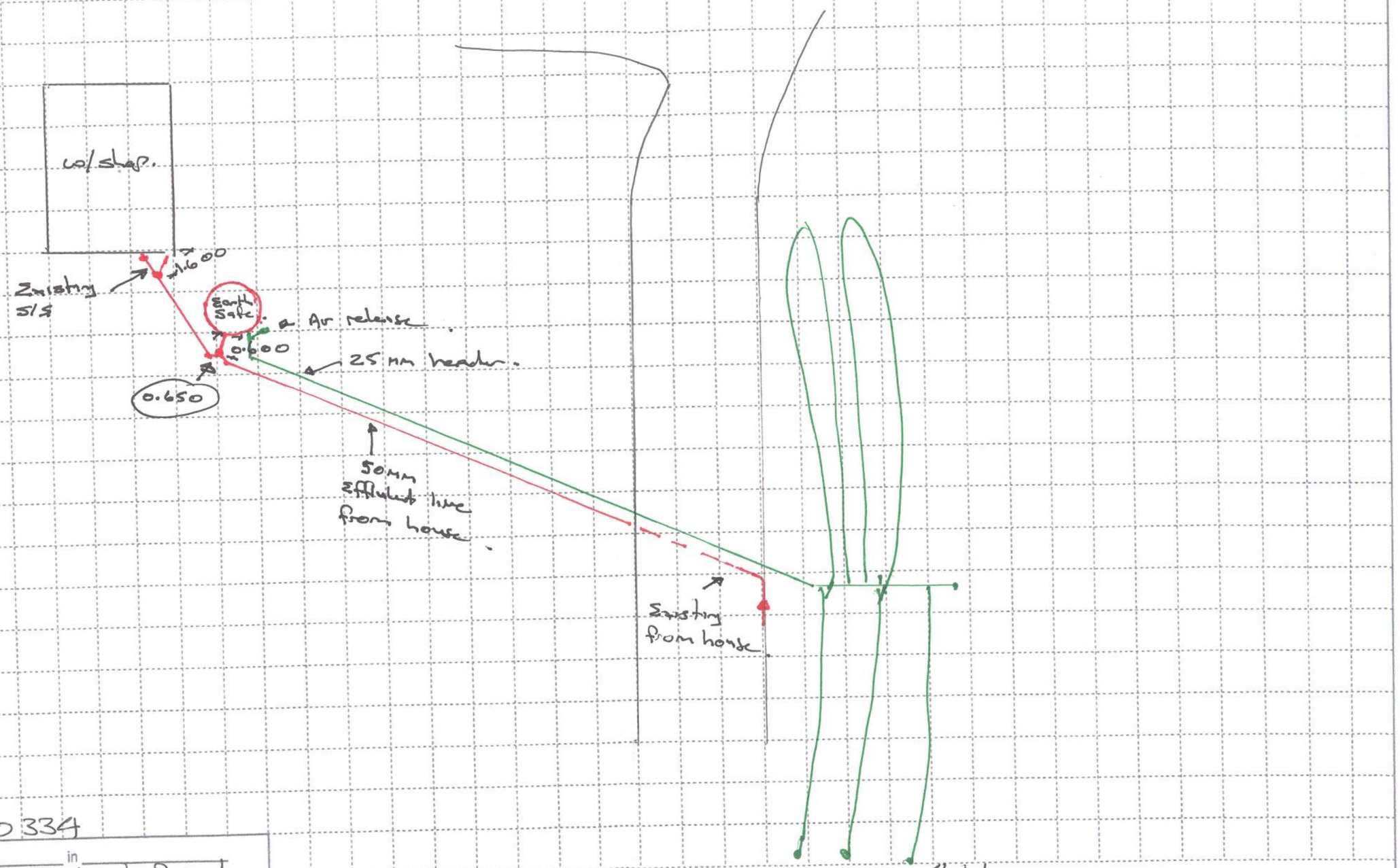
Serial Number _____

Reading _____ m³

(Quote all black figures inclusive of zeros only)

Note Part B As Built Services Information

PART C: As Built Services Plan
(To be completed in all cases. If details are already noted on separate drawings then provide copies in duplicate as appropriate and attach to this sheet. Ensure that drawing numbers, etc, are noted below.)



B/C 160334

Scale: NTS in

Site Address: 33 Baldrock Road.

Please provide at least two measurements for each access point for future location

Code Compliance Certificate

Section 95, Building Act 2004

The Building

Street address of building: 33 Baldrock Road, Kaiwaka
Legal description of land where building is located: lot 2 DP 31705
Building name: N/A
Location of building within site/block number: 33 Baldrock Road Kaiwaka
Level/unit number: N/A
Current, lawfully established, use: 7.0.1 Outbuildings
Year first constructed: 2017

The Owner

Name of owner: [redacted]
Contact person: [redacted]
Mailing address: PO Box 17, Kaiwaka
Street address/registered office: 33 Baldrock Road, Kaiwaka
Phone number: Landline: [redacted] Mobile: N/A
Facsimile number: N/A
Email address: [redacted]
First point of contact for communications with the council/building consent authority: Adrian and Elaine Reddy

Building Work

Building consent number: BC160334
Description of work: Upgrade existing septic system
Issued by: Kaipara District Council

Code Compliance

The building consent authority named below is satisfied, on reasonable grounds, that -

- the building work complies with the building consent.



Matthew Williams
BCO
On behalf of: Kaipara District Council
Issue Date: 10 July 2017

KAIPARA DISTRICT

Kaipara te Oranganui • Two Oceans Two Harbours

KAIPARA DISTRICT COUNCIL

Application for Code Compliance Certificate (Form 6) Section 92, Building Act 2004

For Official use
Date Received:

Items marked * are mandatory. **Complete this form in BLOCK CAPITALS using BLACK or BLUE ink.**

1. The Building Consent

Building Consent Number*: 160334.

Site Address*: 33 BALDROCK ROAD

2. The Project

Description of the building work*: DECOMMISSION SEPTIC INSTALL NEW SECONDARY SYSTEM AND LAY NEW FIELDS INSIDE BOUNDARY

Floor Area*: ____ m²

Has the intended use of the building changed since the Building Consent was issued/granted? * ☐ YES → Provide details of the new use: [*refer NZBC A1 Classified Uses*] ☑ NO

3. The Owner [*include preferred form of address (Miss, Dr, if an individual*]

Owner's Name*: [redacted]

Contact Person (*if owner is a company*):

Mailing/ Billing Address*: PO BOX 17 KAIWAKA.

Street Address/ Registered Office: 33 BALDROCK ROAD

Phone Number:

Cell Phone:

Fax:

E-mail address: [redacted]

Website:

4. The Agent (Note - Only required if application is being made on behalf of the owner. The Agent, if nominated, will be the first point of contact for communications with the Council/Building Consent Authority regarding this application/building work and will receive all correspondence including all invoices)

Agent's Name:

Contact Person (*if agent is a company*):

Mailing/ Billing Address:

Street Address/ Registered Office:

Phone Number:

Cell Phone:

Fax:

E-mail address:

Website:

5a. The Application

All building work to be carried out under the above building consent was completed on*:

KAIPARA DISTRICT

5b. The Application (Restricted Building Work) *

The licenced building practitioner(s) who carried out, or supervised, the restricted building work is/are as follows:

Note: Enter the licenced building practitioner (LBP) number or registration number if treated as being licenced under section 291 of Building Act 2004.

Name | **Licence Class** | **LBP number**

Particular work carried out or supervised:

Name | **Licence Class** | **LBP number**

Particular work carried out or supervised:

Name | **Licence Class** | **LBP number**

Particular work carried out or supervised:

Name | **Licence Class** | **LBP number**

Particular work carried out or supervised:

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Particular work carried out or supervised:

Name | **Licence Class** | **LBP number**

Particular work carried out or supervised:

Name | **Licence Class** | **LBP number**

Particular work carried out or supervised:

Name | **Licence Class** | **LBP number**

Particular work carried out or supervised:

KAIPARA DISTRICT

5c. The Application (Key Personnel) *

The personnel who carried out the building work other than restricted building work are as follows:

Builder:		Registration Number:	
Mailing Address:			
e-mail:		Phone (day):	
Certifying Plumber:		Registration Number:	
Mailing Address:			
e-mail:		Phone (day):	
Certifying Gasfitter:		Registration Number:	
Mailing Address:			
e-mail:		Phone (day):	
Certifying Drainlayer:	MARK WHARFE	Registration Number:	17721
Mailing Address:			
e-mail:	[redacted]	Phone (day):	
Registered Electrician:		Registration Number:	
Mailing Address:			
e-mail:		Phone (day):	
Name:		Registration Number:	
Mailing Address:			
e-mail:		Phone (day):	
Name:		Registration Number:	
Mailing Address:			
e-mail:		Phone (day):	

Note: Use additional sheets if required.

Other notes or comments which you as the applicant may wish to add:

KAIPARA DISTRICT

5d. The Application (Specified Systems)
Are there any specified systems associated with this project? *

YES NO, there are no specified systems associated with this project.

The following specified systems are contained on the compliance schedule for the building and, in the opinion of the personnel who installed them, are capable of performing to the performance standards set out in the building consent: [*specified systems are defined in regulations*].

- **SS1** Automatic systems for fire suppression (for example, sprinkler systems)
- **SS2** Automatic or manual emergency warning systems for fire or other dangers (other than a warning system for fire that is entirely within a household unit & serves only that unit).
- **SS3** Electromagnetic or automatic doors or windows(for example, ones that close on fire alarm activation)
  - **SS3/1** Automatic doors
  - **SS3/2** Access Controlled Doors
  - **SS3/3** Interfaced fire or smoke doors or windows
- **SS4** Emergency lighting systems
- **SS5** Escape route pressurisation systems
- **SS6** Riser mains for fire service use
- **SS7** Automatic back-flow preventers connected to a potable water supply
- **SS8** Lifts, escalators, travelators, or other systems for moving people or goods within buildings
  - **SS8/1** Passenger Carrying lifts
  - **SS8/2** Service Lifts
  - **SS8/3** Escalators and moving walks
- **SS9** Mechanical ventilation or air conditioning systems
- **SS10** Building maintenance units for providing access to the exterior and interior walls of buildings
- **SS11** Laboratory fume cupboards
- **SS12** Audio loops or other assistive listening systems
- **SS13** Smoke control systems
  - **SS13/1** Mechanical Smoke Control
  - **SS13/2** Natural Smoke Control
  - **SS13/3** Smoke Curtains
- **SS14** Emergency power systems for, or signs relating to, a system or feature specified in any of the clauses 1 to 13
  - **SS14/1** Emergency Power Systems
  - **SS14/2** Signs relating to Specified Systems 1 to 13
- **SS15** Other Fire Safety Systems or Features
  - **SS15/1** Systems for communicating spoken information intended to facilitate evacuation
  - **SS15/2** Final exit (as defined by A2 of the Building Code; and
  - **SS15/3** Fire separations
  - **SS15/4** Signs for communicating information intended to facilitate evacuation;
  - **SS15/5** Smoke separations
- **SS16** Cable Cars

Risk Group*: | **Fire Hazard Category*:** | **Max Occupant Load*:**

KAIPARA DISTRICT

5e. The Application (Signatory)

I request that you issue a code compliance certificate for this work under section 95 of the Building Act 2004.

Signed by*:

FULL NAME*: A + B Reddy

Date*: 10/07/2017

I am the*: ☑ **Owner** ☐ **Agent** on behalf of, and with the authority of, the owner.

Address the code compliance certificate should be sent to:

6. Attachments

The following documents are attached to this application:

Evidence of ownership* (*Certificate of Title or Sale & Purchase Agreement*)

Certificates that relate to the energy work (*eg Gas & electricity*)

Evidence that the specified systems are capable of performing to the performance standards set out in the building consent

Proof of potability of drinking water from private well, and/or rainwater catchment, supply (refer to New Zealand Drinking Water Standards 2005)

Memoranda (Records of Building Work) from licenced building practitioner(s) stating what restricted building work they carried out or supervised*

Other documents from personnel who carried out the work

For Official use only:

Sender: **elainepreddy@gmail.com**
Date Received: **11 July 2017 2:20:01 pm**
Subject: **Information Received Via Email: Re: BC160334.1 Form 7: Code Compliance Certificate - 33 Baldrock Road Kaiwaka**

Message:

Hi Matt Did you find your"e computer ? Elaine

On 10 July 2017 at 08:29, Kaipara District Council
wrote:

> Hello,
>
>
> Reference Number: 160334.1
>
> Form 7: Code Compliance Certificate
>
>
> Matthew Williams
> BCO
> Kaipara District Council
> Kaipara District Council, Unit 6 - The Hub, 6 Molesworth Drive, Mangawhai
> 0505
> P: (09) 439 3123 | E: buildingsupport@kaipara.govt.nz | W:
> www.kaipara.govt.nz
>
>

KAIPARA DISTRICT

Kaipara te Oranganui • Two Oceans Two Harbours

KAIPARA DISTRICT COUNCIL

Application for Code Compliance Certificate (Form 6) Section 92, Building Act 2004

For Official use
Date Received:

Items marked * are mandatory. **Complete this form in BLOCK CAPITALS using BLACK or BLUE ink.**

1. The Building Consent

Building Consent Number*: 160334. Site Address*: 33 BALDROCK ROAD

2. The Project

Description of the building work*: DECOMMISSION SEPTIC INSTALL NEW SECONDARY SYSTEM AND LAY NEW FIELDS INSIDE BOUNDARY

Floor Area*: m²

Has the intended use of the building changed since the Building Consent was issued/granted? * ☐ YES → Provide details of the new use: [refer NZBC A1 Classified Uses]

☑ NO

3. The Owner [include preferred form of address eg Mr, Miss, Dr, if an individual]

Owner's Name*: [redacted] Contact Person (*if owner is a company*):

Mailing/ Billing Address*: PO BOX 17 KAIWAKA. Street Address/ Registered Office: 33 BALDROCK ROAD

Phone Number: Cell Phone: Fax:

E-mail address: elainepreddy@gmail.com

Website:

4. The Agent (Note - Only required if application is being made on behalf of the owner. The Agent, if nominated, will be the first point of contact for communications with the Council/Building Consent Authority regarding this application/building work and will receive all correspondence including all invoices)

Agent's Name: Contact Person (*if agent is a company*):

Mailing/ Billing Address: Street Address/ Registered Office:

Phone Number: Cell Phone: Fax:

E-mail address:

Website:

5a. The Application

All building work to be carried out under the above building consent was completed on*:

KAIPARA DISTRICT

5b. The Application (Restricted Building Work) *

The licenced building practitioner(s) who carried out, or supervised, the restricted building work is/are as follows:

Note: Enter the licenced building practitioner (LBP) number or registration number if treated as being licenced under section 291 of Building Act 2004.

Name | **Licence Class** | **LBP number**

Particular work carried out or supervised:

Name | **Licence Class** | **LBP number**

Particular work carried out or supervised:

Name | **Licence Class** | **LBP number**

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Name | **Licence Class** | **LBP number**

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Particular work carried out or supervised:

Name | **Licence Class** | **LBP number**

Particular work carried out or supervised:

Name | **Licence Class** | **LBP number**

Particular work carried out or supervised:

Name | **Licence Class** | **LBP number**

Particular work carried out or supervised:

KAIPARA DISTRICT

5c. The Application (Key Personnel) *

The personnel who carried out the building work other than restricted building work are as follows:

Builder:		Registration Number:	
Mailing Address:			
e-mail:		Phone (day):	
Certifying Plumber:		Registration Number:	
Mailing Address:			
e-mail:		Phone (day):	
Certifying Gasfitter:		Registration Number:	
Mailing Address:			
e-mail:		Phone (day):	
Certifying Drainlayer:	MARK WHARFE	Registration Number:	17721
Mailing Address:			
e-mail:	[redacted]	Phone (day):	
Registered Electrician:		Registration Number:	
Mailing Address:			
e-mail:		Phone (day):	
Name:		Registration Number:	
Mailing Address:			
e-mail:		Phone (day):	
Name:		Registration Number:	
Mailing Address:			
e-mail:		Phone (day):	

Note: Use additional sheets if required.

Other notes or comments which you as the applicant may wish to add:

KAIPARA DISTRICT

5d. The Application (Specified Systems)
Are there any specified systems associated with this project? *

YES NO, there are no specified systems associated with this project.

The following specified systems are contained on the compliance schedule for the building and, in the opinion of the personnel who installed them, are capable of performing to the performance standards set out in the building consent: [*specified systems are defined in regulations*].

- **SS1** Automatic systems for fire suppression (for example, sprinkler systems)
- **SS2** Automatic or manual emergency warning systems for fire or other dangers (other than a warning system for fire that is entirely within a household unit & serves only that unit).
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  - **SS3/1** Automatic doors
  - **SS3/2** Access Controlled Doors
  - **SS3/3** Interfaced fire or smoke doors or windows
- **SS4** Emergency lighting systems
- **SS5** Escape route pressurisation systems
- **SS6** Riser mains for fire service use
- **SS7** Automatic back-flow preventers connected to a potable water supply
- **SS8** Lifts, escalators, travelators, or other systems for moving people or goods within buildings
  - **SS8/1** Passenger Carrying lifts
  - **SS8/2** Service Lifts
  - **SS8/3** Escalators and moving walks
- **SS9** Mechanical ventilation or air conditioning systems
- **SS10** Building maintenance units for providing access to the exterior and interior walls of buildings
- **SS11** Laboratory fume cupboards
- **SS12** Audio loops or other assistive listening systems
- **SS13** Smoke control systems
  - **SS13/1** Mechanical Smoke Control
  - **SS13/2** Natural Smoke Control
  - **SS13/3** Smoke Curtains
- **SS14** Emergency power systems for, or signs relating to, a system or feature specified in any of the clauses 1 to 13
  - **SS14/1** Emergency Power Systems
  - **SS14/2** Signs relating to Specified Systems 1 to 13
- **SS15** Other Fire Safety Systems or Features
  - **SS15/1** Systems for communicating spoken information intended to facilitate evacuation
  - **SS15/2** Final exit (as defined by A2 of the Building Code; and
  - **SS15/3** Fire separations
  - **SS15/4** Signs for communicating information intended to facilitate evacuation;
  - **SS15/5** Smoke separations
- **SS16** Cable Cars

Risk Group*: | **Fire Hazard Category*:** | **Max Occupant Load*:**

KAIPARA DISTRICT

5e. The Application (Signatory)

I request that you issue a code compliance certificate for this work under section 95 of the Building Act 2004.

Signed by*: [redacted]

FULL NAME*: [redacted]

Date*: 10/07/2017

I am the*: ☑ **Owner** ☐ **Agent** on behalf of, and with the authority of, the owner.

Address the code compliance certificate should be sent to:

6. Attachments

The following documents are attached to this application:

Evidence of ownership* (*Certificate of Title or Sale & Purchase Agreement*)

Certificates that relate to the energy work (*eg Gas & electricity*)

Evidence that the specified systems are capable of performing to the performance standards set out in the building consent

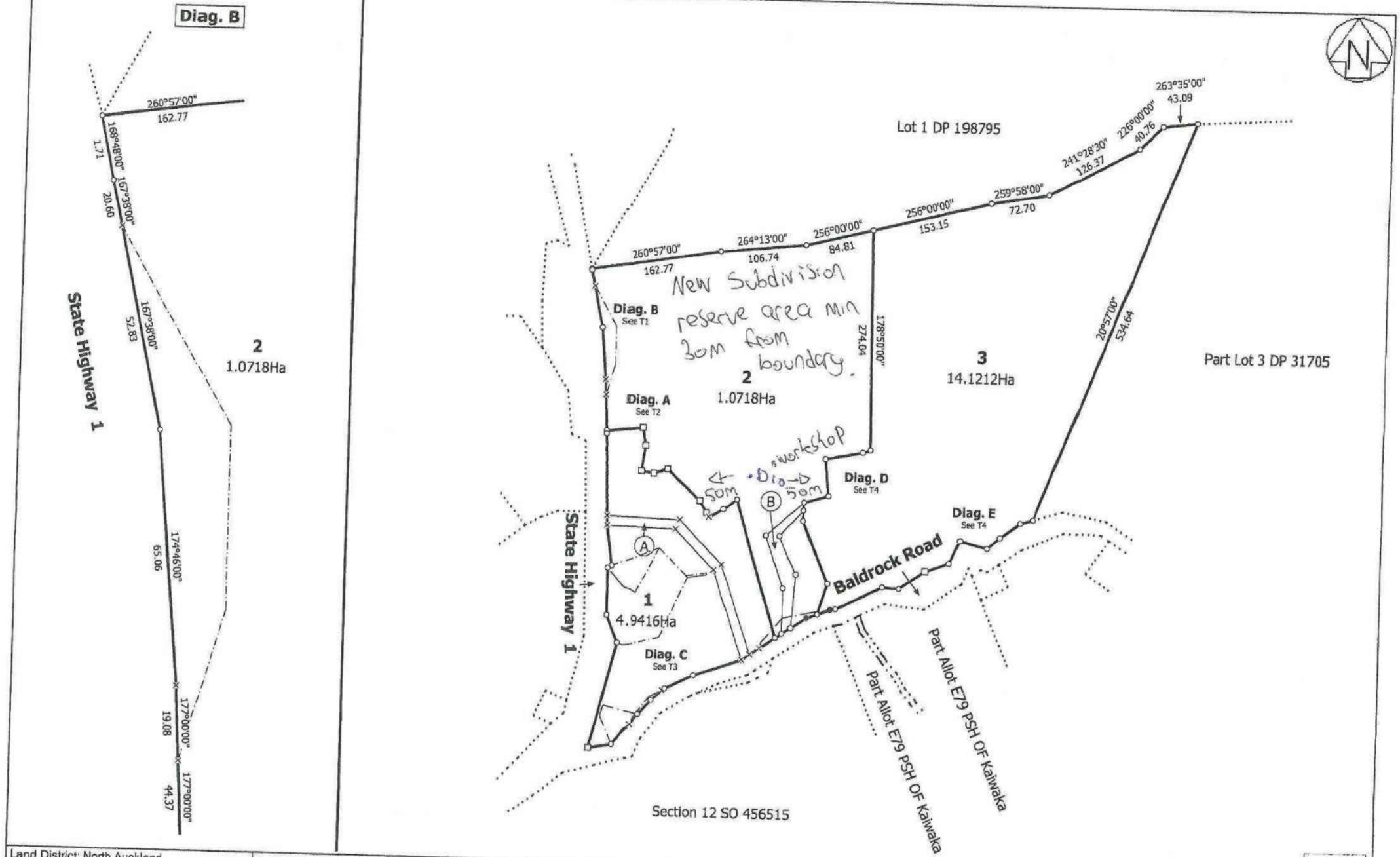
Proof of potability of drinking water from private well, and/or rainwater catchment, supply (refer to New Zealand Drinking Water Standards 2005)

Memoranda (Records of Building Work) from licenced building practitioner(s) stating what restricted building work they carried out or supervised*

Other documents from personnel who carried out the work

For Official use only:

160334.



Land District: North Auckland Digitally Generated Plan Generated on: 20/06/2016 10:15am Page 2 of 5	Lots 1 - 3 Being a subdivision of Allotment 344 parish of Kaiwaka, Sections 3, 4, 6, 10 & 11 SO 456515, Allotment 342 parish of Kaiwaka & Lot 1 DP 45538	Surveyor: Andrew Alistair Dunlop Firm: Parallax Consultants Ltd	Title Plan LT 494384 DRAFT

T 1/4



KAIPARA DISTRICT



KAIPARA
DISTRICT

File Notes: BC160334

[8 Jun 2016] Tanya Ritter ()

Paid on application

[8 Jul 2016] Tanya Ritter ()

Posted to Owner at

PO Box 17

Kaiwaka

0542

File Notes: BC160334

[8 Jun 2016] Tanya Ritter ()

Paid on application

[8 Jul 2016] Tanya Ritter ()

Posted to Owner at

PO Box 17

Kaiwaka

0542

[10 Jul 2017] Michelle Nepia (Technical Support)

Scanned to file under Inspections_CCC is an As built and PS3 issued by M Wharfe

[10 Jul 2017] Michelle Nepia (Technical Support)

I have uploaded the Application for CCC - Paper (10 July 2017)

File Notes: BC160334

[8 Jun 2016] Tanya Ritter ()

Paid on application

[8 Jul 2016] Tanya Ritter ()

Posted to Owner at

PO Box 17

Kaiwaka

0542

[10 Jul 2017] Michelle Nepia (Technical Support)

Scanned to file under Inspections_CCC is an As built and PS3 issued by M Wharfe

[10 Jul 2017] Michelle Nepia (Technical Support)

I have uploaded the Application for CCC - Paper (10 July 2017)

Building Consent - BC160334

Section 51, Building Act 2004

The Building

Street address of building: 33 Baldrock Road, Kaiwaka
Legal description of land where building is located: lot 2 DP 31705
Building name:
Location of building within site/block number: 33 Baldrock Road, Kaiwaka
Level/unit number:

The Owner

Name of owner: [redacted]
Contact person:
Mailing address: PO Box 17, Kaiwaka 0542
Street address/registered office: 33 Baldrock Road, Kaiwaka 0542
Phone number: Landline: [redacted] Mobile:
Facsimile number:
Email address: [redacted]
First point of contact for communications with the council/building consent authority:

Building work

The following building work is authorised by this building consent:

Upgrade existing septic system

This building consent is issued under section 51 of the Building Act 2004. This building consent does not relieve the owner of the building (or proposed building) of any duty or responsibility under any other Act relating to or affecting the building (or proposed

building).

This building consent also does not permit the construction, alteration, demolition, or removal of the building (or proposed building) if that construction, alteration, demolition, or removal would be in breach of any other Act.

Conditions

This building consent is subject to the following conditions:

There are no conditions associated with this consent.

Endorsements

On-Site Effluent Disposal Systems - An Installation and commissioning report verifying the system and all components have been installed and operate in conformity with the design is required upon completion in accordance with 6.2.5.4, AS/NZS1547(2012).

Inspections

The following inspections are required:

- Drainage
- Final

Compliance Schedule

A compliance schedule is not required for the building.

Attachments

Copies of the following documents are attached to this building consent:

Project Information Memorandum (PIM): 160334P



David Hughes
Senior Building Control Officer
On behalf of: Kaipara District Council
Issue Date: 08 Jul 2016

ADDENDA TO THIS BUILDING CONSENT:

- This building consent will lapse and be of no effect if the building work to which it relates does not commence within 12 months after the date of issue. The consent may be extended for any further period at the discretion of council.
- No deviation or alteration from the original plans and specifications can be carried out without written approval of Council and no building may be converted to any other use other than that stated on the building consent.
- IMPORTANT: YOU ARE FULLY RESPONSIBLE FOR ANY DAMAGE DONE TO ANY WORKS SUCH AS TELEPHONE CABLES, POWER CABLES, WATER MAINS, GAS MAINS, SEWERS, PIPES, FOOTPATHS, ROADS OR OTHER SERVICES.
- As the property owner is responsible for the correct siting of all works in accordance with the NZ Building Code and the Resource Management Act, the owner must ascertain the true position of the survey pegs before work commences.
- NOTICE THAT BUILDING WORK IS READY FOR INSPECTION. For the purposes of Section 222 of the Building Act 2004, and unless otherwise provided by the building consent, the owner or other person undertaking any building work shall give:
- At least 2 working days notice of the covering up of any
- i) drainage or plumbing
- ii) excavation for a foundation
- iii) reinforcing steel for a foundation
- iv) timber required to have a specific moisture content
- v) other work required to give notice as a condition
- Council MUST be notified at the completion of building work on the attached form.
- Every household unit requires smoke alarms in accordance with NZBC Clause F7/AS 1.3.1. Smoke alarms may be battery powered but shall have a hush facility and must comply with at least one of the following: UL 217, CAN/ULC S531, AS 3786, BS 5446: Part 1. Smoke alarms shall be installed near the ceiling and located on escape routes, in every sleeping space or within 3.0m of every sleeping space door.
- A Compliance Schedule is NOT required for the building.

BUILDING CONSENT FEES:

Please note that further fees may be required to be paid before a Code Compliance Certificate is issued for this Building Consent. All fees must be paid before a Code Compliance Certificate will be issued.

Project Information Memorandum 160334P

Section 34, Building Act 2004

Application

Owner	Adrian and Elaine Reddy	**Number**	160334P
	PO Box 17	**Issue Date**	21 Jun 2016
	Kaiwaka 0542	**Formally Received Date**	08 Jun 2016

Project

Description	Upgrade existing septic system
Intended Life	50 years
Intended Use	7.0.1 Outbuildings
Estimated Value	$9500
Location	33 Baldrock Road, Kaiwaka
Legal Description	lot 2 DP 31705
Valuation Number	0120003403

Building work can proceed following formal notification of Building Consent Approval being received from the Kaipara District Council Building Consent Authority and approvals being obtained from the agencies identified in this project information memorandum.

This Project Information Memorandum does NOT constitute a Building Consent.

Other Information

Once a Building Consent is issued, the Council will follow up on building work not completed within two years of building consent issue.

A Building Consent lapses and is of no effect if the building work has not been started within 12 months of the date of issue.

If the building is public premises it may not be occupied until either a Code Compliance

Certificate or Certificate for Public Use has been issued.

If the building is wholly or partly a dam, a Project Information Memorandum and Building Consent must be obtained from the regional authority.

The Northland Regional Council has a register of contaminated sites. Please contact them on 0800 002 004 if you suspect that your property may be contaminated e.g. historic timber treatment sites, service stations, landfill sites etcetera.

Please check your Certificate of Title for any encumbrances (such as easements, section 73 notice etcetera) before you make an application for a Building Consent.

All archaeological sites are protected under the provisions of the Historic Places Act 1993. If subsurface archaeological evidence (shell, midden, hangi, storage pits, etc) should be unearthed during construction, work should cease in the immediate vicinity of the remains and the Historic Places Trust should be contacted.

Notes:

1. The information supplied in the sections of this PIM report is specific to the building project to which the application relates by reference to Council files and records. No property inspection, or title search, has been undertaken. To enable the Council to measure the accuracy of this PIM document based on our current records we would appreciate your response should you find any information contained herein which may be considered to be incorrect or omitted. Please telephone the Council (09) 439 3123.

2. The Council has used its best endeavors to ensure that all information provided in this PIM report is correct and complete in all material respects. In the event that a material error or omission can be proven the Council's liability, whether in contract or in tort shall be limited to the fee paid to Council to obtain this report.

3. This information reflects the Kaipara District Council's current understanding of

information which is relevant to the project. This is based only on the information thus far provided to it and held on record. As a result the Council is not in a position to warrant that the information is complete or without error and accepts no liability for any inaccuracy in, or omission from, this information.

4. The information contained in this Project Information Memorandum is current at the date the memorandum is issued. Further relevant information may come into the Council's possession subsequent to the date of issue.

Code Compliance Certificate

Section 95, Building Act 2004

The Building

Street address of building: 33 Baldrock Road, Kaiwaka
Legal description of land where building is located: lot 2 DP 31705
Building name: N/A
Location of building within site/block number: 33 Baldrock Road
Kaiwaka
Level/unit number: N/A
Current, lawfully established, use: 7.0.1 Outbuildings
Year first constructed: 2017

The Owner

Name of owner: [redacted]
Contact person: [redacted]
Mailing address: PO Box 17, Kaiwaka
Street address/registered office: 33 Baldrock Road, Kaiwaka
Phone number: Landline: [redacted] Mobile: N/A
Facsimile number: N/A
Email address: [redacted]
First point of contact for communications with the council/building consent authority: Adrian and Elaine Reddy

Building Work

Building consent number: BC160334
Description of work: Upgrade existing septic system
Issued by: Kaipara District Council

Code Compliance

The building consent authority named below is satisfied, on reasonable grounds, that -

- the building work complies with the building consent.



Matthew Williams
BCO
On behalf of: Kaipara District Council
Issue Date: 10 July 2017

INSPECTION CHECKLIST - MAIN BUILDING - Inspection Checklist	Pass	Reason for Decision
Drainage		
G13 - Foul Water: Is the septic system installed in accordance with building consent?		
G13 - Foul Water - Prompt List:	**Pass**	
1. For is site safety properly managed with work-site hazards identified and mitigated?	Pass	Site safety is considered to be properly managed with work-site hazards identified and mitigated.
2. Drainlayer Certification: Does the nominated drainlayer hold current certification? (Please record registration details).	Pass	Evidence is provided to demonstrate that the nominated drain layer holds current certification. mark wharfe
3. Workmanship: Is the connection sealed and tested?	Pass	The sewer connection is sealed and watertight. s/s from old cottage to new secondary system is completed and air tested
4. Durability: Do the materials satisfy durability provisions of B2?	Pass	B2 provisions are satisfied.
5. Termination: Where an existing septic tank or drainage connection is to be abandoned, is confirmation provided that that these services will be decommissioned (capped / removed)?	Pass	Confirmation is provided that that the services will be decommissioned. collapsed and filled
Producer Statement Acceptance: Commissioning statement required for a pump system/drip per lines		
Producer Statement Acceptance - Prompt List:	**Pass**	
1. Scope - Is scope and extent of work accurately and clearly identified?	Pass	Scope is correctly identified.
2. Id - Is site address & legal description correctly identified?	Pass	Correct information provided.
3. Recipient - Is the BCA identified as recipient?	Pass	Correct information provided.
4. Author - Is adequate information provided - (name, qualification, registration number, professional affiliation, company name)?	Pass	Adequate information provided.
5. Competence - Is the work within authors scope of approval / competence?	Pass	Work nominated on the producer statement is within the authors scope of approval.
6. Means of Compliance - Are correct code clauses and means of compliance identified?	Pass	Code clauses and means of compliance are correctly identified.
7. Durability (B2) - Is confirmation of compliance with durability provisions provided?	Pass	B2 is nominated.
8. References - Are references to plans or consent documents correct?	Pass	Reference to plans and consent documents comply.
9. Accompanying info. Does this demonstrate reasonable grounds for acceptance?	Pass	Information demonstrates reasonable grounds for acceptance.
10. Conditions - If conditions apply are these clear and practicable?	Pass	Conditions are appropriate.
11. Site Verification - If on-site verification is required then have inspection records been provided?	Pass	On-site verification has been provided.
Final		
Act Provisions: Are all Building Act legislative requirements satisfied:		
Act Provisions - Prompt List:	**Pass**	
1. s26 - 28: Has a warning or ban been issued for products or materials used under this building consent since building consent was issued?	Pass	No warning or bans issued.
2. s37: Have all resource consent conditions been satisfied? Select N/A if there are no conditions.	Pass	Resource consent conditions are satisfied.
3. s92: Has a correctly completed Application for Code Compliance Certificate been received?	Pass	Application for CCC received.

CCC DRAFT

Copyright AlphaOne Building Consent System 2017, All Rights Reserved.

INSPECTION CHECKLIST - MAIN BUILDING - Inspection Checklist	Pass	Reason for Decision
Drainage		
G13 - Foul Water: Is the septic system installed in accordance with building consent?		
G13 - Foul Water - Prompt List:	**Pass**	
1. For is site safety properly managed with work-site hazards identified and mitigated?	Pass	Site safety is considered to be properly managed with work-site hazards identified and mitigated.
2. Drainlayer Certification: Does the nominated drainlayer hold current certification? (Please record registration details).	Pass	Evidence is provided to demonstrate that the nominated drain layer holds current certification. mark wharfe
3. Workmanship: Is the connection sealed and tested?	Pass	The sewer connection is sealed and watertight. s/s from old cottage to new secondary system is completed and air tested
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Producer Statement Acceptance - Prompt List:	**Pass**	
1. Scope - Is scope and extent of work accurately and clearly identified?	Pass	Scope is correctly identified.
2. Id - Is site address & legal description correctly identified?	Pass	Correct information provided.
3. Recipient - Is the BCA identified as recipient?	Pass	Correct information provided.
4. Author - Is adequate information provided - (name, qualification, registration number, professional affiliation, company name)?	Pass	Adequate information provided.
5. Competence - Is the work within authors scope of approval / competence?	Pass	Work nominated on the producer statement is within the authors scope of approval.
6. Means of Compliance - Are correct code clauses and means of compliance identified?	Pass	Code clauses and means of compliance are correctly identified.
7. Durability (B2) - Is confirmation of compliance with durability provisions provided?	Pass	B2 is nominated.
8. References - Are references to plans or consent documents correct?	Pass	Reference to plans and consent documents comply.
9. Accompanying info. Does this demonstrate reasonable grounds for acceptance?	Pass	Information demonstrates reasonable grounds for acceptance.
10. Conditions - If conditions apply are these clear and practicable?	Pass	Conditions are appropriate.
11. Site Verification - If on-site verification is required then have inspection records been provided?	Pass	On-site verification has been provided.
Final		
Act Provisions: Are all Building Act legislative requirements satisfied:		
Act Provisions - Prompt List:	**Pass**	
1. s26 - 28: Has a warning or ban been issued for products or materials used under this building consent since building consent was issued?	Pass	No warning or bans issued.
2. s37: Have all resource consent conditions been satisfied? Select N/A if there are no conditions.	Pass	Resource consent conditions are satisfied.
3. s92: Has a correctly completed Application for Code Compliance Certificate been received?	Pass	Application for CCC received.

CCC DRAFT

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SEWER CONNECTION - Inspections - AUDIT	Pass	User	Date	Notes
Drainage				
G13 - Foul Water: Is the septic system installed in accordance with building consent?				
G13 - Foul Water - Prompt List:	**Pass**	**SC**	**16:13 2017/04/12**	
1. F5: Is site safety properly managed with work-site hazards identified and mitigated?	PASS	scorkin	12-Apr-2017 4:16	Site safety is considered to be properly managed with work-site hazards identified and mitigated.
2. Drain layer Certification: Does the nominated drain layer hold current certification? (Please record registration details).	PASS	scorkin	12-Apr-2017 4:16	Evidence is provided to demonstrate that the nominated drain layer holds current certification. mark wharfe
3. Workmanship: Is the connection sealed and tested?	PASS	scorkin	12-Apr-2017 4:16	The sewer connection is sealed and watertight. s/s from old cottage to new secondary system is completed and air tested
4. Durability: Do the materials satisfy durability provisions of B2?	PASS	scorkin	12-Apr-2017 4:16	B2 provisions are satisfied.
5. Termination: Where an existing septic tank or drainage connection is to be abandoned, is confirmation provided that that these services will be decommissioned (capped / removed)?	PASS	scorkin	12-Apr-2017 4:16	Confirmation is provided that that the services will be decommissioned. collapsed and filled
Producer Statement Acceptance: Commissioning statement required for a pump system/dripper lines				
Final				
Act Provisions: Are all Building Act legislative requirements satisfied:				

CCC DRAFT

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12 Apr 2017

[redacted]

PO Box 17

Kaiwaka 0542

Dear Sir or Madam,

Reference Number: BC160334

Project Location: 33 Baldrock Road, Kaiwaka

Legal description of land where building is located: lot 2 DP 31705

Project Description: Upgrade existing septic system

IR Number: 1

Inspection Results:

DRAINAGE - 12 Apr 2017 @ 16:00 by Steve Corkin

Inspection Outcome: INCOMPLETE - Some aspects of the building work pertaining to this inspection have yet to be checked and confirmed as complying with the building consent.

Formal Directive: Commissioning statement and as built drawing required

Inspection Summary: new secodary treatment system and s/s drainage to it complies with the consented design ok to cover.

Your next inspection will be: **Final**

Please contact us 48 hours before you require this to book your inspection.

History

Inspection Name	Summary
Drainage	IN-PROGRESS - 12 Apr 2017
Final	-

Yours Sincerely,



Steve Corkin
Senior Building Control Officer
On behalf of: Kaipara District Council

10 July 2017

[redacted]

PO Box 17

Kaiwaka 0542

Dear Sir or Madam,

Reference Number: BC160334

Project Location: 33 Baldrock Road, Kaiwaka

Legal description of land where building is located: lot 2 DP 31705

Project Description: Upgrade existing septic system

IR Number: 2

Inspection Results:

DRAINAGE - 10 Jul 2017 @ 08:00 by Matthew Williams

Inspection Outcome: PASS - The BCA is satisfied, on reasonable grounds, that the aspects of building work pertaining to this inspection demonstrate compliance with the building consent.

FINAL - 10 Jul 2017 @ 08:00 by Matthew Williams

Inspection Outcome: PASS - The BCA is satisfied, on reasonable grounds, that the aspects of building work pertaining to this inspection demonstrate compliance with the building consent.

Site Communication: Septic system installed as per consent. Effluent field is planted.

Inspection Summary: Pass. OK to issue CCC

Your next inspection will be: **No further inspection required**

History

Inspection Name	Summary
Drainage	**PASS** - 10 Jul 2017
Final	**PASS** - 10 Jul 2017

Yours Sincerely,



Matthew Williams

BCO

On behalf of: Kaipara District Council

KAIPARA DISTRICT

Kaipara te Oranganui • Two Oceans Two Harbours

KAIPARA DISTRICT COUNCIL

Application for Code Compliance Certificate (Form 6) Section 92, Building Act 2004

For Official use
Date Received:

Items marked * are mandatory. **Complete this form in BLOCK CAPITALS using BLACK or BLUE ink.**

1. The Building Consent

Building Consent Number*:		Site Address*:	

2. The Project

Description of the building work*:

Floor Area*: m²

Has the intended use of the building changed since the Building Consent was issued/granted? *

○ YES → Provide details of the new use: [*refer NZBC A1 Classified Uses*]

○ NO

3. The Owner [*include preferred form of address, eg, Mr, Miss, Dr, if an individual*]

Owner's Name*:		Contact Person (*if owner is a company*):	
Mailing/ Billing Address*:		Street Address/ Registered Office:	
Phone Number:		Cell Phone:	Fax:
E-mail address:			
Website:			

4. The Agent (Note - Only required if application is being made on behalf of the owner. The Agent, if nominated, will be the first point of contact for communications with the Council/Building Consent Authority regarding this application/building work and will receive all correspondence including all invoices)

Agent's Name:		Contact Person (*if agent is a company*):	
Mailing/ Billing Address:		Street Address/ Registered Office:	
Phone Number:		Cell Phone:	Fax:
E-mail address:			
Website:			

5a. The Application

All building work to be carried out under the above building consent was completed on*:

KAIPARA DISTRICT

5b. The Application (Restricted Building Work) *

The licenced building practitioner(s) who carried out, or supervised, the restricted building work is/are as follows:

Note: Enter the licenced building practitioner (LBP) number or registration number if treated as being licenced under section 291 of Building Act 2004.

Name		**Licence Class**		**LBP number**	
Particular work carried out or supervised:					
Name		**Licence Class**		**LBP number**	
Particular work carried out or supervised:					
Name		**Licence Class**		**LBP number**	
Particular work carried out or supervised:					
Name		**Licence Class**		**LBP number**	
Particular work carried out or supervised:					
Name		**Licence Class**		**LBP number**	
Particular work carried out or supervised:					
Name		**Licence Class**		**LBP number**	
Particular work carried out or supervised:					
Name		**Licence Class**		**LBP number**	
Particular work carried out or supervised:					
Name		**Licence Class**		**LBP number**	
Particular work carried out or supervised:					
Name		**Licence Class**		**LBP number**	
Particular work carried out or supervised:					
Name		**Licence Class**		**LBP number**	
Particular work carried out or supervised:					

5c. The Application (Key Personnel) *

The personnel who carried out the building work other than restricted building work are as follows:

Builder:		Registration Number:	
Mailing Address:			
e-mail:		Phone (day):	
Certifying Plumber:		Registration Number:	
Mailing Address:			
e-mail:		Phone (day):	
Certifying Gasfitter:		Registration Number:	
Mailing Address:			
e-mail:		Phone (day):	
Certifying Drainlayer:		Registration Number:	
Mailing Address:			
e-mail:		Phone (day):	
Registered Electrician:		Registration Number:	
Mailing Address:			
e-mail:		Phone (day):	
Name:		Registration Number:	
Mailing Address:			
e-mail:		Phone (day):	
Name:		Registration Number:	
Mailing Address:			
e-mail:		Phone (day):	

Note: Use additional sheets if required.

Other notes or comments which you as the applicant may wish to add:

5d. The Application (Specified Systems)

Are there any specified systems associated with this project? *

YES NO, there are no specified systems associated with this project.

The following specified systems are contained on the compliance schedule for the building and, in the opinion of the personnel who installed them, are capable of performing to the performance standards set out in the building consent: [*specified systems are defined in regulations*].

SS1 Automatic systems for fire suppression (for example, sprinkler systems)

SS2 Automatic or manual emergency warning systems for fire or other dangers (other than a warning system for fire that is entirely within a household unit & serves only that unit).

SS3 Electromagnetic or automatic doors or windows(for example, ones that close on fire alarm activation)

- **SS3/1** Automatic doors
- **SS3/2** Access Controlled Doors
- **SS3/3** Interfaced fire or smoke doors or windows

SS4 Emergency lighting systems

SS5 Escape route pressurisation systems

SS6 Riser mains for fire service use

SS7 Automatic back-flow preventers connected to a potable water supply

SS8 Lifts, escalators, travelators, or other systems for moving people or goods within buildings

- **SS8/1** Passenger Carrying lifts
- **SS8/2** Service Lifts
- **SS8/3** Escalators and moving walks

SS9 Mechanical ventilation or air conditioning systems

SS10 Building maintenance units for providing access to the exterior and interior walls of buildings

SS11 Laboratory fume cupboards

SS12 Audio loops or other assistive listening systems

SS13 Smoke control systems

- **SS13/1** Mechanical Smoke Control
- **SS13/2** Natural Smoke Control
- **SS13/3** Smoke Curtains

SS14 Emergency power systems for, or signs relating to, a system or feature specified in any of the clauses 1 to 13

- **SS14/1** Emergency Power Systems
- **SS14/2** Signs relating to Specified Systems 1 to 13

SS15 Other Fire Safety Systems or Features

- **SS15/1** Systems for communicating spoken information intended to facilitate evacuation
- **SS15/2** Final exit (as defined by A2 of the Building Code; and
- **SS15/3** Fire separations
- **SS15/4** Signs for communicating information intended to facilitate evacuation;
- **SS15/5** Smoke separations

SS16 Cable Cars

Purpose Group*:		**Fire Hazard Category*:**		**Max Occupant Load*:**	

KAIPARA DISTRICT

5e. The Application (Signatory)

I request that you issue a code compliance certificate for this work under section 95 of the Building Act 2004.

Signed by*:	
FULL NAME*:	
Date*:	
I am the*:	◯ **Owner** ◯ **Agent** on behalf of, and with the authority of, the owner.
Address the code compliance certificate should be sent to:	

6. Attachments

The following documents are attached to this application:

Evidence of ownership* (*Certificate of Title or Sale & Purchase Agreement*)

Certificates that relate to the energy work (*eg Gas & electricity*)

Evidence that the specified systems are capable of performing to the performance standards set out in the building consent

Proof of potability of drinking water from private well, and/or rainwater catchment, supply (refer to New Zealand Drinking Water Standards 2005)

Memoranda (Records of Building Work) from licenced building practitioner(s) stating what restricted building work they carried out or supervised*

Other documents from personnel who carried out the work

For Official use only:

Project Information Memorandum 160334P

Section 34, Building Act 2004

Application

Owner	[redacted]	**Number**	160334P
	PO Box 17	**Issue Date**	21 Jun 2016
	Kaiwaka 0542	**Formally Received Date**	08 Jun 2016

Project

Description	Upgrade existing septic system
Intended Life	50 years
Intended Use	7.0.1 Outbuildings
Estimated Value	$9500
Location	33 Baldrock Road, Kaiwaka
Legal Description	lot 2 DP 31705
Valuation Number	0120003403

Building work can proceed following formal notification of Building Consent Approval being received from the Kaipara District Council Building Consent Authority and approvals being obtained from the agencies identified in this project information memorandum.

This Project Information Memorandum does NOT constitute a Building Consent.

Other Information

Once a Building Consent is issued, the Council will follow up on building work not completed within two years of building consent issue.

A Building Consent lapses and is of no effect if the building work has not been started within 12 months of the date of issue.

If the building is public premises it may not be occupied until either a Code Compliance

Certificate or Certificate for Public Use has been issued.

If the building is wholly or partly a dam, a Project Information Memorandum and Building Consent must be obtained from the regional authority.

The Northland Regional Council has a register of contaminated sites. Please contact them on 0800 002 004 if you suspect that your property may be contaminated e.g. historic timber treatment sites, service stations, landfill sites etcetera.

Please check your Certificate of Title for any encumbrances (such as easements, section 73 notice etcetera) before you make an application for a Building Consent.

All archaeological sites are protected under the provisions of the Historic Places Act 1993. If subsurface archaeological evidence (shell, midden, hangi, storage pits, etc) should be unearthed during construction, work should cease in the immediate vicinity of the remains and the Historic Places Trust should be contacted.

Notes:

1. The information supplied in the sections of this PIM report is specific to the building project to which the application relates by reference to Council files and records. No property inspection, or title search, has been undertaken. To enable the Council to measure the accuracy of this PIM document based on our current records we would appreciate your response should you find any information contained herein which may be considered to be incorrect or omitted. Please telephone the Council (09) 439 3123.

2. The Council has used its best endeavors to ensure that all information provided in this PIM report is correct and complete in all material respects. In the event that a material error or omission can be proven the Council's liability, whether in contract or in tort shall be limited to the fee paid to Council to obtain this report.

3. This information reflects the Kaipara District Council's current understanding of

information which is relevant to the project. This is based only on the information thus far provided to it and held on record. As a result the Council is not in a position to warrant that the information is complete or without error and accepts no liability for any inaccuracy in, or omission from, this information.

4. The information contained in this Project Information Memorandum is current at the date the memorandum is issued. Further relevant information may come into the Council's possession subsequent to the date of issue.

BC 16 1234 - PROCESSING CHECKLIST - MAIN BUILDING - AUDIT	Yes No N/A	Reason for Decision
SEWER CONNECTION		
Act Provisions: Are all Building Act legislative requirements satisfied?	-	
Act Provisions - Prompt List:		
1. s19 - 25: Has the means of compliance been properly completed on the building consent application form?	-	Means of compliance correctly edited on behalf of applicant
2. s26 -28: Does the work exclude use of a building method or product that may result in breach of a ban under BA 26?	-	No known bans on this system
3. s37: Has a Resource Consent Certificate been attached to the PIM? Please select N/A if Resource Consent is not required.	-	This question does not apply to this Project.
4. s67 - 69: Is adequate reasoning for request for waiver / modification provided and have associated legal obligations been satisfied? Please select N/A if Waiver or Modification is not required. See Reference Notes	-	This question does not apply to this Project.
5. s84 - 88: Has all restricted building work been properly identified and have the names of licensed building practitioners been notified to the BCA?	-	This question does not apply to this Project.
6. s[illegible] Please tick.	-	App for CCC
7. s112: If the proposal involves alteration to an existing building, does it demonstrate on reasonable grounds that after alteration the building will:(a) Comply, as nearly as reasonably practicable, with provisions that relate to means of escape from fire, and access & facilities for people with disabilities (if required by Section 118), and(b) Continue to comply with the other provisions of the building code to at least the same extent as before alteration?	-	This question does not apply to this Project.
8. s268 -273: If the proposal includes a product certificate issued by an accredited product certification body under BA sec. 261; then is the certificate current and the proposal within the scope of the product certificate? Please check MOBIE register and record Authorization Number; or select N/A if there no certified building methods or products. See Reference Notes	-	This question does not apply to this Project.
G13 - Foul Water Does the sewer connection proposal demonstrate compliance with Building Code Clauses B2, F5 and G13?	-	
G13 - Foul Water - Prompt List:		
1. G13.3.3 (Sewer Connection) Does the proposal demonstrate that the connection will be made in a manner that avoids damage to the sewer and has the approval of the network utility operator?	-	This question does not apply to this Project.
2. Drain layer Certification Does the nominated drain layer hold current certification?	-	Design stage only; confirm drain layer\'s details on site during future inspection
3. Termination: Where an existing septic tank or drainage connection is to be abandoned, then is confirmation provided that that these services will be decommissioned (capped / removed)?	-	One septic tank is \"to be removed\"; refer Wiley Geotechnical report/design
4. F5: Does the proposal demonstrate compliance with the Objective of F5.1 (safeguard people from injury and other property from damage, caused by construction or demolition site hazards).	-	Rural, low risk site.
Producer Statement Acceptance: Does the statement provide sufficient information and evidence to demonstrate reasonable grounds for its acceptance?	-	
Producer Statement Acceptance - Prompt List:		
1. Scope - Is scope and extent of work accurately and clearly identified?...	-	Scope and extent of work is accurately and clearly identified.
2. ID - Is site address & legal description correctly identified?	-	Site address & legal description is correctly identified
3.Recipient - Is the BCA identified as recipient?	-	BCA is identified as the recipient.
4. Author - Is adequate information provided - (name, qualification, regist...	-	Adequate information is provided. Cameron Shaw is an approved, competent designer who works under supervision from a CPEng.
5. Competence - Is the work within author's scope of approval / competence?...	-	Work is within the author\'s scope of competence.
6. Means of Compliance - Are correct code clauses and means of compliance i... .	-	Correct code clauses and means of compliance are nominated.
7. Durability (B2) - Is confirmation of compliance with durability provisio...	-	Durability provisions are correctly identified. Concrete tanks are reinforced and fit for purpose. Refer \"D10\" design criteria

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BC160334 - PROCESSING CHECKLIST - MAIN BUILDING - AUDIT	Yes No N/A	Reason for Decision
8. References - Are references to plans or consent documents correct? ...	-	BC for upgrade of septic system only. Not associated with any other BC.
9. Accompanying info: Does this demonstrate reasonable grounds for acceptan. ..	-	Accompanying information demonstrates reasonable grounds for acceptance. The proposal will bring the waste water treatment and effluent field up to current specs.
10. Conditions - If conditions apply are these clear and practicable?...	-	This question does not apply to this Project.
11. Site Verification - If on-site verification is required then have inspe...	-	Standard inspection procedure.
Miscellaneous: Please select the cross if you wish to raise an RFI for an item that may not clearly fit into any other category.		

BC DRAFT

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BC 16 1234 - PROCESSING CHECKLIST - MAIN BUILDING - AUDIT	Yes No N/A	Reason for Decision
SEWER CONNECTION		
Act Provisions: Are all Building Act legislative requirements satisfied?	-	
Act Provisions - Prompt List:		
1. s19 - 25: Has the means of compliance been properly completed on the building consent application form?	-	Means of compliance correctly edited on behalf of applicant
2. s26 -28: Does the work exclude use of a building method or product that may result in breach of a ban under BA 26?	-	No known bans on this system
3. s37: Has a Resource Consent Certificate been attached to the PIM? Please select N/A if Resource Consent is not required.	-	This question does not apply to this Project.
4. s67 - 69: Is adequate reasoning for request for waiver / modification provided and have associated legal obligations been satisfied? Please select N/A if Waiver or Modification is not required. See Reference Notes	-	This question does not apply to this Project.
5. s84 - 88: Has all restricted building work been properly identified and have the names of licensed building practitioners been notified to the BCA?	-	This question does not apply to this Project.
6. s[illegible] Please tick.	-	App for CCC
7. s112: If the proposal involves alteration to an existing building, does it demonstrate on reasonable grounds that after alteration the building will:(a) Comply, as nearly as reasonably practicable, with provisions that relate to means of escape from fire, and access & facilities for people with disabilities (if required by Section 118), and(b) Continue to comply with the other provisions of the building code to at least the same extent as before alteration?	-	This question does not apply to this Project.
8. s268 -273: If the proposal includes a product certificate issued by an accredited product certification body under BA sec. 261; then is the certificate current and the proposal within the scope of the product certificate? Please check MOBIE register and record Authorization Number; or select N/A if there no certified building methods or products. See Reference Notes	-	This question does not apply to this Project.
G13 - Foul Water Does the sewer connection proposal demonstrate compliance with Building Code Clauses B2, F5 and G13?	-	
G13 - Foul Water - Prompt List:		
1. G13.3.3 (Sewer Connection) Does the proposal demonstrate that the connection will be made in a manner that avoids damage to the sewer and has the approval of the network utility operator?	-	This question does not apply to this Project.
2. Drain layer Certification Does the nominated drain layer hold current certification?	-	Design stage only; confirm drain layer\'s details on site during future inspection
3. Termination: Where an existing septic tank or drainage connection is to be abandoned, then is confirmation provided that that these services will be decommissioned (capped / removed)?	-	One septic tank is \"to be removed\"; refer Wiley Geotechnical report/design
4. F5: Does the proposal demonstrate compliance with the Objective of F5.1 (safeguard people from injury and other property from damage, caused by construction or demolition site hazards).	-	Rural, low risk site.
Producer Statement Acceptance: Does the statement provide sufficient information and evidence to demonstrate reasonable grounds for its acceptance?	-	
Producer Statement Acceptance - Prompt List:		
1. Scope - Is scope and extent of work accurately and clearly identified?...	-	Scope and extent of work is accurately and clearly identified.
2. ID - Is site address & legal description correctly identified?	-	Site address & legal description is correctly identified
3.Recipient - Is the BCA identified as recipient?	-	BCA is identified as the recipient.
4. Author - Is adequate information provided - (name, qualification, regist...	-	Adequate information is provided. Cameron Shaw is an approved, competent designer who works under supervision from a CPEng.
5. Competence - Is the work within author's scope of approval / competence?...	-	Work is within the author\'s scope of competence.
6. Means of Compliance - Are correct code clauses and means of compliance i... .	-	Correct code clauses and means of compliance are nominated.
7. Durability (B2) - Is confirmation of compliance with durability provisio...	-	Durability provisions are correctly identified. Concrete tanks are reinforced and fit for purpose. Refer \"D10\" design criteria

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BC160334 - PROCESSING CHECKLIST - MAIN BUILDING - AUDIT	Yes No N/A	Reason for Decision
8. References - Are references to plans or consent documents correct? ...	-	BC for upgrade of septic system only. Not associated with any other BC.
9. Accompanying info: Does this demonstrate reasonable grounds for acceptan. ..	-	Accompanying information demonstrates reasonable grounds for acceptance. The proposal will bring the waste water treatment and effluent field up to current specs.
10. Conditions - If conditions apply are these clear and practicable?...	-	This question does not apply to this Project.
11. Site Verification - If on-site verification is required then have inspe...	-	Standard inspection procedure.
Miscellaneous: Please select the cross if you wish to raise an RFI for an item that may not clearly fit into any other category.		

BC DRAFT

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MAIN BUILDING - SEWER CONNECTION - AUDIT	Y/N	User	Date	Notes
SEWER CONNECTION				
Act Provisions: Are all Building Act legislative requirements satisfied?				
Act Provisions - Prompt List:	**Y**	**DH**	**14:13 2016/07/08**	
1. s19 - 25: Has the means of compliance been properly completed on the building consent application form?	Y	dhughes	8-Jul-2016 2:14	Means of compliance correctly edited on behalf of applicant
2. s26 -28: Does the work exclude use of a building method or product that may result in breach of a ban under BA 26?	Y	dhughes	8-Jul-2016 2:14	No known bans on this system
3. s37: Has a Resource Consent Certificate been attached to the PIM? Please select N/A if Resource Consent is not required.	N/A	dhughes	8-Jul-2016 2:14	This question does not apply to this Project.
4. s67 - 69: Is adequate reasoning for request for waiver / modification provided and have associated legal obligations been satisfied? Please select N/A if Waiver or Modification is not required. See Reference Notes	N/A	dhughes	8-Jul-2016 2:14	This question does not apply to this Project.
5. s84 - 88: Has all restricted building work been properly identified and have the names of licensed building practitioners been notified to the BCA?	N/A	dhughes	8-Jul-2016 2:14	This question does not apply to this Project.
6. s92: Please tick.	Y	dhughes	8-Jul-2016 2:14	App for CCC
7. s112: If the proposal involves alteration to an existing building, does it demonstrate on reasonable grounds that after alteration the building will:(a) Comply, as nearly as reasonably practicable, with provisions that relate to means of escape from fire, and access & facilities for people with disabilities (if required by Section 118), and(b) Continue to comply with the other provisions of the building code to at least the same extent as before alteration?	N/A	dhughes	8-Jul-2016 2:14	This question does not apply to this Project.
8. s269 -273: If the proposal includes a product certificate issued by an accredited product certification body under BA sec. 261; then is the certificate current and the proposal within the scope of the product certificate? Please check MOBIE register and record Authorization Number; or select N/A if there no certified building methods or products. See Reference Notes	N/A	dhughes	8-Jul-2016 2:14	This question does not apply to this Project.
G13 - Foul Water: Does the sewer connection proposal demonstrate compliance with Building Code Clauses B2, F5 and G13?				
G13 - Foul Water - Prompt List:	**Y**	**DH**	**14:49 2016/07/08**	
1. G13.3.3 (Sewer Connection) Does the proposal demonstrate that the connection will be made in a manner that avoids damage to the sewer and has the approval of the network utility operator?	N/A	dhughes	8-Jul-2016 2:14	This question does not apply to this Project.
2. Drain layer Certification Does the nominated drain layer hold current certification?	Y	dhughes	8-Jul-2016 2:14	Design stage only; confirm drain layer\'s details on site during future inspection
3. Termination: Where an existing septic tank or drainage connection is to be abandoned, then is confirmation provided that that these services will be decommissioned (capped / removed)?	Y	dhughes	8-Jul-2016 2:14	One septic tank is \"to be removed\"; refer Wiley Geotechnical report/design
4. F5: Does the proposal demonstrate compliance with the Objective of F5.1 (safeguard people from injury, and other property from damage, caused by construction or demolition site hazards).	Y	dhughes	8-Jul-2016 2:14	Rural, low risk site.
Producer Statement Acceptance: Does the statement provide sufficient information and evidence to demonstrate reasonable grounds for its acceptance?				

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MAIN BUILDING - SEWER CONNECTION - AUDIT	Y/N	User	Date	Notes
Producer Statement Acceptance - Prompt List:	**Y**	**DH**	**14:54 2016/07/08**	
1. Scope - Is scope and extent of work accurately and clearly identified?	Y	dhughes	8-Jul-2016 2:14	Scope and extent of work is accurately and clearly identified.
2. ID - Is site address & legal description correctly identified?	Y	dhughes	8-Jul-2016 2:14	Site address & legal description is correctly identified
3. Recipient - Is the BCA identified as recipient?	Y	dhughes	8-Jul-2016 2:14	BCA is identified as the recipient.
4. Author - Is adequate information provided (name, qualification, registration number, professional affiliation, company name)?	Y	dhughes	8-Jul-2016 2:14	Adequate information is provided. Cameron Shaw is an approved, competent designer who works under supervision from a CPEng.
5. Competence - Is the work within author's scope of approval / competence?	Y	dhughes	8-Jul-2016 2:14	Work is within the author\'s scope of competence.
6. Means of Compliance - Are correct code clauses and means of compliance identified?	Y	dhughes	8-Jul-2016 2:14	Correct code clauses and means of compliance are nominated.
7. Durability (B2) - Is confirmation of compliance with durability provisions provided?	Y	dhughes	8-Jul-2016 2:14	Durability provisions are correctly identified. Concrete tanks are reinforced and fit for purpose. Refer \"D10\" design criteria
8. References - Are references to plans or consent documents correct?	Y	dhughes	8-Jul-2016 2:14	BC for upgrade of septic system only. Not associated with any other BC.
9. Accompanying info: Does this demonstrate reasonable grounds for acceptance?	Y	dhughes	8-Jul-2016 2:14	Accompanying information demonstrates reasonable grounds for acceptance. The proposal will bring the waste water treatment and effluent field up to current specs.
10. Conditions - If conditions apply are these clear and practicable?	N/A	dhughes	8-Jul-2016 2:14	This question does not apply to this Project.
11. Site Verification - If on-site verifications required then have inspection/s for this been added?	Y	dhughes	8-Jul-2016 2:14	Standard inspection procedure.
Miscellaneous: Please select this cross if you wish to raise an RFI for an item that may not clearly fit into any other category.	N/A	DH	14:55 2016/07/08	(No Comments)

BC FINAL

Copyright AlphaOne Building Consent System 2017, All Rights Reserved.

BC Number: BC160334

Recipient: [redacted]
Sender: Jamie Nikora
Subject: 160334.1 Request For Further Information - Vetting
Date Sent: 2016-06-09 08:23:42
Message:
Good Morning,

Reference Number: 160334
Project Location: 33 Baldrock Road, Kaiwaka
Project Description: Upgrade existing septic system

Thank you for lodging your building consent application with the Kaipara District Council, the application has been reviewed for completeness, and the attached letter details information which is required to be provided to enable your application to be formally received.

So that your information gets to us as promptly as possible, please:

- ensure you reply directly to this email and the format of our email address must be in full as follows: 160334@kdc.abcs.co.nz

- only provide information specifically relating to this project;
- all attachments must be saved in PDF format;

By doing this you will keep your project moving as the information will be delivered directly to the processor - thank you for helping us to help you!

If you do not receive the automated reply confirmation from Kaipara District Council for the info sent then Kaipara District Council has not received your information.

Regards,

Jamie Nikora
Technical Support
Kaipara District Council
Kaipara District Council, Unit 5 - The Hub, 6 Molesworth Drive, Mangawhai / PO Box 224, Mangawhai 0540
P: (09) 439 3123 | E: buildingsupport@kaipara.govt.nz | W: www.kaipara.govt.nz

BC Number: BC160334

Recipient: [redacted]
Sender: Jamie Nikora
Subject: 160334.1 Request For Further Information - Vetting
Date Sent: 2016-06-09 08:23:42
Message:
Good Morning,

Reference Number: 160334
Project Location: 33 Baldrock Road, Kaiwaka
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P: (09) 439 3123 | E: buildingsupport@kaipara.govt.nz | W: www.kaipara.govt.nz

BC Number: BC160334

Recipient: [redacted]
Sender: Deleted User
Subject: RE: FW: Message from
Date Sent: 2016-06-21 15:15:02
Message:

Thank you for your message. This is an automated response to acknowledge receipt. Your message will be forwarded to the assigned officer for review.

ACCEPTED ATTACHMENTS:

- image001.jpg.pdf (18.96 Kb)
- image002.jpg.pdf (4.84 Kb)
- S16062115440.pdf (270.75 Kb)

Kaipara District Council
160334@kdc.abcs.co.nz
www.kaipara.govt.nz

BC Number: BC160334

Recipient: [redacted]
Sender: Deleted User
Subject: RE: FW: Message from
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Kaipara District Council
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- S16062115440.pdf (270.75 Kb)

Kaipara District Council
160334@kdc.abcs.co.nz
www.kaipara.govt.nz

BC Number: BC160334

Recipient: [redacted]
Sender: Ian McCauley
Subject: BC160334: A new job for you
Date Sent: 2016-06-24 09:30:54
Message:
Hello Derek Free,

BC160334 has been allocated to you. Please check and begin processing.

— AlphaOne System

BC Number: BC160334

Recipient: [redacted]

Sender: Ian McCauley

Subject: BC160334: A new job for you

Date Sent: 2016-06-24 09:30:54

Message:

Hello Derek Free,

BC160334 has been allocated to you. Please check and begin processing.

— AlphaOne System

BC Number: BC160334

Recipient: [redacted]
Sender: Ian McCauley
Subject: BC160334: A new job for you
Date Sent: 2016-06-24 09:30:54
Message:
Hello Derek Free,

BC160334 has been allocated to you. Please check and begin processing.

— AlphaOne System

BC Number: BC160334

Recipient: [redacted]
Sender: David Hughes
Subject: BC160334: A new job for you
Date Sent: 2016-07-08 11:56:00
Message:
Hello David Hughes,

BC160334 has been allocated to you. Please check and begin processing.

— AlphaOne System

BC Number: BC160334

Recipient: [redacted]
Sender: David Hughes
Subject: BC160334: A new job for you
Date Sent: 2016-07-08 11:56:00
Message:
Hello David Hughes,

BC160334 has been allocated to you. Please check and begin processing.

— AlphaOne System

BC Number: BC160334

Recipient: [redacted]
Sender: David Hughes
Subject: BC160334: A new job for you
Date Sent: 2016-07-08 11:56:00
Message:
Hello David Hughes,

BC160334 has been allocated to you. Please check and begin processing.

— AlphaOne System

BC Number: BC160334

Recipient: [redacted]
Sender: David Hughes
Subject: BC160334.1 Form 5: Building Consent
Date Sent: 2016-07-08 14:57:00
Message:
Hello,

Please find attached the copy of your building consent. Your building consent documents will be available when all fees are paid and can be downloaded from our Customer Portal. To access these:

1) enter the following link into your internet web browser: https://consents-kdc.abcs.co.nz/
2) click on BC section of your applications progress bar
3) click on Documents Issued on the blue menu bar (if this doesn't show, click on Application and then the Documents Issued will show)
4) click on building consent documentation, select Save File
5) select where you would like to save this documentation to, and then click on save

You files will be downloaded and available for use.

David Hughes
Senior Building Control Officer
Kaipara District Council
Kaipara District Council, Unit 5 - The Hub, 6 Molesworth Drive, Mangawhai / PO Box 224, Mangawhai 0540
P: (09) 439 3123 | E: buildingsupport@kaipara.govt.nz | W: www.kaipara.govt.nz

BC Number: BC160334

Recipient: [redacted]
Sender: David Hughes
Subject: BC160334.1 Form 5: Building Consent
Date Sent: 2016-07-08 14:57:00
Message:
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5) select where you would like to save this documentation to, and then click on save

You files will be downloaded and available for use.

David Hughes
Senior Building Control Officer
Kaipara District Council
Kaipara District Council, Unit 5 - The Hub, 6 Molesworth Drive, Mangawhai / PO Box 224, Mangawhai 0540
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BC Number: BC160334

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P: (09) 439 3123 | E: buildingsupport@kaipara.govt.nz | W: www.kaipara.govt.nz

BC Number: BC160334

Recipient: [redacted]

Sender: Steve Corkin

Subject: BC160334 Inspection Report

Date Sent: 2017-04-12 16:18:03

Message:

Our inspection team have carried out a site inspection on the above project today, please find attached the inspectors site notice for your information.

If you have any queries regarding the content of the site notice please contact the inspector on phone 0800 727 059.

BC Number: BC160334

Recipient: [redacted]

Sender: Steve Corkin

Subject: BC160334 Inspection Report

Date Sent: 2017-04-12 16:18:03

Message:

Our inspection team have carried out a site inspection on the above project today, please find attached the inspectors site notice for your information.

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BC Number: BC160334

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Message:

Our inspection team have carried out a site inspection on the above project today, please find attached the inspectors site notice for your information.

If you have any queries regarding the content of the site notice please contact the inspector on phone 0800 727 059.

BC Number: BC160334

Recipient: [redacted]

Sender: Matthew Williams

Subject: BC160334 Inspection Report

Date Sent: 2017-07-10 08:29:03

Message:

Our inspection team have carried out a site inspection on the above project today, please find attached the inspectors site notice for your information.

If you have any queries regarding the content of the site notice please contact the inspector on phone 0800 727 059.

BC Number: BC160334

Recipient: [redacted]

Sender: Matthew Williams

Subject: BC160334 Inspection Report

Date Sent: 2017-07-10 08:29:03

Message:

Our inspection team have carried out a site inspection on the above project today, please find attached the inspectors site notice for your information.

If you have any queries regarding the content of the site notice please contact the inspector on phone 0800 727 059.

BC Number: BC160334

Recipient: [redacted]

Sender: Matthew Williams

Subject: BC160334.1 Form 7: Code Compliance Certificate - 33 Baldrock Road Kaiwaka

Date Sent: 2017-07-10 08:29:59

Message:

Hello,

Reference Number: 160334.1

Form 7: Code Compliance Certificate

Matthew Williams
BCO
Kaipara District Council
Kaipara District Council, Unit 6 - The Hub, 6 Molesworth Drive, Mangawhai 0505
P: (09) 439 3123 | E: buildingsupport@kaipara.govt.nz | W: www.kaipara.govt.nz

BC Number: BC160334

Recipient: [redacted]

Sender: Matthew Williams

Subject: BC160334.1 Form 7: Code Compliance Certificate - 33 Baldrock Road Kaiwaka

Date Sent: 2017-07-10 08:29:59

Message:

Hello,

Reference Number: 160334.1

Form 7: Code Compliance Certificate

Matthew Williams
BCO
Kaipara District Council
Kaipara District Council, Unit 6 - The Hub, 6 Molesworth Drive, Mangawhai 0505
P: (09) 439 3123 | E: buildingsupport@kaipara.govt.nz | W: www.kaipara.govt.nz

BC Number: BC160334

Recipient: [redacted]
Sender: Deleted User
Subject: RE: Re: BC160334.1 Form 7: Code Compliance Certificate - 33 Baldrock Road Kaiwaka
Date Sent: 2017-07-11 14:20:02
Message:

Thank you for your message. This is an automated response to acknowledge receipt. Your message will be forwarded to the assigned officer for review.

Kaipara District Council
160334@kdc.abcs.co.nz
www.kaipara.govt.nz

BC Number: BC160334

Recipient: [redacted]
Sender: Deleted User
Subject: RE: Re: BC160334.1 Form 7: Code Compliance Certificate - 33 Baldrock Road Kaiwaka
Date Sent: 2017-07-11 14:20:02
Message:

Thank you for your message. This is an automated response to acknowledge receipt. Your message will be forwarded to the assigned officer for review.

Kaipara District Council
160334@kdc.abcs.co.nz
www.kaipara.govt.nz

BC Number: BC160334

Recipient: [redacted]

Sender: Gavin Spaabaek

Subject: BC160334: A new email has been allocated to you

Date Sent: 2017-07-11 14:40:00

Message:

Hello Matthew Williams,

A new email for BC160334 has been allocated to you. Please check and take appropriate action.

//kdc.abcs.co.nz/jobs/160334/communication/?opt=mailbox

— AlphaOne System

BC Number: BC160334

Recipient: [redacted]

Sender: Gavin Spaabaek

Subject: BC160334: A new email has been allocated to you

Date Sent: 2017-07-11 14:40:00

Message:

Hello Matthew Williams,

A new email for BC160334 has been allocated to you. Please check and take appropriate action.

//kdc.abcs.co.nz/jobs/160334/communication/?opt=mailbox

— AlphaOne System

BC Number: BC160334

Recipient: [redacted]
Sender: Matthew Williams
Subject: BC160334: 33 Baldrock Road Kaiwaka
Date Sent: 2017-07-11 16:01:22
Message:
Hi Elaine

Yes I did thank you.

Cheers

Matthew Williams
BCO
Kaipara District Council
Kaipara District Council, Unit 6 - The Hub, 6 Molesworth Drive, Mangawhai 0505
P: (09) 439 3123 | E: buildingsupport@kaipara.govt.nz | W: www.kaipara.govt.nz

==========

Hi Matt Did you find your"e computer ? Elaine

On 10 July 2017 at 08:29, Kaipara District Council
wrote:

> Hello,
>
>
> Reference Number: 160334.1
>
> Form 7: Code Compliance Certificate
>
>
> Matthew Williams

> BCO

> Kaipara District Council

> Kaipara District Council, Unit 6 - The Hub, 6 Molesworth Drive, Mangawhai

> 0505

> P: (09) 439 3123 | E: buildingsupport@kaipara.govt.nz | W:

> www.kaipara.govt.nz

>

>

BC Number: BC160334

Recipient: [redacted]
Sender: Matthew Williams
Subject: BC160334: 33 Baldrock Road Kaiwaka
Date Sent: 2017-07-11 16:01:22
Message:
Hi Elaine

Yes I did thank you.

Cheers

Matthew Williams
BCO
Kaipara District Council
Kaipara District Council, Unit 6 - The Hub, 6 Molesworth Drive, Mangawhai 0505
P: (09) 439 3123 | E: buildingsupport@kaipara.govt.nz | W: www.kaipara.govt.nz

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> Reference Number: 160334.1
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>
> Matthew Williams

> BCO

> Kaipara District Council

> Kaipara District Council, Unit 6 - The Hub, 6 Molesworth Drive, Mangawhai

> 0505

> P: (09) 439 3123 | E: buildingsupport@kaipara.govt.nz | W:

> www.kaipara.govt.nz

>

>

BC 10034 - VETTING CHECKLIST - AUDIT	Yes No N/A	Reason for Decision
Application Form (Form 2): Has Form 2 been properly completed?	Y	Form 2 is correct.
Deposit / Fee: Has the appropriate deposit / fee been paid?	Y	Deposit fee of $1100 has been received.
Evidence of Ownership: Is a Certificate of Title that is in the owner's name and less than 6 months old provided? If Title is not yet available a subdivision scheme plan is required?	Y	minor works rates verified.
Section 45 - Memorandum from LBP: Section 45 - Certificate of Design Work: Does the proposed building work include Restricted Building Work? If so has a Certificate of Design Work from a LBP been provided; OR where Owner - Builder exemption applies has a Statutory Declaration confirming Owner-Builder Status been provided?	N/A	This application does not include restricted building work.
Site Plan: Do site plans show:	Y	
Site Plan - Prompt List:		
1. Legal & notional boundaries?	Y	received site plan correct
2. New & existing structures?	Y	All structures are identified.
3. Construction barriers?	N/A	This question does not apply to this project.
4. Ground & floor levels?	N/A	This question does not apply to this project.
5. Swimming pools in relation to structures?	N/A	This question does not apply to this project.
6. Vehicle access?	Y	Appropriate information provided.
7. Crossing location/s?	Y	Appropriate information provided.
8. Maneuvering / parking space/s?	N/A	This question does not apply to this project.
9. Hardstand area/s with drainage details?	N/A	This question does not apply to this project.
Drainage Details: Is adequate information provided:	Y	
Drainage Details - Prompt List:		
1. Sewer: Does drainage information include the location of existing and proposed sewer pipework layouts, pipe specifications, pipe sizes, grades and inspection/control details?	N/A	This question does not apply to this application.
2. Effluent Disposal System: Has a specific design been provided?	Y	Specific design for the effluent design has been provided.
3. Storm water: Does drainage information identify the location of existing and proposed soak-holes (and their design), and/or storm-water pipe layouts with pipe specifications, pipe sizes and grades?	N/A	This question does not apply to this application.
4. If soak-holes have been nominated (E1/VM1) then has the percolation test been provided to confirm adequate drainage.	N/A	This question does not apply to this application.
Approvals from Other Authorities: Does this application involve approvals from other Authorities; and if so have these been provided?	N/A	(No Comments)
Engineer Design and Calculations: Have engineer design and calculations been submitted in support of Specific Engineering Design components of work?	Y	SED and Calcs are provided for wastewater system

BC DRAFT

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BC 10034 - VETTING CHECKLIST - AUDIT	Yes No N/A	Reason for Decision
Application Form (Form 2): Has Form 2 been properly completed?	Y	Form 2 is correct.
Deposit / Fee: Has the appropriate deposit / fee been paid?	Y	Deposit fee of $1100 has been received.
Evidence of Ownership: Is a Certificate of Title that is in the owner's name and less than 6 months old provided? If Title is not yet available a subdivision scheme plan is required?	Y	minor works rates verified.
Section 45 - Memorandum from LBP: Section 45 - Certificate of Design Work: Does the proposed building work include Restricted Building Work? If so has a Certificate of Design Work from a LBP been provided; OR where Owner - Builder exemption applies has a Statutory Declaration confirming Owner-Builder Status been provided?	N/A	This application does not include restricted building work.
Site Plan: Do site plans show:	Y	
Site Plan - Prompt List:		
1. Legal & notional boundaries?	Y	received site plan correct
2. New & existing structures?	Y	All structures are identified.
3. Construction barriers?	N/A	This question does not apply to this project.
4. Ground & floor levels?	N/A	This question does not apply to this project.
5. Swimming pools in relation to structures?	N/A	This question does not apply to this project.
6. Vehicle access?	Y	Appropriate information provided.
7. Crossing location/s?	Y	Appropriate information provided.
8. Maneuvering / parking space/s?	N/A	This question does not apply to this project.
9. Hardstand area/s with drainage details?	N/A	This question does not apply to this project.
Drainage Details: Is adequate information provided:	Y	
Drainage Details - Prompt List:		
1. Sewer: Does drainage information include the location of existing and proposed sewer pipework layouts, pipe specifications, pipe sizes, grades and inspection/control details?	N/A	This question does not apply to this application.
2. Effluent Disposal System: Has a specific design been provided?	Y	Specific design for the effluent design has been provided.
3. Storm water: Does drainage information identify the location of existing and proposed soak-holes (and their design), and/or storm-water pipe layouts with pipe specifications, pipe sizes and grades?	N/A	This question does not apply to this application.
4. If soak-holes have been nominated (E1/VM1) then has the percolation test been provided to confirm adequate drainage.	N/A	This question does not apply to this application.
Approvals from Other Authorities: Does this application involve approvals from other Authorities; and if so have these been provided?	N/A	(No Comments)
Engineer Design and Calculations: Have engineer design and calculations been submitted in support of Specific Engineering Design components of work?	Y	SED and Calcs are provided for wastewater system

BC DRAFT

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KAIPARA DISTRICT
Kaipara te Oranganui • Two Oceans Two Harbours

VETTING CHECKLIST - AUDIT	Y/N	User	Date	Notes
Application Form (Form 2): Has Form 2 been properly completed?	Y	JN	08:15 2016/06/09	Form 2 is correct.
Deposit / Fee: Has the appropriate deposit / fee been paid?	Y	JN	08:23 2016/06/09	Deposit fee of $1100 has been received.
Evidence of Ownership: Is a Certificate of Title that is in the owner's name and less than 6 months old provided? If Title is not yet available a subdivision scheme plan is required?	Y	JN	08:17 2016/06/09	minor works rates verified.
Section 45 - Memoranda from LBP: Section 45 - Certificate of Design Work. Does the proposed building work include Restricted Building Work? If so has a Certificate of Design Work from a LBP been provided; OR where Owner - Builder exemption applies has a Statutory Declaration confirming Owner-Builder Status been provided?	N/A	JN	08:17 2016/06/09	This application does not include restricted building work.
Site Plan: Do site plans show:				
Site Plan - Prompt List:	**N**	**JN**	**08:21 2016/06/09**	
1. Legal & notional boundaries?	N	jnikora	9-Jun-2016 8:08	Please provide a site plan to show your boundaries in relation to these systems and disposal fields. The site plan does not need to detail driveways etc just the boundaries in relation to the proposed work.
2. New & existing structures?	Y	jnikora	9-Jun-2016 8:08	All structures are identified.
3. Construction barriers?	N/A	jnikora	9-Jun-2016 8:08	This question does not apply to this project.
4. Ground & floor levels?	N/A	jnikora	9-Jun-2016 8:08	This question does not apply to this project.
5. Swimming pools in relation to structures?	N/A	jnikora	9-Jun-2016 8:08	This question does not apply to this project.
6. Vehicle access?	Y	jnikora	9-Jun-2016 8:08	Appropriate information provided.
7. Crossing location/s?	Y	jnikora	9-Jun-2016 8:08	Appropriate information provided.
8. Maneuvering / parking space/s?	N/A	jnikora	9-Jun-2016 8:08	This question does not apply to this project.
9. Hardstand area/s with drainage details?	N/A	jnikora	9-Jun-2016 8:08	This question does not apply to this project.
Site Plan - Prompt List:	**RFI**	**JN**	**08:23 2016/06/09**	1. Please provide a site plan to show your boundaries in relation to these systems and disposal fields. The site plan does not need to detail driveways etc just the boundaries in relation to the proposed work.
1. Legal & notional boundaries?	N	jnikora	9-Jun-2016 8:08	
2. New & existing structures?	Y	jnikora	9-Jun-2016 8:08	
3. Construction barriers?	N/A	jnikora	9-Jun-2016 8:08	
4. Ground & floor levels?	N/A	jnikora	9-Jun-2016 8:08	
5. Swimming pools in relation to structures?	N/A	jnikora	9-Jun-2016 8:08	
6. Vehicle access?	Y	jnikora	9-Jun-2016 8:08	
7. Crossing location/s?	Y	jnikora	9-Jun-2016 8:08	
8. Maneuvering / parking space/s?	N/A	jnikora	9-Jun-2016 8:08	
9. Hardstand area/s with drainage details?	N/A	jnikora	9-Jun-2016 8:08	
Site Plan - Prompt List:	**Y**	**JN**	**15:11 2016/06/21**	
1. Legal & notional boundaries?	Y	jnikora	21-Jun-2016 3:15	RFI Response:
2. New & existing structures?	Y	jnikora	21-Jun-2016 3:15	RFI Response:
3. Construction barriers?	N/A	jnikora	21-Jun-2016 3:15	RFI Response:
4. Ground & floor levels?	N/A	jnikora	21-Jun-2016 3:15	RFI Response:
5. Swimming pools in relation to structures?	N/A	jnikora	21-Jun-2016 3:15	RFI Response:
6. Vehicle access?	Y	jnikora	21-Jun-2016 3:15	RFI Response:
7. Crossing location/s?	Y	jnikora	21-Jun-2016 3:15	RFI Response:
8. Maneuvering / parking space/s?	N/A	jnikora	21-Jun-2016 3:15	RFI Response:
9. Hardstand area/s with drainage details?	N/A	jnikora	21-Jun-2016 3:15	RFI Response:
Drainage Details: Is adequate information provided:				
Drainage Details - Prompt List:	**Y**	**JN**	**08:21 2016/06/09**	

BC FINAL

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VETTING CHECKLIST - AUDIT	Y/N	User	Date	Notes
1. Sewer: Does drainage information include the location of existing and proposed sewer pipework layouts, pipe specifications, pipe sizes, grades and inspection/outfall details?	N/A	jnikora	9-Jun-2016 8:08	This question does not apply to this application.
2. Effluent Disposal System: Has a specific design been provided?	Y	jnikora	9-Jun-2016 8:08	Specific design for the effluent design has been provided.
3. Storm-water: Does drainage information identify the location of existing and proposed soak-holes (and their design), and/or storm-water pipe layouts with pipe specifications, pipe sizes and grades?	N/A	jnikora	9-Jun-2016 8:08	This question does not apply to this application.
4. If soak-holes have been nominated (E1/VM1) then has the percolation test been provided to confirm adequate drainage.	N/A	jnikora	9-Jun-2016 8:08	This question does not apply to this application.
Approvals from Other Authorities: Does this application involve approvals from other Authorities; and if so have these been provided?	N/A	JN	08:21 2016/06/09	(No Comments)
Engineer Design and Calculations: Have engineer design and calculations been submitted in support of Specific Engineering Design components of work?	Y	JN	08:22 2016/06/09	SED and Calcs are provided for wastewater system

BC FINAL

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RECEIVED: 24 Sep 2009 SCANNED: 24 Sep 2009 BOX: 2 BATCH: 44746 DOC: KDCAAJBK

KAIPARA DISTRICT COUNCIL

PROGRESS CHECK SHEET FOR A BUILDING CONSENT

Valuation Reference :

Name of Applicant :

Address of Property :

Consent Required For :

Consent Issued (number) :

OBJECTION TO RELEASE OF INFORMATION : YES/NO

Sent To Applicant With Building Consent :
PIM
Various Receipts
One Copy of Approved Plan and Specification Submitted With Application

7/12/00 Requested Bottom Plates be bolted into Concrete

012 000 3403 1

ARTEP READY BUILDROCK ROAD

RECEIVED: 24 Sep 2009 SCANNED: 24 Sep 2009 BOX: 2 BATCH: 44746 DOC: KDCAAJBK

KAIPARA DISTRICT COUNCIL
Inspection Checklist

Note: This form is to be kept on site at all times together with the approved plans and specifications.

REQUIRED INSPECTIONS		BUILDING CONSENT NO.				
NOTE:	One days notice is required for all inspections (A day means one Council Working day) inspections relating to this consent are those highlighted in the following list.					
CONTACT: KAIPARA DISTRICT COUNCIL TELEPHONE. Dargaville(09) 439 7059 FAX: (09) 439 6756 Paparoa (09) 431 7019 FAX: (09) 431 7017		APPROVED YES	APPROVED NO	Re-check	Initial	
	Foundations	Excavations level and clean, reinforcement in place, starters tied, with correct clearances prior to placement of concrete.				
	Subfloor	Sub floor bracing and connectors, crawl space, dpc.				
	Floor Slab	Damp proofing and/or reinforcement in place, correct clearances, plumbing & drainage pipes in place and protected, damp proofing continuous to the exterior face of the building				
	Masonry	Inc. bond beams, reinforcement in place, starters tied, bottom of core & ports clean, plumbing & drainage pipes in place.				
	Prelining	At the stage where exterior cladding and joinery is in place, but prior to the erection or fixing of internal linings, includes plumbing in walls under test framing, bracing, moisture content, insulation, fixings for subfloor.				
	Insulation	Skillion roofs, solid construction (where insulation cannot be seen at the prelne stage).				
	Gib Nail	Sheet bracing and insulation, double skin firewalls.				
	Brick Veneer	When the veneer reaches sill height (brick ties, weep holes, clean cavities, steel lintels which support brickwork)				
	Sanitary Drainage	Manholes, benching, test on lines bedding SS connection, septic tank & irrigation installations prior to backfilling.				

As Built Drainage Plan Required? YES ☐ NO ☐

	Stormwater Drainage	All drains, manholes, connection to SW system, soak holes in place but prior to covering up.				
	Disconnect Sanitary Drainage	Demolition work, capping sewer.				
	Disconnect Stormwater	Removal and capping of existing stormwater connection.				
	Disconnect Water	Removal of water meter from Council supply.				
	Special Conditions	Where notice is required for specific items				
	Completion	Weathertightness, flashings, doors, deviation from plans, building, plumbing, drainage, free standing fire unit completion of all work authorised by this consent required prior to the issue of the Code Compliance Certificate				

NOTE: DEPENDING ON THE FORM OF CONSTRUCTION SOME OF THESE INSPECTIONS COULD BE INCORPORATED INTO ONE INSPECTION.

RECEIVED: 24 Sep 2009 SCANNED: 24 Sep 2009 BOX: 2 BATCH: 44746 DOC: KDCAAJBK

BC001391

Dargaville Office
Private Bag 1001
DARGAVILLE
Phone 09 439 7059
Fax 09 439 6756

KAIPARA DISTRICT COUNCIL

APPLICATION FOR A BUILDING CONSENT

Kaiwaka Office
State Highway 1
KAIWAKA
Phone 09 431 2013
Fax 09 431 2023

Section 33, Building Act 1991
(Attach all relevant documents in duplicate)

RECEIVED
22 JUN 2000
Kaipara District Council

PART A : GENERAL
(Complete Part A in all cases)

OWNER

Name: A A & E P REDDY

Postal Address: P O BOX 17
KAIWAKA

Phone Number: 09 431 2211

Fax Number: 09 431 2242

PROJECT LOCATION

Address: BALD ROCK ROAD

LEGAL DESCRIPTION

Valuation Number: 012 000 34 03

Lot(s) _____ DP(s) 31705

Section _____ Block _____

Survey District _____

Area of Site _____ hectares / square metres

Nature of soil (rock, clay, sand, loam etc) _____

Floor area (proposed work - square metres)

	Basement	Ground Floor	Other Floors	Total
Main Building				
Accessory Buildings				

ESTIMATED VALUE OF WORK
(including GST)

Main buildings	$
Accessory buildings	$
Plumbing & Drainage	$
Total Value of Work	$ 15,000

☐ Application for Building Consent only, in accordance with Project Information Memorandum No: ____

☐ Application for Building Consent and Project Information Memorandum

Name: _____

Postal Address: _____

Phone Number: _____

Fax Number: _____

DESCRIPTION OF WORK & INTENDED USE

Barn and Tractor Shed.

NATURE OF CONSENT

☑ New building - exclude domestic garages & domestic outbuildings

☐ Foundations only

☐ Alterations, repairs, extensions, conversions, resiting, installation of heating appliances

☐ Domestic garages & domestic outbuildings

Intended Life:
Indefinite, but not less than ☑ 50 yrs OR
Specified as ____ yrs

Demolition ☐

Being stage 1 of an intended 1 stages

OFFICE USE ONLY
Property ID:

FEES PAID ON APPLICATION
(including GST)

P I M	$ 50.00 c
Building Consent	255.00
BRANZ Levy	
B I A Levy	
TOTAL	305.00

Receipt No: 342946

Date: 23.6.00.

Signed for and on behalf

Signature: _____

Name: ADRIAN ANDREW REDDY Date: 21/6/00
Please print

Note: **Information and forms for vehicle crossings & services eg water connection, sewerage & stormwater connections area available from the front counter at the Dargaville and Kaiwaka offices.**

RECEIVED: 24 Sep 2009 SCANNED: 24 Sep 2009 BOX: 2 BATCH: 44746 DOC: KDCAAJBK

PART B : PROJECT DETAILS

(Complete Part B only if you have not applied separately for a Project Information Memorandum)

The project involves the following matters (Tick each applicable box, if any, and attach relevant information in duplicate)

- ☐ Location, in relation to legal boundaries, and external dimensions of new, relocated, or altered buildings
  (Site Plan with elevations, topography, drawn to scale)
- ☐ Details of any known or potential erosion, avulsion, falling debris, filled ground, subsidence, slippage, alluvion, inundation, hazardous contaminants on or near the site
- ☐ Provisions to be made for vehicular access, including parking (to be shown on site plan)
- ☐ Provisions to be made in building over or adjacent to any road or public place
- ☐ New provisions to be made for disposing of stormwater and wastewater (to be shown on site plan)
- ☐ Precautions to be taken where building work is to take place over existing drains or sewers or in close proximity to wells or watermains
- ☐ New connections to public utilities ie water supply, stormwater system, wastewater system (Note: Council has no agreement with network utility operations to act as their agent)
- ☐ Provisions to be made in any demolition work for the protection of the public, suppression or dust, disposal of debris, disconnection from public utilities, and suppression of noise
- ☐ Details of any cultural heritage significance of the building site, including whether it is on a marae, or waahi tapu
- ☐ Copy or reference to, of any resource consent or planning approval for this project
- ☐ Details of volume. Proposed excavations : Include volumes for site preparation, basement and driveway

(Complete Part C in all cases)

PART C : BUILDING DETAILS

This application is accompanied by (Tick each applicable box, attach relevant documents in duplicate)

- ☐ The drawings, specifications and other documents according to which the building is proposed to be constructed to comply with the provisions of the New Zealand Building Code, with supporting documents, if any, including -
- ☐ Building Certificates
- ☐ Producer Statements
- ☐ References to accreditation certificates issued by the Building Industry Authority
- ☐ References to determinations issued by the Building Industry Authority
- ☐ Proposed procedures, if any, for inspection during construction

RECEIVED: 24 Sep 2009 SCANNED: 24 Sep 2009 BOX: 2 BATCH: 44746 DOC: KDCAAJBK

PART D : KEY PERSONNEL

(Complete Part D As far as possible in all cases. Give names, addresses and telephone numbers. Give relevant registration numbers if known)

DESIGNER(S)

Name _____

Address _____

Phone Number _____ Fax Number _____

BUILDER

Name Myles Reilly

Address _____

Phone Number [redacted] Fax Number _____

DRAINLAYER

Name _____

Address _____

Phone Number _____ Fax Number _____

PLUMBER

Name _____

Address _____

Phone Number _____ Fax Number _____

CERTIFIERS

Name _____ Reg No _____

Address _____

Phone Number _____ Fax Number _____

Certifying _____

Name _____ Reg No _____

Address _____

Phone Number _____ Fax Number _____

Certifying _____

RELEASE OF INFORMATION

Council provides building consent information to a number of organisations. Included in this is the names of applicants and the location of the projects. Much of this information has to be supplied in terms of the Local Government Information Act, however we can withhold personal identification if you wish. Please indicate below if you object to release of identifying information.

I WISH TO OBJECT TO THE ISSUE OF IDENTIFYING INFORMATION ON MY PROJECT ☑

RECEIVED: 24 Sep 2009 SCANNED: 24 Sep 2009 BOX: 2 BATCH: 44746 DOC: KDCAAJBK

PART E : COMPLIANCE SCHEDULE DETAILS

E1 : SYSTEMS NECESSITATING A COMPLIANCE SCHEDULE

(Complete Part E1 for all new buildings and alterations, except single residential dwellings)

The building will contain the following (Tick ☐ each applicable box and attach proposed inspection, maintenance and reporting procedures.

- ☐ Automatic Sprinkler systems or other systems of automatic fire protection
- ☐ Automatic doors which form part of any fire wall and which are designed to close shut and remain shut on an alarm of fire
- ☐ Emergency warning systems for fire and other dangers
- ☐ Emergency lighting systems
- ☐ Escape route pressurisation systems. Riser
- ☐ Mains for fire service use
- ☐ Any automatic back-flow preventer connected to a potable water supply
- ☐ Lifts, escalators, or travelators or other similar systems
- ☐ Mechanical ventilation or air conditioning system serving all or a major part of the building
- ☐ Any other mechanical, electrical, hydraulic or electronic system whose proper operation is necessary for compliance with the building code
- ☐ Building maintenance units for providing access to the exterior and interior walls of buildings
- ☐ Such signs as are required by the building code in respect of the above-mentioned systems
- ☐ None of the above

E2 : OTHER SYSTEMS AND FEATURES TO BE INCLUDED IN THE COMPLIANCE SCHEDULE

(Complete Part E2 only if the building contains one or more of the systems listed in Part E1)

The building will contain the following (Tick ☐ each applicable box and attach proposed inspection, maintenance and reporting procedures)

- ☐ Means of escape from fire
- ☐ Safety barriers
- ☐ Means of access and facilities for use by persons with disabilities which meet the requirements of Section 25 of the Disabled Persons Community Welfare Act 1975.
- ☐ Hand-held hoses for fire fighting
- ☐ Such signs as are required by the building code or Section 25 of the Disabled Persons Community Welfare Act 1975

RECEIVED: 24 Sep 2009 SCANNED: 24 Sep 2009 BOX: 2 BATCH: 44746 DOC: KDCAAJBK

27 June 2000

A A Reddy
P O Box 17
Kaiwaka

Dear Mr Reddy

Building Consent Application Received 22 June 2000

Your application received for the construction of a barn and tractor shed does not show sufficient detail for consent purposes. For an industrial building of the height you have constructed, this building requires specific design. Please refer your sketches to a registered engineer for proper plans and calculations.

No further work is to be carried out until a Building Consent has been issued.

A copy of the penalties prescribed under the Building Act 1991 is attached for building without first obtaining a building consent.

Your immediate attention to this matter would be appreciated.

Yours faithfully

I W Whitcher
Kaipara District Council

Encl.

IWW/jac

3101,102/34/3
Reddy 2706.doc

RECEIVED: 24 Sep 2009 SCANNED: 24 Sep 2009 BOX: 2 BATCH: 44746 DOC: KDCAAJBK

KAIPARA DISTRICT COUNCIL

ATTACHMENT TO P.I.M. No 001391

INSPECTORATE

(A) **Wind Zone rating for site**

Low
Medium
High √
Very High

(B) **Durability : Classification of Exposure Zones**

Sea Spray Zone
Zone 1
Zone 2 √

(C) **Provisions being made with regard to building over or adjacent to a road or public place are acceptable**

Hoardings)
Gantries) NA
Temporary Support)

(D) **Provisions made for demolition are adequate**

Removal of materials from site) NA
Dust Extraction)

(E) **The site is known to be affected by hazardous contaminants which may impact on the proposed project**

Chemical Contamination)
Underground Tanks) None Known
Asbestos)

(E) **Licenses required to operate, subject to Building Consent being granted**

Health Licences)NO
Dangerous Goods Licence)

PLANNING

(A) **Proposed Project complies with District Plan Zoning**

Yes √
No

(B) **The bulk and location of the proposed project complies with the restrictions of the District Plan**

Yes √
No

(C) **Special planning restrictions known to affect the site which impact on the proposed project**

Protected Tree Restrictions)
Historic Site Restrictions) NIL

(D) **Proposed Vehicle access acceptable**

Gradient)
Width) EXISTING
Length)

(E) **Resource Consent Required -** NO

Nature of required consent

NOTE: The Northland Regional Council General Authorisation requires that there be a two metre separation between the lowest point of a septic tank effluent field and the highest ground water level. As this can only be determined by an examination of your site it is recommended that you seek professional advice on this point. if you cannot obtain the required separation it will be necessary to apply to the Northland Regional council for a resource consent to discharge effluent.

ENGINEERING

(A) **The site is known to have soil conditions which will have impact on the proposed project**

Fill)
Erosion)
Slippage) NONE KNOWN
Poor Bearing Capacity)

(B) **Site is known to be prone to flooding or lies within an overland flow path**

NO

(C) **Proposed methods for building over or near service pipes acceptable?** NA

(D) **Proposed connection to services acceptable**

Stormwater Disposal TO EXISTING
Water Connection NA
Foulwater Disposal NA

(E) **Proposed location of vehicle access acceptable**

Location)
Traffic Implications) EXISTING

(F) **Restrictions which may be imposed owing to potential impact on traffic**

Signs NA

RECEIVED: 24 Sep 2009 SCANNED: 24 Sep 2009 BOX: 2 BATCH: 44746 DOC: KDCAAJBK

Building Consent

Section 35, Building Act 1991

Application

[redacted]	No.	001391
P O BOX 17	Issue date	26/07/00
KAIWAKA	Application date	22/06/00

Project

Description	New Construction
	Being Stage 1 of an intended 1 Stages
	BARN AND TRACTOR SHED
Intended Life	Indefinite, but not less than 50 years
Intended Use	FARM USE
Estimated Value	$15,000
Location	BALDROCK RD, KAIWAKA
Legal Description	PT LOT 2 DP 31705 BLK XIV WAIPU SD
Valuation No.	0120003403

Charges

The Council's charges paid on uplifting this Building Consent, in accordance with the attached details are:

	$	305.00
Building Research Levy	$	0.00
Building Industry Authority Levy	$	0.00
Total	$	305.00

This building consent is a consent under the Building Act 1991 to undertake building work in accordance with the attached plans and specifications so as to comply with the provisions of the building code. It is not a consent under the Resource Management Act and does not affect any duty or responsibility under any other Act nor permit any breach of any other Act.

This building consent is issued subject to the conditions specified in the attached page(s) headed Conditions of Building Consent 001391.

Signed for and on behalf of the Council:

Name: [signature] **Date:** 28-7-00

RECEIVED: 24 Sep 2009 SCANNED: 24 Sep 2009 BOX: 2 BATCH: 44746 DOC: KDCAAJBK

2 Conditions of Building Consent 001391

1. This consent will lapse if building work has not commenced within 6 months from the date of issue or if reasonable progress has not been made within 12 months after work has commenced. The consent may be extended for a further period at the discretion of Council.
2. No deviation or alteration from the original plans and specifications can be carried out without written approval of Council and no building may be converted to any other use other than that stated on the building consent.
3. IMPORTANT: YOU ARE FULLY RESPONSIBLE FOR ANY DAMAGE DONE TO ANY WORKS SUCH AS TELEPHONE CABLES, POWER CABLES, WATER MAINS, GAS MAINS, SEWERS, PIPES, FOOTPATHS, ROADS OR OTHER SERVICES.
4. As the property owner is responsible for the correct siting of all works in accordance with the NZ Building Code and the Resource Management Act, the owner must ascertain the true position of survey pegs before work commences.
5. Restrictions on the Erection of Buildings near Overhead Electric Lines:- Under the Electrical Supply Regulations 1976, it is an offence to erect any building or structure etc, within certain prescribed distances of an overhead electric line.
6. To enquire about these restrictions, contact the nearest office of the NZ Electricity Department or your local Power Supply Authority.
7. NOTICE THAT BUILDING WORK IS READY FOR INSPECTION. For the purposes of Section 76 of the Building Act, and unless otherwise provided by the building consent, the owner or other person undertaking any building work shall give:
8. a) at least 2 working days notice of the intended commencement of construction.
9. b) at least 1 working days notice of the covering up of any
10. i) drainage or plumbing
11. ii) excavation for a foundation
12. iii) reinforcing steel for a foundation
13. iv) timber required to have a specific moisture content
14. v) other work required to give notice as a condition
15. Council MUST be notified at the completion of building work on the attached form.

RECEIVED: 24 Sep 2009 SCANNED: 24 Sep 2009 BOX: 2 BATCH: 44746 DOC: KDCAAJBK

Project Information Memorandum

Section 31, Building Act 1991

Application

[redacted]	No.	001391
P O BOX 17	Issue date	26/07/00 00
KAIWAKA	Application date	22/06/00

Project

Description	New Construction
	Being Stage 1 of an intended 1 Stages
	BARN AND TRACTOR SHED
Intended Life	Indefinite, but not less than 50 years
Intended Use	FARM USE
Estimated Value	$15,000
Location	BALDROCK RD, KAIWAKA
Legal Description	PT LOT 2 DP 31705 BLK XIV WAIPU SD
Valuation No.	0120003403

This project information memorandum is confirmation that the proposed building work may be undertaken, subject to the provisions of the Building Act 1991, and any requirements of the building consent.

This project information memorandum includes:

___ Information identifying relevant special features of the land concerned

Signed for and on behalf of the Council:

Name: [signature] **Date:** 28-7-00

RECEIVED: 24 Sep 2009 SCANNED: 24 Sep 2009 BOX: 2 BATCH: 44746 DOC: KDCAAJBK

PRODUCER STATEMENT - CONSTRUCTION

ISSUED BY [redacted]

TO [redacted]
(Employer/Principal)

IN RESPECT OF Barn + Tractor Shed
(Description of Building Works)

to be completed under Building Consent Number .....

AT Baldrock Rd

Kaiwaka
(Address)

[redacted] has contracted to .... [redacted]
(Employer/Principal)

to carry out and complete certain building works in accordance with a contract titled .....

..... ("the contract").
(Contract Title)

I [redacted] a duly authorised representative of [redacted]
believe or
(Duly Authorised Agent) *(Contractor)*

have reasonable grounds that [redacted] has carried out and completed:
(Contractor)

☑ All ☐ Part only as specified in the attached particulars

of the building works in accordance with the plans, specifications and instructions of the Employer/Principal in accordance with the contract.

[redacted] Date 20/7/09
(Signature of Authorised Agent on behalf of)

.....
(Contractor)

Baldrock Rd Kaiwaka.
(Address)

This Producer Statement has been prepared by a combined task committee consisting of members of the New Zealand Institute of Architects, Institution of Professional Engineers New Zealand, Association of Consulting Engineers New Zealand, Building Officials Institute of New Zealand, New Zealand Master Builders Federation and New Zealand Contractors Federation.

RECEIVED: 24 Sep 2009 SCANNED: 24 Sep 2009 BOX: 2 BATCH: 44746 DOC: KDCAAJBK

KAIPARA DISTRICT
Kaipara te Oranganui · Two Oceans Two Harbours

P O Box 26, Kaiwaka, Northland
Free Phone: 0800 100 388
Phone: (09) 431 2013
Fax: (09) 431 2023
www.kaipara.govt.nz

FIELD ADVICE NOTICE - 3 Pg 1

BC # 001391 **Date:** 12-8-09

06176

Applicant: Redely

Contractor:

Site Address: 8M1 Kaiwaka **Inspection** Final **Passed / Failed**

Reinspection Required: Yes / No

VAL # **Recommended to issue CCC:** (Yes) / No

Travelling Time: **Inspection Time:** Please issue CCC

Officer: Des Skelton *Signature:*

21	FINAL INSPECTION	OK	Not	N/A	Reason for the decision / Comments ..... If further inspection needed please indicate
1	Peer Review required (over 5 yrs)			✓	Merger works only
2	Owners Application for CCC / Contractors List	✓			
3	Consent Documents on Site	✓			Taken to site
4	Photos Taken			✓	
20	**FINAL FIREPLACES INSPECTION**	**OK**	**Not**	**N/A**	
1	Smoke Alarms with Hush			✓	
2	Hearth size and & secured			✓	
3	Fire Place Clearances			✓	
4	Fire Place secured			✓	
5	Flue Shield			✓	
6	Flashings / Flue Height			✓	
7	Wet back circulators correct size and fall			✓	
PLUMBING		**OK**	**Not**	**N/A**	
1	Waste pipe correct support & gradient			✓	
2	Water filtration system installed			✓	
3	Hot water pipe lagged			✓	
4	1 metre minimum of copper outlet of HWC			✓	
5	Hot water cylinder seismic restraint			✓	
6	Hot water tempering value set at 45/55 degrees			✓	
7	Hot water energy cut out switch to all valve vented systems			✓	
8	Hot water drain OK (falls to outside of building)			✓	
9	Filter, non return, stop, cold water expansion, pressure reducing & pressure relief valves			✓	Block only
10	Notches & holes in joists & bearers			✓	
11	Waste pipes sizing / fall / support to gully trap			✓	
12	Soil pipe sizing / fall / support			✓	
13	Adequate support to water pipes			✓	
14	Water supply tank / bore / supply			✓	
15	Back flow prevention where required			✓	
16	Other			✓	
FINAL INTERNAL INSPECTION		**OK**	**Not**	**N/A**	
1	Smoke alarms with hush			✓	
2	Sink insert secured correctly			✓	
3	Service rooms inpervious walls			✓	
4	Service rooms impervious floors			✓	
5	Producer statement membrane in wet areas			✓	
6	Ceiling insulation (clear of downlights)			✓	
7	Safety glass where required			✓	
8	Ventilation			✓	
9	Stairs gap / tread / rise / handrails			✓	
10	Barrier Height 1.0m / 1.1m / Stairs 900mm			✓	
11	Safety from falling eg. 100mm balustrade gaps			✓	
12	Access for disabled *(commercial only)*			✓	
13	Facilities for disabled *(commercial only)*			✓	
14	All surfaces completed			✓	

An Inspection of the above mentioned premises has been undertaken and the matters as listed must be completed within ..... Days or otherwise stated

Action to be taken:
Issued by:
Designation: Building Officer
Next Inspection:

This notice Received By:
Owner / Agent / Contractor

RECEIVED: 24 Sep 2009 SCANNED: 24 Sep 2009 BOX: 2 BATCH: 44746 DOC: KDCAAJBK

KAIPARA DISTRICT
Kaipara te Oranganui - Two Oceans Two Harbours

P O Box 26, Kaiwaka, Northland
Free Phone: 0800 100 388
Phone: (09) 431 2013
Fax: (09) 431 2023
www.kaipara.govt.nz

FIELD ADVICE NOTICE - 3 Pg 2

001391 Reddy 06176

	FINAL EXTERIOR INSPECTION	OK	Not	N/A	Reason for the decision / Comments ..... If further inspection needed please indicate
1	Conditions on Resource / Building consent	✓			
1a	Landscaping Complete	✓			
2	Joints in bearers supported			✓	
3	Ground clearance to u/side of floor			✓	
4	Subfloor ventilation			✓	
5	Subfloor bracing			✓	
6	U/floor insulation			✓	
7	Finished ground level	✓			
8	Cladding (joints, corner, scribers window flashing etc)	✓			
9	Cladding - painted / penetrations sealed			✓	
10	Brick veneer weep holes cleared			✓	
11	Roof & post fixings	✓			
12	Roof, ridging and flashings fixed correctly	✓			
13	Roof penetrations flashed correctly			✓	
14	Spouting fixed correctly	✓			Concrete yard
15	Down pipe clips at 1.2	✓			sheet only.
16	Vent pipe clips at 1.2			✓	
17	Vent Discharge / Vermin cage			✓	
18	Stairs gap / tread / rise / handrails			✓	
19	Barriers 1.0m / 1.1m / stairs 900mm			✓	
20	Safe from falling ballustrades			✓	
21	RAMPS grade / slip resistance			✓	
22	Safety Glass (Glass Visible - commercial)			✓	
	DRAINAGE	**OK**	**Not**	**N/A**	
1	As built drainage plan s/water and sewer			✓	
2	Gully dish 25mm above sealed surface "A"			✓	
3	Gully dish 75mm above unsealed surface "B"			✓	
4	Relief gully installed			✓	
5	Foulwater drain finished			✓	
6	Ventilation to drains, e.g. TV & or valves			✓	
7	Stormwater drain finished	✓			
8	Retaining wall drainage connected into stormwater drain			✓	
9	Overflow to water tank			✓	
10	Access for septic tank maintenance			✓	
11	Commissioning statements			✓	
12	Effluent Completed Barking / Planting			✓	
	PRODUCER STATEMENTS	**OK**	**Not**	**N/A**	
1	Engineer / Licenced Building Practioneer			✓	
2	Membranes / Roof			✓	
	FINAL POOL INSPECTION	**OK**	**Not**	**N/A**	
1	Pool fencing compliance (sheet completed)			✓	
2	Back flow prevention where required			✓	
	ENERGY CERTIFICATES	**OK**	**Not**	**N/A**	
1	Electrical			✓	
2	Gas			✓	
	ROAD DAMAGE	**OK**	**Not**	**N/A**	
1	Footpath & kerb damage			✓	
2	Crossing installed			✓	
	COMMERCIAL	**OK**	**Not**	**N/A**	
1	Compliance Schedule			✓	Concrete yard only
2	Fire Design Compliance			✓	
3	FPIS report			✓	
4	Certificate of Public Use			✓	
5	Fire Service - Evacuation Scheme			✓	
6	Fire Service - Conditions meet			✓	
7	Producer Statements - Fire Alarm, Ventilation etc			✓	

An Inspection of the above mentioned premises has been undertaken and the matters as listed must be completed within ..... Days or otherwise stated

Action to be taken:
Issued by:
Designation: Building Officer
Next Inspection:

This notice Received By:
Owner / Agent / Contractor

RECEIVED: 24 Sep 2009 SCANNED: 24 Sep 2009 BOX: 2 BATCH: 44746 DOC: KDCAAJBK

KAIPARA DISTRICT COUNCIL

Building Consent Enquiry

Prev Change, Inspection Load, Create Invoice, Print Forms, Print Letters, Search, Resource Consent Search (Change Log) Next

PIM/Consent No. 001391

The Building

Valuation No	0120003403
	General Property Enquiry
Street Address	BALDROCK RD, KAIWAKA
Legal Description	PT LOT 2 DP 31705 BLK XIV WAIPU SD
Floor (m2)	0
Owner	[redacted]
Current Status	CCC Application Received 12/08/09 taken to final inspection
CCC Process Days To Date	1
Overseer	Ian Whitcher
Zone	Rural Zone

Please issue CCC with notation added

thanks

The Applicant

Name	[redacted]
Mailing Address	P O BOX 17 KAIWAKA
Daytime Phone	094312211
After Hours Phone	094312242
Debtor	BC001391 Edit Debtor
Balance	$ 0.00

Building Work

Type of Work	BARN AND TRACTOR SHED
Intended use	FARM USE
Intended life / Durability	INDEFINITE
Being stage	1 OF 1
Stats code	1499 NEW FARM BUILDINGS - OTHER
Estimated value	$15,000
Resource Consent?	
Dev Contrib Notice?	

Building Consent	$255.00
PIM Fee	$50.00
Total Charges	$305.00

Status history

Deadline	8/08/00	
Formally Received	22/06/00	
Further Information Requested	22/06/00	
Information Received	26/07/00	
PIM Issued	26/07/00	CONFIRMATION

RECEIVED: 24 Sep 2009 SCANNED: 24 Sep 2009 BOX: 2 BATCH: 44746 DOC: KDCAAJBK

Consent Granted	26/07/00	
CCC Application Received	12/08/09	taken to final inspection

Builder	MYLES REDDY
Phone	4312066
	KAIWAKA

Forms that should have been saved

Consent

PIM

Forms and Letters Actually Saved None Found

Notes

None found

Diary Reminders

None found

Standard and Non-Standard Conditions

This building consent will lapse and be of no effect if the building work to which it relates does not commence within 12 months after the date of issue. The consent may be extended for any further period at the discretion of council.

No deviation or alteration from the original plans and specifications can be carried out without written approval of Council and no building may be converted to any other use other than that stated on the building consent.

IMPORTANT: YOU ARE FULLY RESPONSIBLE FOR ANY DAMAGE DONE TO ANY WORKS SUCH AS TELEPHONE CABLES, POWER CABLES, WATER MAINS, GAS MAINS, SEWERS, PIPES, FOOTPATHS, ROADS OR OTHER SERVICES.

As the property owner is responsible for the correct siting of all works in accordance with the NZ Building Code and the Resource Management Act, the owner must ascertain the true position of survey pegs before work commences.

Restrictions on the Erection of Buildings near Overhead Electric Lines:- Under the Electrical Supply Regulations 1976, it is an offence to erect any building or structure etc, within certain prescribed distances of an overhead electric line.

To enquire about these restrictions, contact the nearest office of the NZ Electricity Department or your local Power Supply Authority.

NOTICE THAT BUILDING WORK IS READY FOR INSPECTION. For the purposes of Section 222 of the Building Act 2004, and unless otherwise provided by the building consent, the owner or other person undertaking any building work shall give:

a) at least 2 working days notice of the intended commencement of construction.

b) at least 1 working days notice of the covering up of any

i) drainage or plumbing

ii) excavation for a foundation

iii) reinforcing steel for a foundation

iv) timber required to have a specific moisture content

v) other work required to give notice as a condition

Council MUST be notified at the completion of building work on the attached form.

Standard and Non-Standard Addenda

RECEIVED: 24 Sep 2009 SCANNED: 24 Sep 2009 BOX: 2 BATCH: 44746 DOC: KDCAAJBK

Standard and Non-Standard PIM Notes

None found

Inspections

Type	**B02 B02 Foundations - Slab or wall concrete strip foundations**
Inspected	7/12/00
Officer	Des Sheldon
Result	OKAY
	Update from paper file...There has clearly been footings and concrete block inspections undertaken here...These were by Ian Witcher and were obviously passed as ok.....On the above date he has noted a request to have the "bottom plates bolted down into concrete". It is therefore concluded that at that point the building framework was already up.
Type	**B21 B21 Final - Building Code Compliance Certificate**
Inspected	12/08/09
Officer	Des Sheldon
Result	OKAY
	Field sheets 06176.....Final on this tractor shed....All final items are complete.....Please now issue a CCC with notation attached as to its age.

Print Summary

Standard and Non-Standard CCC Conditions

None found

Work to be Stopped and Notice to Fix Conditions None found

RM Certificate None found

Letter 1 and Letter 2 Paragraphs None found

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Author: Greg M Lee

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KAIPARA DISTRICT

Kaipara te Oranganui • Two Oceans Two Harbours

Code Compliance Certificate Checklist

KAIPARA DISTRICT COUNCIL

Code Compliance Certificate Checklist

Address of Property	SH 1 Kaiwaka		
Consent Number	001391	**Date**	13-8-09
Staff Responsible	Les Skelsey	**Building Category**	1.1

Note: In some cases some of the following items may not need to be checked

Number	Issue	Yes	No	N/A	Comment *1-7 (CSO Build)
1 *	Change of owner or address	Yes	(No)	N/A	
2 *	Request for CCC within 2 year time-frame	Yes	(No)	N/A	
3 *	All inspections completed	(Yes)	No	N/A	
4 *	Development contributions paid	Yes	No	(N/A)	
5 *	Energy works certificate provided	Yes	No	(N/A)	none installed
6 *	Inspection fees paid	(Yes)	No	N/A	
7 *	All building consent conditions fulfilled	(Yes)	No	N/A	
8 *	Ensure that conditions of geotechnical reports, engineers reports of producer statements are complied with	Yes	No	(N/A)	
9 *	Work complies with approved building consent documentation	(Yes)	No	N/A	
10 *	Specified systems/performance standards	Yes	No	(N/A)	
11 *	Final sheet check items	(Yes)	No	N/A	
12 *	LBP advised that building work does not comply	Yes	No	(N/A)	
13 *	Survey certificates – siting, height in relation to boundary, maximum height of building or minimum floor level	Yes	No	(N/A)	
14 *	List of consultants	Yes	No	(N/A)	
15 *	Amendments, and associated documentation properly completed	Yes	No	(N/A)	
16 *	Document applies to **building work** for which a building consent has been issued **before the date** on which the compliance document came into force	Yes	No	(N/A)	

RECEIVED: 24 Sep 2009 SCANNED: 24 Sep 2009 BOX: 2 BATCH: 44746 DOC: KDCAAJBK

KAIPARA DISTRICT

17 *	Reference (if applicable) to acceptable solutions of verification methods	Yes	No	N/A	
18 *	Documentation **Incomplete**, suspend the time clock. Obtain necessary information. Enter note into NCS.	Yes	No	N/A	
19 *	If time clock stopped owner notified	Yes	No	N/A	
20 *	File forwarded to Senior Building Services Officer to undertake a Peer Review (over 5 years old) and arrange issue of CCC	Yes	No	N/A	
21 *	If compliance schedule must be issued, co-ordinate issue with issue of CCC	Yes	No	N/A	
22 *	Photographs	Yes	No	N/A	
23 *	CPENG engineers producer statements	Yes	No	N/A	
24 *	Alternative solutions	Yes	No	N/A	
25 *	CCC Consent issued under the transitional provisions of Section 436 Building Act 2004 ~~noted added to CCC~~	Yes	No	N/A	
	Compliance document must not state any restrictions relating to:				
26 *	Regulatory approvals, dispensations or waivers	Yes	No	N/A	

Issue CCC	Yes	~~No~~
Reason for Decision	I am Satisfied on reasonable grounds that the Building work complies with the building code at the time the building consent was granted (see number 25) ~~(See number 25)~~ ~~Building work complies with the building consent issued~~ ;~~and the specified systems in the building are capable of performing to the performance standards set out in this building consent (Added to CCC and the compliance schedule as attachment) (compliance schedule statement issued)~~	
Signed	Des Skelton	

"Yes" means Approved "No" Means not Approved "N/A" means Not Applicable

RECEIVED: 24 Sep 2009 SCANNED: 24 Sep 2009 BOX: 2 BATCH: 44746 DOC: KDCAAJBK

Advice of Completion of Building Work

Section 43(1), Building Act 1991

To: KAIPARA DISTRICT COUNCIL

Consent Details

[redacted]	No.	001391
P O BOX 17	Issue date	26/07/00
KAIWAKA	Application date	22/06/00

Project

Description	New Construction Being Stage 1 of an intended 1 Stages BARN AND TRACTOR SHED
Intended Life	Indefinite, but not less than 50 years
Intended Use	FARM USE
Estimated Value	$15,000
Location	BALDROCK RD, KAIWAKA
Legal Description	PT LOT 2 DP 31705 BLK XIV WAIPU SD
Valuation No.	0120003403

You are hereby advised that

___ All

___ Part only as specified in the attached particulars

of the building work under the above building consent is believed to have been completed to the extent required by that building consent.

You are requested to issue

___ A final

___ An interim

code compliance certificate accordingly (except where a code compliance certificate has been issued by a building certifier as stated below).

The attached particulars include:

___ Building and energy certificates

___ A code compliance certificate issued by a building certifier

___ Producer statements

Signed by or for and on behalf of the owner:

Name: _____

Position: _____ **Date:** _____

Business hours contact phone no.: _____

RECEIVED: 24 Sep 2009 SCANNED: 24 Sep 2009 BOX: 2 BATCH: 44746 DOC: KDCAAJBK

Code Compliance Certificate 001391

Form 7, Section 95, Building Act 2004

REDDY ADRIAN ANDREW
PO BOX 17
KAIWAKA

Issue Date: 13/08/09
Overseer: Ian Whitcher

THE BUILDING:

Street Address of Building:	BALDROCK RD, KAIWAKA
Valuation Number:	0120003403
Legal Description:	PT LOT 2 DP 31705 BLK XIV WAIPU SD
Building Name:	
Location of Building within site/block number:	
Level/Unit Number:	
Current Lawfully Established Use:	
Year First Constructed:	

THE PROJECT:

Description:	BARN AND TRACTOR SHED NEW FARM BUILDINGS - OTHER
Type of Work:	
Intended Use:	FARM USE
Intended Life:	Indefinite, but not less than 50 years
Stages:	Being Stage 1 of an intended 1 Stages

THE OWNER:

Owners Name:	[redacted]		
Owners Mailing Address:	PO BOX 17, KAIWAKA		
Street Address/Registered Office:			
Phone Number	**Landline:**	**Daytime:**	**After Hours:**
	Mobile:	**Fax:**	
Email:		**Website:**	

FIRST POINT OF CONTACT:

First Point of Contact:	Full Name: [redacted]
	Mailing Address: P O BOX 17, KAIWAKA
	Phones:: 094312211: 094312242

BUILDING WORK:

Building Consent Number:	001391
Issued By:	Kaipara District Council

This Code Compliance Certificate is issued by the Kaipara District Council. As the Building Consent Authority it is satisfied, on reasonable grounds that :

- Building work complies with the building code at the time the building consent was granted
- CCC Consent issued under the transitional provisions of Section 436 Building Act 2004

Signature Des Gibbon **Date:** «IssueDate» **Position** Building Services Officer

On behalf of: Kaipara District Council

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CONSULTING CIVIL & STRUCTURAL ENGINEERS
2 SEAVIEW ROAD, WHANGAREI. PH (09) 438-3273. FAX (09) 438-5734.

File No. 200568
Plan Ref. No.
Calculated by Tim Pike
Checked by
Date 10.07.00

Refers to Barn & Tractor Shed

Client

STRUCTURE CALCULATION SUMMARY

CODES USED:			
	N.Z. Building Code 1991		☑
	Design Loadings	NZS 4203:1992	☑
	SAA Loadings Code, Wind	AS1170.2:1989	☐
	Timber Structures Standard	NZS 3603:1993	☑
	Light Timber Frame Buildings (not specific)	NZS 3604:1990	☐
	Steel Structures Standard	NZS 3404:1997	☑
	Steel Structures Code	AS1250:1981	☐
	AISC Design Capacity Tables		☐
	The Design of Concrete Structures	NZS 3101:1995	☑
	The Design of Masonry Structures	NZS 4230:1990	☐
	Concrete Masonry Buildings (not specific)	NZS 4229:1986	☐

Description of Calculations	Page Reference	Drawing Reference	Checked
Loadings	1		
1. Purlins	1		
2. Rafters	2		
3. Poles + Footings	3		
4. Girts	4		
5. Stiffener Columns	4		
6. Bracing	5		
7. Eaves Beams	5		
8. Slab / Footings	6		
9. Retaining Wall	6		
10. Plan	8		
Roof Plan	9		
Section	10		

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2 SEAVIEW ROAD, WHANGAREI. PH (09) 438 3273. FAX (09) 438 5734.
EMAIL rscltd@clear.net.nz

File No. .....
Plan Ref. No. .....
Calculated by Tim Pike.
Checked by .....
Date 10. 07. 2000.

Refers to Barn and Tractor Shed

Client Adrian Reddy

Pole building, timber girts, steel roof beams, timber purlins. Concrete slab floor, R.C. retaining wall to part.

Building length = 18.0 metres
width = 7.3
height = 6.0

Loadings

Roof G = 0.25 kPa
Q = 0.25 kPa

Wind V_{50} = 47 m/s

M_d = 0.93 (M_s = 0.70)
M_2 = 0.91

V_2 = 41.5 m/s
q_u = 1.0 kPa (q_s = 0.60 kPa)

C_{pe} (walls) = +0.7, −0.3 C_{pi} = 0, −0.3

C_{pe} (roof) = −0.6, −1.3

1. **Purlins**

Span = 6.0 metres

Try 300 × 50 at 1143 mm centres.

W_u = (1.3 × 1.0 × 1.143) = 1.49 kN/m
W_s = 1.0

G = (0.25 × 1.143) = 0.3 $G - W_s$ = −0.70 kN/m.

$0.9G - W_u$ = 1.22 M^* = 5.5 kNm

ϕM_b = (0.8 × 1.0 × 17.7 × 0.68) = 9.6 kNm OK

δ = 14.8 mm (L/406)

R_u = (1.22 × 6.0) = 7.3 kN M12 bolt = 4.9 kN.

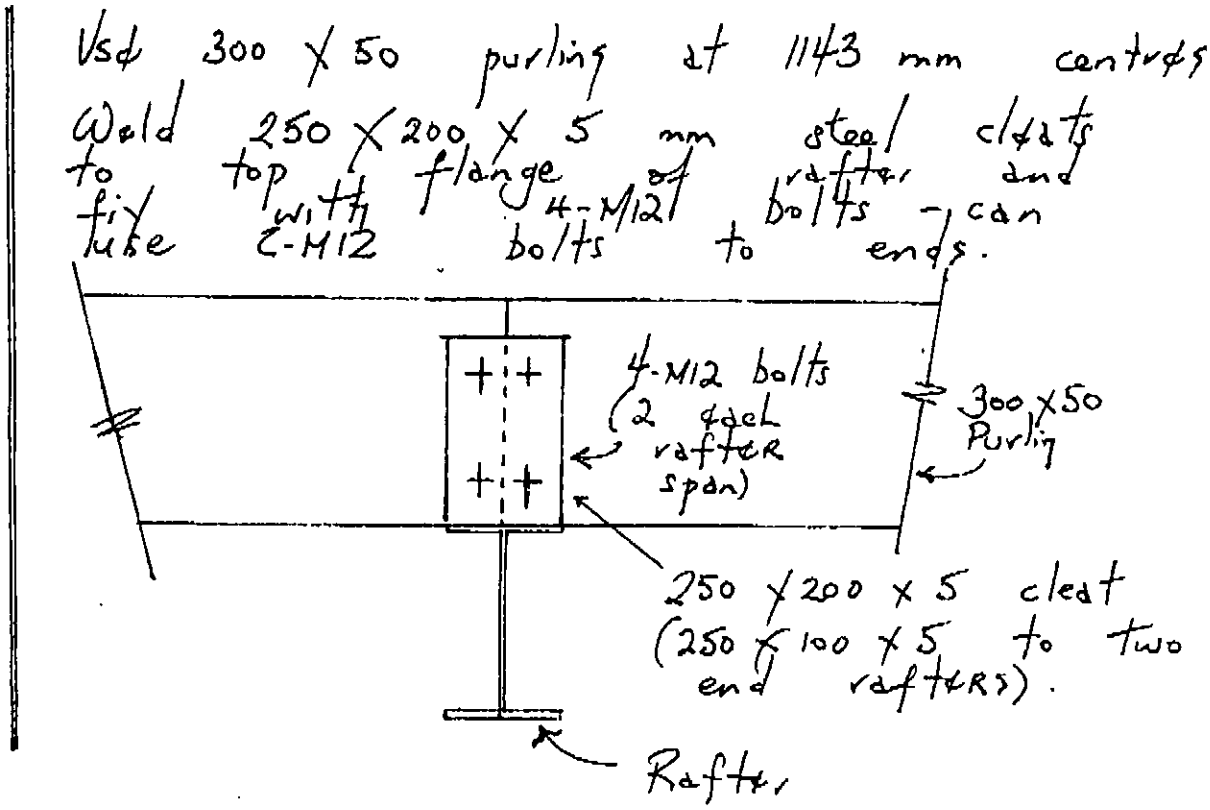
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Refers to .....

Client .....

File No. .....
Plan Ref. No. .....
Calculated by .....
Checked by .....
Date .....



2. Rafters

Span = 7.5 metres.

G = (0.25 x 6.0) = 1.5 kN/m.
Q = = 1.5 kN/m.
W_S = (0.70 x 1.3 x 6.0) = -5.5
W_U = = -7.8

G + Q = 3.0 kN/m.
G + W_S = -4.0

0.9G - W_U = -6.5 kN/m. M^* = 45.4 kNm.

1.2G + 1.6Q = 4.2 kN/m.

250 UB 31 : ϕM_b = 88 kNm OK.

δ = 13.6 mm

R_u = (-6.5 x 3.75) = 24.4 kN. (2-M16's)

Use 250 UB 31's. Weld 2/80 x 5 straps to flanges, with 2-M16 bolts thru' poles.

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EMAIL [redacted]

File No. .....
Plan Ref. No. .....
Calculated by .....
Checked by .....
Date .....

Refers to .....

Client .....

3. Poles

Height = 6.0 metres. Cantilever action.

Wall = (18.0 x 6.0) = 108 m^2

W_U = (108 x 1.0 x 1.0) = 108 kN

8 poles ∴ W_U = 13.5 kN per pole.

M_U = (13.5 x 3.0) = 40.5 kNm

Use 250 SED High Density Poles, H5, to NZS 3605.

Footings

Assume 100 kPa allowable bearing, ϕ = 0.6.

Brom's: $\beta = \frac{13.5}{9 \times 36 \times 0.45} = 0.09$

e = 3.0 metres

ϕ' = 3.68 metres

L' = 1.25 metres

L = 1.92 metres

If diameter = 600 mm ∴ β = 0.07

ϕ' = 3.90 metres

L' = 1.1 metres

L = 2.0 metres

Use concrete footings, 450 or 600 diameter, 2000 mm depth.

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EMAIL [redacted]

File No. .....
Plan Ref. No. .....
Calculated by .....
Checked by .....
Date .....

Refers to .....

Client .....

4. Girts

Maximum span = 2.5 metres

N2S 1/00 Chapter 11.2

Use 150 X 50 girts at 1000 mm centres — simple.
Fix to poles and stiffener columns with 100 X 100 X 6 angles and M12 bolts, or use Lumberlock N21 cleats.

5. Stiffener Columns

Length = 5.0 metres

w_0 = (2.5 X 5.0 X 1.0) = 12.5 kN

M_0 = $\frac{12.5 \times 5.0}{8}$ = 7.8 kNM

150 X 100 : ϕM_b = (0.8 X 1.0 X 17.7 X 0.325)
= 4.6 kNM No Good.

200 X 100 : ϕM_b = 8.4 kNM
w_s = 8.75 kN R_v = 6.25 kN.
δ = 31 mm (L/160)

Use 200 X 100, provided 30 mm deflection acceptable to client.
Fix to rafters / eaves beam with a 290 X 150 X 5 cleat and 2-M12 bolts.
Fix to slab with Lumberlock CF2X cleat, M12 chemsets.

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5

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EMAIL [redacted]

File No. .....
Plan Ref. No. .....
Calculated by .....
Checked by .....
Date .....

Refers to .....

Client .....

6. Roof Bracing

Cantilevered poles, put include bracing to distribute loads.

Use Stripbrace doubled or single runs of Multibrace to all 3 roof panels, and 3 wall panels.
Minimum of 12 nails each end.
Include tensioners.

7. Eaves Beams

Horizontal support to stiffener columns.

$L = 6.0$ metres

Door = 500 kg = 5.0 kN.

$W_d = (1.0 \times 1.0 \times 3.0) = 3.0$ kN/M, say

$M_d = 13.5$ kNm. Wind Critical.

200 UB 25 : y-axis flexure.

$\phi M_{by} = 270$ N/mm^2, 11.5 kNm.
300 steel, OK - 13.80.

$\delta = 55$ mm.

Could use 200 UB 25 both sides.
Weld to rafters with 6 mm f.w.a.R.

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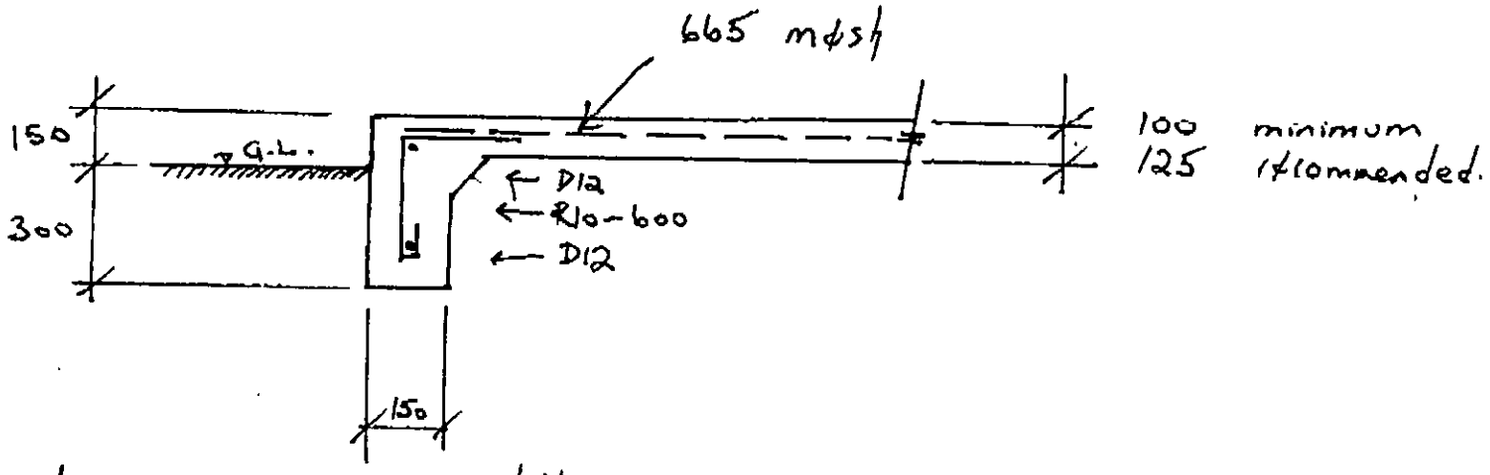
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EMAIL [redacted]

File No. .....
Plan Ref. No. .....
Calculated by .....
Checked by .....
Date .....

Refers to .....

Client .....

8. Slab / Footings



9. Retaining Wall

$H = 1100$ mm

$K_A = 0.3$

$P_u = (1/2 \times 0.3 \times 1.1^2 \times 18.0) \times 1.4 = 4.6$ kN

$M_u = (4.6 \times \frac{1.1}{3}) = 1.7$ kNm.

Try 150 mm R.C. Wall

D12 - 180 crs : $A_s = 628$ mm^2/m

$d = 75$ mm

$\phi M_b = 11.7$ kNm OK

Use 150 mm R.C. Wall
D12 - 180 crs both ways

Footing : Try 600 x 600

Mass = 8.6 kN
Wall = 4.0
Fill = 4.5
17.0

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File No. 7

Plan Ref. No.

Calculated by

Checked by

Date

Refers to

Client

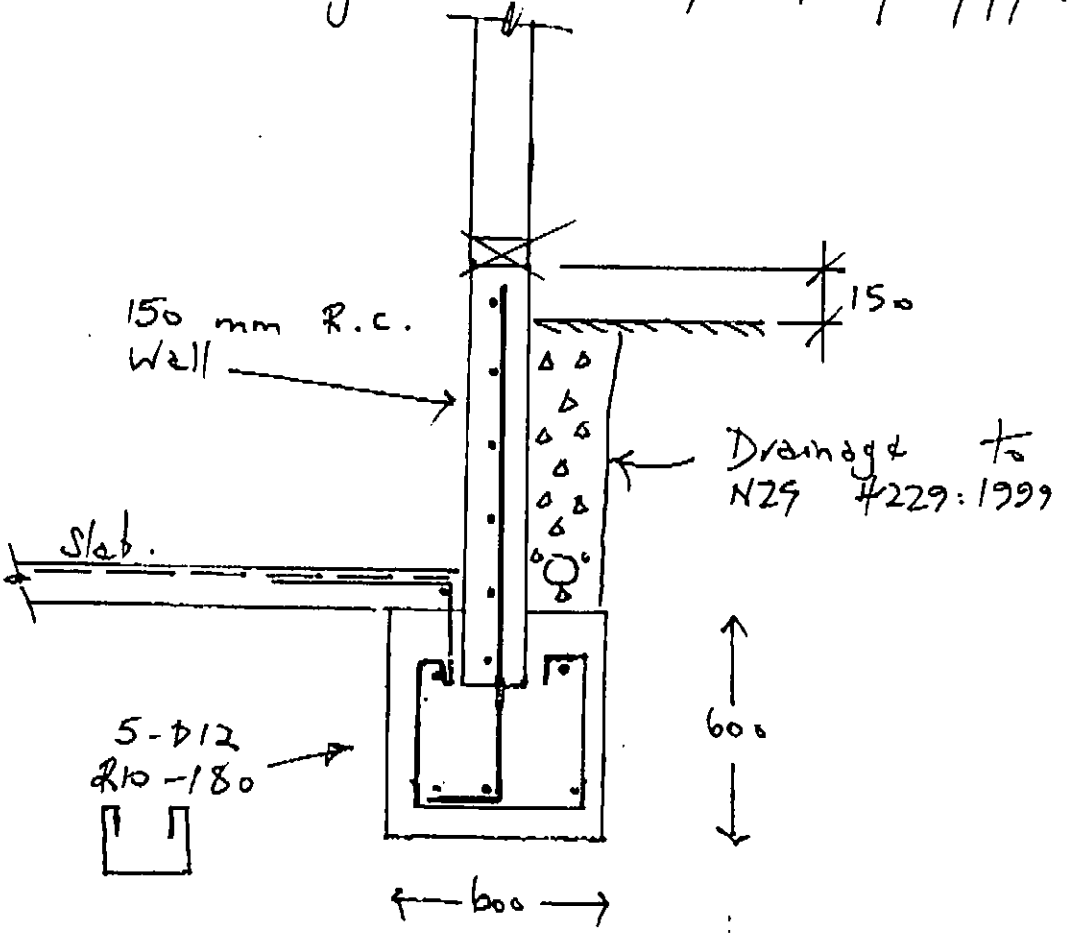
$M_o = 1.7 + (12.6 \times 0.3) + 14.5 \times \frac{0.225}{2} = 6.0$ kNm

$x_R = \frac{6.0}{17.0} = 0.35$ metres

$b_d = 0.50$ metres

$\sigma_V = 34$ kPa O.K.

600 x 600 footing o.k.
Extend D12 vertical bars into footing from wall
5- D12 longitudinal
R10 – 180 stirrups.
Drainage to NZS 4229:1999.



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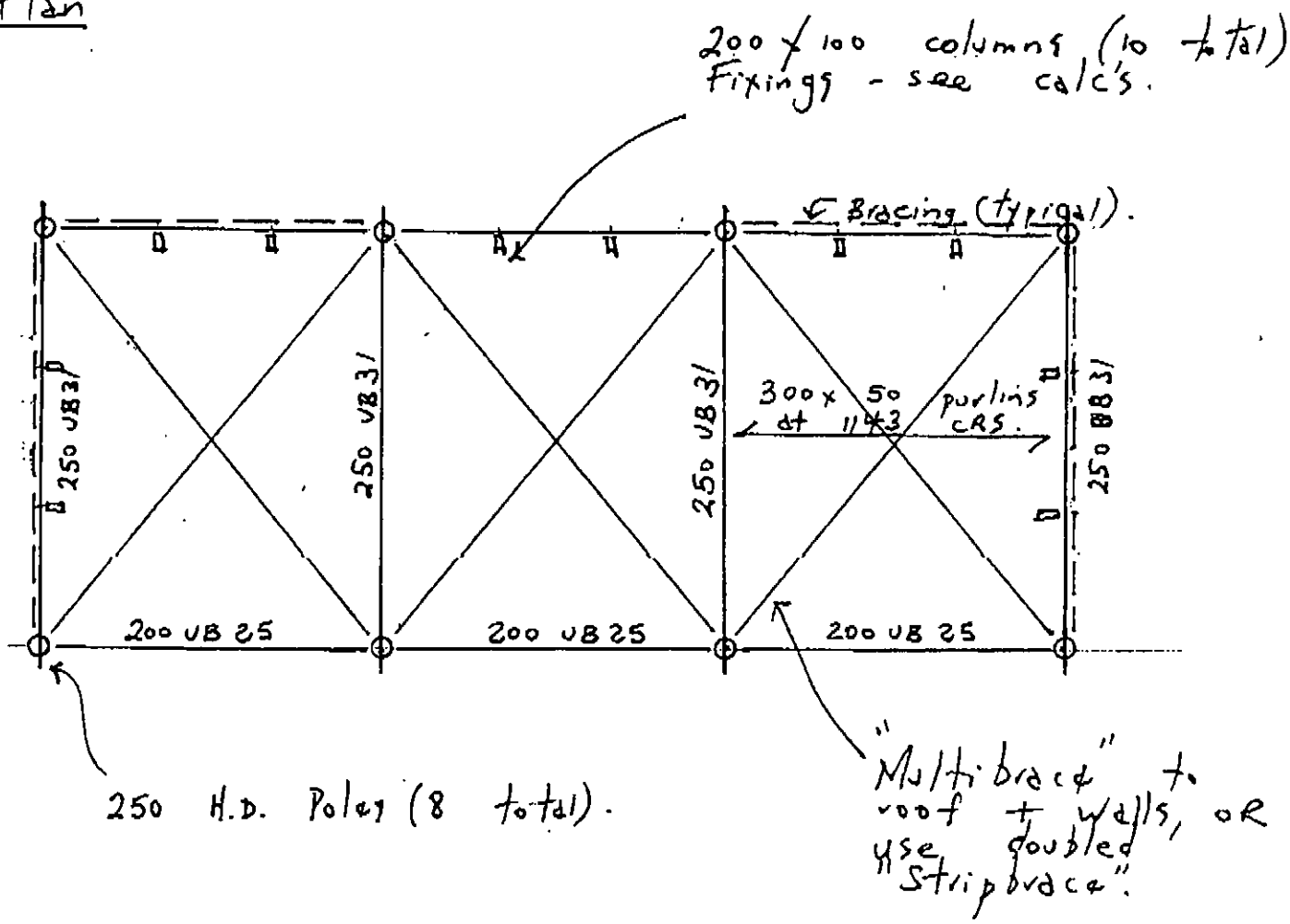
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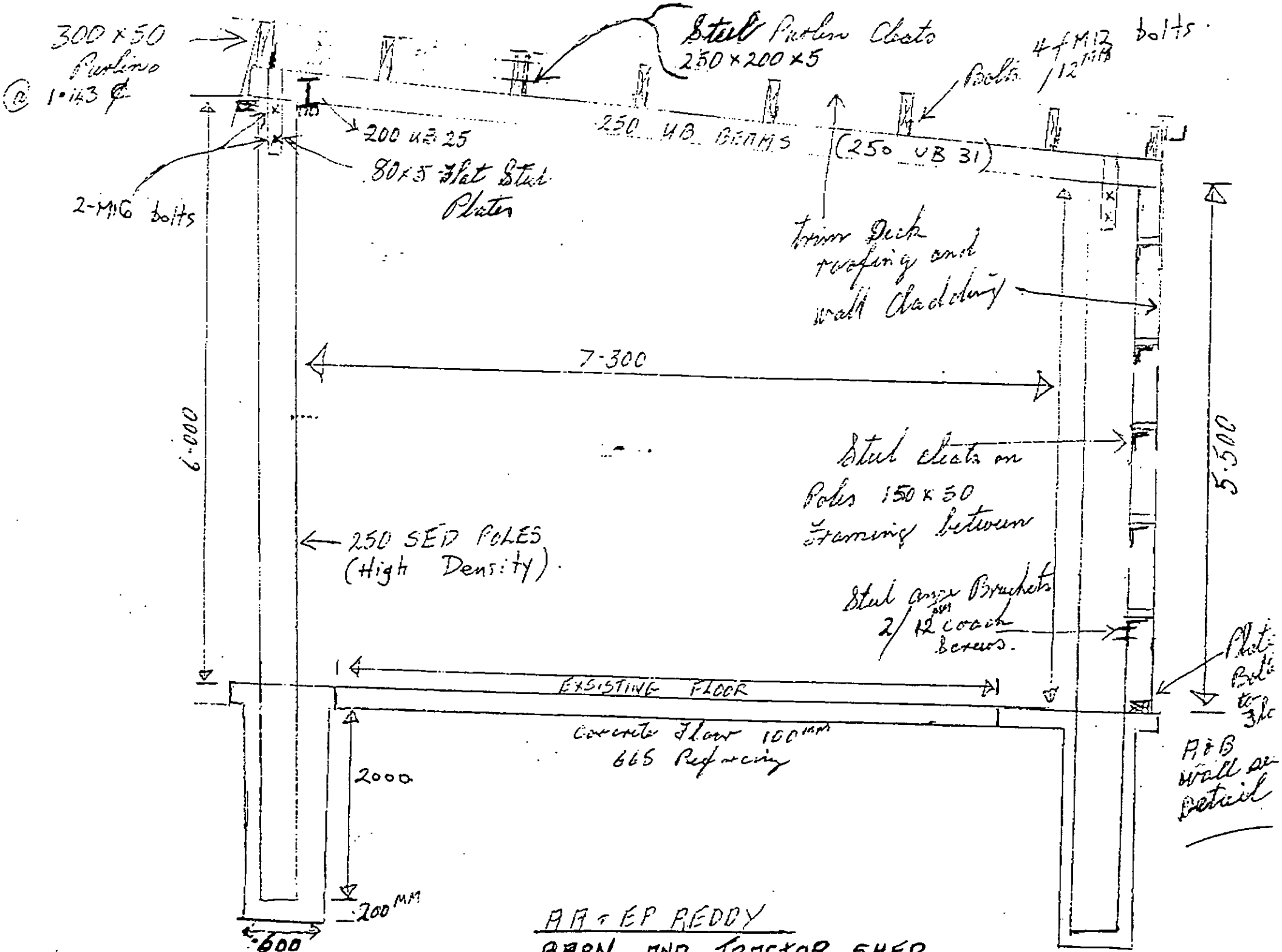
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Plan Ref. No. .....
Calculated by .....
Checked by .....
Date .....

Refers to .....

Client .....

10. Plan

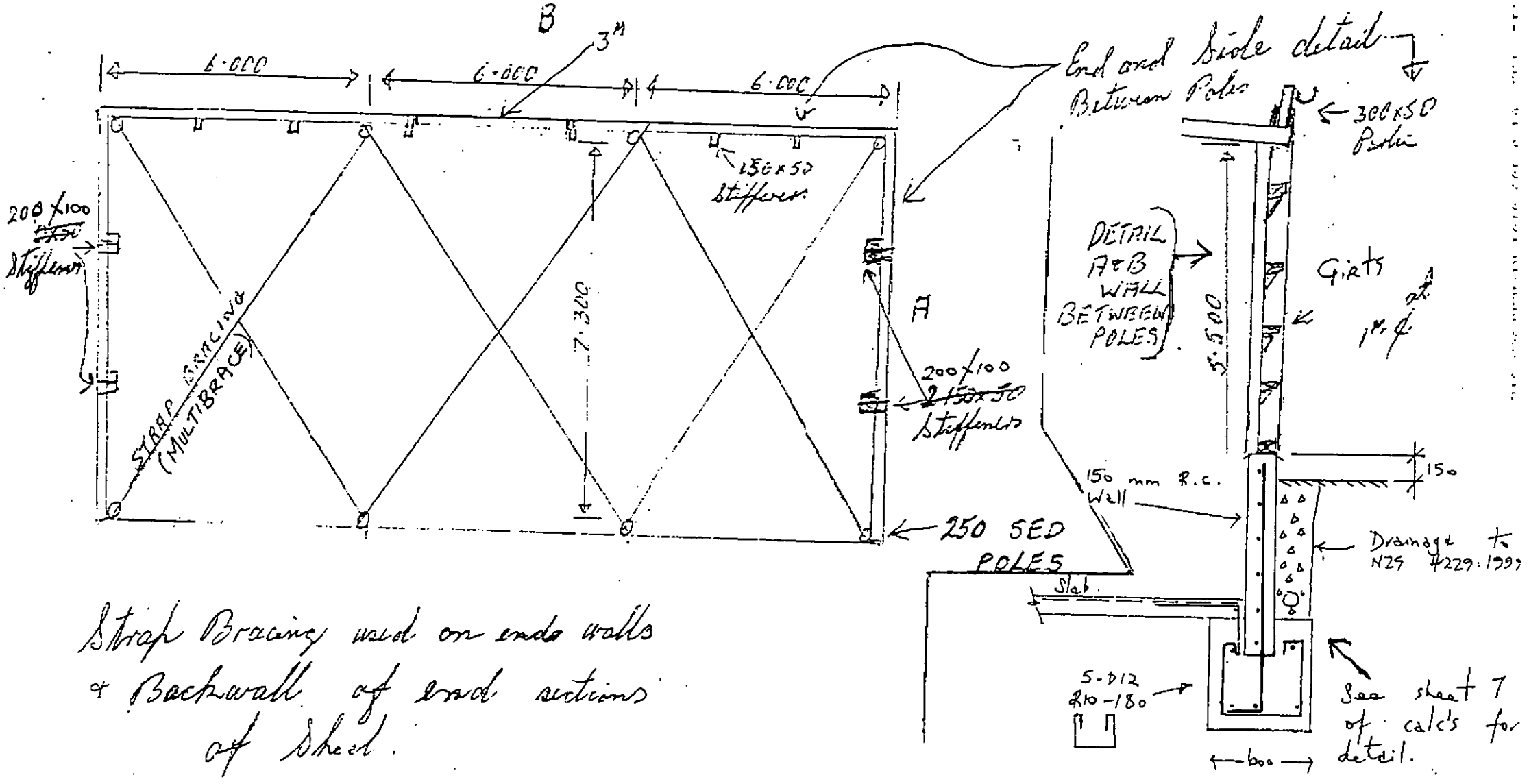




AA + EP REDDY

BARN AND TRACTOR SHED

RECEIVED: 24 Sep 2009 SCANNED: 24 Sep 2009 BOX: 2 BATCH: 44746 DOC: KDCAAJBK



Strap Bracing used on ends walls & Backwall of end sections of Shed.

A & EP REDDY

BARN AND TRACTOR SHED

RECEIVED: 24 Sep 2009 SCANNED: 24 Sep 2009 BOX: 2 BATCH: 44746 DOC: KDCAAJBK

RECEIVED: 25 Feb 2013 SCANNED: 25 Feb 2013 BOX: 1 BATCH: 100434 DOC: KDCAAQGU

KAIPARA DISTRICT

KAIPARA DISTRICT COUNCIL

Building Consent File Complete - Checklist

Item Checked	Y	N	NA	Comments	File Type
Application Form and Acceptance Checklist	(Y)	N	NA	PIM/BC Number: 110229	H
Building Consent and Conditions	(Y)	N	NA		H S
PIM	(Y)	N	NA		H S
Resource Consent	Y	N	(NA)		S
Amendments	Y	N	(NA)		H S
Plans	(Y)	N	NA		H
Specifications	(Y)	N	NA		H
Drainage plan	Y	N	(NA)		H
2nd Hand Dwelling Relocate Report and signed Confrimation	Y	N	(NA)		H
Bracing / Engineering Calcs	(Y)	N	NA		H
Producer Statements	(Y)	N	NA		H
Specified Systems Information	Y	N	(NA)		H
Processing Checklist	(Y)	N	NA	MINOR.	H
Other Checklists (Please Note)	Y	N	(NA)		H
Requests for Additional Information	(Y)	N	NA		H S
Records of all correspondence (emails, letters, phonecalls)	(Y)	N	NA		H S
Memorandum from NZFS	Y	N	(NA)		H
Form 4A (Section 37)	Y	N	(NA)		H S
Approval from NZHPT	Y	N	(NA)		H
Development Contributions	Y	N	(NA)		
Inspection Records	(Y)	N	NA		H S
Truss Layout	Y	N	(NA)		H
Photos	Y	N	(NA)		H
Geotech Report	Y	N	(NA)		H
Notice to Fix	Y	N	(NA)		H S
Compliance Schedule	Y	N	(NA)	Refer CS:	H S
Compliance Schedule Statement	Y	N	(NA)	Refer CS:	S
Certificate of Public Use	Y	N	(NA)		H S
Copy of Complaints Received	Y	N	(NA)		H S
CCC Application, CCC Checklist and Code Compliance Certificate	(Y)	N	NA		H H H S
Drainage Asbuilt	Y	N	(NA)		H
Electrical Certificate of Compliance	Y	N	(NA)		H
Gas Certificate	Y	N	(NA)		H
Sewer/Water Notes	Y	N	(NA)		H
LBP Memorandum Design	Y	N	(NA)		H
LBP Builder	Y	N	(NA)		H
Other Checklists (Please Note)	Y	N	(NA)		H

Checked & Approved by: MN Date: 27/2/12.

Circle if applicable Y = Yes on file N = Not on file NA = Not applicable to this file
Note: If 'N, Not on file' is used, reasons need to be added to the comments box

H = Hard Copy - Information found on paper file. S = Soft Copy - Information available on NCS system
Once file is completed, file is sent for scanning. All information available as hard and soft copy.

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KAIPARA DISTRICT

ENTERED

KAIPARA DISTRICT COUNCIL

RECEIVED 30 MAY 2011 Kaipara District Council

PIM and Building Consent Application

(The Building Act 2004)

Applicant Details: **BC No:** 110229

1 The Owner

Name of Owner: [redacted]

Contact Person: [redacted]

Postal Address: P.O Box 17

Kaiwaka 0542

Street Address/Registered Office: 33 Baldrock Rd Kaiwaka

Phone No 09 [redacted] Fax No:

Mobile No:

Email [redacted]

The following evidence of ownership is attached to this application : e.g *Certificate of Title,* **less than 6months old** *(If property has been recently sold a copy of Sale and Purchase Agreement is required)*

2 The Agent

Name of Agent: Brogan Builders Ltd

Contact Person: Grant Eager

Postal Address: 105 Griffin Rd

RD1 Maungaturoto

Street Address/Registered Office: (As Above)

Phone No: [redacted]

Mobile No: [redacted]

[redacted]:

Relationship to Owner: Builder

First Point of Contact for Communications/Fees/Refunds to:

☐ The Owner ☑ The Agent

3 The Project (What is the work to be done)

Description of the building work: Deck extension

Will the work result in a change of use of the building:

☐ Yes ☒ No

If YES please state new use and provide details:

List Building Consents previously issued for this project (if any):

Floor area (proposed work - square metres)

	Basement	Ground Floor	Other Floors	Total
Main Building				
Accessory				16.81
Buildings				

4 Building Details: (Where work to be done)

Valuation Roll No : 01200-03403

Legal Description: Pt Lot 2 DP 31705

Street Address of Building: 33 Baldrock Road, Kaiwaka

Location of Building within site/block number (include nearest street access):

Building Name: Deck

Number of Levels: one

Level/Unit No:

Certificate of Title No :

Area of Site (m²/ha) :

Current, lawfully established use:

Number of Occupants:

Year first constructed (if applicable) :

5 Nature Of Consent

☐ New building - exclude domestic garages and domestic outbuildings — Intended Life: Indefinite, but not less than

☐ Foundations only — 50 yrs ☐ OR Specified as .....yrs

☒ Alterations, repairs, extensions, conversions, resiting, installation of heating appliances — Demolition ☐

Being stage ..... of an intended ..... stages

☐ Domestic garages and domestic outbuildings

6 Value Of Work And Fees (GST Incl)

Main buildings	$
Accessory buildings	$35,000.00
Plumbing & Drainage	$
Total Value of Work	$35,000.00
Office Use Only	
PIM	$143.00
Building Consent	$892.00
BRANZ Levy	$35.00
DBH Levy	$70.35
Certificate of Acceptance	$
TOTAL	$1,140.35

Receipt No: 623091

Date: 30/5/11

RECEIVED: 25 Feb 2013 SCANNED: 25 Feb 2013 BOX: 1 BATCH: 100434 DOC: KDCAAQGU

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7 Tick box A to D below, as appropriate :

- ☐ **A** Application is for a Project Information Memorandum (PIM)
- ☑ **B** Application is for Building Consent (BC) only, in accordance with PIM No : .....
- ☐ **C** Application is for Building Consent (BC) and Project Information Memorandum (PIM)
- ☐ **D** Application is for a Certificate of Acceptance (COA)
- ☐ **E** Amendment to Building Consent No: .....

8 Confidentiality (Plans and Specifications):

I/We require the following to be treated as confidential (proof of reasons for confidentiality will be required and will only be accepted if legally valid)

- ☐ Plans (please specify which plans i.e. Floor Plans etc.,) : .....
- ☐ Specifications
- ☐ I/We require that **all details** of this application remain confidential as required by a Council directive applied for, or already issued, in relation to a protection order currently in force under The Domestic Violence Act 1995.

9 Vehicle Crossing Required

Is this application linked to a vehicle crossing application?

~~YES~~/NO If 'YES', Application No : .....

(If 'YES' please include Vehicle Crossing Application)

10 Public Utility Connections Required

Is this application subject to a utility connection application? (Sewer/stormwater, Water Connection or Water Meter Installation)

- ☐ YES - Application No: .....
- ☑ NO - Existing connections in place
- ☐ **Mangawhai Eco-Care Drainage District**

11 Historic Places Trust

- ☐ The property is a registered historic place, historic area or wāhi tapu area
- ☐ A PIM has already been issued for this project - PIM No : .....

If your property has an archaeological or historic site, you need to consult with the Historic Places Trust in regards to your project for review and approval prior to your project commencing

12 Fire Service Design Unit (3 copies - 4 where fire report required, 1 set to be A3)

Section 47 of The Building Act 2004, requires certain projects as specified by notice in the NZ Gazette to be reviewed by the New Zealand Fire Service, which may require a Memorandum, setting out advice on issues such as **'means of escape from fire'** and **'water supply for fire fighting'**. Not required when Fire Design Report shows compliance with the 'C' Documents of the New Zealand Building Code.

13 Compliance Schedule (where applicable – Complete Part E)

A Compliance Schedule is required for buildings with specified systems. This does **NOT** apply to single storey, residential property apart from when serviced by a cable car (lift).

14 Certificate of Acceptance

Is this application in relation to obtaining a Certificate of Acceptance (Section 96 Building Act 2004) ?

☐ Yes ☐ No If yes, please provide details below:

Description of Building work - .....

.....

Date work carried out - .....

Personnel who carried out work – Please list over page in PART D: KEY PERSONNEL

RECEIVED: 25 Feb 2013 SCANNED: 25 Feb 2013 BOX: 1 BATCH: 100434 DOC: KDCAAQGU

KAIPARA DISTRICT

Part B: Project Details

Project Information Memorandum (Complete this part only when applying for a PIM)

The project involves the following matters. Tick each applicable box and attach relevant information in **triplicate** for residential and **four copies** for Commercial Industrial or Multi-Storey. **Always include one set A3 size.**

- ☐ (a) Location, in relation to legal boundaries, and external dimensions of new, relocated, or altered buildings (Site Plan with elevations, Topography, drawn to scale).
- ☐ (b) Details of any known or potential erosion, avulsion, falling debris, filled ground, subsidence, slippage, alluvion, inundations, and hazardous contaminants on or near the site, land contours.
- ☐ (c) Provisions to be made for vehicular access, including parking. (To be shown on site plan).
- ☐ (d) Provisions to be made in building over or adjacent to any road or public place.
- ☐ (e) Provisions to be made for disposing of stormwater and wastewater. (To be shown on site plan).
- ☐ (f) Precautions to be taken where building work is to take place over existing drains or sewers or in close proximity to wells or water mains.
- ☐ (g) New connections to public utilities i.e. water supply, stormwater system, wastewater system.
- ☐ (h) Provisions to be made in any demolition work for the protection of the public, suppression of dust, suppression of noise, disposal of debris and disconnection from public utilities.
- ☐ (i) Details of any cultural or heritage significance of the building or building site, including whether it is on a marae or wahi tapu.
- ☐ (j) Copy of/or reference to, any resource consent or planning approval (including subdivision) for this project.
- ☐ (k) Details of volume of proposed excavations; include volumes for site preparation, basement and driveway.

Part C: Building Details

Complete this part only when applying for a Building Consent

This application is accompanied by: (tick each applicable box, attach relevant documents in **triplicate*** for residential and **four copies** for Commercial, Industrial or Multi-Storey).

- ☑ 1 The drawings, specifications and other documents according to which the building is proposed to be constructed to comply with the provisions of the New Zealand Building Code, with supporting documents, if any, including:
- ☐ 2 Building Certificates.
- ☑ 3 Producer Statements (including TP 58 Effluent Design), and any alternative solutions.
- ☐ 4 References to product certification issued by the Department of Building and Housing (DBH).
- ☐ 5 References to determinations issued by the Department of Building and Housing (DBH).

For details on drawings and specifications etc, see checklist form. If applying for PIM and Building Consent together, then plans for PART B (a) can be included in PART C (1).**
If a PIM has already been applied for then include a copy of any relevant authorisations (eg Resource Consents) with this application.

***Triplicate** = 2 full sets plans and specifications, 1 set A3 (1 x Floor Plan, 1 x Site Plan and 1 x Elevations)

** **Four Copies** = 3 Full sets plans and specifications, 1 set A3 (1 x Floor Plan, 1 x Site Plan and 1 x Elevations)

RECEIVED: 25 Feb 2013 SCANNED: 25 Feb 2013 BOX: 1 BATCH: 100434 DOC: KDCAAQGU

KAIPARA DISTRICT

Part D : Key Personnel

From 30 November 2009, the Building Act 2004 requires all restricted building work to be carried out or supervised by a Licensed Building Practitioner. After this date, applications for consent can only be accepted where a Licensed Building Practitioner has been engaged and the registration number shown in the appropriate area below.

Designer

Name : Mangawhai Draughting & Design. Reg No 101041 Phone No: 4314804

Address : 210 Molesworth Drive Mangawhai

Mobile No : Email:

Builder (Licensed Building Practitioner From 30/11/2009)

Name : Brogan Builders Ltd Reg No : Phone No: 09 4318290

Address : 106 Griffin Rd RD1 Maungaturoto

Mobile No : [redacted] Email: [redacted].nz

Registered Drainlayer

Name : Reg No : Phone No:

Address :

Mobile No : Email:

Registered Plumber

Name : Reg No : Phone No:

Address :

Mobile No : Email:

Registered Electrician

Name : Paul Greig Reg No : E241452 Phone No: [redacted]

Address :

Mobile No : Email:

Registered Gas Fitter

Name : Reg No : Phone No:

Address :

Mobile No : Email:

Other

Name : Reg No : Phone No:

Address :

Mobile No : Email:

Other

Name : Reg No : Phone No:

Address :

Mobile No : Email:

RECEIVED: 25 Feb 2013 SCANNED: 25 Feb 2013 BOX: 1 BATCH: 100434 DOC: KDCAAQGU

KAIPARA DISTRICT

Building Consent Application Checklist/Design Review

(To Be Completed By Applicant/Designer)

Return this **completed** checklist with your application.

Include all information and documents requested.

This will ensure your consent is processed in the quickest possible time.

Name:	**Date:**
Address:	

Application Type				**Application Number**			
New building	YES	NO	N/A	Certificate of title/Easements/Infringements	YES	NO	
Alterations	YES	NO	N/A	Legal description checked	~~YES~~	NO	
Additions	~~YES~~	NO	N/A	Street address	~~YES~~	NO	
Demolition	YES	NO	N/A	Name of building	deck		
Relocation	YES	NO	N/A	Floor level	~~YES~~	NO	N/A
Change of use	YES	NO	N/A	Current lawful use	residential		
Stage of	YES	NO	N/A	Building history - listed	YES	NO	~~N/A~~
Building Classification				Intended life	50 years		
Housing							
Detached Deck	~~YES~~	NO	N/A	**Floor Area**			
Multi-unit	YES	NO	N/A	Ground floor			M^2
Group dwelling	YES	NO	N/A	Basement			M^2
Outbuildings				1st floor			M^2
Garage, barn, shed	YES	NO	N/A	2nd floor			M^2
Swimming pool	YES	NO	N/A	Outbuildings			M^2
Glasshouse, pergola, other	YES	NO	N/A	Decks/balconies	16.81		M^2
Ancillary				Other			M^2
Bridge, Outdoor fire, retaining wall	YES	NO	N/A	TOTAL	16.81		M^2

Office Use:	**Contact Details, Address, Phone, Etc**			
	Owner's details	YES	NO	N/A
	Agent's details	YES	NO	N/A
	Designer's details	~~YES~~	NO	N/A
	Engineer's details	YES	NO	N/A
	Builder details	YES	NO	N/A
	Electrician details	YES	NO	N/A
	Plumber details	YES	NO	N/A
	Drainlayer details	YES	NO	N/A
	Means of compliance (as per application form)	YES	NO	N/A

Wind zone	Low	Med	High	Very high	**Spec. Des**	**Corrosion zone**	C	**Earthquake region**	1

Full Description Of Building Work Extension of deck

Provide Details Of Any Reports Submitted And Issue Date:

RECEIVED: 25 Feb 2013 SCANNED: 25 Feb 2013 BOX: 1 BATCH: 100434 DOC: KDCAAQGU

KAIPARA DISTRICT

Plans				**Site plan**			
Number of sets supplied	3			1:100 1:200 or 1:500	YES	NO	N/A
Specifications				Legal description	YES	NO	N/A
Number of sets supplied	2			Title – Easements/Infringements	YES	NO	N/A
				Site area	YES	NO	N/A
Bracing Calculations				Private drainage	YES	NO	N/A
Subfloor/ Deck	2			Public drainage showing depth of drains, manholes etc.	YES	NO	N/A
Wall (per floor)	2			Dimensions – 3 minimum	YES	NO	N/A
Structural Engineering				Existing and proposed buildings	YES	NO	N/A
Number of sets supplied	2			North point	YES	NO	N/A
Beam layout plan	~~YES~~	NO	N/A	Contours, datum	YES	NO	N/A
Connection details	~~YES~~	NO	N/A	Finished floor level	YES	NO	N/A
Producer statement	~~YES~~	NO	N/A	Retaining walls	YES	NO	N/A
Geotechnical Engineering	N/A			Extent of cut and fill	YES	NO	N/A
Number of sets supplied				Site coverage	YES	NO	N/A
Site plan	YES	NO	N/A	Parking and vehicle access	YES	NO	N/A
Soils analysis/report	YES	NO	N/A	Protected trees	YES	NO	N/A
Producer statement	YES	NO	N/A	HWC (gas)	YES	NO	N/A
Drainage Report				Water meter (if applicable)	YES	NO	N/A
Who	YES	NO	N/A	Natural water course	YES	NO	N/A
Soil Analysis	YES	NO	N/A	Site Drainage away from house to suitable path	YES	NO	N/A
System/Design recommended under	YES	NO	N/A	Ponding	YES	NO	N/A
E2 Risk Matrix – 1 per face/elevation				**Floor Plan**			
• North	YES	NO	~~N/A~~	Room use denoted	~~YES~~	NO	N/A
• South	YES	NO	~~N/A~~	Window size and position	YES	NO	~~N/A~~
• East	YES	NO	~~N/A~~	Fixtures and fittings	YES	NO	~~N/A~~
• West	YES	NO	~~N/A~~	Solid fuel heating	YES	NO	~~N/A~~
Cross-Sections				HWC	YES	NO	~~N/A~~
Minimum of one along the length	YES	NO	N/A	Wall bracing - height, position, type	~~YES~~	NO	N/A
Minimum of one across the width	~~YES~~	NO	N/A	Lintels	YES	NO	~~N/A~~
Details to include				Door/window size and position	YES	NO	~~N/A~~
Fixings	~~YES~~	NO	N/A	**Foundation Plan**			
Footing size	YES	NO	N/A	**Timber Floor And Fixings**			
Subfloor ventilation and insulation	YES	NO	~~N/A~~	Pile size, centres, treatment	~~YES~~	NO	N/A
Foundations steel – size and centres	~~YES~~	NO	N/A	Fixings	~~YES~~	NO	N/A
Wall insulation	YES	NO	~~N/A~~	Footing size	~~YES~~	NO	N/A
Wall framing - sizes, centres, treatment, height	~~YES~~	NO	N/A	Bracing layout, type and position	~~YES~~	NO	N/A
Masonry and slab	YES	NO	~~N/A~~	Joists and bearers	~~YES~~	NO	N/A
Cladding	~~YES~~	NO	N/A	**Concrete floor**			
Cavity and battens	YES	NO	~~N/A~~	Dimensions, bays, mesh size, plumbing fixtures, point load pads, slab thickenings,	YES	NO	N/A
Building paper	~~YES~~	NO	N/A	Specific design (raft)	YES	NO	N/A
Stairs - tread, rise, pitch, height	YES	NO	~~N/A~~	**Roof Framing Plan**			
Decks and balconies	~~YES~~	NO	N/A	**Pitched roof**	~~YES~~	NO	N/A
Linings and finishes	YES	NO	~~N/A~~	Ridge beam, rafters, purlins, building paper insulation	~~YES~~	NO	N/A
Ceiling insulation	YES	NO	~~N/A~~	Eaves	~~YES~~	NO	N/A
				Pergola	YES	NO	~~N/A~~
				Fixings	~~YES~~	NO	N/A

RECEIVED: 25 Feb 2013 SCANNED: 25 Feb 2013 BOX: 1 BATCH: 100434 DOC: KDCAAQGU

KAIPARA DISTRICT

Electrical Plan							
Smoke detectors	YES	NO	N/A	**Trussed Roof**	YES	NO	N/A
Mechanical light and ventilation	YES	NO	N/A	Truss type	YES	NO	N/A
Elevations				Point loads identified	YES	NO	N/A
• North	~~YES~~	NO	N/A	Roof bracing	YES	NO	N/A
• South	~~YES~~	NO	N/A	Fixings	YES	NO	N/A
• East	~~YES~~	NO	N/A	**Weathertightness - Flashing Details**	N/A		
• West	~~YES~~	NO	N/A	Windows	YES	NO	N/A
Wall cladding	YES	NO	~~N/A~~	Balconies	YES	NO	N/A
Roof cladding	~~YES~~	NO	N/A	Parapets	YES	NO	N/A
Finished floor levels	~~YES~~	NO	N/A	Decks	YES	NO	N/A
Height in relation to boundary	YES	NO	~~N/A~~	Roof and wall junctions	YES	NO	N/A
Maximum building height	~~YES~~	NO	N/A	More than one cladding	YES	NO	N/A
Deck Construction				Pergola	YES	NO	N/A
Foundation plan	~~YES~~	NO	N/A	Other penetrations	YES	NO	N/A
Pile size, centers. treatment	~~YES~~	NO	N/A	**Solid Fuel Heating**	N/A		
Bearer size, span, treatment	~~YES~~	NO	N/A	Specifications	YES	NO	N/A
Joist size, centers, treatment	~~YES~~	NO	N/A	Construction details	YES	NO	N/A
Detail at junction of house	~~YES~~	NO	N/A	Floor plan	YES	NO	N/A
Fixings	~~YES~~	NO	N/A	Energy source	YES	NO	N/A
Fencing Of Swimming Pools				**Outbuildings**	N/A		
Pool construction details	YES	NO	N/A	Foundation plan	YES	NO	N/A
Pool specification	YES	NO	N/A	Cross-section	YES	NO	N/A
In-ground or above-ground	YES	NO	N/A	Wall bracing	YES	NO	N/A
Fencing and gate plan	YES	NO	N/A	Roof framing	YES	NO	N/A
Fencing/construction details	YES	NO	N/A	Elevations	YES	NO	N/A
Floor plan if house forms fencing	YES	NO	N/A	Drainage	YES	NO	N/A
Backflow	YES	NO	N/A	Engineer design	YES	NO	N/A

RECEIVED: 25 Feb 2013 SCANNED: 25 Feb 2013 BOX: 1 BATCH: 100434 DOC: KDCAAQGU

KAIPARA DISTRICT

Means Of Compliance Checklist

(To Be Completed By Applicant/Designer)

Please circle all parts of New Zealand Building Code that your project complies with.

If using a verified method or have gained a waiver, please provide verification method or waiver certificate.

NZBC Clause (which of the following clauses will be involved in the proposed building work)	Means Of Compliance (refer to the relevant compliance document(s) or detail or alternative solution in the plans and specifications)			Proposed Inspections (state means of inspection. Note PS4 or certification may be required) For Office Use Only		
B1 Structure	B1/AS2	NZS 3604	NZS 4203	☐Council	☐Consultant	☐Other
	NZS 4229					
B2 Durability	B2/AS1	NZS 3101	NZS 3602	☐Council	☐Consultant	☐Other
	NZS 3604					
C1-C2-C3-C4 Fire	C1/AS1	C2/AS1	C3/AS1	☐Council	☐Consultant	☐Other
	C4/AS1					
D1 Access routes	D1/AS1	NZS 4121		☐Council	☐Consultant	☐Other
D2 Mechanical installations for access	D2/AS1	NZS 4322	EN/81	☐Council	☐Consultant	☐Other
	EN/115					
E1 Surface water	E2/AS1	AS/NZS 3500		☐Council	☐Consultant	☐Other
E2 External moisture	E2/AS1	SPECIFIC DESIGN		☐Council	☐Consultant	☐Other
E3 Internal moisture	E3/AS1	COUNCIL STANDARDS		☐Council	☐Consultant	☐Other
F1 Hazardous agents on site	F1/AS1			☐Council	☐Consultant	☐Other
F2 Hazardous building materials	F2/AS1	NZS 4233		☐Council	☐Consultant	☐Other
F3 Hazardous substances	F3/AS1			☐Council	☐Consultant	☐Other
F4 Safety from falling	F4/AS1	FENCING OF SWIMMING POOLS ACT		☐Council	☐Consultant	☐Other
F5 Construction and demolition hazards	F5/AS1			☐Council	☐Consultant	☐Other
F6 Lighting for emergency	F6/AS1			☐Council	☐Consultant	☐Other
F7 Warning systems	F7/AS1	NZS 4512	NZS 4515	☐Council	☐Consultant	☐Other
	AS/NZS 1668					
F8 Signs	F8/AS1			☐Council	☐Consultant	☐Other
G1 Personal hygiene	G1/AS1			☐Council	☐Consultant	☐Other
G2 Laundering	G2/AS1			☐Council	☐Consultant	☐Other
G3 Food preparation and prevention from contamination	G3/AS1			☐Council	☐Consultant	☐Other
G4 Ventilation	G4/AS1	AS 1668.2		☐Council	☐Consultant	☐Other

RECEIVED: 25 Feb 2013 SCANNED: 25 Feb 2013 BOX: 1 BATCH: 100434 DOC: KDCAAQGU

KAIPARA DISTRICT

NZBC Clause (which of the following clauses will be involved in the proposed building work)	Means Of Compliance (refer to the relevant compliance document(s) or detail or alternative solution in the plans and specifications)			Proposed Inspections (state means of inspection. Note PS4 or certification may be required) For Office Use Only		
G5 Interior environment	G5/AS1			☐Council	☐Consultant	☐Other
G6 Airborne and impact sound	G6/AS1			☐Council	☐Consultant	☐Other
G7 Natural light	G7/AS1			☐Council	☐Consultant	☐Other
G8 Artificial light	G8/AS1	NZS 6703		☐Council	☐Consultant	☐Other
G9 Electricity	G9/AS1			Energy works certificate		
G10 Piped services	G10/AS1	NZS 5261		Energy works certificate		
G11 Gas as an energy source	G11/AS1			Energy works certificate		
G12 Water supplies	G12/AS1	AS/NZS 3500.2	AS/NZS 3500.5	☐Council	☐Consultant	☐Other
G13 Foul water	G13/AS1	AS/NZS 3500.2	BS 5572	☐Council	☐Consultant	☐Other
G14 Industrial liquid waste	G14/AS1			☐Council	☐Consultant	☐Other
G15 Solid waste	G15/AS1			☐Council	☐Consultant	☐Other
H1 Energy efficiency	H1/AS1	NZS 4218	NZS 4243	☐Council	☐Consultant	☐Other
	NZS 4214					

Waiver or modification								
	B1	B2	C1	C2	C3	C4	D1	D2
	E1	E2	E3	F1	F2	F3	F4	F5
	F6	F7	F8	G1	G2	G3	G4	G5
	G6	G7	G8	G9	G10	G11	G12	G13
	G14	G15	H1					

Alternative solution								
	B1	B2	C1	C2	C3	C4	D1	D2
	E1	E2	E3	F1	F2	F3	F4	F5
	F6	F7	F8	G1	G2	G3	G4	G5
	G6	G7	G8	G9	G10	G11	G12	G13
	G14	G15	H1					

RECEIVED: 25 Feb 2013 SCANNED: 25 Feb 2013 BOX: 1 BATCH: 100434 DOC: KDCAAQGU

KAIPARA DISTRICT

Application

☐ I have read the guidance notes and the information I have supplied with this application is true and complete to the best of my knowledge.

☐ I have completed the attached checklists

I request that you issue a (please tick):

☐ Project Information Memorandum

☐ Building Consent

☐ Certificate of Acceptance

for the building work described in this application

Signed by / for and on behalf of / the owner

Note : If acting for and on behalf of, please read the following declaration prior to signing

"I hereby declare that I am authorised to act as Agent of the Applicant"

Signature : [redacted] **Nam** [redacted]...

Date : 28/6/11

Please Note :

Council is unable to accept your application as being lodged until **all details and relevant information are provided** and the **application is signed** and the **processing fee paid**. Fees for your application will be assessed by the Customer Services Section on application. Further fees may be incurred after the Building Consent is issued.

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KAIPARA DISTRICT

Kaipara te Oranganui · Two Oceans Two Harbours

Application Acceptance Checklist

110229

ENTERED

KAIPARA DISTRICT COUNCIL

For Council Use Only

RECEIVED
30 MAY 2011
KAIWAKA
Kaipara District Council

Name Of Applicant [redacted] **BC** _____

Received By Glenis **Date Stamp** _____

Office Received ☑ Kaiwaka ☐ Dargaville

Received ☐ In Person ☐ By Mail ☐ By Courier ☐ By Email ☐ Other

☑ Print off **'General Property Information'** to confirm legal description of property.

☒ Certificate of Title provided or other evidence of ownership.

☑ Check that <u>all</u> sections (1 – 14) of the application have been filled in and the application has been signed and dated.

☒ Solid Fuel Heater Application.

☑ Check that all relevant details (plans, calc and specs) for Part B (PIM) and Part C (Building Consent) are provided.

☑ Check all **contractors** have been listed in Part D (Key Personnel).

☐ Check that Part E (Compliance Schedule Details) is completed.

If Compliance Schedule required extra fees will be charged.

☑ Is the **Building Consent Application Checklist** completed?

☑ Is the **Means of Compliance Checklist** completed?

☐ Are any other application forms required, ie

- ☐ Vehicle Crossing
- ☐ Fire Service Design
- ☐ Rapid Application
- ☐ Application for Reticulated Services
- ☐ **Is the connection to Mangawhai Eco-Care Drainage District**

Payment Method ☐ Cash ☐ Eftpos ☑ Cheque ☐ Direct Credit

No Payment Received ☐

Fees: $1,140.35 623091

Receipt Number _____

Date 30/5/2011

Received By _____ Gl

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Tax Invoice

GST Reg No.	52-237-122
Date	30/05/11
Customer No:	BC110229
Invoice Number	29616

AA & EP Reddy
C/-Brogan Builders Ltd
108 Griffin Road
RD 1
Maungaturoto 0583

110229 : 33 BALDROCK ROAD, KAIWAKA
Deck Extension
Owner: AA & EP Reddy

Qty	Description	Rate	Amount	
	Building Consent Fee		892.00	*
	PIM Fee		143.00	*
	BRANZ Fee		35.00	0G
	DBH Levy		70.35	0G
		BEFORE GST	**1,005.35**	
		(* Includes GST) GST	135.00	
		Total incl. GST	**$1,140.35**	
		LESS DEPOSIT PAID	1,140.35CR	
		Net Due	**$0.00**	

Payments by Direct Debit: BNZ Dargaville 02 0308 0090743 07
Please ensure you quote your customer number when making a payment

Remittance Advice

Please use this remittance when making your payment and make cheques payable to Kaipara District Council.

AA & EP Reddy
C/-Brogan Builders Ltd
108 Griffin Road
RD 1
Maungaturoto 0583

Customer Number	BC110229
Invoice Date	30/05/11
Invoice Number	29616
Amount Due	**$0.00**

KAIPInvoice

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KAIPARA DISTRICT

TAX INVOICE RECEIPT (GST NO. 52-[illegible]22)
Received with thanks by 8/20
Kaipara District Council

30-05-11 16:02 Receipt no.623051

GL G1122266	TRF TO BC11 ** Refund *	991.60
GL G.S.T.	TRF TO BC11 ** Refund *	148.75
DR BC110229		1,140.35-
INVOICE 29616		
AA & EP Reddy::C/-Brogan Builders Ltd:1		

RECEIVED: 25 Feb 2013 SCANNED: 25 Feb 2013 BOX: 1 BATCH: 100434 DOC: KDCAAQGU

Kaipara District Council
General Property Information

Property

Valuation No.	0120003403: (GIS)
Location	33 BALDROCK ROAD, KAIWAKA
Legal Description	PT LOT 2 DP 31705 BLK XIV WAIPU SD
Owner	[redacted]
Owner Address	33 Baldrock Road : RD 2 : Maungaturoto : : 0587
Area (hectares)	28.7382

Rates

Government Valuation	
Land	$ 405,000
Improvements	$ 430,000
Capital Value	$ 835,000
Current Rates Year 2010 to 2011	
Annual Rates	$ 1,375.20
Current Instalment	$ 225.80
Outstanding Balance	$ 2.40
Arrears for Previous Years	
Next Instalment Date	

Planning/Resource Management	
9/04/10	RESOURCE CONSENT 090098 : Application for Certificate of Compliance for the concrete manufacturing plant. Proposed boundary adjustment between 5 : Decision Notified 17/03/10
	RESOURCE CONSENT 952483 : SUBDIVISION OF 1 LOT FROM PT ALLOT 80 PSH KAIWAKA BLK XIV WAIPU SD : Decision Notified 20/08/64 (Found on parent property: 0120003900)
	RESOURCE CONSENT 952735 : PRECAST CONCRETE FACTORY : Decision Notified 24/09/71
	RESOURCE CONSENT 952827 : DWELLING IN RURAL ZONE LOT 2 DP 31705 : Decision Notified 31/03/76
	PLANNING NOTES FOREST SHRUBLAND N80 PUKEKARORO MOUNTAIN REGIONAL SIGNIFICANCE (Found on parent property: 0120003400)
	PLANNING NOTES FOREST SHRUBLAND N65 BRYNDERWYN HILLS NATIONAL SIGNIFICANCE
	PLANNING NOTES RM090098: Consent Notices for Lots 1-3 shall draw attention to & require compliance with respect to the following matters: i)(Lots 2 & 3) Consent Notice requirement for earthworks, the location of buildings, building foundations and stormwater and wastewater disposal to be subject to specific engineering design by a suitably qualified Chartered Professional Engineer having regard to any soil instability/saturation issues that may exist or arise as a result of the development ii)(Lots 2 & 3) Consent Notice requiring the floor level of new any habitable building to be at least 0.5m above the 100yr ARI flood level. iii)(Lots 2 & 3) Consent Notice requiring that the existing vehicle crossing at the eastern end of the Baldrock Road frontage shall not be used as an access to any dwelling or building iv) (Lot 1) At the time the vehicle crossing place onto Baldrock road obtains final approval all heavy vehicle traffic accessing proposed Lot I shall use the Baldrock Road entrance; no heavy vehicle shall access proposed Lot 1 via crossing places CP14/15.
Building	
1/07/08	BUILDING CONSENT 080442 : New shed : Work Start Extension 9/07/09

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25/09/01	BUILDING CONSENT 010655 : DEMOLISH BUILDING : Code Compliance Certificate issued 24/05/04
28/08/01	BUILDING CONSENT 010570 : DEMOLISH DWELLING AND REPLACE WITH NEW DWELLI : Code Compliance Cert Issued 24/05/04
26/07/00	BUILDING CONSENT 001391 : BARN AND TRACTOR SHED : Code Compliance Certificate issued 13/08/09
24/02/94	BUILDING CONSENT 394 E & A REDDY S J BELL ALTER/ADD TO DWELLING
4/11/93	BUILDING CONSENT C 474 A & E REDDY APPLICANT SWIMMING POOL
24/04/91	BUILDING PERMIT H 28433 ALTER/ADD TO INDUSTRIAL BUILDING
26/11/86	BUILDING PERMIT D 37804 HAY BARN/HAY SHED (Found on parent property: 0120003400)
28/09/84	BUILDING PERMIT B 107090 ALTER/ADD TO DWELLING
4/03/83	BUILDING PERMIT A 63987 MILKING SHED/DAIRY SHED
26/02/82	BUILDING PERMIT GOAT WINTERING BARN
12/05/76	BUILDING PERMIT H 11000 DWELLING
16/06/71	BUILDING PERMIT P&D 70 RENEW EFFLUENT LINE (Found on parent property: 0120003400)
Licences	
No information located	
Sewer & Drainage	
No information located	
Land and Building Classifications	
No information located	
Transport	
No information located	
Special Land Features	
LAND FEATURE NOTES Natural Gas Pipeline through property.	
Swimming Pools	
29/10/08	Swimming Pool SW0016 : 29/10/08 : Adrian & Elaine Reddy
Other	
14/07/05	LIM APPLICATION L050291 : LIM
** End of enquiry **	

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Author: Greg M Lee

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KAIPARA DISTRICT

Minor Processing Checklist

Unit: Building Processing Document No:
Revision No.: Version 0.2 Date issued:

Address	33 Baldrock Road Kaiwaka.														
Date	27-6-11	Consent number	110229	Processed by:	Dave W.										
Current Use	CS	CL	CO	CM	SC	SD	SA	SR	Number of levels above ground	1					
Crowd Activity	SH	WL	WM	WH	WF	IA	ID	Number of levels below ground							
Building Cat.	1	2	3	Comp. level	1	2	3								
Wind zone	L	M	H	VH	SD	Corrosion	Zone 1	Seaspray							

To be used as an aid, by the Building Control Officer, when processing Building Consents at the Processing table
- It is expected that there will be a tick in every line and that this will indicate that the BC application complies with the New Zealand Building Code. If it does not comply leave the line blank until it does
- This document is to be read in conjunction with the appropriate *Building Consent Checklist*
- The shaded areas are not to be filled in
- This document is to be used for all minor Building Consent applications, including the following:
  Minor plumbing and drainage repairs/work Internal building alterations Heater installations Outbuildings - Garages and sheds Decks Demolition Foundations Amendment

NZBC Clause number	Clause	Items	Alternative solution	N/A	Complies P&D	Complies Build	Comments Including Endorsements, Conditions and Requirements NOTE:- If its an alternative solution there must be comments
PIM	S31 - S39	*Have you filled in PIM conditions*				✓	
BA 2005	S47	*Does this application need to go to the NZFS – DRU?*		✓			
	S71 - 74	*Building on land subject to erosion , check PIM entry*		✓			
	S75 - 83	*Building on 2 or more allotments*					
	S112	*Alterations to existing Buildings*		✓			
	S100 – 107	*Is a compliance schedule required*		✓			
	S114 – 116	*Change of use*		✓			
	S118	*Access and Facilities – does the building need them*		✓			
	S122	*Is it an earthquake prone building*		✓			
	S222	*Required inspections marked on site Inspection sheet*				✓	
B1	Structure	*Foundations*				✓	Specific design.
		Floor & Sub-Floor				✓	3604
		Wall Framing				✓	3604
		Roof Framing				✓	3604
		Trusses require a fully developed design		✓			
B2	Durability			✓		✓	H3.2 R
C1	*Outbreak of Fire*	*Solid Fuel Appliances*		✓			
		Oil or Gas Appliances		✓			
C2	*Means of Escape*	*Single Escape*		✓			
		Exits		✓			
		Travel Distance		✓			
C3	*Spread of fire*	*External fire separation*		✓			
		Internal Fire separation		✓			
		Fire protection systems		✓			
		Smoke Control		✓			
C4	*Structural stability During Fire*			✓			
D1	Access Routes	*Disabled access*		✓			
		Stairs, Handrails		✓			
		Slip resistant Surfaces		✓			
		Lift required		✓			
D2	Mechanical Installations for Access	*Producer Statement required*		✓			
E1	Surface Water	*Confirm FFL is min. 200mm above the 2% event level*				✓	
		Hard surface areas		✓			
		Drainage system		✓			
E2	External Moisture	*Risk Matrix*		✓			
		Cavities		✓			
		Materials		✓			
		Penetrations/openings Flashings		✓			
E3	Internal Moisture	*Impervious, Overflow, Thermal resistance, Ventilation*		✓			

RECEIVED: 25 Feb 2013 SCANNED: 25 Feb 2013 BOX: 1 BATCH: 100434 DOC: KDCAAQGU

KAIPARA DISTRICT

F1	Hazardous Agents on site	*via the PIM*		✓		
F2	Hazardous Building Materials	*Glazing*		✓		
F3	Substances & Processes	*Hazardous Substances PIM note (9)*		✓		
		Trade waste		✓		
		Gas, Solid, Liquid		✓		
F4	Safety from Falling	*Barriers*			✓	1m high unclimbable barrier.
		Restrictors		✓		
F5	Construction & Demolition Hazards	*PIM note (13) or schedule of proposed safety procedures*		✓		
F6	Lighting for Emergency	*Possible compliance schedule*		✓		
F7	Warning Systems	*Possible compliance schedule*		✓		
		Smoke alarm		✓		
F8	Signs			✓		
G1	Personal Hygiene	*Number and type of units*		✓		
		Location of units		✓		
		Accessible units		✓		
G2	Laundering	*Accessible units*		✓		
		Number of facilities		✓		
G3	Food preparation and prevention of contamination	*Personal Services, Offensive trades, commercial food premises - Send to EHO*		✓		
G4	Ventilation	*Natural, Mechanical, gas- fuel appliances*		✓		
G5	Interior Environment	*Heating, Space and Accessibility requirements*		✓		
G6	Airborne & Impact Sound	*STC, IIC*		✓		
G7	Natural Light	*% of glass, Visual awareness*		✓		
G8	Artificial Light	*Access routes, Common spaces, exit s*		✓		
G9	Electricity	*Is it part of this BC application – PS1*		✓		
G10	Piped Services	*Fuel gas only – all others alternate solution*		✓		
G11	Gas as an Energy Source	*Is it part of this BC application. AS1 / NZS5261*		✓		
G12	Water	*Back flow prevention*		✓		
		Cold Water		✓		
		Hot Water		✓		
		Non-Potable		✓		
G13	Foul Water	*Drainage*		✓		
		Sanitary Plumbing		✓		
		Septic tank (sent to TSO)		✓		
G14	Industrial Liquid Waste	*TSO, Containment, Disposal*		✓		
		Trade waste		✓		
G15	Solid Waste	*Storage*		✓		
		Access		✓		
		Design		✓		
H1	Energy Efficiency	*R – value building*		✓		
		R – value plumbing		✓		
	Backcountry Huts			✓		
	Simple dwellings			✓		
	Have you Stamped the plans and specification				✓	
	Have you signed the plans and specification				✓	
	Have you checked the application form				✓	
	Have you completed your task in NCS				✓	
	Consent documents sorted ready for issuing (customer pile and KDC pile)				✓	
	For amendments only – have you filled in the "time taken in minutes column"				1	
	Further Information Requested / Letter Sent				1	

~~Approved~~ Granted / Refused	State outcome and reasons I am satisfied on reasonable grounds that if the work was built in accordance with the specifications and plans and the design assumption are met that the work will comply with the Building Code		
Checked by:	Dave Warford	Date	1-7-11
Reviewed by:		Date	

RECEIVED: 25 Feb 2013 SCANNED: 25 Feb 2013 BOX: 1 BATCH: 100434 DOC: KDCAAQGU

KAIPARA DISTRICT

Conditions of the Building Consent
Type of Inspections Required for Building Consent

Building Consent Number: 110229

Please circle		Description of Inspection	T-19.4
01	**Producer statement Construction (PS4)**	As required by either the consent or BCA officer for specialist installations for ground conditions, pile driving, foundations, structural, all building work.
02	**Foundations** ***slab or wall concrete strip foundations***	Boundaries are to be defined and foundations excavated, reinforcing placed as required. Depth/width of excavations, steel size, laps ties clearances ground bearing to be checked.
03	**Footings** ***pile or posts***	Boundaries are to be clearly defined. Pile and/or post holes to be drilled/dug to required depth, cleaned and correct size. Depth/width of holes, ground bearing (i.e. firm original clay) anchor or bracing components identified, to be checked.
04	**Slab drainage** ***concrete floors***	All sub floor drainage to be completed, and junctions exposed. Inspection to be carried out while under water test
05	**Slab** ***concrete floors***	All slab steel, underlay, penetrations wrapped, thickenings and point loads, formwork complete. Please have a string line taught across slab for ready thickness check
06	**Tilt Slabs**	All Formwork complete. All steel in place, tied and on chairs. All welding plates lifting eyes as per engineer design.
07	**Sub floor** ***timber floor***	Bearer support, fixings, and size, and joist span, support, fixings and size, and brace size, location, fixings to be complete (if this is carried out before the floor is laid it is useful). Decks – all fixings to be stainless steel or similar
08	**Bond Beam**	Any block work with bond beams or fill to be complete with steel correctly placed and if over 1200mm high washouts at the base of each starter
09	**Framing**	All framing to be completed, all bottom plate, stud to top plate, truss fixings, strapping diagonal braces, purlin fixings to be checked ***prior to building wrap or roof install***
10	**Flashing/Wrap/Cavity/ Waterproofing**	All waterproofing inspected. All building wrap and flashing tape to be completed, roof can be installed by this stage. Check of Flashings and Battens to Cavity systems prior to cladding being installed / fitted
11	**Cladding**	Check of Flashings and Fixings to systems prior to coating being installed
12	**Brick Veneer**	Bricks half completed, brick tie spacing, slope, type checked, cavity width window flashings (dpc) checked
13	**Preline**	Cladding completed windows installed, building completely weather tight, pre-wire, pipe-out *(see preline plumbing)* wastes and soil stacks, vents and insulation complete.
14	**Fireplace Chimney**	Chimney to be inspected prior to the fire being installed (In Built)
15	**Preline Plumbing** ***often part of preline***	All plumbing to be complete and mixers bypassed, outlets plugged and entire system to be under 1500kpa (250psi) pressure test for not less than 30 minutes, Pressure gauge to be on the line at time of inspection and under the above pressure
16	**Post Line**	When Internal linings (gib) are installed and all bracing elements correctly fastened, fastening type and spacing to be inspected. Fire walls completed and fire wraps done. ***All fastening to be exposed, no stopping skirting, Scotia etc to be covering fasteners***
17	**Drainage**	An inspection of all foul water, storm water drains, septic tanks, effluent fields, sewer connections is to be carried out when drains are completed prior to back filling all foul water lines to be under static water test at time of inspection. As built plan of drainage to be provided
18	**Septic Tank**	Septic Tank installed. Effluent systems completed and/or planted. As built plan of drainage required at time of inspection.
19	**Swimming Pool Fence**	The pool fence and gates must meet the requirements of the Swimming Pool and Fences Act 1987
20	**Final – Heating Appliance**	Required when appliance has been installed in strict compliance with the manufacturers instructions and NZ Building Code
21	**Final – Building (Code Compliance Certificate Inspection)**	All work to be completed, all specified inspections on inspection sheet passed by a Kaipara District Council building officer, and all work complying to consented plans. (This may require landscaping against building to be complete also). All required documentation to be provided, see below Development levies to be paid prior to issue of CCC if applicable
22	**As built drainage plan**	This plan shows the location of drains laid, inspection, gullies, depth of connections, with distances off boundaries or buildings to enable accurate relocation of services in the future
23	**Producer statements**	As required by either the consent or BCA officer for work such as water proof membranes, or specialist installations
24	**Other documentation**	As required. Copies of Electrical certificates, or Gas certificates included. CCC application

Contact: **Kaipara District Council**

Telephone: Dargaville Telephone (09) 439 7059 Facsimile: (09) 439 6756

Kaiwaka Telephone (09) 431 2013 Facsimile: (09) 431 2023

Depending on the form of construction some of these inspections could be incorporated into one inspection. Other inspections may be necessary.

Note: This form is to be kept on site at all times together with the approved plans/specifications.

One working days notice is required for all inspections

RECEIVED: 25 Feb 2013 SCANNED: 25 Feb 2013 BOX: 1 BATCH: 100434 DOC: KDCAAQGU

KAIPARA DISTRICT

Kaipara te Oranganui · Two Oceans Two Harbours

Building Consent Addenda Items

KAIPARA DISTRICT COUNCIL

TO: Building Administration Team

FROM: David Hughes / Jim Vallance / Derek Free / Des Sheldon / Dave Waetford

Please insert the addenda items indicated into BC No: 110229

01 This building consent will lapse and be of no effect if the building work to which it relates does not commence within 12 months after the date of issue. The consent may be extended for any further period at the discretion of council.
02 No deviation or alteration from the original plans and specifications can be carried out without written approval of Council and no building may be converted to any other use other than that stated on the building consent.
03 IMPORTANT: YOU ARE FULLY RESPONSIBLE FOR ANY DAMAGE DONE TO ANY WORKS SUCH AS TELEPHONE CABLES, POWER CABLES, WATER MAINS, GAS MAINS, SEWERS, PIPES, FOOTPATHS, ROADS OR OTHER SERVICES.
04 As the property owner is responsible for the correct siting of all works in accordance with the NZ Building Code and the Resource Management Act, the owner must ascertain the true position of survey pegs before work commences.
05 Restrictions on the Erection of Buildings near Overhead Electric Lines:- Under the Electrical Supply Regulations 1976, it is an offence to erect any building or structure etc, within certain prescribed distances of an overhead electric line.
06 To enquire about these restrictions, contact the nearest office of the NZ Electricity Department or your local Power Supply Authority.
07 NOTICE THAT BUILDING WORK IS READY FOR INSPECTION. For the purposes of Section 222 of the Building Act 2004, and unless otherwise provided by the building consent, the owner or other person undertaking any building work shall give:
09 b) at least 2 working days notice of the covering up of any
10 i) drainage or plumbing
11 ii) excavation for a foundation
12 iii) reinforcing steel for a foundation
13 iv) timber required to have a specific moisture content
14 v) other work required to give notice as a condition
15 Council MUST be notified at the completion of building work on the attached form.
16 This building MUST NOT be used for human habitation.
17 THIS CONSENT IS ISSUED SUBJECT TO AN ENTRY PURSUANT TO SECTION 72 OF THE BUILDING ACT 2004. EQC ADVISES THAT THIS MAY EFFECT THE NATURAL DISASTER INSURANCE. REFER TO THE ATTACHED STATEMENT AND CLAUSE 3(D) OF THE 3RD SCHEDULE TO THE EARTHQUAKE COMMISSION ACT 1993.
18 From 28 April 2003 all new dwellings, additions or alterations to dwellings must be provided with domestic smoke alarm(s) in order to comply with the Building Code.
19 This Building Consent is issued subject to Section 37 of the Building Act 2004 whereby no building work shall be carried out until Resource Consent is granted.
20 This building consent is issued subject to the condition that the element(s) of the building work with limited life/lives which is/are the subject of this building consent, is/are demolished, removed or altered on or before the end of the specified intended life.
21 Council will require a Producer Statement Construction from the installer for this project upon completion of the building work, and recommends that woodburners are installed by a member of the New Zealand Home Heating Association.
22 This Building Consent is issued subject to site and soil conditions being in 'good ground' as defined in NZS3604:1999
23 The design engineer or his agent is to INSPECT ALL ASPECTS OF THIS CONSTRUCTION as per the engineers Producer Statement covering engineering aspects of this project.
24 The engineers inspections are to be carried out in conjunction with Councils inspections to enable continuity throughout the project.
25 Council will require a Producer Statement Construction Review from the design engineer for this project upon completion of the building.
26 Every household unit requires smoke alarms in accordance with NZBC Clause F7/AS 1.3.1. Smoke alarms may be battery powered but shall have a hush facility and must comply with at least one of the following: UL 217, CAN/ULC S531, AS 3786, BS 5446: Part 1. Smoke alarms shall be installed near the ceiling and located on escape routes, in every sleeping space or within 3.0m of every sleeping space door.
27 A Compliance Schedule is required for the building

1	✓
2	✓
3	✓
4	✓
5	✓
6	✓
7	✓
9	✓
10	-
11	✓
12	.
13	✓
14	✓
15	✓
16	.
17	
18	✓
19	
20	
21	
22	
23	
24	
25	.
26	✓
26a	✓
27	

Condition/s:

RECEIVED: 25 Feb 2013 SCANNED: 25 Feb 2013 BOX: 1 BATCH: 100434 DOC: KDCAAQGU

KAIPARA DC	PIM PROCESSING T- 08.2v3			Application Number	110229
Page 1 of 2	A checklist of procedure & contents: Planning Information Memorandum			Date Received	30/5/11
OWNER	Quality Manager	Category: 1·2	PIM & BC / PIM only	Date Issued	

Fees paid?	(Y) N	Intended building use: Housing & detached alt + add.	
Change of use?	Y (N)	Zoning: Rural	
Fire design outside of the C	Y (N)	If change of use, what changes?	
Evacuation scheme required?	Y (N)		
Notify Health Officers?	Y (N)	If yes, done within 48 hrs?	Y N
Notify Historic Places Trust?	Y (N)	If yes, done within 5 days?	Y N
More information required?	Y (N)	If yes, done within 10 days?	Y N

1. Are there any other licenses that may be required?

Liquor	Y (N)	Other	Y (N)
Health	Y (N)		

2. Any outstanding issues with the property?

Certificate of Title:	Y (N)	Resource Consent Notices:	Y N
Two or more building sites?	Y (N)	Property Comment:	

3. Any GIS or site specific information relevant to this application?

Location of service adjacent to, or on, the site:		water	well	storm water
wastewater treatment on site	wastewater utility	manhole	public place	
Wind Zone: M	Site topography:	gentle	(moderate)	steep
(H) VH EH	Spec Eng:	Zone D -Sea Spray		(Zone C-Inland)
Demolition arrangements requ	Y (N)	Party wall on the Boundary?		Y (N)
Earthquake/dangerous/insanitary building?	Y (N)	Building over sewer/drains?		Y (N)

4. Any flags with District Plan district wide issues?

Earthworks RC required:	Y (N)	Network Authority affected?	Y (N)
Parking required:	Y N		
Vehicle crossing required:	Y N	DP Comment:	

5. Any flags with District Plan Heritage & landscape protection?

Archaeological sites	Y (N)	Ecological feature	Y (N)
Historical buildings	Y (N)	Trees of amenity value	Y (N)
Biological interest	Y (N)	Significance to Maori	Y (N)
Heritage orders	Y (N)	Coastal Hazard	Y (N)
Designated Site	Y (N)	Other Hazards#	Y (N)
Places of heritage value	Y (N)	Site susceptible to flooding	Y (N)

#Includes natural hazards of potential erosion, avulsion, falling debris, subsidence, alluvion, inundation, slippage; alteration of existing earthquake prone building; or contaminants at or near the site. Check the Hazard Register for any historical information known to Council.

6. Are District Plan zone rules exceeded?

Boundary setbacks	Y (N)	Minimum Floor Levels	Y (N)
Location near water or sea	Y (N)	Buildings near Infrastructure	Y (N)
Height of buildings	Y (N)	Private Open Space	Y (N)
Relocated building	Y (N)	Impermeable Surfaces	Y (N)
Building coverage	Y (N)	Other:	

7. Are Development Contributions required for this project?

Wastewater - Mangawhai	Y (N)	
Roading - Mangawhai	Y (N)	
Roading - Otamatea	Y (N)	

NOTES - If yes to any of the above – note section number, list issue & action taken:

(PLEASE note any impacts on timeframes & anything that makes this application not standard - notes are to include date & initials of processer)

PLEASE SEE OVER PAGE

Required certificate of Title. OK

RECEIVED: 25 Feb 2013 SCANNED: 25 Feb 2013 BOX: 1 BATCH: 100434 DOC: KDCAAQGU

This project information memorandum includes:	
	Information identifying relevant special features of the land concerned
	Information about the land or buildings concerned notified to the Council by any statutory organisation having the power to classify land or buildings
*	Details of relevant utility systems
	Details of authorisations that have been granted
	Notification of any other authorisations that must be obtained before the proposed building work may be undertaken
	Details of authorisations, which have been refused

Building work may be carried out?	Building work may not be carried out?
PROCESSED BY (Print Name): Dave W	
SIGNED: D A Wakefield	DATE: 27/6/11

RECEIVED: 25 Feb 2013 SCANNED: 25 Feb 2013 BOX: 1 BATCH: 100434 DOC: KDCAAQGU

KAIPARA DISTRICT

Kaipara te Oranganui - Two Oceans Two Harbours

KAIPARA DISTRICT COUNCIL

PIM Number: 110229

This Planning Information Memorandum confirms that building work may be carried out.

Council advises the applicant that:

1 This document is not approval to build.

2 Once a Building Consent is issued, the Council will follow up on building work not completed within two years of building consent issue.

3 A Building Consent lapses and is of no effect if the building work has not been started within 12 months of the date of issue.

4 If the building is public premises it may not be occupied until either a Code Compliance Certificate or Certificate for Public Use has been issued.

5 If the building is wholly or partly a dam, a Project Information Memorandum and Building Consent must be obtained from the regional authority.

6 The Northland Regional Council has a register of contaminated sites. Please contact them on 0800 002 004 if you suspect that your property may be contaminated e.g. historic timber treatment sites, service stations, landfill sites etcetera.

7 Please check your Certificate of Title for any encumbrances (such as easements, section 73 notice etcetera) before you make an application for a Building Consent.

8 All archaeological sites are protected under the provisions of the Historic Places Act 1993. If subsurface archaeological evidence (shell, midden, hangi, storage pits, etc) should be unearthed during construction, work should cease in the immediate vicinity of the remains and the Historic Places Trust should be contacted.

This Planning Information Memorandum includes :

- **Information identifying special features of the land concerned**
  - The proposed project complies with / ~~does not comply with~~ the District Plan zoning as it does/~~does not~~ meet the Rural Zone ..... Rules. ~~Please see the attached Form 4~~.
  - The Proposed District Plan was publicly notified on 21 October 2009. The rules in the proposed Plan do not have legal effect except for those listed in the attached document entitled: *Proposed Kaipara District Plan: How does the Resource Management Amendment Act 2009 affect the plan?*
  - There are special planning restrictions (include exact reference from page 1 Heritage and Landscape Protection) known to affect this site which will have an impact on the proposed project. Please refer to the attached Heritage and Landscape Protection rules.
  - The site contains an overland flow path that needs to be maintained e.g. through the building of a "swale drain". OR For your information: The site is low lying but is not known to flood. OR For your information: The site is located in a natural floodplain that is assisted by a number of flood drainage schemes.
  - This property is subject to a section 73 notice - where an entry has been made on the Certificate of Title to allow land subject to certain hazards to be developed as long as the owner and future owners are aware of the risks. Under section 392 of the Building Act, the Council is not liable in any civil proceedings brought against it in respect of a Building Consent issued under section 72 where the building suffers damage directly or indirectly from the natural hazard noted on the Certificate of Title. Please also note that the existence of an entry under Section 74 of The Building Act 2004 may limit statutory natural disaster insurance. Refer to Clause 3(d) of Third Schedule to The Earthquake

RECEIVED: 25 Feb 2013 SCANNED: 25 Feb 2013 BOX: 1 BATCH: 100434 DOC: KDCAAQGU

Commission Act 1993. Please call the Earthquake Commission on 0800 652 333 if you have any enquiries about your property.

- The Council's records show that the building site may be subject to one or more natural hazards (list hazards). You will need to take both legal and engineering expert advice as this proposed building development will, or may, be subject to risks. You need to take these risks into account in this building project. The Building Consent, if the natural hazard is verified, will be subject to a section 73/74 notice which will be registered against the title of this property at Building Consent stage. The existence of an entry pursuant to section 73 / 74 of the Building Act 2004 may limit statutory natural disaster insurance. Refer Clause 3(d) of the Earthquake Commission Act
- 1993. For further information please contact the Earthquake Commission on 0800 652 333.

- **Information about the land or buildings concerned notified to Council by any statutory organisation having the power to classify land and buildings**
  - For your information: The Council has found that the site wind zone rating is (medium / high / very high / extra high. Special engineering will be required.
  - For your information: The Council has found that the site exposure zone is Zone D - Sea Spray Zone or Zone C – Inland.
  - The provisions (hoardings / gantries / temporary support) being made with regard to building over or adjacent to a road or public place are acceptable / not acceptable.
  - The existing building is classified as insanitary / dangerous / earthquake prone.
  - The site is known to be affected by hazardous contaminants (chemical contamination / underground tanks / asbestos) which may impact on the proposed project. The Northland Regional Council has been advised of your application, and ...
  - An evacuation scheme may be required for the proposed building, under section 21A of the Fire Services Act. Please see the attached form that, when completed, must be sent to the New Zealand Fire Services.
  - Council considers that notification to the New Zealand Historic Places Trust is required under section 39. A copy of the Project Information Memorandum application has therefore been sent to the New Zealand Historic Places Trust, under section 39 of the Building Act, as the application affects a (registered historic place / historic area / wahi tapu / wahi tapu area). The Historic Places Trust may impose conditions on the application, and a Building Consent will not be issued by the Council until approval, or conditions, from the Historic Places Trust is received.
- **Details of relevant infrastructure systems**
  - The proposed vehicle access (gradient / width / length) needs to comply with District Plan requirements. Attached, for your use, is a copy of the crossing application form and supporting information can be found in section 9 of the District Plan.
  - The Northland Regional Council Transitional Regional Rule for small domestic sewerage treatment systems, requires that there be a two metre separation between the lowest point of a septic tank effluent field and the highest ground water level. As this can only be determined by an examination of your site it is recommended that you seek professional advice on this point. If you cannot obtain the required separation it will be necessary to apply to the Northland Regional Council for a Resource Consent to discharge effluent.
  - The proposed methods for building over or near service pipes acceptable/ not acceptable. The application needs approval from the Assets section of Council, and design of the building needs to meet their requirements.
  - Under section 38 of the Building Act, a copy of this Project Information Memorandum has been sent to (statutory / network utility authority) as they are affected by the proposal.

RECEIVED: 25 Feb 2013 SCANNED: 25 Feb 2013 BOX: 1 BATCH: 100434 DOC: KDCAAQGU

- **Details of authorisations which have been granted**
  - The provisions (removal of materials from the site / dust extraction) made for demolition are acceptable / not acceptable.
  - Previous Building Consents granted include ... BC 010655 & 010570
  - Previous resource consents granted include ... RC 952483, & 952827
  - Previous network utility operator authorisations include...
  - The building work referred to in this Project Information Memorandum will / may be affected by active resource consents - please see the attached conditions from Resource Consent (number).
  - Development Contributions apply/do not apply to this project
- **Notification of any authorisation which must be obtained before the proposed building work may be undertaken**
  - The alterations to the property and/or the use mean/s that a review of the means of escape and access and facilities for people with disabilities may need to be upgraded. The building use type is listed in Schedule 2 of the Building Act, as such the provisions of sections 117–120 may apply and access and facilities for people with disabilities must be considered.
  - You will require a health license/liquor license to operate, and this requirement will be subject to the building consent being granted. Please see the enclosed application forms.
  - As the Project Information Memorandum application outlines plans for an additional household unit, you may have to provide additional development contributions as per the Council's development contributions policy. Please note that a Code Compliance Certificate cannot be issued until all development contributions have been paid. Please find attached a Section 36 Development Contribution Notice, form 3.
  - The Project Information Memorandum is subject to a condition under section 75 of the Building Act (2004) where 1 or more of the specified allotments (provide allotment DPs) must not be transferred or leased except in conjunction with (provide allotment DPs) of those allotments. The attached certificate is to be signed by owner and proof of lodgement with the Registrar General of Land must be provided to Council before the building consent may be granted. If required, exemptions to section 75 are possible if the building work is constructed with a party wall on the boundaries of the allotments referred to, or if the owner provides evidence of an application to the Registrar-General of Land for amalgamation of the allotments.
  - Please apply for a section 363A Certificate of Public Use if you wish to continue to use the premises for public use while building commences.

- **Details of authorisations which have been refused**
  - The provisions (removal of materials from the site / dust extraction) made for demolition are acceptable / not acceptable.
  - Previous resource consents refused include...
  - Previous network utility operator refusals include...

Attachments:

- ✗ GIS map of property and utilities etcetera.
- Form 4
- Application to the Fire Commissioner for approval of an evacuation scheme
- Form 3
- Section 73 Notification

RECEIVED: 25 Feb 2013 SCANNED: 25 Feb 2013 BOX: 1 BATCH: 100434 DOC: KDCAAQGU

- Section 74 removal of hazard condition
- Section 75 Allotment development condition
- Section 363A Application for certificate of public use
- Resource Consent application form
- Rapid Number application form
- Liquor License form
- Health license form
- Crossing application form
- Vehicle access rules
- Zone rules
- Heritage rules

RECEIVED: 25 Feb 2013 SCANNED: 25 Feb 2013 BOX: 1 BATCH: 100434 DOC: KDCAAQGU

KAIPARA DISTRICT COUNCIL

Building Consent Notes

New Note , Enquiry , Search

No: 110229
Applicant: AA & EP Reddy
Project: Deck Extension
Location: 33 BALDROCK ROAD, KAIWAKA
Overseer: Central
Status: 28/06/11 Further Information Requested

Notes

Chg Note	Done Date	Officer	Delete	Notes
C1	30/05/11	GM	delete note	FEES TRF TO BC RECEIPT 623091
C2	27/06/11	BS	delete note	It has been noticed that this application is not
C3	29/06/11	DAW	delete note	Received some information . Still more to come.
C4	1/07/11	DAW	delete note	Info received now OK to issue

New Note , Enquiry , Search

Cancel

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Author: Lesley Marshall

RECEIVED: 25 Feb 2013 SCANNED: 25 Feb 2013 BOX: 1 BATCH: 100434 DOC: KDCAAQGU

Building Consent 110229

(Form 5) Section 51, Building Act 2004

AA & EP Reddy
C/-Brogan Builders Ltd
108 Griffin Road
RD 1, Maungaturoto

Issue Date: 1/07/11
Application Date: 30/05/11
Overseer: Central

THE PROJECT: (the following Building Work is authorised by this Building Consent)

Description:	Deck Extension
	DWELLINGS - ALTERATIONS & ADDITIONS
Type of Work:	
Estimated Value:	$35,000
Intended Use:	Housing Detached - Deck Extension
Intended Life:	Indefinite, but not less than 50 years
Stages:	Being Stage 1 of an intended 1 Stages

THE BUILDING:

Street Address of Building:	33 BALDROCK ROAD, KAIWAKA
Valuation Number:	0120003403
Legal Description:	PT LOT 2 DP 31705 BLK XIV WAIPU SD
Building Name:	
Location of Building within site/block number:	
Level/Unit Number:	

THE OWNER:

Owners Name:	AA & EP Reddy			
Owners Mailing Address:	PO Box 17, Kaiwaka 0542			
Street Address/Registered Office:	33 Baldrock Road			
Phone Number	**Landline:** 09 4312 338	**Daytime:**		**After Hours:**
	Mobile:	**Fax:**		
Email:	elainepreddy@gmail.com		**Website:**	

FIRST POINT OF CONTACT: (with the Council/Building Authority)

First Point of Contact:	Grant Eager			
Mailing Address:	C/-Brogan Builders Ltd, 108 Griffin Road, RD 1, Maungaturoto 0583			
Phone Number	**Landline:** 09 4318 290	**Daytime:**		**After Hours:**
	Mobile: 027 474 3856	**Fax:**		
Email:	grant@broganbuilders.co.nz		**Website:**	

This building consent is issued under section 51 of the Building Act 2004. This building consent does not relieve the owner of the building (or proposed building) of any duty or responsibility under any other Act relating to or affecting the building (or proposed building).

This building consent also does not permit the construction, alteration, demolition, or removal of the building (or proposed building) if that construction, alteration, demolition, or removal would be in breach of any other Act.

Signature D.A Jaeyard **Date:** 1/07/11 **Position** Building Services Officer

On behalf of KAIPARA DISTRICT COUNCIL

RECEIVED: 25 Feb 2013 SCANNED: 25 Feb 2013 BOX: 1 BATCH: 100434 DOC: KDCAAQGU

ADDENDA TO THIS BUILDING CONSENT:

1. This building consent will lapse and be of no effect if the building work to which it relates does not commence within 12 months after the date of issue. The consent may be extended for any further period at the discretion of council.
2. No deviation or alteration from the original plans and specifications can be carried out without written approval of Council and no building may be converted to any other use other than that stated on the building consent.
3. IMPORTANT: YOU ARE FULLY RESPONSIBLE FOR ANY DAMAGE DONE TO ANY WORKS SUCH AS TELEPHONE CABLES, POWER CABLES, WATER MAINS, GAS MAINS, SEWERS, PIPES, FOOTPATHS, ROADS OR OTHER SERVICES.
4. As the property owner is responsible for the correct siting of all works in accordance with the NZ Building Code and the Resource Management Act, the owner must ascertain the true position of survey pegs before work commences.
5. Restrictions on the Erection of Buildings near Overhead Electric Lines:- Under the Electrical Supply Regulations 1976, it is an offence to erect any building or structure etc, within certain prescribed distances of an overhead electric line.
6. To enquire about these restrictions, contact the nearest office of the NZ Electricity Department or your local Power Supply Authority.
7. NOTICE THAT BUILDING WORK IS READY FOR INSPECTION. For the purposes of Section 222 of the Building Act 2004, and unless otherwise provided by the building consent, the owner or other person undertaking any building work shall give:
8. At least 2 working days notice of the covering up of any
9. ii) excavation for a foundation
10. iv) timber required to have a specific moisture content
11. v) other work required to give notice as a condition
12. Council MUST be notified at the completion of building work on the attached form.
13. From 28 April 2003 all new dwellings, additions or alterations to dwellings must be provided with domestic smoke alarm(s) in order to comply with the Building Code.
14. Every household unit requires smoke alarms in accordance with NZBC Clause F7/AS 1.3.1. Smoke alarms may be battery powered but shall have a hush facility and must comply with at least one of the following: UL 217, CAN/ULC S531, AS 3786, BS 5446: Part 1. Smoke alarms shall be installed near the ceiling and located on escape routes, in every sleeping space or within 3.0m of every sleeping space door.
15. near the ceiling and located on escape routes, in every sleeping space or within 3.0m of every sleeping space door.

BUILDING CONSENT FEES:

Please note that further fees may be required to be paid before a Code Compliance Certificate is issued for this Building Consent. All fees must be paid before a Code Compliance Certificate will be issued.

RECEIVED: 25 Feb 2013 SCANNED: 25 Feb 2013 BOX: 1 BATCH: 100434 DOC: KDCAAQGU

Project Information Memorandum 110229

Section 31, Building Act 2004

AA & EP Reddy
C/-Brogan Builders Ltd
108 Griffin Road
RD 1, Maungaturoto

Issue Date: 1/07/11
Application Date: 30/05/11
Overseer: Central

THE PROJECT:

Description:	Deck Extension
	DWELLINGS - ALTERATIONS & ADDITIONS
Type of Work:	
Estimated Value:	$35,000
Intended Use:	Housing Detached - Deck Extension
Intended Life:	Indefinite, but not less than 50 years
Stages:	Being Stage 1 of an intended 1 Stages

THE BUILDING:

Street Address of Building:	33 BALDROCK ROAD, KAIWAKA
Valuation Number:	0120003403
Legal Description:	PT LOT 2 DP 31705 BLK XIV WAIPU SD
Building Name:	
Location of Building within site/block number:	
Level/Unit Number:	

This Project Information Memorandum is confirmation that the proposed building work may be undertaken, subject to the provisions of the Building Act 2004, and any requirements of the Building Consent.

This project information memorandum includes:

___ Information identifying special features of the land concerned

___ Information about the land or building concerned notified to the Council by any statutory organisation having the power to classify land or buildings

___ Details of authorisations which have been granted

___ Important information

Signature **Date:** 1/07/11 **Position** Building Services Officer

On behalf of: KAIPARA DISTRICT COUNCIL

RECEIVED: 25 Feb 2013 SCANNED: 25 Feb 2013 BOX: 1 BATCH: 100434 DOC: KDCAAQGU

KAIPARA DISTRICT

Kaipara te Oranganui • Two Oceans Two Harbours

KAIPARA DISTRICT COUNCIL

PIM Number: 110229

This Planning Information Memorandum confirms that building work may be carried out.

Council advises the applicant that:

1 This document is not approval to build.

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6 The Northland Regional Council has a register of contaminated sites. Please contact them on 0800 002 004 if you suspect that your property may be contaminated e.g. historic timber treatment sites, service stations, landfill sites etcetera.

7 Please check your Certificate of Title for any encumbrances (such as easements, section 73 notice etcetera) before you make an application for a Building Consent.

8 All archaeological sites are protected under the provisions of the Historic Places Act 1993. If subsurface archaeological evidence (shell, midden, hangi, storage pits, etc) should be unearthed during construction, work should cease in the immediate vicinity of the remains and the Historic Places Trust should be contacted.

This Planning Information Memorandum includes :

- **Information identifying special features of the land concerned**
  - The proposed project complies with the District Plan zoning as it does meet the Rural Zone Rules.

- **Information about the land or buildings concerned notified to Council by any statutory organisation having the power to classify land and buildings**
  - For your information: The Council has found that the site wind zone rating is high.
  - For your information: The Council has found that the site exposure zone is Zone C – Inland.

- **Details of authorisations which have been granted**
  - Previous Building Consents granted include BC010655 & 010570
  - Previous resource consents granted include RM952483 & RM952827

Attachments:

- GIS map of property and utilities etcetera.

RECEIVED: 25 Feb 2013 SCANNED: 25 Feb 2013 BOX: 1 BATCH: 100434 DOC: KDCAAQGU

Mangawhai Draughting and Design
Dave Stewart
210 Molesworth Drive Mangawhai 0505 Phone 09 4314 804 Fax 09 4314 802 Email dave.draft@xtra.co.nz

PRODUCER STATEMENT - PS 1 - DESIGN

To:

To be supplied to: **Kaipara District Council**

In respect of: **Structural Design as Required for a Additions to a Dwelling**

Located at: **33 Baldrock Road, Kaiwaka**

Mangawhai Draughting and Design has been engaged by Elaine and Adrian Reddy to provide structural design as required for additions to a dwelling at 33 Baldrock Road, Kaiwaka.

I certify that the design methodology used includes compliance with the loading and general design requirements contained within **AS/NZS 1170:2002, NZS 3603:1993, the NZTIF Timber Design Guide and the New Zealand Building Code.**

Serviceability and other criteria for design have been selected using the most up to date information available to ensure compliance with the performance levels implied by the design solutions given in NZS 3604:2011. (Acceptable Solution B1/AS1)

I believe on reasonable grounds that, subject to all proprietary products meeting the performance specification requirements, **the structure**, if constructed in accordance with the drawings, specifications, and other documents supplied **will comply with the relevant provisions of the Building Code.**

In line with normal professional practices we carry Professional Indemnity Insurance to the value of $1,000,000.

Signed: **Date:** 31/03/11

David Stewart
Licensed Building Practitioner No 101041
NZCE REA MDANZ

RECEIVED: 25 Feb 2013 SCANNED: 25 Feb 2013 BOX: 1 BATCH: 100434 DOC: KDCAAQGU

MANGAWHAI DRAUGHTING and DESIGN DESIGN CALCS

Dave Stewart Licensed Building Practitioner No 101041

Design Calculations for A and E Reddy - 33 Baldrock Road, Kaiwaka

Bearer supporting wall plus roof plus ceiling

Span, L =	2.60	m			
Cont. Width =	2.050	m			
Loaded Area =	5.330	m2			
Loads					
Wall					
DL, G =	**0.60**	kN/m			
LL, Q =	**0.00**	kN/m			
Roof and Ceiling					
DL, G =	0.40	kPa	**0.820**	kN/m	
LL, Q =	0.25	kPa	**0.513**	kN/m	
Floor					
DL, G =	0.40	kPa	**0.820**	kN/m	
LL, Q =	2.00	kPa	**4.100**	kN/m	
Total Loads					
DL, G =	**2.24**	kN/m			
LL, Q =	**4.613**	kN/m			
Design Loads					
1.2G + 1.5Q =	9.607	kN/m	x span =	**24.98**	kN
G + #Q (# = 0.7) =	5.469	kN/m	x span =	**14.22**	kN
k2(G + ^Q) (k2 = 2, ^ = 0.4) =	8.170	kN/m	x span =	**21.24**	kN
1.35G =	3.024	kN/m	x span =	**7.86**	kN
Design Load BM:					
*M = WL / 8 W=(1.2G+1.5Q) =	**8.118**	kNm			

Try 2/300 x 50 MSG8 timber d = 290 b = 45

Design Strength:

Allowable BM, #Mn =	#.k1.k4.k5.k8.fb.Z				
where					
# =	0.8				
k1 =	0.6	perm. load	0.8		
k4 =	1				
k5 =	1				
k8 =	1				
fb =	14	MPa			
Z =	0.631				
Allowable BM, #Mn =					
#.k1.k4.k5.k8.fb.Z =	**4.240**	kNm each =	**8.481**	kNm > M*	OK

Check Deflection - Serviceability Limit State

Allowable deflection = Span/300 = 8.67 mm (but < 12mm)

Deflection = 5.W.1000.L3/384.E.I =
where W= k2(G + ^Q))

where					
E =	8				
Elb =	5.4				
(E + Elb)/2 =	**6.7**				
I =	91.5				
k2 =	2				
Deflection = 5.W.1000.L3/384.E.I =	**3.96**	mm <	**8.67**	OK	

Therefore 2/300 X 50 MSG8 timber OK

RECEIVED: 25 Feb 2013 SCANNED: 25 Feb 2013 BOX: 1 BATCH: 100434 DOC: KDCAAQGU

Check Bearer Cantilever

Span, L =		0.550	m			
Cont. Width =		2.050	m			
Loaded Area =		1.128	m2			
Loads						
Wall						
	DL, G =	**0.60**	kN/m			
	LL, Q =	**0.00**	kN/m			
Roof and Ceiling						
	DL, G =	0.40	kPa	**0.820**	kN/m	
	LL, Q =	0.25	kPa	**0.513**	kN/m	
Floor						
	DL, G =	0.40	kPa	**0.820**	kN/m	
	LL, Q =	2.00	kPa	**4.100**	kN/m	
Total Loads						
	DL, G =	**2.24**	kN/m			
	LL, Q =	**4.613**	kN/m			
Design Loads						
	1.2G + 1.5Q =	9.607	kN/m	x span =	**5.28**	kN
	G + #Q (# = 0.7) =	5.469	kN/m	x span =	**3.01**	kN
	k2(G + ^Q) (k2 = 2, ^ = 0.4) =	8.170	kN/m	x span =	**4.49**	kN
	1.35G =	3.024	kN/m	x span =	**1.66**	kN
Design Load BM:						
	*M = WL / 2 W=(1.2G+1.5Q) =	**5.416**	kNm			

Bearer is 2/ 300 x 50 MSG8 timber d = 290 b = 45

Design Strength:

Allowable BM, #Mn = #.k1.k4.k5.k8.fb.Z

where			
# =	0.8		
k1 =	0.6	perm. load	0.8
k4 =	1		
k5 =	1		
k8 =	1		
fb =	14	MPa	
Z =	0.631		

Allowable BM, #Mn =

#.k1.k4.k5.k8.fb.Z = **4.240** kNm/beam= **8.481** kNm total >M* OK

Check Deflection - Serviceability Limit State

Allowable deflection = Span/400 = **1.38** mm

Actual deflection = W.1000.L3/8.E.I

W= k2(G + ^Q)) =

where	
E =	8
Elb =	5.4
(E + Elb)/2 =	**6.7**
I =	91.5
k2 =	2

Actual deflection = **0.08** mm **< span/400 OK**

Therfore the 550mm cantilever for 2/300 x 50 MSG8 bearer is OK

RECEIVED: 25 Feb 2013 SCANNED: 25 Feb 2013 BOX: 1 BATCH: 100434 DOC: KDCAAQGU

Pile / Bearer Connection

Max Shear at pile, V* = (1.2G + 1.5Q) = **12.49** kN

Bearing Support Provided by Pile

Nc = #. k1. k3. fp. Ap

Check Bearers 45mm into Pile - bearing area =	0.01052	m2	
Use 50% as Contact Bearing Area, Ap =	5.26	x1000 mm2	
# =	0.8		
k1 =	0.6	perm. load	0.8
k3 =	1		
fp =	8.9	MPa	
Support provided: # Nc (long) =	**22.47**	kN	
Support provided: # Nc (med) =	**29.96**	kN	

Strength provided by bolts
Try 2 / M16 bolt

@Qn = @.n.k1.k12.k13.Qsk (eqn. 4.17 NZS 3603)

where @ =	0.7			
n =	2			
k1 =	0.6			
k12 =	0.7			
k13 =	1			
effective timber thickness =	200	mm		
therefore Qkp =	12.3		(Table 4.13 NZS 3603)	
therefore bolt joint strength, @Qn =	**7.23**	kN >	0.00	kN - OK

Total min support provided at pile / bearer joint = 29.70 kN > 12.49 OK

Check deck bearers 45mm into 200mm dia pile
and fix with 2/M16 bolt and 50 x 50 x 4mm square washers

Verandah Beam supporting roof and ceiling

Span, L =	3.92	m		
Cont. Width =	2.00	m		
Loaded Area =	4.840	m2		
Loads				
DL, G =	0.40	kPa	**1.936**	kN
LL, Q =	0.25	kPa	**1.210**	kN
Design Loads				
1.2G + 1.5Q =	4.138	kN		
(# = 0.7) G + #Q =	2.783	kN		
(k2 = 2, ^ = 0.4) k2(G + ^Q) =	4.840	kN		
1.35G =	2.614	kN		

Design Load BM:
*M = WL / 8 W=(1.2G+1.5Q) = **2.028** kNm

Try 250 x 50 MSG8 timber d = 240 b = 45

Design Strength:

Allowable BM, #Mn = #.k1.k4.k5.k8.fb.Z

where				
# =	0.8			
k1 =	0.6	perm. load	0.8	
k4 =	1			
k5 =	1			
k8 =	1			
fb =	14	MPa		
Z =	0.432			
Allowable BM, #Mn =				
#.k1.k4.k5.k8.fb.Z =	2.903	kNm total >	**2.028**	**OK**

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Check Deflection - Serviceability Limit State

Allowable deflection = Span/300 =	**13.07**	mm			
Deflection = 5.W.1000.L3/384.E.I	W= k2(G + ^Q)				
where					
E =	8				
Elb =	5.4				
(E = Elb)/2 =	**6.7**				
I =	51.8				
k2 =	2				
Actual Deflection =	**10.94**	mm <	**13.067**	**OK**	

Check Shear Strength

Actual shear per beam =					
W= k2(G + ^Q)) =	**4.840**	kN			
V* = (1.2G + 1.5Q)/2 =	**4.138**	kN			

Allowable shear: # Vn = #.k1.k4.k5.fs.As

where					
# =	0.8				
k1 =	0.6	perm. load	0.8		
k4 =	1				
k5 =	1				
fs =	3.8	MPa			
As = 2/3bd =	14.40	x1000 mm2			
Allowable shear: # Vn (long) =	**26.266**	kN >	**4.840**	OK	
Allowable shear: # Vn (med) =	**35.021**	kN >	**4.138**	OK	

Check Bearing Strength

Reaction from: W= k2(G + ^Q)) =	**4.840**	kN			
Reaction from: N* (1.2G + 1.5Q) =	**4.138**	kN			
Bearing support strength provided:		(assume 75mm contact with top plate)			
# Nc =	#. k1. k3. fp. Ap				
where					
# =	0.8				
k1 =	0.6	perm. load	0.8		
k3 =	1				
fp =	8.9	MPa			
Bearing surface area = Ap =	6.75	x1000 mm2			
Support provided: # Nc (long) =	**28.84**	kN >	**4.840**	OK	
Support provided: # Nc (med) =	**38.45**	kN >	**4.138**	OK	

Use 250 x 50 MSG8 timber

Uplift

Supported area, A =	4.84	m2			
Wind uplift force, q =	-0.9	kPa			
Wind uplift load = A x q =	**-4.356**	kN			
Loads					
DL, G =	0.40	kPa	**1.936**	kN	
Design Loads					
0.9G + W =	**-2.6136**	kN			
Number of columns per beam =	2				
Uplift per column / beam connection =	**-1.3068**	kN <	**0**	kN	OK

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Post / Joist Connection

Max Shear at post, V* = uplift = **-1.31** kN

Use a Bowmac B85 bracket - Load capacity = 10.4kN

Verandah Beam / Post Connection

Max Shear at post, V* = (1.2G + 1.5Q) = **8.28** kN

Bearing Support Provided by Post

Nc = #. k1. k3. fp. Ap

Check Beam 45mm into Post
Assume contact area = 80mm x 40mm

b =	80	d =	40
Bearing Area, Ap = 110 x 15 =	3.20	x1000 mm2	
# =	0.8		
k1 =	0.6	perm. load	0.8
k3 =	1		
fp =	8.9	MPa	

Support provided: # Nc (long) = **13.67** kN
Support provided: # Nc (med) = **18.23** kN

Strength provided by bolts
Try 2 / M12 bolt

@Qn = @.n.k1.k12.k13.Qsk (eqn. 4.17 NZS 3603)

where @ =	0.7				
n =	2				
k1 =	0.6				
k12 =	0.7				
k13 =	1				
effective timber thickness = 2 x 45 =	90mm				
therefore Qkp =	6.97		(Table 4.13 NZS 3603)		
therefore bolt joint strength, @Qn =	**4.10**	kN >	-1.31	kN - OK	

Total min support provided at pile / bearer joint = 17.77 kN > 6.97 OK

THEREFORE USE 200 X 50 MSG8 H3.2 timber for deck bearer checked 45mm into 100 x 100 pile and fixed with 2/M12 bolt and 50 x 50 x 4mm square washers

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BUILDING FOR: **Elaine and Adrian Reddy** **Lot No:** **Pt Lot 2**
33 Baldrock Road **D.P. No:** **31705**
Kaiwaka **Val. No** **120003403**

1/ FOUNDATION BRACING REQUIRED:

Deck Bracing Required:

Clause 7.4.2.2 of NZS 3604:2011 states that

"decks which project more than two metres from the building shall have sub-floor bracing provided by anchor or braced piles at half the bracing demand required by table 5.8 for light / light / light cladding for zero degrees of roof slope and for subfloor structures"

From table 5.8 the number of bracing units required = 7.5 / 2 = **3.75** BUs / m2

Max. Deck Area with > 2m Projection = **16.81** m2
Total Bracing Units Required = **63** BU's
Provide 2 braced piles each way
Bracing provided each way = **320** BU's

2/ WALL BRACING REQUIRED SINGLE OR UPPER STOREY:

BUILDING DETAILS:

Location of storey:	foundation	lower of two	**single or upper of two**
Building height to apex:	**4.64**		
Roof height above eaves:	**2.200**		
Stud height:	**2.40**		
Average roof pitch:	**45.00**		
Building width (BW):	**4.10**		
Building length (BL):	**4.10**		

Building Area (GPA) = **16.8** m2
Room in roof space: yes **no**

WIND BRACING DESIGN:
From NZS 3604:2011 Section 5

Wind Region	Lee Zone	Ground Roughness	Site Exposure	Topographic Class (T1,T2,T3,T4,T5)	Smoothed Gradient	Smoothed Gradient Class
A	**No**	**Open**	**Sheltered**	**T2**	**1 : 5**	**Moderate**

Wind Zone (L,M,H,VH,SED)
H

Bracing Units Required For Wind:

From Table 5.6 NZS3604: W across = **60.0** bracing units per metre
W along = **55.0** bracing units per metre

Total Bracing Units Required for Wind:

W across = (W across x BL) = **246** BUs
W along = (W along x BW) = **226** BUs

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EARTHQUAKE DESIGN:

Earthquake Zone:
1

Subfloor Cladding	Single Storey Cladding	Roof Cladding	Roof Pitch (degrees)
Light	Light	Light	0 - 25
Medium	Medium	Medium	26 - 45
Heavy	Heavy	Heavy	46 - 60

Bracing Units Required For Earthquake:

From Table 5.8 NZS 3604:
Bracing for Single Storey Walls = **4.4** BUs / m2 (11) x 1.5 (DFE) = 16.5 BU per m^2.

Total Bracing Units Required for Earthquake:

277.2.

= **74** BU's

WALL BRACING PROVIDED SINGLE OR UPPER STOREY:

Bracing Units Provided Across Building:

Wall or Bracing Line		Bracing Elements Provided			Wind		Earthquake	
Line Label	Minimum Bracing Units Required	Bracing Element Number	Bracing Element Type	Number or Length of Element	Rating of Element (BU's)	Bracing Units Provided	Rating of Element (BU's)	Bracing Units Provided
M	41	M1	Ply EP1	3.8	130	494	130	494
		Totals Achieved:				**494**		**494**
		Totals Required :				**246** ✓		**74**

Bracing Units Provided Along Building :

Wall or Bracing Line		Bracing Elements Provided			Wind		Earthquake	
Line Label	Minimum Bracing Units Required	Bracing Element Number	Bracing Element Type	Number or Length of Element	Rating of Element (BU's)	Bracing Units Provided	Rating of Element (BU's)	Bracing Units Provided
A	41	A1	Ply EP1	3.8	130	494	130	494
B	41	B1	Ply EP1	3.8	130	494	130	494
		Totals Achieved:				**988**		**988**
		Totals Required :				**226** ✓		**74**

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[redacted] BUILDING SERVICES DEPARTMENT

Kaipara te Oranganui
KAIPARA DISTRICT
Two Oceans Two Harbours

1919 State Highway 1
PO Box 26
Kaiwaka 0542, Northland
New Zealand
p 09 431 2013
p 0800 100 388
f 09 431 2023
e council@kaipara.govt.nz
www.kaipara.govt.nz

28 June 2011

[redacted]
C/-Brogan Builders Ltd
108 Griffin Road
RD 1

Dear AA & EP Reddy

Building Consent Application 110229

Thank for lodging your Building Consent Application with Council.

Initial checking of your application has identified that insufficient information has been provided to enable Council to fully assess your application. The following matters need to be addressed, with the relevant information being provided to Council, before your application can be considered further.

Please could you supply the following details; 1. SED calculations for the pole foundations, 2. Detail showing how the verandah beams will meet and attach to the posts. 3. Provide calculations for the span of the barrier sill. 4. The roof details show custom orb roofing but it looks like Gerard tiles are to be used .Provide fixing details. 5. Provide fixing details for ply bracing.

All information submitted to Council is required in triplicate. Please help us to help you, by providing the information in full and as soon as possible to prevent further delays.

Yours faithfully
Dave Waetford.

D A Waetford

Central
Building Services Officer
Central Processing Unit

File
Document1

INITIALS:initials

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FIELD ADVICE NOTICE - 2

ENTERED

BC # 110229 **Date:** 14-9-11

Applicant: Reddy

Contractor:

Site Address: 33 Baldrock

Pre clad

Inspection ~~Framing~~ **Passed / Failed**

Reinspection Required: Yes / No

VAL #

Travelling Time: **Inspection Time:**

Officer: Des Sheldon *Signature:* 08113

10	**CLADDING INSPECTION**	**OK**	**Not**	**N/A**	Reason for the decision / Comments ..... If further inspection needed please indicate
1	Plaster: reinforcing, flashings, sealants, construction			//	
2	Waterproofing / Coating			//	
3	EPS (polystyrene), nailing, flashings etc.			//	
4	Sheet Systems: layout, nailing, flashing, construction			//	
5	Weatherboard: grading, type, fixing, flashing	/			
6	Other				
9	**FRAMING INSPECTION**	**OK**	**Not**	**N/A**	Pre clad to Garage
13	**PRELINE BUILDING INSPECTION**				Pergola
1	Trusses: fixing, spacing, bracing, support, purlins			/	
2	Pitched roof; fixing, spacing, bracing, strutting, span			/	
3	Ceiling: joists/Batten: fixing, spacing, support			/	
4	Bottom-Top plate: fixing, size, DPC	/			
5	Bracing: Strapping, bolts, check plan	/			
6	Moisture content			/	
7	Frame timber treatment	/			
8	Frame; stud size, spacing, lintel fixings, grade	/			
9	Recheck cladding: flashing, nog spacing (480mm-board/batten)			/	
10	Insulation: type, thickness			/	
11	Glazing: safety glass, thickness			/	
12	Fire & Sound walls: sealer, staggered laps, fire collars			/	
13	Other			/	
15	**PRELINE PLUMBING INSPECTION**	**OK**	**Not**	**N/A**	All good
1	Pressure Test			//	
2	Pipe material, size, support, insulation		//		
3	Stacks / Wastes		//		
4	Supply Tank		//		
5	Other	/			
16	**POST LINING INSPECTION**	**OK**	**Not**	**N/A**	
1	Sheet brace nailing, placement options			/	
2	Fire & Sound walls: sealer, staggered laps, fire collars		//		
3	Waterproofing under tiles		//		
4	Other		//		
17	**DRAINAGE INSPECTION**	**OK**	**Not**	**N/A**	
1	Accurate "as built" plan provided			//	
2	Depth of drain			//	
3	Bedding			//	
4	Gradient Line; Inspections, diameter correct			//	
5	Water test - connection to main			//	
6	Gullys: max 600mm depth, finish 25mm above protected or 100mm above protected ground			//	
7	Drains within boundaries, too close to foundations		//		
8	Other		//		
18	**SEPTIC TANKS**	**OK**	**Not**	**N/A**	
1	AS/NZS 1546, 1547 design			/	
2	Depth of beds, length, scoria, matting, cut off drain		//		
3	Tank installed properly on level		//		
4	Ventilation provided-distribution box		//		
5	Aerated mechanical systems installed to manufacturers specifications		//		
6	Access or tank maintenance (no vertical air loading)	/	/		
7	Other	/	/		

Next Inspection:

This notice Received By:
Owner / Agent / Contractor

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KAIPARA DISTRICT

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FIELD ADVICE NOTICE - 1

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ENTERED 07781

BC # 110229 **Date:** 24-8-11

Applicant: Reddy

Contractor:

Site Address: 33 Baldrock Rd **Inspection** Pole Sales **Passed / Failed**
Reinspection Required: **Yes / No**

VAL #
Travelling Time: **Inspection Time:**

Officer: Des Skelton *Signature:*

OK - Complies with BC Consent, **Not** - Does Not Comply With BC Issued, **N/A** - Not Applicable, **Crossed Out** - Deleted.

	02/03 FOUNDATION INSPECTION	OK	Not	N/A	Reason for the decision / Comments ..... If further inspection needed please indicate
1	Boundary Pegs Sited			/	
2	Correct site & building siting (closer than 1.1m to boundary surveyors Certificate required	/			
3	Ground bearing, fill, expansive clay	/			
4	Reinforcing: spacing, size, clearance etc			/	
5	Excavation: depth, width	/			Pole Sales to deck extension
6	Pile/pole holes: depth, diameter	/			
7	Pile / Pole: Correct grade, diameter	/			
8	Driven Piles: Engineers Certification			/	
9	Retaining Wall: polythene underneath			/	
10	Other			/	
	04 UNDER SLAB PLUMBING INSPECTION	**OK**	**Not**	**N/A**	All OK
1	Pipes: gradient, protection, sizing, tested			/	
2	Other			/	
	05 SLAB INSPECTION / 06 TILT slab inspection	**OK**	**Not**	**N/A**	
1	Slab thickness: D.P.M., Tape, rebates		/		
2	Slab Reinforcing: Thickenings, tying, cover etc		/		
3	Fill: Compaction, depth, binding		/		
4	Other		/		
	07 SUBFLOOR INSPECTION	**OK**	**Not**	**N/A**	
1	Sub floor brace connectors			/	
2	Bracing: washers, timber size etc			/	
3	Bearer / Joist: Size, spacing, joist hangers			/	
4	Notching/holes/clocking for lines of horizontal supports			/	
5	Ventilation & Insulation			/	
6	Other			/	
	08 BOND BEAM - BLOCK INSPECTION	**OK**	**Not**	**N/A**	
1	Block size			/	
2	Reinforcing: Size, grade, laps, tied			/	
3	Washouts: If pour exceed 1.2m in height			/	
4	Design Calculation on site			/	
5	Retaining Wall: DPM, type, protection, Novacoil siting			/	
6	Adequate propping			/	
7	Services Installation (Fire Collars)			/	
8	Identify proprietary pre-stress components			/	
9	Other			/	
	11 FLASHING/WRAP/CAVITY INSPECTION	**OK**	**Not**	**N/A**	
1	Flashings			/	
2	Battening (air cavity)			/	
3	Wrap			/	
4	Vermin protection			/	
	12 BRICK VENEER INSPECTION	**OK**	**Not**	**N/A**	
1	Brick Ties SS / Galv			/	
2	Other			/	
	14 FIREPLACE CHIMNEY INSPECTION	**OK**	**Not**	**N/A**	
1	Solid fuel heating, chimney check, setback				
2	fixing, flue flashing, mantel shelf, hearth construction				
	19 SWIMMING POOL FENCE INSPECTION	**OK**	**Not**	**N/A**	
1	Swimming pool: backwash, fencing, registration				

An Inspection of the above mentioned premises has been undertaken and the matters as listed must be completed within ..... Days or otherwise stated

Action to be taken:

Issued by:

Designation: Building Officer

Next Inspection:

This notice Received By:

Owner / Agent / Contractor

RECEIVED: 25 Feb 2013 SCANNED: 25 Feb 2013 BOX: 1 BATCH: 100434 DOC: KDCAAQGU

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FIELD ADVICE NOTICE - 3 Pg 1

05395

BC # 110229 **Date:** 9-10-12

Applicant: REDDY

Contractor:

Site Address: 33 BALDROCK RD. KAIWARA

VAL #

Inspection FINAL (Passed / Failed)
Reinspection Required: (Yes / No)
Recommended to issue CCC: (Yes) / No

Travelling Time:

Inspection Time: 1030 Am

Officer: DAVID HUGHES *Signature:* Dal Hughes

21	FINAL INSPECTION	OK	Not	N/A	Reason for the decision / Comments ..... If further inspection needed please indicate
1	Peer Review required (over 5 yrs)			X	
2	Owners Application for CCC / Contractors List	X			
3	Consent Documents on Site	X			
4	Photos Taken			X	ENTERED
20	**FINAL FIREPLACES INSPECTION**	**OK**	**Not**	**N/A**	
1	Smoke Alarms with Hush			X	
2	Hearth size and & secured				
3	Fire Place Clearances				
4	Fire Place secured				
5	Flue Shield				
6	Flashings / Flue Height				
7	Wet back circulators correct size and fall				
PLUMBING		**OK**	**Not**	**N/A**	
1	Waste pipe correct support & gradient			X	
2	Water filtration system installed				
3	Hot water pipe lagged				
4	1 metre minimum of copper outlet of HWC				
5	Hot water cylinder seismic restraint				
6	Hot water tempering value set at 45/55 degrees				
7	Hot water energy cut out switch to all valve vented systems				
8	Hot water drain OK (falls to outside of building)				
9	Filter, non return, stop, cold water expansion, pressure reducing & pressure relief valves				
10	Notches & holes in joists & bearers				
11	Waste pipes sizing / fall / support to gully trap				
12	Soil pipe sizing / fall / support				
13	Adequate support to water pipes				
14	Water supply tank / bore / supply				
15	Back flow prevention where required				
16	Other				
FINAL INTERNAL INSPECTION		**OK**	**Not**	**N/A**	
1	Smoke alarms with hush			X	
2	Sink insert secured correctly				
3	Service rooms inpervious walls				
4	Service rooms impervious floors				
5	Producer statement membrane in wet areas				
6	Ceiling insulation (clear of downlights)				
7	Safety glass where required				
8	Ventilation				
9	Stairs gap / tread / rise / handrails				
10	Barrier Height 1.0m / 1.1m / Stairs 900mm				
11	Safety from falling eg. 100mm balustrade gaps				
12	Access for disabled *(commercial only)*				
13	Facilities for disabled *(commercial only)*				
14	All surfaces completed				

An Inspection of the above mentioned premises has been undertaken and the matters as listed must be completed within ..... Days or otherwise stated

Action to be taken:
Issued by:
Designation: Building Officer
Next Inspection:

This notice Received By:
Owner / Agent / Contractor

RECEIVED: 25 Feb 2013 SCANNED: 25 Feb 2013 BOX: 1 BATCH: 100434 DOC: KDCAAQGU

KAIPARA DISTRICT
Kaipara te Oranganui • Two Oceans Two Harbours

FIELD ADVICE NOTICE - 3 Pg 2

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05395

	FINAL EXTERIOR INSPECTION	OK	Not	N/A	Reason for the decision / Comments ..... If further inspection needed please indicate
1	Conditions on Resource / Building consent			X	
1a	Landscaping Complete			X	
2	Joints in bearers supported	X			
3	Ground clearance to u/side of floor	X			
4	Subfloor ventilation	X			
5	Subfloor bracing	X			
6	U/floor insulation			X	
7	Finished ground level	X			
8	Cladding (joints, corner, scribers window flashing etc)	X			
9	Cladding - painted / penetrations sealed			X	
10	Brick veneer weep holes cleared			X	
11	Roof & post fixings	X			
12	Roof, ridging and flashings fixed correctly	X			
13	Roof penetrations flashed correctly	X			
14	Spouting fixed correctly	X			
15	Down pipe clips at 1.2	X			
16	Vent pipe clips at 1.2			X	
17	Vent Discharge / Vermin cage			X	
18	Stairs gap / tread / rise / handrails			X	
19	Barriers 1.0m / 1.1m / stairs 900mm	X			
20	Safe from falling ballustrades	X		X	
21	RAMPS grade / slip resistance			X	
22	Safety Glass (Glass Visible - commercial)			X	
	DRAINAGE	**OK**	**Not**	**N/A**	
1	As built drainage plan s/water and sewer			X	
2	Gully dish 25mm above sealed surface "A"				
3	Gully dish 75mm above unsealed surface "B"				
4	Relief gully installed				
5	Foulwater drain finished				
6	Ventilation to drains, e.g. TV & or valves				
7	Stormwater drain finished				
8	Retaining wall drainage connected into stormwater drain				
9	Overflow to water tank				
10	Access for septic tank maintenance				
11	Commissioning statements				
12	Effluent Completed Barking / Planting				
	PRODUCER STATEMENTS	**OK**	**Not**	**N/A**	
1	Engineer / Licenced Building Practioneer			X	
2	Membranes / Roof				
	FINAL POOL INSPECTION	**OK**	**Not**	**N/A**	
1	Pool fencing compliance (sheet completed)			X	
2	Back flow prevention where required				
	ENERGY CERTIFICATES	**OK**	**Not**	**N/A**	
1	Electrical			X	
2	Gas				
	ROAD DAMAGE	**OK**	**Not**	**N/A**	
1	Footpath & kerb damage			X	
2	Crossing installed				
	COMMERCIAL	**OK**	**Not**	**N/A**	
1	Compliance Schedule			X	
2	Fire Design Compliance				
3	FPIS report				
4	Certificate of Public Use				
5	Fire Service - Evacuation Scheme				
6	Fire Service - Conditions meet				
7	Producer Statements - Fire Alarm, Ventilation etc				

FINAL

An Inspection of the above mentioned premises has been undertaken and the matters as listed must be completed within ..... Days or otherwise stated

Action to be taken:
Issued by:
Designation: Building Officer
Next Inspection: CC

This notice Received By:
Owner / Agent / Contractor

RECEIVED: 25 Feb 2013 SCANNED: 25 Feb 2013 BOX: 1 BATCH: 100434 DOC: KDCAAQGU

KAIPARA DISTRICT

Kaipara te Oranganui • Two Oceans Two Harbours

Code Compliance Certificate Checklist

KAIPARA DISTRICT COUNCIL

Code Compliance Certificate Checklist

Address of Property	33 BALDOCK RD KAIWAKA		
Consent Number	110229	**Date**	9-10-12
Staff Responsible	DAVID HUGHES	**Building Category**	1

Note: In some cases some of the following items may not need to be checked

Number	Issue	Yes	No	N/A	
1 *	Change of owner or address	Yes	No	(N/A)	
2 *	Request for CCC within 2 year timeframe	(Yes)	No	N/A	
3 *	All inspections completed	(Yes)	No	N/A	
4 *	Development contributions paid	Yes	No	(N/A)	
5 *	Energy works certificate provided	Yes	No	(N/A)	
6 *	Inspections Extra inspections to be charged	Yes	No	(N/A)	
7 *	All building consent conditions fulfilled	(Yes)	No	N/A	
8 *	Ensure that conditions of geotechnical reports, engineers reports of producer statements are complied with	Yes	No	(N/A)	
9 *	Work complies with approved building consent documentation	(Yes)	No	N/A	
10 *	Check that items are completed from Final Checklist (FAN)	(Yes)	No	N/A	
11 *	Survey certificates – siting, height in relation to boundary, maximum height of building or minimum floor level	Yes	No	(N/A)	
12 *	List of contractors	(Yes)	No	N/A	
13 *	Amendments, variations and associated documentation properly completed	Yes	No	(N/A)	
14 *	Document applies to **building work** for which a building consent has been issued **before the date** on which the compliance document came into force	Yes	No	(N/A)	

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KAIPARA DISTRICT

15 *	Reference (if applicable) to acceptable solutions of verification methods	Yes	No	N/A	
16 *	File forwarded to Senior Building Services Officer to undertake a Peer Review (over 5 years old) and arrange issue of CCC	Yes	No	N/A	
17 *	If compliance schedule must be issued, co-ordinate issue with issue of CCC	Yes	No	N/A	
18 *	Photographs	Yes	No	N/A	
19 *	CCC Consent issued under the transitional provisions of Section 436 Building Act 2004 noted added to CCC	Yes	No	N/A	
20 *	Regulatory approvals, dispensations, waivers or modifications	Yes	No	N/A	

Issue CCC	**Yes**	**No**
Reason for Decision	I am satisfied on reasonable grounds that the: Building work complies with the building code at the time the Building Consent was granted (see number 19) Building work complies with the Building Consent issued; ~~and~~ The specified systems in the building are capable of performing to the performance standards set out in this building consent (Added to CCC and the compliance schedule as attachment) (compliance schedule statement issued)	
Signed		

"Yes" means Approved "No" Means not Approved "N/A" means Not Applicable

RECEIVED: 25 Feb 2013 SCANNED: 25 Feb 2013 BOX: 1 BATCH: 100434 DOC: KDCAAQGU

KAIPARA DISTRICT

Kaipara te Oranganui · Two Oceans Two Harbours

KAIPARA DISTRICT COUNCIL

Application for a Code Compliance Certificate for 110229

(Form 6) Section 92 Building Act 2004

AA & EP Reddy
C/-Brogan Builders Ltd
108 Griffin Road
RD 1, Maungaturoto

Issue Date: 1/07/11
Application Date: 30/05/11
Overseer: Central

IMPORTANT:

You need to submit this form when requesting your final inspection. Please check that the details below are still current when submitting it, and that all information required is provided. Once you make this request, Council will have 20 working days within which to deal with it. You will need to insure that all fees relating to this Building Consent are paid. The Code Compliance Certificate will not be issued while fees are owing.

THE OWNER:

Owners Name:	[redacted]			
Owners Mailing Address:	PO Box 17, Kaiwaka 0542			
Street Address/Registered Office:	33 Baldrock Road			
Phone Number	**Landline:** [redacted]	**Daytime:**	**After Hours:**	
	Mobile:	**Fax:**		
Email:	elainepreddy@gmail.com	**Website:**		

THE BUILDING (The following building work was authorised by this Building Consent)

Description:	Deck Extension
Street Address of Building:	33 BALDROCK ROAD, KAIWAKA
Valuation Number:	0120003403
Legal Description:	PT LOT 2 DP 31705 BLK XIV WAIPU SD

THE AGENT:

Agents Name:	GRANT EAGER			
Agents Mailing Address:	P.O.BOX 1			
Street Address/Registered Office:	MAUNGATUROTO			
Phone Number	[redacted]	**Daytime:**	4318618	**After Hours:** [redacted]
	Mobile: [redacted]	**Fax:**		
Email:	grant@broganbuilders.co.nz	**Website:**		

Relationship to Owner: (State details of authorisation from the owner to make the application on the owner's behalf)

FIRST POINT OF CONTACT: (with the Council/Building Authority)

First Point of Contact:	Grant Eager			
Mailing Address:	C/-Brogan Builders Ltd, 108 Griffin Road, RD 1, Maungaturoto 0583			
Phone Number	**Landline:** [redacted]	**Daytime:**	**After Hours:**	
	Mobile: [redacted]	**Fax:**		
Email:	grant@broganbuilders.co.nz	**Website:**		

RECEIVED: 25 Feb 2013 SCANNED: 25 Feb 2013 BOX: 1 BATCH: 100434 DOC: KDCAAQGU

KAIPARA DISTRICT

SPECIFIED SYSTEMS: The following specified systems are contained on the compliance schedule for the building and, in the opinion of the personnel who installed them, are capable of performing to the performance standards set out in the building consent.

Type of system	Existing	New	Altered	Added	Removed
1 Automatic systems for fire suppression	☐	☐	☐	☐	☐
2 Automatic or manual emergency warning systems	☐	☐	☐	☐	☐
3/1 Automatic doors	☐	☐	☐	☐	☐
3/2 Access controlled doors	☐	☐	☐	☐	☐
3/3 Interfaced fire or smoke doors or windows	☐	☐	☐	☐	☐
4 Emergency lighting systems	☐	☐	☐	☐	☐
5 Escape route pressurisation systems	☐	☐	☐	☐	☐
6 Riser mains for use by fire services	☐	☐	☐	☐	☐
7 Any automatic backflow preventers fitted to a potable water supply	☐	☐	☐	☐	☐
8/1 Passenger carrying lifts	☐	☐	☐	☐	☐
8/2 Service lifts	☐	☐	☐	☐	☐
8/3 Escalators and moving walks	☐	☐	☐	☐	☐
9 Mechanical ventilation systems, or air conditioning systems	☐	☐	☐	☐	☐
10 Building maintenance units for providing access to buildings (internal or external)	☐	☐	☐	☐	☐
11 Laboratory fume cupboards	☐	☐	☐	☐	☐
12/1 Audio loops	☐	☐	☐	☐	☐
12/2 FM radio frequency systems and infrared beam transmis	☐	☐	☐	☐	☐
13/1 Mechanical smoke control systems	☐	☐	☐	☐	☐
13/2 Natural smoke control	☐	☐	☐	☐	☐
13/3 Smoke curtains	☐	☐	☐	☐	☐
14/1 Emergency power systems for any of the above systems	☐	☐	☐	☐	☐
14/2 Signs for systems	☐	☐	☐	☐	☐
15/1 Systems for communicating spoken information for evacuation	☐	☐	☐	☐	☐
15/2 Final exits	☐	☐	☐	☐	☐
15/3 Fire separations	☐	☐	☐	☐	☐
15/4 Signs for fire systems	☐	☐	☐	☐	☐
15/5 Smoke separations	☐	☐	☐	☐	☐
A – Safety barriers	☐	☐	☐	☐	☐
B – Means of access and facilities	☐	☐	☐	☐	☐
C – Handheld hose reels	☐	☐	☐	☐	☐
16 Cable car	☐	☐	☐	☐	☐

RECEIVED: 25 Feb 2013 SCANNED: 25 Feb 2013 BOX: 1 BATCH: 100434 DOC: KDCAAQGU

KAIPARA DISTRICT

ATTACHMENTS: The following documents are attached to this application:

☐	Certificates from the personnel who carried out the work
☐	Certificates that relate to the energy work
☐	Evidence that specified systems are capable of performing to the performance standards set out in the Building Consent

EVIDENCE OF OWNERSHIP: **(The following evidence of ownership is attached to this application):**

☐	Copy of Certificate of Title
☐	Lease Agreement for Sale and Purchase
☐	Other document showing full name of legal owner(s) of the building/property
Please state other document:	

REQUEST TO ISSUE A CODE COMPLIANCE CERTIFICATE FOR BC 110229:

All of the building work relating to the Building Consent 110229 was completed on:

I request that the Kaipara District Council issue a Code Compliance Certificate for the Building Consent 110229 under Section 95 of the Building Act 2004:

Signed ~~by~~/ for and on behalf of/ the owner

Note: If acting for and on behalf of, please read the following declaration prior to signing

'I hereby declare that I am authorised to act as the Agent of the Applicant':

Signed: [signature] GRANT EAGER 9/10/2012.

Signature **Name** **Date**

The Code Compliance Certificate should be sent to:

Name: Beagon Builders LTD. ~~Owner~~ / **Agent** (delete one)

Address: PO Box 1

MAUNGATUROTO.

RECEIVED: 25 Feb 2013 SCANNED: 25 Feb 2013 BOX: 1 BATCH: 100434 DOC: KDCAAQGU

Code Compliance Certificate 110229

Form 7, Section 95, Building Act 2004

AA & EP Reddy
C/- Brogan Builders Ltd
PO Box 1
Maungaturoto 0547

Issue Date: 9/10/12
Overseer: Central

THE BUILDING:

Street Address of Building:	33 BALDROCK ROAD, KAIWAKA
Valuation Number:	0120003403
Legal Description:	PT LOT 2 DP 31705 BLK XIV WAIPU SD
Building Name:	
Location of Building within site/block number:	
Level/Unit Number:	
Current Lawfully Established Use:	Housing Detached - Addition and Alteration
Year First Constructed:	

THE PROJECT:

Description:	Deck Extension DWELLINGS - ALTERATIONS & ADDITIONS
Type of Work:	
Intended Use:	Housing Detached - Deck Extension
Intended Life:	Indefinite, but not less than 50 years
Stages:	Being Stage 1 of an intended 1 Stages

THE OWNER:

Owners Name:	AA & EP Reddy		
Owners Mailing Address:	PO Box 17, Kaiwaka 0542		
Street Address/Registered Office:	33 Baldrock Road		
Phone Number	**Landline:** [redacted]	**Daytime:**	**After Hours:**
	Mobile:	**Fax:**	
Email:	[redacted]	**Website:**	

FIRST POINT OF CONTACT:

First Point of Contact:	Full Name: [redacted] Mailing Address: C/-Brogan Builders Ltd, PO Box 1, Maungaturoto 0547 Phones:: 027 474 3856: 09 4318 018 Email: [redacted]

BUILDING WORK:

Building Consent Number:	110229
Issued By:	Kaipara District Council

This Code Compliance Certificate is issued by the Kaipara District Council. As the Building Consent Authority it is satisfied, on reasonable grounds that:

- The building work complies with the Building Consent 110229

Signature **Date:** 9/10/12 **Position** Building Services Officer

On behalf of: Kaipara District Council

RECEIVED: 25 Feb 2013 SCANNED: 25 Feb 2013 BOX: 1 BATCH: 100434 DOC: KDCAAQGU

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3.2 ECOPLY® & SHADOWCLAD® BRACING SPECIFICATIONS SUMMARY

Carter Holt Harvey® Woodproducts has a range of bracing specifications called the EP bracing series. The EP bracing series simplifies the design and construction of bracing elements using plywood, by itself or in conjunction with GIB® Plasterboard.

Historical Ecoply bracing elements (referred to as the SP bracing series in previous versions of Ecoply literature) can still be used in bracing design if desired and can be downloaded from www.chhwoodproducts.co.nz, however the EP bracing series offers the following benefits:

- Higher bracing performance per metre than historical SP elements
- Reduced number of element types and simplified naming system
- Single sided and double sided bracing elements
- Special EPGs bracing element design for where plywood cladding comes to soffit line within 300 mm of top plate
- High performance bracing element utilising GIB® Standard plasterboard
- A single type, GIB Handibrac®, hold-down for all bracing elements
- Direct fix or cavity construction
- Simplified construction
- Specifications for each bracing element type

TABLE 9: SUMMARY P21 RATINGS FOR 2.4 M HIGH ECOPLY® AND SHADOWCLAD® WALL ELEMENTS

Specification	Minimum Wall Length	Lining Requirements	EQ (m) Wind	EQ (m) Earthquake
EP1	0.6 m	7 mm Ecoply or 12 mm Shadowclad* one side	130	130
EP2	0.6 m	7 mm Ecoply or 12 mm Shadowclad each side	145	150
EPG	0.4 m	7 mm Ecoply or 12 mm Shadowclad one side and 10 mm GIB® Standard plasterboard other side	120	125
	1.2 m		150	150
EPGs	0.4 m	7 mm Ecoply or 12 mm Shadowclad one side* and 10 mm GIB® Standard plasterboard other side*	100	120
	1.2 m		150	120

* Plywood side of element must be a maximum of 300 mm below top plate

Note: Bracing and other technical information has been specifically tested using Ecoply and Shadowclad branded structural plywood. This information cannot be used with any other plywood brand and bracing data must be sought directly from the specific plywood manufacturer.

More information

The following pages provide a full specification of EP bracing elements. Copies of specifications can be down loaded from www.chhwoodproducts.co.nz

NZS 3604 provides the method of calculating demand on a building and calculation sheets are available from BRANZ or GIB® EzyBrace™ software is available as a free download from www.gib.co.nz. Information is available at www.chhwoodproducts.co.nz which can be placed in the custom elements of GIB® EzyBrace™ for ease of calculation.

Ecoply® Bracing Systems are designed to meet the requirements of the NZBC and have been tested and analysed using the P21 method referenced in NZ3604 listed as an acceptable solution B1/AS1 Structure. Testing was carried out using Ecoply Shadowclad and Laserframe MSG8 timber framing manufactured by Carter Holt Harvey Limited trading as Carter Holt Harvey Woodproducts New Zealand, and GIB® products manufactured by Winstone Wallboards Ltd. Substituting materials may compromise performance of the system. GIB® and GIB HandiBrac® are registered trade marks of Fletcher Building Holdings Ltd.

RECEIVED: 25 Feb 2013 SCANNED: 25 Feb 2013 BOX: 1 BATCH: 100434 DOC: KDCAAQGU

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3.3 ECOPLY® BRACING SPECIFICATION – EP1

SINGLE SIDED STRUCTURAL PLYWOOD BRACE

Specification No.	Minimum Wall Length	Lining Requirements	EQ1/m Wind	EQ1/m Earthquake
EP1	0.6 m	7 mm Ecoply® or 12 mm Shadowclad® one side	130	130

Framing

Wall framing must comply with:

- NZBC B1 - Structure: AS1 Clause 3 Timber (NZS3604)
- NZBC B2 - Durability: AS1 Clause 3.2 Timber (NZS3602)

Framing dimensions and height are as determined by the NZS3604 stud and top plate tables for load bearing and non load bearing walls. Kiln dried verified structural grade timber must be used. Machine stress graded timber, such as Laserframe®, is recommended.

Bottom plate fixing

Use GIB Handibrac® hold-down connections at each end of the bracing element. Refer to installation instructions supplied with the connectors for correct installation instructions and bolt types to be used for either concrete or timber floors. Within the length of the bracing element, bottom plates are fixed in accordance with the requirements of NZS 3604:1999.

Lining

One layer 7 mm Ecoply structural plywood or 12 mm Shadowclad exterior wall cladding fixed directly to framing or over cavity battens. If part sheets are used, ensure nailing at required centres is carried out around the perimeter of each sheet or part sheet. A 2-3 mm expansion gap should be left between sheets.

Fastening the Ecoply®

Fasteners

Fasten with 50 x 2.8 mm galvanised or stainless steel flat head nails for direct fix or 60 x 2.8 mm over cavity battens. Place fasteners no less than 7 mm from sheet edges.

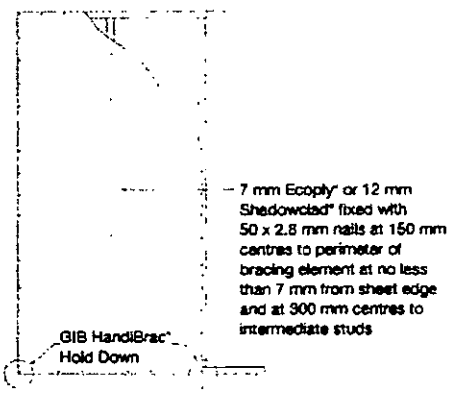
Fasteners for H3.2 CCA treated Ecoply

Where fasteners are in contact with H3.2 CCA treated timber or plywood, fasteners shall be a minimum of hot dip galvanised.

In certain circumstances stainless steel fasteners may be required. Refer to section 4 of NZS3604 for these circumstances.

Refer to Table 8 for further fastener selection advice.

Where stainless steel nails are required, annular grooved nails must be used.



Fastening centres

Fasteners are placed at 150 mm centres around the perimeter of each sheet and 300 mm centres to intermediate studs.

KAIPARA DISTRICT COUNCIL
BC 110229
BUILDING INSPECTOR

Fastening to cavity battens

The brace element may be fixed over cavity battens.

The cavity battens must be a minimum of 40 x 20 mm nailed staggered formation at 150 mm centres to studs around the perimeter of the brace element, and nailed to the intermediate studs within the element at 300 mm centres, with 50 mm x 2.8 mm flat head galvanised or annular grooved stainless steel nails.

Ecoply® Bracing Systems are designed to meet the requirements of the NZBC and have been tested and analysed using the P21 method referenced in NZ3604 listed as an acceptable solution B1/AS1 Structure. Testing was carried out using Ecoply, Shadowclad and Laserframe MSG8 timber framing manufactured by Carter Holt Harvey Limited trading as Carter Holt Harvey Woodproducts New Zealand, and GIB® products manufactured by Winstone Wallboards Ltd. Substituting materials may compromise performance of the system. GIB® and GIB HandiBrac® are registered trade marks of Fletcher Building Holdings Ltd.

RECEIVED: 25 Feb 2013 SCANNED: 25 Feb 2013 BOX: 1 BATCH: 100434 DOC: KDCAAQGU

[redacted]angawhai Draughting and Design

SPECIFICATION of MATERIALS and WORKMANSHIP to

COUNCIL

CONSTRUCT

ADDITION to a DWELLING for

ELAINE and ADRIAN REDDY

33 BALDROCK ROAD, KAIWAKA

Contents

General Specification

Appendix A:

Producer Statement and Design Calculations

Wind Bracing Design

KAIPARA DISTRICT COUNCIL
BC 110229
BUILDING INSPECTOR

RECEIVED: 25 Feb 2013 SCANNED: 25 Feb 2013 BOX: 1 BATCH: 100434 DOC: KDCAAQGU

General Specification

Contents

SECTION	DESCRIPTION
1.	PRELIMINARY AND GENERAL
2.	SITE CLEARANCE, EXCAVATION, AND FILLING
3.	CONCRETE WORK
4.	CARPENTRY
5.	ROOFING

Related Documents

NZS 3604:2011 and Related Documents
The New Zealand Building Code and Related Documents
The New Zealand Building Act

1. Preliminary and General

1.1 Extent of Work

The extent of work is shown on the drawings and described or implied in this specification.
It includes the supply of all labour, materials and plant necessary to carry out the works. Also included is the obtaining of all necessary permits to build, arrange all inspections and pay all fees as required by the local authorities and the various supply authorities.

1.2 Contract Documents

Accompanying Drawings;
This Specification;
The Related Documents:
Other Standards produced by the Standards Association of New Zealand and other Associations as well as various Acts and Regulations as referred to in this specification. The latest edition, including Provisional standards applies unless stated otherwise.

1.3 Statutory / General Obligations

1.3.1 Comply with the New Zealand Building Act, The New Zealand Building Code and all statutory obligations and regulations of Territorial Authorities and Regulatory Bodies with regard to execution of the contract.

1.3.2 Building Consent: Obtain from the Territorial Authority such consents as are required by the New Zealand

RECEIVED: 25 Feb 2013 SCANNED: 25 Feb 2013 BOX: 1 BATCH: 100434 DOC: KDCAAQGU

Building Act 1991 and pay all charges due for their processing and issue. Keep the building consent form and documents on site and liaise with the Territorial Authority for all notices to be given and all inspections required during construction to ensure compliance. Return consent form and documents to the Employer on completion.

1.3.3 Notices: Give all other notices to and obtain from all Authorities and Network Utilities all other permits, authorisations and approvals which relate to the carrying out of the contract works. Pay all fees and levies in respect of same including re-inspections.

1.3.4 Code Compliance Certificate: Apply for and obtain for the Employer the Code Compliance Certificate for this building work from the Territorial Authority as prescribed under Section 32 (3), Building Act 1991.

1.3.5 Compliance Schedule: Obtain from the Employer the list of systems and features that were agreed as completing the Compliance Schedule when application was made for Building Consent. Supply to the Employer the inspection, maintenance and reporting procedure information of each system or feature of the building needed to complete the schedule for issue by the Territorial Authority.

1.3.6 Insurance's: Refer to the conditions of contract and take out insurance cover called for, stating in the tender those amounts.

1.3.7 Health and Safety: Refer to the requirements of the Health and Safety in Employment Act and eliminate, isolate or minimise all hazards on the work site by using proper equipment and techniques. Fence off, light or otherwise separate any source of site danger to the public at all times. Inform employees and others of the site hazards, supply protective clothing and equipment and put in place procedures for dealing with emergencies.

1.3.8 Nuisance: Take all reasonable precautions to prevent damage and nuisance from water, fire, smoke, vehicles, dust, rubbish, noise and any other causes relating from the works. Comply with the requirements of the Local Authority and any relevant Acts and Standards.

1.3.9 Temporary Works and Services: Provide, erect and maintain all necessary scaffolding, sheds, toilets, water, power, hoardings and access to the site. Allow for all necessary cartage, craneage, plant hire, storage or the like. Arrange for all temporary works and services necessary for the completion of the works, including that for nominated subcontractors. Pay all fees in connection therewith. Remove all facilities provided on completion of the work.

1.3.10 Materials: Materials are to be new unless otherwise stated, the best quality of their respective kinds, and complying with this Specification, NZS 3604:1999 and The New Zealand Building Code.

1.3.11 Workmanship: Conform to good trade practise and the relevant Codes of Practice in current use in NZ. All work to be level, plumb, and true to line and face. Employ only experienced workers familiar with the materials and techniques specified.

1.3.12 Labour, Plant and Materials: Supply all labour and materials, services, temporary works and equipment and plant required for the proper execution and completion or the contract works.

1.3.13 Guarantees: Guarantees stating the period and any special obligations, may be called for in any work section of this specification. The general terms of such guarantees are covered by the General Conditions of Contract, but in no case shall the terms or conditions accepted negate the minimum remedies available under common law as if no guarantee had been offered or accepted.

1.3.14 Completion: Clear away all trade debris form the site and leave the building clean and ready for occupancy, with all services operating and mechanical parts in good working order. Remove all

RECEIVED: 25 Feb 2013 SCANNED: 25 Feb 2013 BOX: 1 BATCH: 100434 DOC: KDCAAQGU

temporary markings, coverings and protective wrappings. Clean all glass inside and out.

2. Site Clearance, Excavation and Filling

2.1 General

2.1.1 Site Visit: Visit the site and make all necessary investigations as to conditions.

2.1.2 Antiquities: All fossils, antiquities and other objects of interest or value which may be found on the site are the property of the employer.

2.2 Clearance

2.2.1. Preparation: Comply with NZS 3604 – Section 3, Site Requirements. Remove all turf, vegetation, trees, topsoil, stumps and rubbish from the area to be built on.

2.2.2. Excavated Material: Stockpile and dispose of excavated material as directed by the employer.

2.3 Excavations

2.3.1 General: Trim Ground to required profile, batters, falls and levels. Remove all loose material. Protect all cut faces from collapse. Keep all excavations free from water at all times. Excavation is assumed to be in material other than rock

2.3.2 Pile Footing: Excavate to the depths shown with plumb excavations that have bottoms level and solid. Keep clean and free of water at all times.

2.3.3 Inadequate Bearing: If bearing becomes inadequate, due to any cause, then excavate further, backfill and compact to approval with materials as follows to obtain 'good ground' as defined in NZS 3604:
Below Footings: 10 MPa concrete
Service Trenches: Hardfill

2.3.4 Excess Excavation: If for any reason excavation exceeds the required depths, backfill and compact to the correct level with material as shown above at no cost to the employer.

2.4 Filling

2.4.1 General Backfilling: Use approved excavated material compacted in 150mm layers, the last 200mm to be clean top soil lightly compacted and neatly finished.

2.5 Completion

2.5.1 Surplus Material: Remove and dispose off site any surplus excavated material including that excavated for drains.

3. Concrete Work

3.1 General

3.1.1 Scope: This section deals with the formwork, reinforcing, mixes and the placing of concrete in buildings and in landscaping.

3.1.2 NZ Building Code: Follow the approved documents with regard to the criteria and/or methods that must be used in this section to establish compliance with the Code.

3.2 Documents

3.2.1 Documents referred to in this section are:

RECEIVED: 25 Feb 2013 SCANNED: 25 Feb 2013 BOX: 1 BATCH: 100434 DOC: KDCAAQGU

Accompanying Drawings
This Specification
The Related Documents
Other Standards produced by the Standards Association of New Zealand and other Associations as well as various Acts and Regulations as referred to in this specification. The latest edition, including Provisional standards applies unless stated otherwise.

The documents listed above and cited in the following clauses are deemed to form part of this specification.

However this specification takes precedence in the event of it being of a higher standard than the cited documents.

3.3 Materials

3.3.1 General: All materials shall comply with NZS 3604:1999 and Related Documents

3.4 Workmanship

3.4.1 General: All workmanship and construction shall comply with NZS 3604, NZS 3109 and the New Zealand Building Code.

3.4.2 Inspection: No concrete shall be placed until all excavations, boxing and reinforcing have been inspected and passed by the Territorial Authority inspector.

3.4.3 Formwork: Shall be securely fixed and braced with sufficient strength to support all loads and joints and linings tight enough to prevent loss of water. Hose out thoroughly and keep wet before and after concrete is placed.

3.5 Completion

3.5.1 Curing of Concrete: Concrete shall be protected from premature drying and extremes of temperature.

4. Carpentry

4.1 General

4.1.1 Scope: This section specifies the supply and erection of timber framing, flooring, exterior sheathing, internal lining and timber products.

4.1.2 Documents: Documents listed below and cited in the following clauses are deemed to form part of this specification except where a higher standard than the cited documents is specified herein.
Accompanying Drawings
This Specification
The Related Documents
NZS 3604: 1999 Timber Frame Buildings
New Zealand Building Code

Other Standards produced by the Standards Association of New Zealand and other Associations as well as various Acts and Regulations as referred to in this specification. The latest edition, including Provisional standards applies unless stated otherwise.

4.2 Materials

4.2.1 Materials shall comply with the contract documents in 4.1.2 above.

4.3 Workmanship

RECEIVED: 25 Feb 2013 SCANNED: 25 Feb 2013 BOX: 1 BATCH: 100434 DOC: KDCAAQGU

4.3.1 General: Comply with NZS 3604 and the New Zealand Building Code except as varied in this specification in accordance with the best trade practice.

4.3.2 Inspections: Allow for and ensure that all inspections required for NZ Building Code compliance are carried out at the required times.

4.3.3 Attendance: Allow for attendance on all trades as is normal practice. Provide and fix all blocks, nogs, openings and other items as required by them.

4.3.4 Wall Framing: Fabricate, fasten and brace complete with all lintels, sills and nogs etc to NZS 3604.

4.3.5 Roof Framing: Fabricate, fasten and brace complete with all hips, valleys, rafters, purlins and beams etc to NZS 3604.

4.3.6 Building Paper and Insulation: Lay and fix all building paper, aluminium foil and insulation as detailed to the manufacturer's recommendation and NZS 3604.

4.3.7 Exterior Wall Coverings: Fix to framing true to line, level and face to the manufacturer's recommendation and NZS 3604.

4.3.8 Sealing: Prime or seal all faces, edges and end grains before fixing cladding and exterior trim.

4.3.9 Nailing: Fasten with nails as scheduled in NZS 3604.

4.3.10 Moisture Content: At the time of fixing or installing the moisture content shall be as follows:

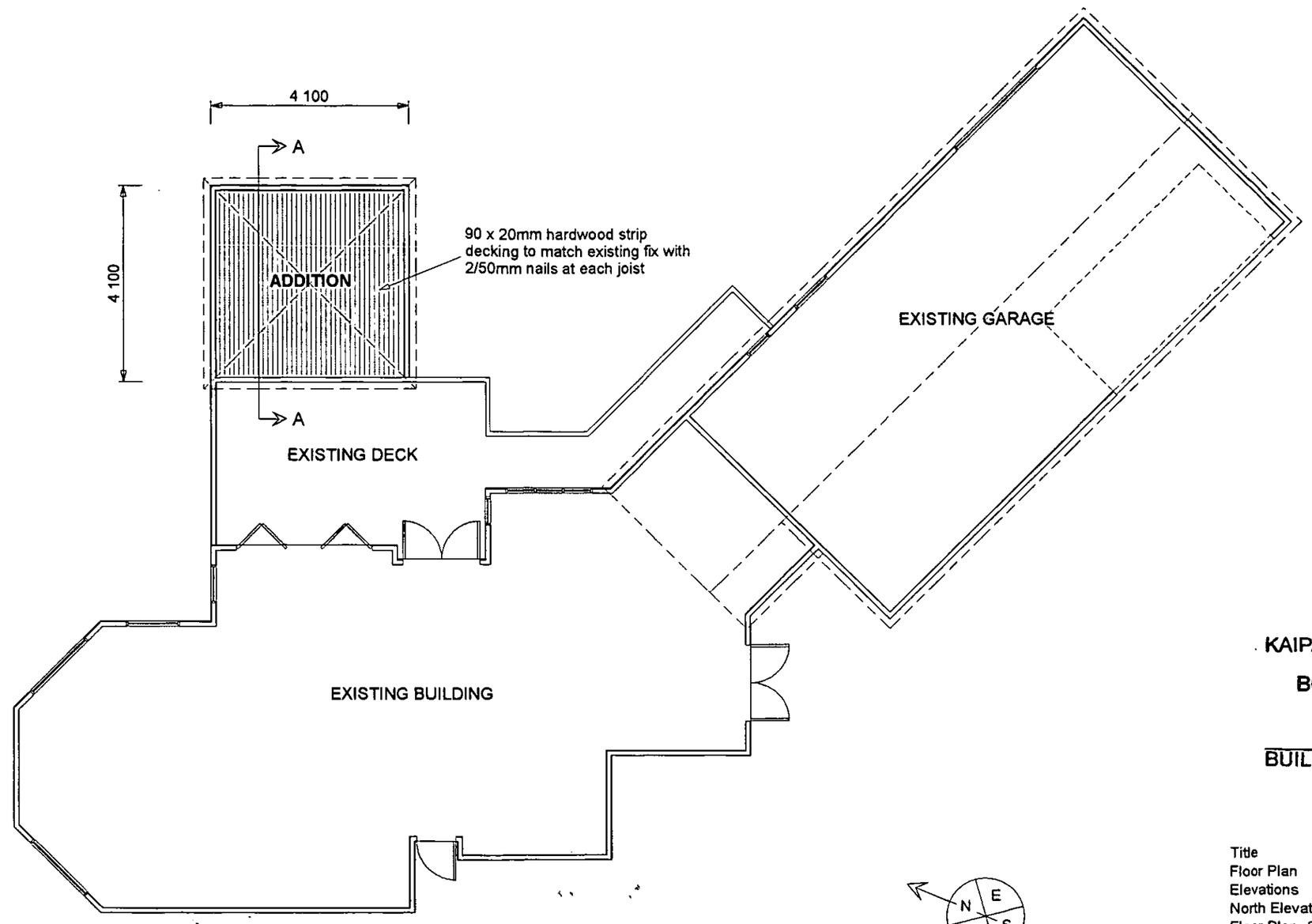
Framing Timbers	18% to 20%
Exterior Trim	12% to 14%
Weather Boards	12% maximum
Flooring	10% maximum

4.4 Completion

4.4.1 Take away all trade rubbish from the site on a weekly basis and leave site in a clean and tidy condition for the trades that will follow.

RECEIVED: 25 Feb 2013 SCANNED: 25 Feb 2013 BOX: 1 BATCH: 100434 DOC: KDCAAQGU

COUNCIL



KAIPARA DISTRICT COUNCIL
BC 110228
BUILDING INSPECTOR

Drawing Index

Title	Drawing
Floor Plan	1
Elevations	2
North Elevation and Cross Section A - A	3
Floor Plan, Subfloor Plan and Roof Plan	4
Roof and Pole Frame Details	5
Verandah Post and Railing Details	6

The durability of all materials used on this project shall comply with Section 4 of NZS 3604:1999 as a means of compliance with Clause B2 of the New Zealand Building Code

All components used in this structure shall be installed, fixed and flashed in accordance with the manufacturers specifications and the New Zealand Building Code.

All construction shall be carried out in accordance with The New Zealand Buiding Code, NZS 3604 and any Local Authority Bylaws.

All framing shall be MSG 8 or VSG 8 unless noted otherwise

Mangawhai Draughting and Design
Dave Stewart
Licensed Building Practitioner No 101041
Phone 09 4314 804 Fax 09 4314 802
Mobile 029 4314 804 email dave.draft@xtra.co.nz

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They shall NOT be Copied in Any Form or Passed On To Any Third Party Without Prior Approval from Coastal Homes and Mangawhai Draughting and Design

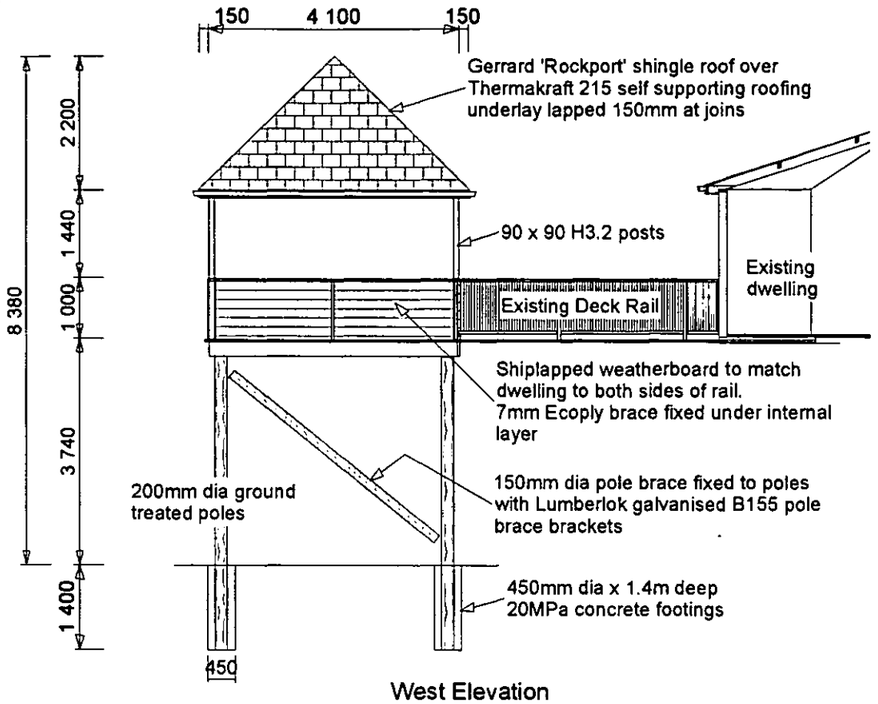
Deck Addition to Dwelling for Elaine and Adrian Reddy at 33 Baldrock Road, Kaiwaka

Floor Plan

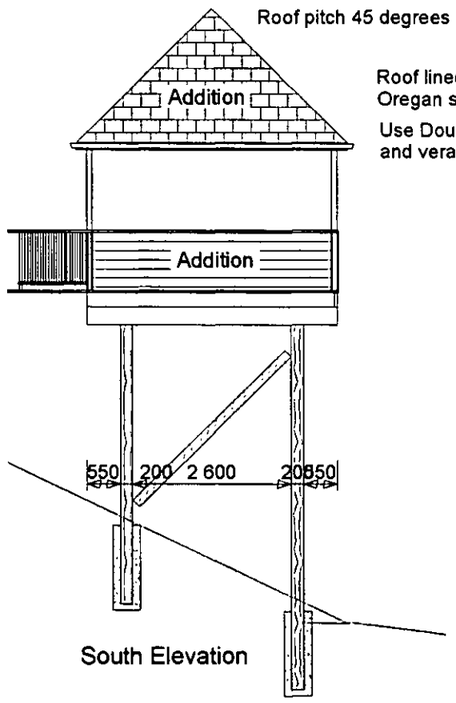
Drawn: Dave Stewart
Date: March 2011
Scale: 1 : 100

Sheet: one
of: six
Drawing No: A3 / 993

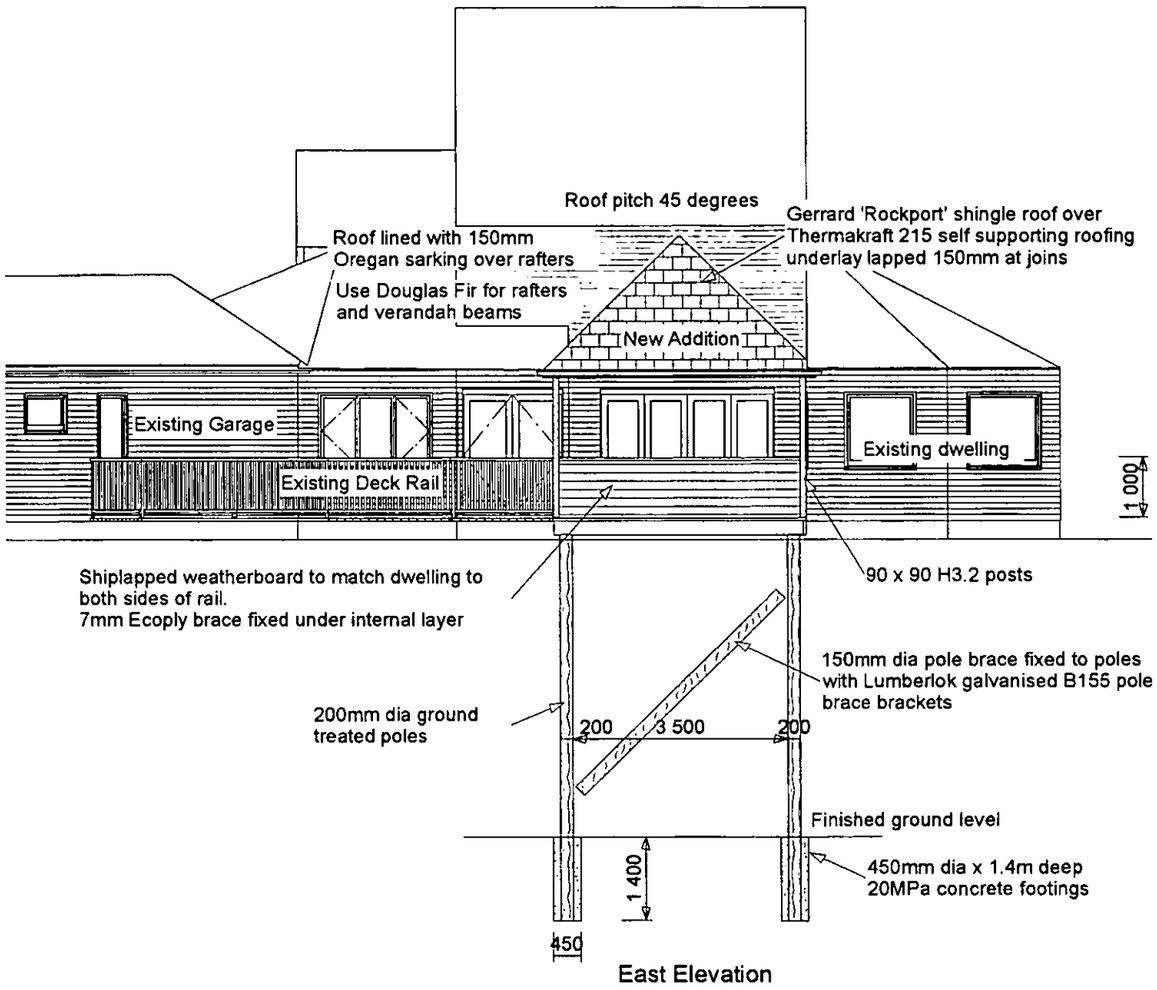
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West Elevation



South Elevation



East Elevation

KAIPARA DISTRICT COUNCIL
BC 110279
BUILDING INSPECTOR

The durability of all materials used on this project shall comply with Section 4 of NZS 3604:1999 as a means of compliance with Clause B2 of the New Zealand Building Code

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Checked for specifically designed structural engineering content as summarised in our calculations

for Mangawhai Draughting and Design
Ph 09 4314804

All framing shall be MSG 8 or VSG 8 unless noted otherwise

Mangawhai Draughting and Design
Dave Stewart
Licensed Building Practitioner No 101041
Phone 09 4314 804 Fax 09 4314 802
Mobile 029 4314 804 email dave.draft@xtra.co.nz

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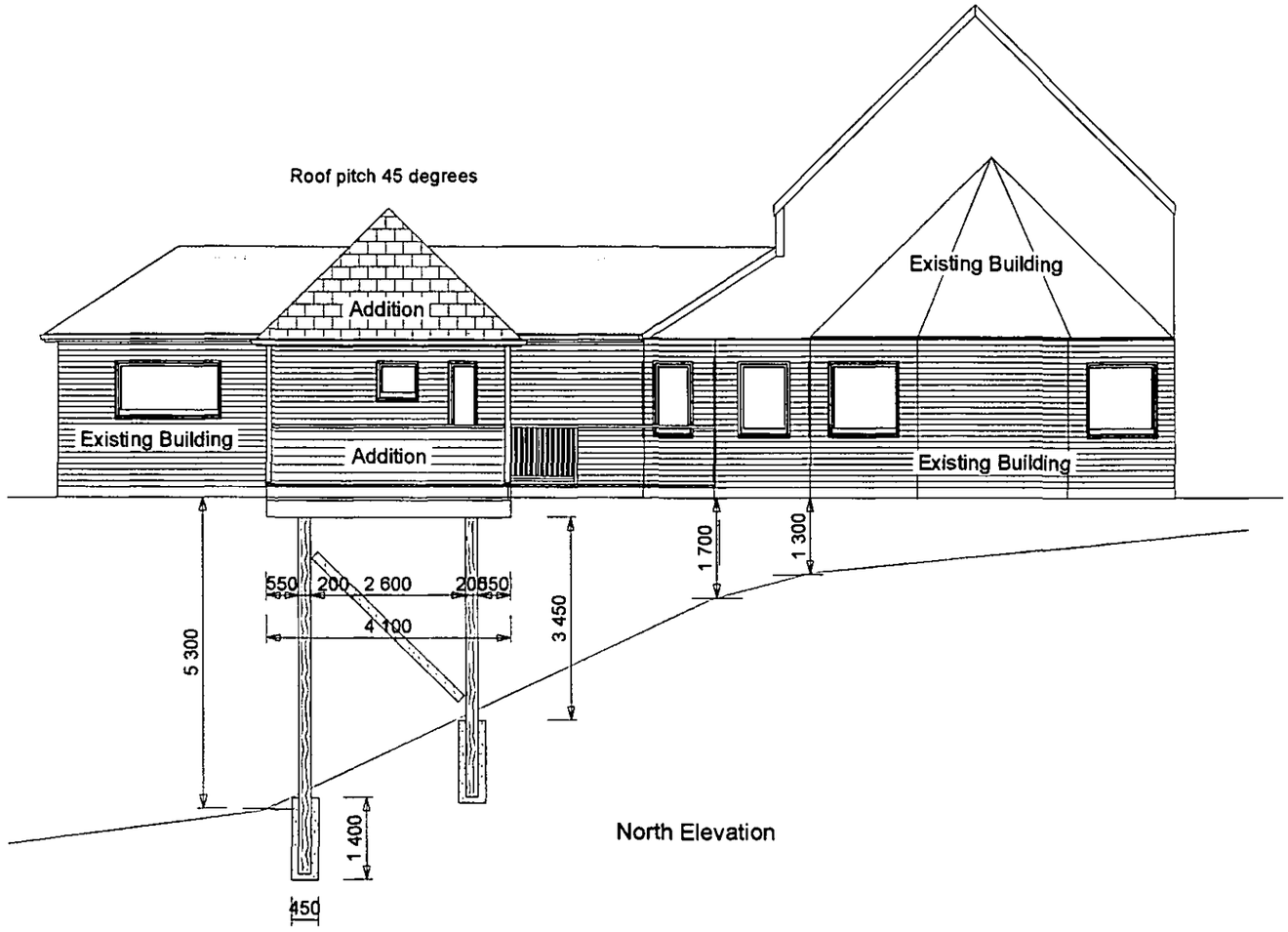
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Deck Addition to Dwelling for
Elaine and Adrian Reddy at
33 Baldrock Road, Kaiwaka

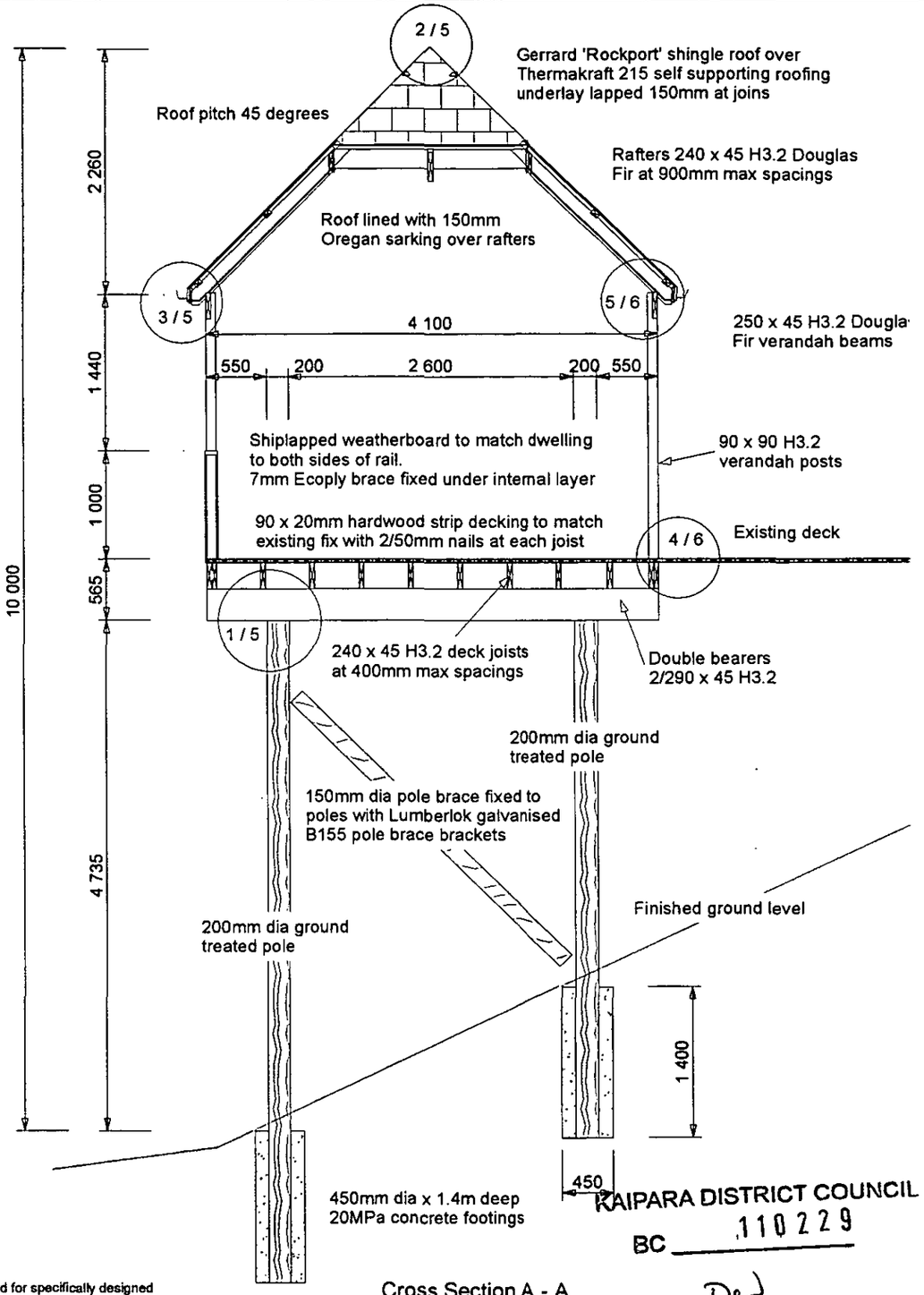
Elevations

Drawn:	Dave Stewart	Sheet:	two
Date:	March 2011	of:	six
Scale:	1 : 100	Drawing No:	A3 / 993

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North Elevation



Cross Section A - A
1 : 50

The durability of all materials used on this project shall comply with Section 4 of NZS 3604:1999 as a means of compliance with Clause B2 of the New Zealand Building Code

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N.P. Stewart

for Mangawhai Draughting and Design
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KAIPARA DISTRICT COUNCIL
BC 110229
BUILDING INSPECTOR

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Mangawhai Draughting and Design
Dave Stewart
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Mobile 029 4314 804 email dave.draft@xtra.co.nz

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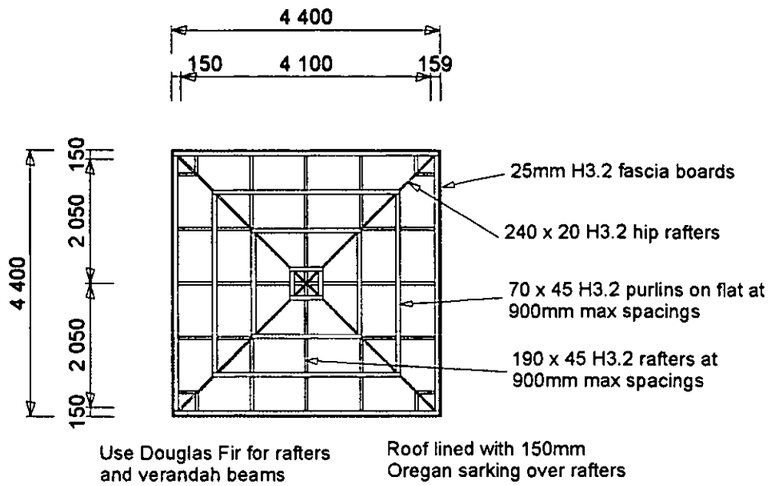
Deck Addition to Dwelling for Elaine and Adrian Reddy at 33 Baldrock Road, Kaiwaka

North Elevation and Cross Section A - A

Drawn: Dave Stewart
Date: March 2011
Scale: 1 : 100

Sheet: three
of: six
Drawing No: A3 / 993

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Roof Plan

Fix rafters to top plate/beam/lintel with 2/90 x 3.15mm skewed nails and 2 wire dogs or a 4.7kN capacity altenative fixing

Fix purlins to rafters with a 25mm strap nailed to rafters first with 4/75 x 3.15 flat head nails then bent up each side and nailed to purlin with 4/30 x 2.5mm flat head nails (2 each side)

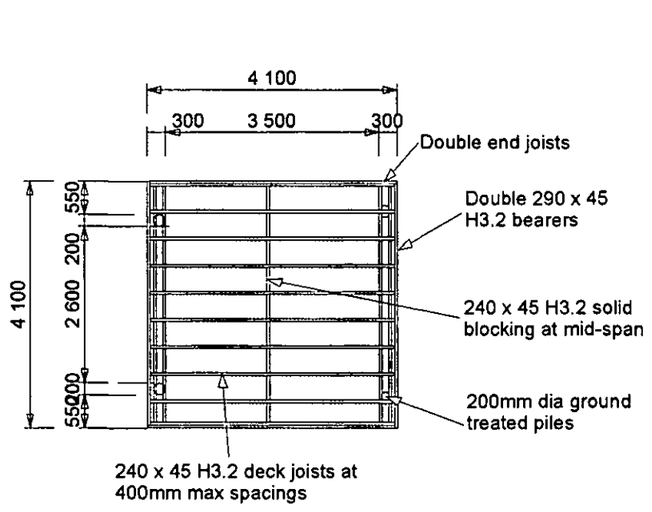
Fix each sarking board to rafters with 2/65mm long nails.

Except where shown otherwise fix joist to plate or bearer with 2/100 x 3.75 skewed nails

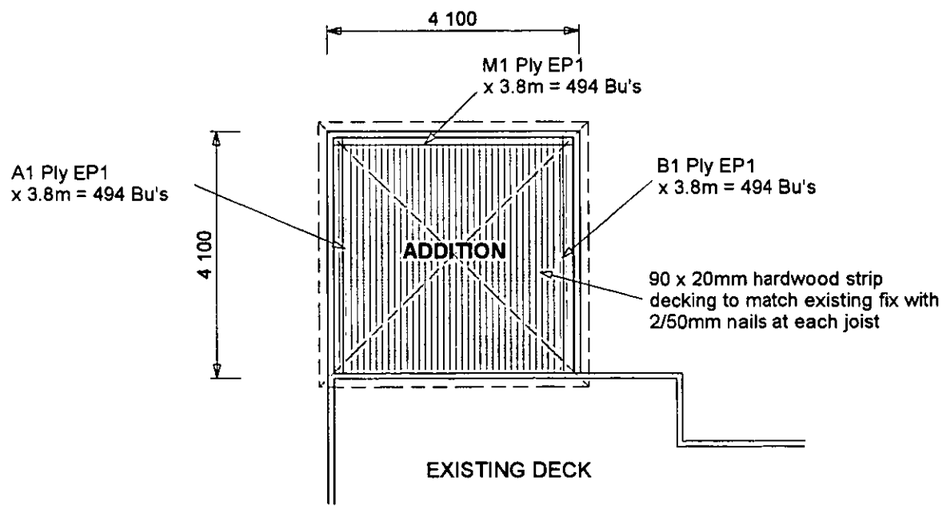
Fix boundary joist to end of each joist with 2/100 x 3.75mm end nails

Fix lapped joints in joists with 100 x 3.75mm nails - 2 each side

Fix solid blocking between joists with 2/100 x 3.75mm end nails or 4/75 x 3.15mm skewed nails



Subfloor Plan



Floor Plan

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Checked for specifically designed structural engineering content as summarised in our calculations

for Mangawhai Draughting and Design
Ph 09 4314804

KAIPARA DISTRICT COUNCIL
BC 110229
BUILDING INSPECTOR

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Mangawhai Draughting and Design
Dave Stewart
Licensed Building Practitioner No 101041
Phone 09 4314 804 Fax 09 4314 802
Mobile 029 4314 804 email dave.draft@xtra.co.nz

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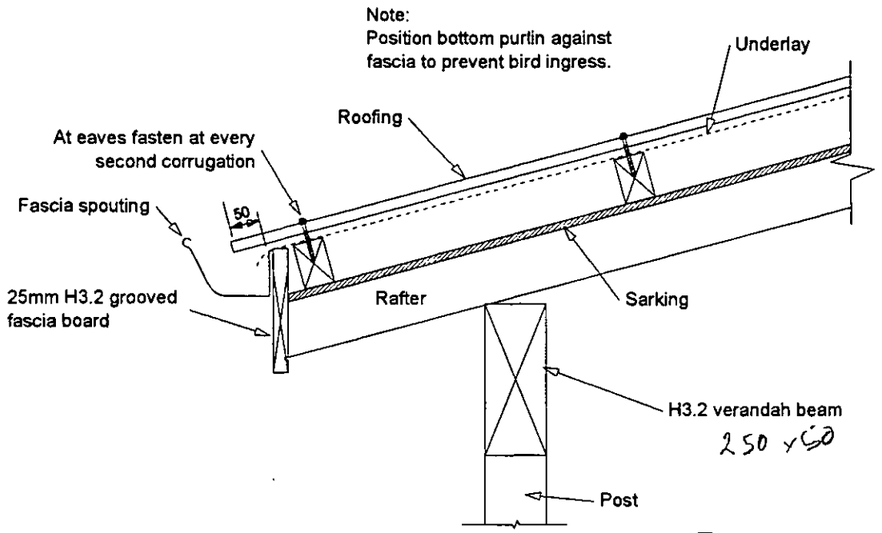
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Deck Addition to Dwelling for Elaine and Adrian Reddy at 33 Baldrock Road, Kaiwaka

Subfloor, Floor, and Roof Plans

Drawn:	Dave Stewart	Sheet:	four
Date:	March 2011	of:	six
Scale:	1 : 100	Drawing No:	A3 / 993

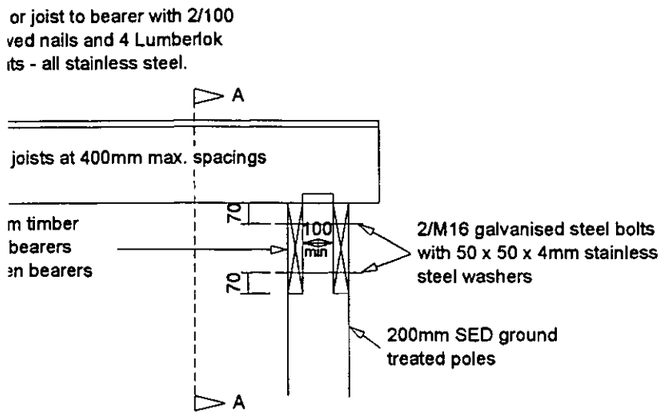
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Soffit Detail

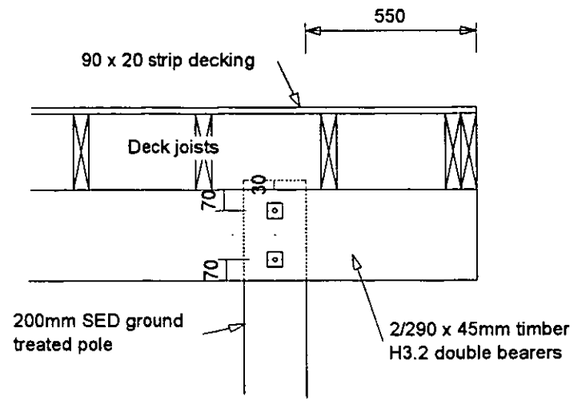
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3 / 3



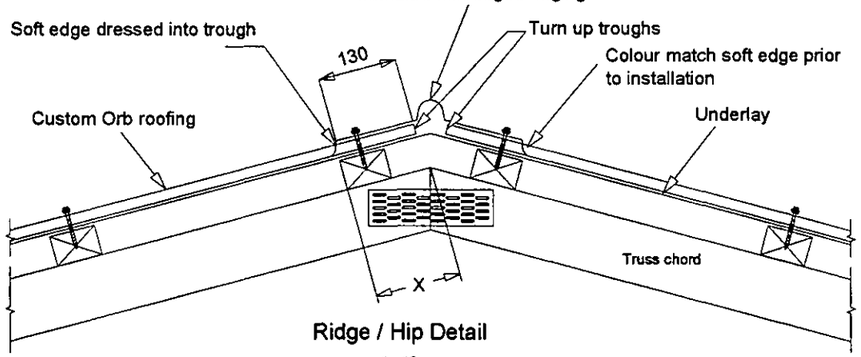
Double Bearer / Pole Conection Detail

1: 20



Section A - A

1 / 3



Ridge / Hip Detail

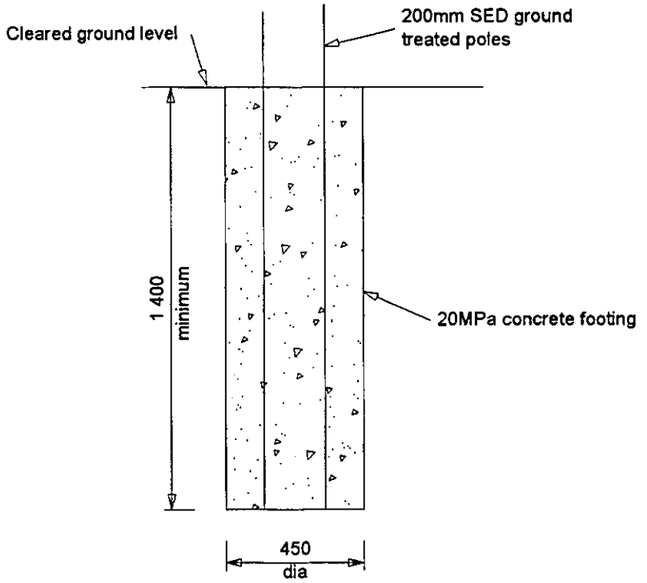
1 : 10

LOW / MEDIUM / HIGH WIND ZONES WHERE PITCH ≥ 10°

Roof Pitch	8	10	15	20	25	30	35	**45**
Dimension X	168	167	162	156	150	143	134	**115**

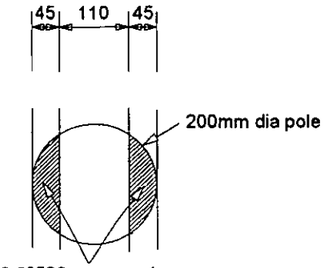
For standard ridge using ex 50mm purlins on flat

2 / 3



Pole Footing

1 : 20



0.00526 sq.m each =
0.01052 sq.m total

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Checked for specifically designed structural engineering content as summarised in our calculations

D. L. Stewart

for Mangawhai Draughting and Design
Ph 09 4314804

KAIPARA DISTRICT COUNCIL

BC 110229

Dew

BUILDING INSPECTOR

All framing shall be MSG 8 or VSG 8 unless noted otherwise

Mangawhai Draughting and Design
Dave Stewart
Licensed Building Practitioner No 101041
Phone 09 4314 804 Fax 09 4314 802
Mobile 029 4314 804 email dave.draft@xtra.co.nz

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Deck Addition to Dwelling for Elaine and Adrian Reddy at 33 Baldrock Road, Kaiwaka

Roof and Pole / Bearer Details

Drawn: Dave Stewart
Date: March 2011
Scale: As Shown

Sheet: five
of: six
Drawing No: A3 / 993

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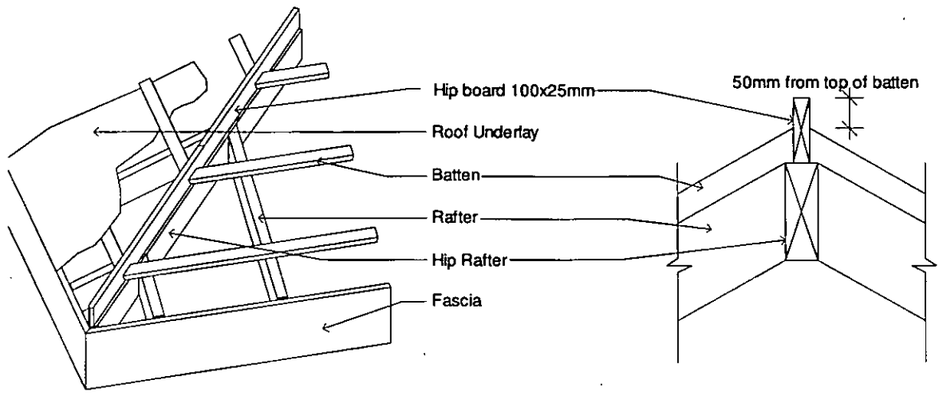


Figure 04
Hip board detail

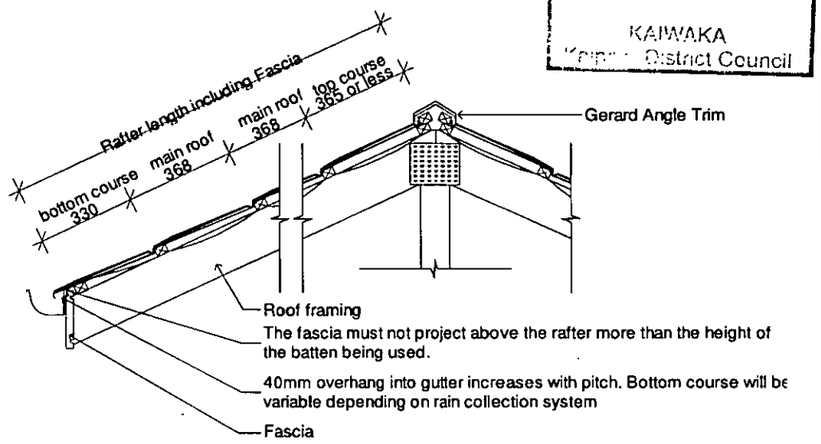
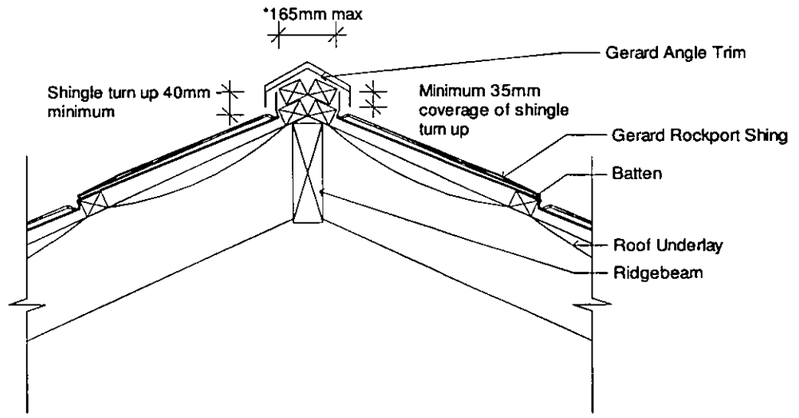


Figure 01
Batten spacing - Ridge or Hip with conventional rafter
Rockport Shingle profile. Angle Trim

Fix tile battens to each rafter with 2 / 90 x 3.15 gun nails



*Approximate dimension - changes with roof pitch

Figure 03
Ridge detail - Rafter
Rockport Shingle profile. Angle Trim

KAIPARA DISTRICT COUNCIL
BC 110229
Dec
BUILDING INSPECTOR

Roof Details added June 2011 Dave Stewart

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Deck Addition to Dwelling for
Elaine and Adrian Reddy at
33 Baldrock Road, Kaiwaka

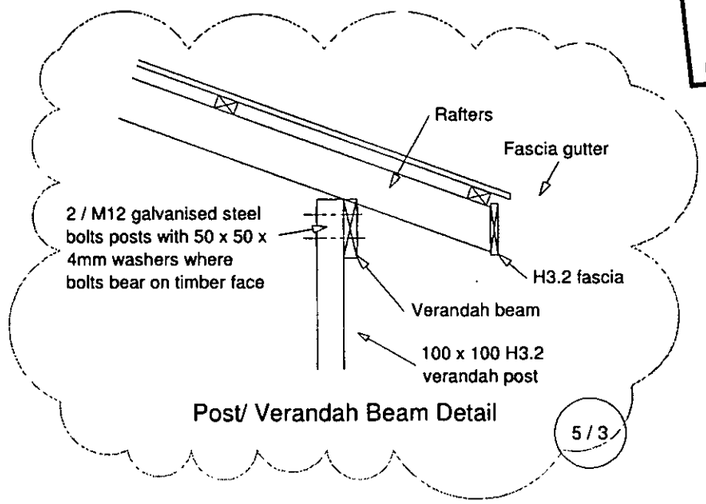
Roofing Details

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Date: March 2011
Scale: Not to Scale

Sheet: six A
of: six
Drawing No: A3 / 993

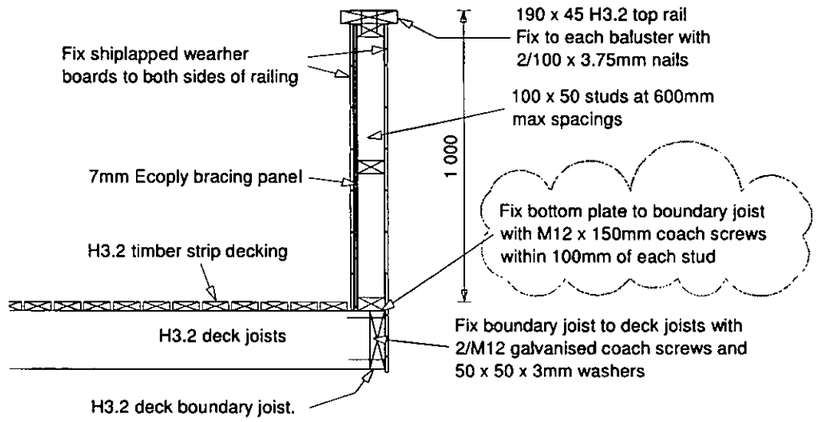
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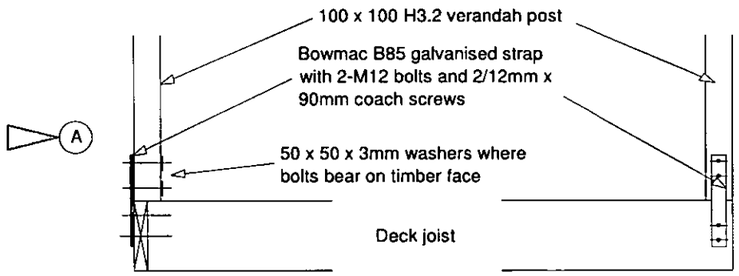


Post/ Verandah Beam Detail

5 / 3



Railing Detail
1 : 20



Verandah Post / Joist Detail View (A)
1 : 20

4 / 3

KAIPARA DISTRICT COUNCIL
BC 110229

BUILDING INSPECTOR

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Post / Verandah Beam detail and railing stud fixing to joists amended June 2011 Dave Stewart

Checked for specifically designed structural engineering content as summarised in our calculations

for Mangawhai Draughting and Design
Ph 09 4314804

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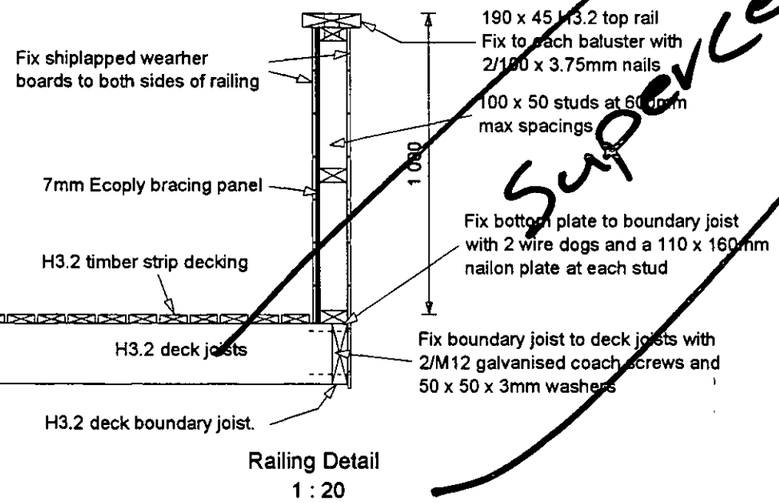
Deck Addition to Dwelling for Elaine and Adrian Reddy at 33 Baldrock Road, Kaiwaka

Verandah Post Fixing and Railing Details

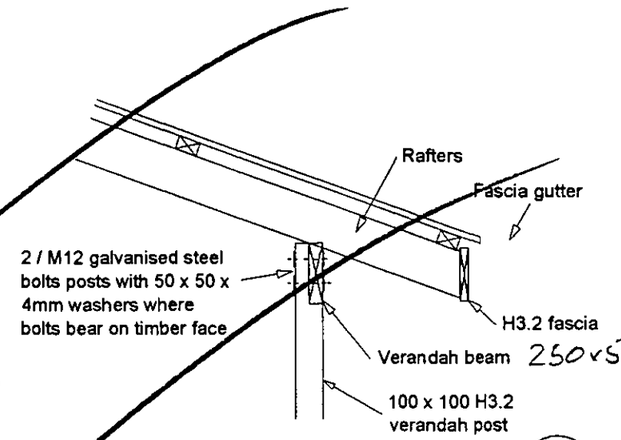
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Date: March 2011
Scale: As Shown

Sheet: six A
of: six
Drawing No: A3 / 993

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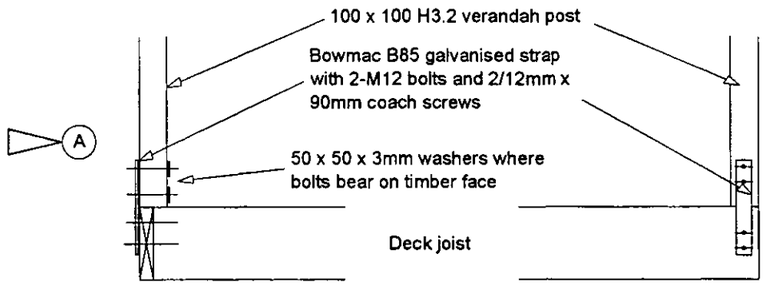


Railing Detail
1 : 20



Post/ Verandah Beam Detail

5 / 3



Verandah Post / Joist Detail View (A)
1 : 20

4 / 3

Calcs

Superceeded.

corner detail

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Deck Addition to Dwelling for Elaine and Adrian Reddy at 33 Baldrock Road, Kaiwaka

Verandah Post Fixing and Railing Details

Drawn: Dave Stewart
Date: March 2011
Scale: As Shown

Sheet: six
of: six
Drawing No: A3 / 993

Appendix D
Laboratory Certificates

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

0508 HILL LAB (44 555 22)
[redacted]
mail@hill-labs.co.nz
www.hill-labs.co.nz

Certificate of Analysis

Client:	Aurecon New Zealand Limited	**Lab No:**	4009250 SPv2
Contact:	Andrew Allcock C/- Aurecon New Zealand Limited PO Box 9762 Newmarket Auckland 1149	**Date Received:** **Date Reported:** **Quote No:** **Order No:** **Client Reference:** **Submitted By:**	15-Oct-2025 28-Oct-2025 82714 Andrew Allcock

Sample Type: Soil

		Sample Name:	BH2B_1160 23m 13-Oct-2025	BH2B_1160 28m 13-Oct-2025
		Lab Number:	4009250.1	4009250.2
Individual Tests				
Organic Matter*	g/100g dry wt		4.4	3.8
Dry Matter	g/100g as rcvd		82	74
Ash*	g/100g dry wt		96	96
Heavy Metals with Mercury, Screen Level				
Total Recoverable Arsenic	mg/kg dry wt		6	7
Total Recoverable Cadmium	mg/kg dry wt		0.19	0.18
Total Recoverable Chromium	mg/kg dry wt		6	7
Total Recoverable Copper	mg/kg dry wt		14	13
Total Recoverable Lead	mg/kg dry wt		9.7	8.9
Total Recoverable Mercury	mg/kg dry wt		< 0.10	< 0.10
Total Recoverable Nickel	mg/kg dry wt		19	17
Total Recoverable Zinc	mg/kg dry wt		67	65
Polycyclic Aromatic Hydrocarbons Screening in Soil*				
Total of Reported PAHs in Soil	mg/kg dry wt		< 0.3	< 0.4
1-Methylnaphthalene	mg/kg dry wt		0.022	0.022
2-Methylnaphthalene	mg/kg dry wt		0.024	0.022
Acenaphthylene	mg/kg dry wt		< 0.012	< 0.014
Acenaphthene	mg/kg dry wt		< 0.012	< 0.014
Anthracene	mg/kg dry wt		< 0.012	< 0.014
Benzo[a]anthracene	mg/kg dry wt		< 0.012	< 0.014
Benzo[a]pyrene (BAP)	mg/kg dry wt		< 0.012	< 0.014
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt		< 0.029	< 0.033
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt		< 0.029	< 0.033
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt		< 0.012	< 0.014
Benzo[e]pyrene	mg/kg dry wt		< 0.012	< 0.014
Benzo[g,h,i]perylene	mg/kg dry wt		< 0.012	< 0.014
Benzo[k]fluoranthene	mg/kg dry wt		< 0.012	< 0.014
Chrysene	mg/kg dry wt		< 0.012	< 0.014
Dibenzo[a,h]anthracene	mg/kg dry wt		< 0.012	< 0.014
Fluoranthene	mg/kg dry wt		< 0.012	< 0.014
Fluorene	mg/kg dry wt		< 0.012	< 0.014
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt		< 0.012	< 0.014
Naphthalene	mg/kg dry wt		< 0.06	< 0.07
Perylene	mg/kg dry wt		< 0.012	< 0.014
Phenanthrene	mg/kg dry wt		< 0.012	< 0.014
Pyrene	mg/kg dry wt		< 0.012	< 0.014

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The tests reported herein have been performed in accordance with the terms of accreditation, with the exception of tests marked * or any comments and interpretations, which are not accredited.

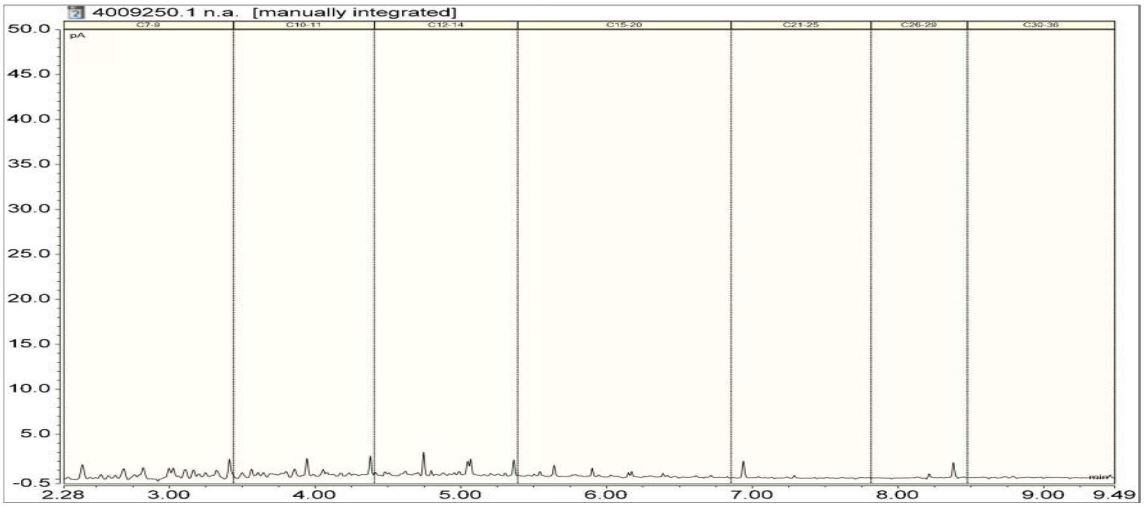
Sample Type: Soil			
Sample Name:		BH2B_1160 23m 13-Oct-2025	BH2B_1160 28m 13-Oct-2025
Lab Number:		4009250.1	4009250.2
Total Petroleum Hydrocarbons in Soil			
C7 - C9	mg/kg dry wt	34	52
C10 - C14	mg/kg dry wt	88	81
C15 - C36	mg/kg dry wt	51	67
Total hydrocarbons (C7 - C36)	mg/kg dry wt	173	199
BTEX in VOC Soils by Headspace GC-MS			
Benzene	mg/kg dry wt	0.111	0.14
Ethylbenzene	mg/kg dry wt	2.4	2.1
Toluene	mg/kg dry wt	3.4	3.0
m&p-Xylene	mg/kg dry wt	6.3	5.6
o-Xylene	mg/kg dry wt	1.68	1.54
Halogenated Aliphatics in VOC Soils by Headspace GC-MS			
Bromomethane (Methyl Bromide)	mg/kg dry wt	< 0.03	< 0.03
Carbon tetrachloride	mg/kg dry wt	< 0.03	< 0.03
Chloroethane	mg/kg dry wt	< 0.03	< 0.03
Chloromethane	mg/kg dry wt	< 0.03	< 0.03
1,2-Dibromo-3-chloropropane	mg/kg dry wt	< 0.05	< 0.05
1,2-Dibromoethane (ethylene dibromide, EDB)	mg/kg dry wt	< 0.03	< 0.03
Dibromomethane	mg/kg dry wt	< 0.03	< 0.03
1,3-Dichloropropane	mg/kg dry wt	< 0.03	< 0.03
Dichlorodifluoromethane	mg/kg dry wt	< 0.05	< 0.05
1,1-Dichloroethane	mg/kg dry wt	< 0.03	< 0.03
1,2-Dichloroethane	mg/kg dry wt	< 0.03	< 0.03
1,1-Dichloroethene	mg/kg dry wt	< 0.03	< 0.03
cis-1,2-Dichloroethene	mg/kg dry wt	< 0.03	< 0.03
trans-1,2-Dichloroethene	mg/kg dry wt	< 0.03	< 0.03
Dichloromethane (methylene chloride)	mg/kg dry wt	< 0.4	< 0.5
1,2-Dichloropropane	mg/kg dry wt	< 0.03	< 0.03
1,1-Dichloropropene	mg/kg dry wt	< 0.03	< 0.03
cis-1,3-Dichloropropene	mg/kg dry wt	< 0.03	< 0.03
trans-1,3-Dichloropropene	mg/kg dry wt	< 0.03	< 0.03
Hexachlorobutadiene	mg/kg dry wt	< 0.03	< 0.03
1,1,1,2-Tetrachloroethane	mg/kg dry wt	< 0.03	< 0.03
1,1,2,2-Tetrachloroethane	mg/kg dry wt	< 0.03	< 0.03
Tetrachloroethene (tetrachloroethylene)	mg/kg dry wt	< 0.03	< 0.03
1,1,1-Trichloroethane	mg/kg dry wt	< 0.03	< 0.03
1,1,2-Trichloroethane	mg/kg dry wt	< 0.03	< 0.03
Trichloroethene (trichloroethylene)	mg/kg dry wt	< 0.03	< 0.03
Trichlorofluoromethane	mg/kg dry wt	< 0.03	< 0.03
1,2,3-Trichloropropane	mg/kg dry wt	< 0.05	< 0.05
1,1,2-Trichlorotrifluoroethane (Freon 113)	mg/kg dry wt	< 0.03	< 0.03
Vinyl chloride	mg/kg dry wt	< 0.03	< 0.03
Halogenated Aromatics in VOC Soils by Headspace GC-MS*			
Bromobenzene	mg/kg dry wt	< 0.03	< 0.03
1,3-Dichlorobenzene	mg/kg dry wt	< 0.03	< 0.03
4-Chlorotoluene	mg/kg dry wt	< 0.03	< 0.03
Chlorobenzene (monochlorobenzene)	mg/kg dry wt	< 0.03	< 0.03
1,2-Dichlorobenzene	mg/kg dry wt	< 0.03	< 0.03
1,2-Dichloropropane	mg/kg dry wt	< 0.03	< 0.03
1,4-Dichlorobenzene*	mg/kg dry wt	< 0.03	< 0.03
2-Chlorotoluene	mg/kg dry wt	< 0.03	< 0.03
1,2,3-Trichlorobenzene	mg/kg dry wt	< 0.03	< 0.03

Sample Type: Soil			
Sample Name:		BH2B_1160 23m 13-Oct-2025	BH2B_1160 28m 13-Oct-2025
Lab Number:		4009250.1	4009250.2
Halogenated Aromatics in VOC Soils by Headspace GC-MS*			
1,2,4-Trichlorobenzene	mg/kg dry wt	< 0.03	< 0.03
1,3,5-Trichlorobenzene	mg/kg dry wt	< 0.03	< 0.03
Monoaromatic Hydrocarbons in VOC Soils by Headspace GC-MS			
n-Butylbenzene	mg/kg dry wt	0.25	0.26
tert-Butylbenzene	mg/kg dry wt	< 0.03	< 0.03
Isopropylbenzene (Cumene)	mg/kg dry wt	0.47	0.46
4-Isopropyltoluene (p-Cymene)	mg/kg dry wt	0.28	0.27
n-Propylbenzene	mg/kg dry wt	0.68	0.66
sec-Butylbenzene	mg/kg dry wt	0.19	0.18
Styrene	mg/kg dry wt	0.05	0.06
1,2,4-Trimethylbenzene	mg/kg dry wt	1.48	1.41
1,3,5-Trimethylbenzene	mg/kg dry wt	0.86	0.83
Ketones in VOC Soils by Headspace GC-MS			
2-Butanone (MEK)	mg/kg dry wt	< 4	< 5
4-Methylpentan-2-one (MIBK)	mg/kg dry wt	< 0.8	< 0.9
Acetone	mg/kg dry wt	< 4	< 5
Methyl tert-butylether (MTBE)	mg/kg dry wt	< 0.03	< 0.03
Trihalomethanes in VOC Soils by Headspace GC-MS			
Bromodichloromethane	mg/kg dry wt	< 0.03	< 0.03
Bromoform (tribromomethane)	mg/kg dry wt	< 0.05	< 0.05
Chloroform (Trichloromethane)	mg/kg dry wt	< 0.03	< 0.03
Dibromochloromethane	mg/kg dry wt	< 0.03	< 0.03
Other VOC in Soils by Headspace GC-MS			
Carbon disulphide	mg/kg dry wt	< 0.05	< 0.05
Naphthalene	mg/kg dry wt	0.12	0.11

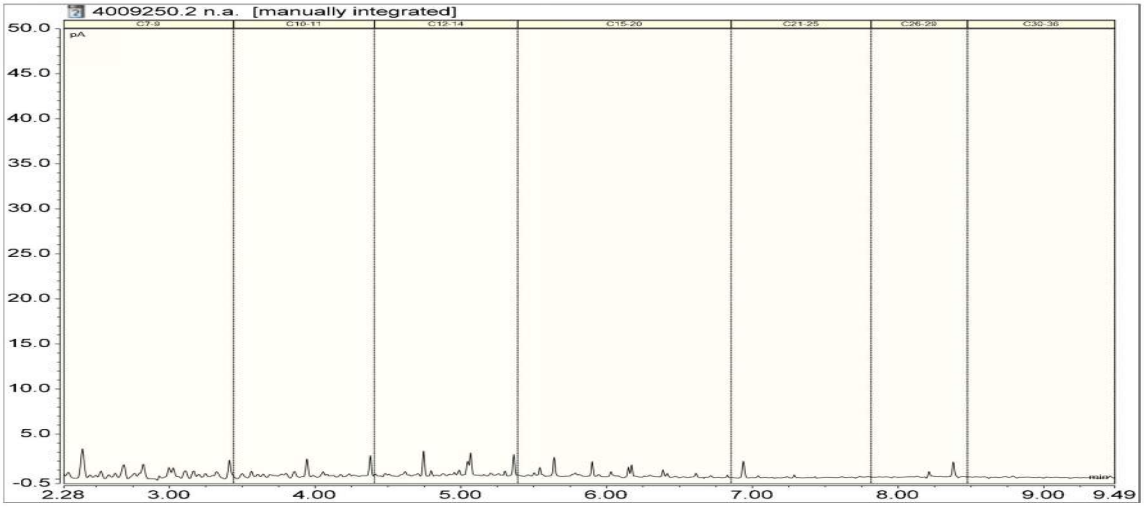
Sample Type: Aqueous		
Sample Name:		BH2B_1160 Water 01 13-Oct-2025
Lab Number:		4009250.3
Individual Tests		
Total Mercury	g/m³	< 0.010
Heavy metals, totals, trace As,Cd,Cr,Cu,Ni,Pb,Zn		
Total Arsenic	g/m³	0.70
Total Cadmium	g/m³	0.0192
Total Chromium	g/m³	0.92
Total Copper	g/m³	1.40
Total Lead	g/m³	0.78
Total Nickel	g/m³	1.95
Total Zinc	g/m³	6.6
Polycyclic Aromatic Hydrocarbons Screening in Water, By Liq/Liq		
Acenaphthene	g/m³	< 0.0005
Acenaphthylene	g/m³	< 0.0005
Anthracene	g/m³	< 0.0005
Benzo[a]anthracene	g/m³	< 0.0005
Benzo[a]pyrene (BAP)	g/m³	< 0.0005
Benzo[b]fluoranthene + Benzo[j] fluoranthene	g/m³	< 0.0005
Benzo[g,h,i]perylene	g/m³	< 0.0005
Benzo[k]fluoranthene	g/m³	< 0.0005
Chrysene	g/m³	< 0.0005
Dibenzo[a,h]anthracene	g/m³	< 0.0005
Fluoranthene	g/m³	< 0.0005
Fluorene	g/m³	< 0.0005
Indeno(1,2,3-c,d)pyrene	g/m³	< 0.0005
Naphthalene	g/m³	< 0.003
Phenanthrene	g/m³	< 0.0005

Sample Type: Aqueous		
Sample Name:		BH2B_1160 Water 01 13-Oct-2025
Lab Number:		4009250.3
Polycyclic Aromatic Hydrocarbons Screening in Water, By Liq/Liq		
Pyrene	g/m^3	< 0.0005
Total Petroleum Hydrocarbons in Water		
C7 - C9	g/m^3	18.4
C10 - C14	g/m^3	5.9
C15 - C36	g/m^3	4
Total hydrocarbons (C7 - C36)	g/m^3	28

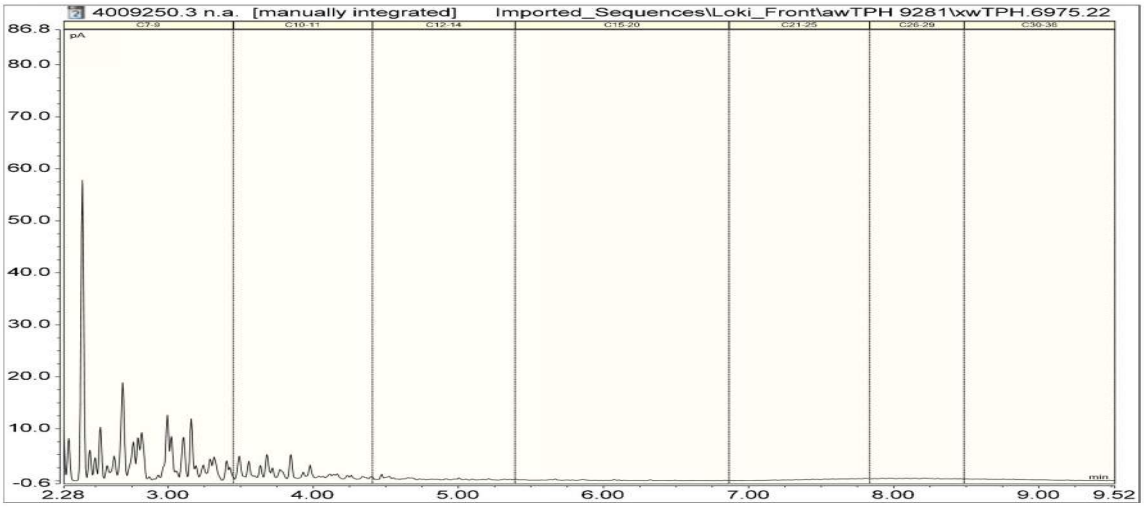
4009250.1
BH2B_1160 23m 13-Oct-2025
Client Chromatogram for TPH by FID



4009250.2
BH2B_1160 28m 13-Oct-2025
Client Chromatogram for TPH by FID



4009250.3
BH2B_1160 Water 01 13-Oct-2025
Client Chromatogram for TPH by FID



Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request.
Unless otherwise indicated, analyses were performed at Hill Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Individual Tests			
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	1-2
Organic Matter*	Calculation: 100 - Ash (dry wt).	0.04 g/100g dry wt	1-2
Total of Reported PAHs in Soil	Sonication extraction, GC-MS/MS analysis. In-house based on US EPA 8270.	0.03 mg/kg dry wt	1-2
Dry Matter	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	1-2
Ash*	Ignition in muffle furnace 550°C, 6hr, gravimetric. APHA 2540 G : Online Edition.	0.04 g/100g dry wt	1-2
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	BaP Potency Equivalence calculated from; Benzo(a)anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(j)fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Benzo(a)pyrene x 1.0 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Fluoranthene x 0.01 + Indeno(1,2,3-c,d)pyrene x 0.1. Ministry for the Environment. 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment.	0.024 mg/kg dry wt	1-2
Benzo[a]pyrene Toxic Equivalence (TEF)*	Benzo[a]pyrene Toxic Equivalence (TEF) calculated from; Benzo[a]pyrene x 1.0 + Benzo(a)anthracene x 0.1 + Benzo(b) fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Indeno(1,2,3-c,d)pyrene x 0.1. Guidelines for assessing and managing contaminated gasworks sites in New Zealand (GMG) (MfE, 1997).	0.024 mg/kg dry wt	1-2
TPH Oil Industry Profile + PAHscreen	Sonication extraction, GC-FID and GC-MS/MS analysis. Tested on as received sample. In-house based on US EPA 8015 and US EPA 8270.	0.010 - 70 mg/kg dry wt	1-2
Heavy Metals with Mercury, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required. US EPA 200.2 (modified), APHA 3125 B: Online Edition.	0.10 - 4 mg/kg dry wt	1-2
Volatile Organic Compounds Trace in Soil by Headspace GC-MS	Sonication extraction, Headspace GC-MS analysis. Tested on as received sample. In-house based on US EPA 8260 and 5021.	0.010 - 3 mg/kg dry wt	1-2
Total Petroleum Hydrocarbons in Soil			

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Client Chromatogram for TPH by FID	Small peaks associated with QC compounds may be visible in chromatograms with low TPH concentrations. QC peaks are as follows: one peak in the C12 - 14 band, the C21 - 25 band and the C30 - 36 band. All QC peaks are corrected for in the reported TPH concentrations.	-	1-2
C7 - C9	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	1-2
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	1-2
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	1-2
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	1-2

Sample Type: Aqueous			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Individual Tests			
Total Digestion	Nitric acid digestion. APHA 3030 E (modified) : Online Edition.	-	3
Total Digestion with HCl	Nitric/hydrochloric acid digestion. APHA 3030 E (modified) : Online Edition.	-	3
Total Mercury	Acid digestion, ICP-MS, screen level. APHA 3125 B : Online Edition.	0.00011 g/m^3	3
Heavy metals, totals, trace As,Cd,Cr,Cu,Ni,Pb,Zn	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.000053 - 0.0011 g/m^3	3
Polycyclic Aromatic Hydrocarbons Screening in Water, By Liq/Liq	Liquid / liquid extraction, GC-MS/MS analysis. In-house based on US EPA 8270.	0.00010 - 0.0005 g/m^3	3
Total Petroleum Hydrocarbons in Water			
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	0.10 g/m^3	3
C10 - C14	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	0.2 g/m^3	3
C15 - C36	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	0.4 g/m^3	3
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	0.7 g/m^3	3

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 21-Oct-2025 and 28-Oct-2025. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

This certificate of analysis must not be reproduced, except in full, without the written consent of the signatory.



Kim Harrison MSc
Client Services Manager - Environmental

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Quality Assurance Report

Client:	Aurecon New Zealand Limited	**Lab No:**	4009250	QCPv1
Contact:	Andrew Allcock C/- Aurecon New Zealand Limited PO Box 9762 Newmarket Auckland 1149	**Date Received:** **Date Reported:** **Quote No:** **Order No:** **Client Reference:** **Submitted By:**	15-Oct-2025 28-Oct-2025 82714 Andrew Allcock	

Sample Specific QCs

Polycyclic Aromatic Hydrocarbons Screening in Soil

		4009250.1	Control Limits	Outside Limit (Yes/No)
1-methylnaphthalene-d10	%	97	65 – 130	No
Benzo[a]pyrene-d12	%	103	70 – 140	No
Fluoranthene-d10	%	98	66 – 130	No

System monitoring Compounds for VOC - % Recovery

		4009250.1	Control Limits	Outside Limit (Yes/No)
Dibromofluoromethane	%	93	80 – 120	No
4-Bromofluorobenzene	%	104	80 – 120	No
Toluene-d8	%	109	80 – 120	No

Polycyclic Aromatic Hydrocarbons Screening in Soil

		4009250.2	Control Limits	Outside Limit (Yes/No)
1-methylnaphthalene-d10	%	100	65 – 130	No
Benzo[a]pyrene-d12	%	106	70 – 140	No
Fluoranthene-d10	%	101	66 – 130	No

System monitoring Compounds for VOC - % Recovery

		4009250.2	Control Limits	Outside Limit (Yes/No)
Dibromofluoromethane	%	94	80 – 120	No
4-Bromofluorobenzene	%	102	80 – 120	No
Toluene-d8	%	108	80 – 120	No

Polycyclic Aromatic Hydrocarbons Screening in Water, By Liq/Liq

		4009250.3	Control Limits	Outside Limit (Yes/No)
1-methylnaphthalene-d10	%	120	40 – 130	No
Benzo[a]pyrene-d12	%	133	40 – 130	**Yes** [#1]
Fluoranthene-d10	%	119	40 – 130	No

Blank QCs

Blank 1 PrepWS TDig - WS: Env. Waters Totals by ICP-MS (EWT): 23502.22

		Results	Control Limits	Outside Limit (Yes/No)
Total Arsenic	g/m³	< 0.0011 ± 0.00074	-0.00105 – 0.00105	No
Total Cadmium	g/m³	< 0.00006 ± 0.000036	-0.000052 – 0.000052	No
Total Chromium	g/m³	< 0.0006 ± 0.00036	-0.00052 – 0.00052	No
Total Copper	g/m³	< 0.0006 ± 0.00035	-0.00052 – 0.00052	No
Total Lead	g/m³	< 0.00011 ± 0.000074	-0.000105 – 0.000105	No
Total Nickel	g/m³	< 0.0006 ± 0.00035	-0.00052 – 0.00052	No
Total Zinc	g/m³	< 0.0011 ± 0.00073	-0.00105 – 0.00105	No

5x Dilution PrepWS TDig - WS: Env. Waters Totals by ICP-MS (EWT): 23502.23				
		Results	Control Limits	Outside Limit (Yes/No)
Total Arsenic	g/m³	< 0.006 ± 0.00074	-0.0052 – 0.0052	No
Total Cadmium	g/m³	< 0.0003 ± 0.000036	-0.00026 – 0.00026	No
Total Chromium	g/m³	< 0.003 ± 0.00036	-0.0026 – 0.0026	No
Total Copper	g/m³	< 0.003 ± 0.00036	-0.0026 – 0.0026	No
Total Lead	g/m³	< 0.0006 ± 0.000074	-0.00052 – 0.00052	No
Total Nickel	g/m³	< 0.003 ± 0.00035	-0.0026 – 0.0026	No
Total Zinc	g/m³	< 0.006 ± 0.00074	-0.0052 – 0.0052	No

Blank 2 PrepWS TDig - WS: Env. Waters Totals by ICP-MS (EWT): 23502.24				
		Results	Control Limits	Outside Limit (Yes/No)
Total Arsenic	g/m³	< 0.0011 ± 0.00074	-0.00105 – 0.00105	No
Total Cadmium	g/m³	< 0.00006 ± 0.000036	-0.000052 – 0.000052	No
Total Chromium	g/m³	< 0.0006 ± 0.00036	-0.00052 – 0.00052	No
Total Copper	g/m³	< 0.0006 ± 0.00035	-0.00052 – 0.00052	No
Total Lead	g/m³	< 0.00011 ± 0.000074	-0.000105 – 0.000105	No
Total Nickel	g/m³	< 0.0006 ± 0.00035	-0.00052 – 0.00052	No
Total Zinc	g/m³	< 0.0011 ± 0.00073	-0.00105 – 0.00105	No

10x Dilution PrepWS TDig - WS: Env. Waters Totals by ICP-MS (EWT): 23502.25				
		Results	Control Limits	Outside Limit (Yes/No)
Total Arsenic	g/m³	< 0.011 ± 0.00074	-0.0105 – 0.0105	No
Total Cadmium	g/m³	< 0.0006 ± 0.000036	-0.00052 – 0.00052	No
Total Chromium	g/m³	< 0.006 ± 0.00036	-0.0052 – 0.0052	No
Total Copper	g/m³	< 0.006 ± 0.00036	-0.0052 – 0.0052	No
Total Lead	g/m³	< 0.0011 ± 0.000074	-0.00105 – 0.00105	No
Total Nickel	g/m³	< 0.006 ± 0.00036	-0.0052 – 0.0052	No
Total Zinc	g/m³	< 0.011 ± 0.00074	-0.0105 – 0.0105	No

Blank 3 PrepWS TDig - WS: Env. Waters Totals by ICP-MS (EWT): 23502.26				
		Results	Control Limits	Outside Limit (Yes/No)
Total Arsenic	g/m³	< 0.0011 ± 0.00074	-0.00105 – 0.00105	No
Total Cadmium	g/m³	< 0.00006 ± 0.000036	-0.000052 – 0.000052	No
Total Chromium	g/m³	< 0.0006 ± 0.00036	-0.00052 – 0.00052	No
Total Copper	g/m³	< 0.0006 ± 0.00035	-0.00052 – 0.00052	No
Total Lead	g/m³	< 0.00011 ± 0.000074	-0.000105 – 0.000105	No
Total Nickel	g/m³	< 0.0006 ± 0.00035	-0.00052 – 0.00052	No
Total Zinc	g/m³	< 0.0011 ± 0.00073	-0.00105 – 0.00105	No

20x Dilution PrepWS TDig - WS: Env. Waters Totals by ICP-MS (EWT): 23502.27				
		Results	Control Limits	Outside Limit (Yes/No)
Total Arsenic	g/m³	< 0.021 ± 0.00074	-0.021 – 0.021	No
Total Cadmium	g/m³	< 0.0011 ± 0.000036	-0.00105 – 0.00105	No
Total Chromium	g/m³	< 0.011 ± 0.00036	-0.0105 – 0.0105	No
Total Copper	g/m³	< 0.011 ± 0.00037	-0.0105 – 0.0105	No
Total Lead	g/m³	< 0.0021 ± 0.000074	-0.0021 – 0.0021	No
Total Nickel	g/m³	< 0.011 ± 0.00035	-0.0105 – 0.0105	No
Total Zinc	g/m³	< 0.021 ± 0.00078	-0.021 – 0.021	No

10x Vol. Dilution Digest Blank PrepWS TDig - WS: Env. Waters Totals by ICP-MS (EWT): 23502.28				
		Results	Control Limits	Outside Limit (Yes/No)
Total Arsenic	g/m³	< 0.011 ± 0.00074	-0.0105 – 0.0105	No
Total Cadmium	g/m³	< 0.0006 ± 0.000036	-0.00052 – 0.00052	No
Total Chromium	g/m³	< 0.006 ± 0.00036	-0.0052 – 0.0052	No
Total Copper	g/m³	< 0.006 ± 0.00036	-0.0052 – 0.0052	No
Total Lead	g/m³	< 0.0011 ± 0.000074	-0.00105 – 0.00105	No
Total Nickel	g/m³	< 0.006 ± 0.00036	-0.0052 – 0.0052	No
Total Zinc	g/m³	< 0.011 ± 0.00075	-0.0105 – 0.0105	No

Blank 1 - WS: ES - Ash by Muffle Furnace: 1489.1				
		Results	Control Limits	Outside Limit (Yes/No)
Ash	g/100g dry wt	< 0.04 ± 0.027	-0.0050 – 0.0050	No

Blank 2 - WS: ES - Ash by Muffle Furnace: 1489.2				
		Results	Control Limits	Outside Limit (Yes/No)
Ash	g/100g dry wt	< 0.04 ± 0.027	-0.0050 – 0.0050	No

Blank PrepWS xwTPH - WS: Total Petroleum Hydrocarbons Water Analysis: 9281.2				
		Results	Control Limits	Outside Limit (Yes/No)
C7 - C9	g/m³	< 0.10 ± 0.060	0.0 – 0.075	No
C10 - C11	g/m³	< 0.10 ± 0.060	0.0 – 0.100	No
C12 - C14	g/m³	< 0.10 ± 0.060	0.0 – 0.100	No
C15 - C20	g/m³	< 0.10 ± 0.060	0.0 – 0.100	No
C21 - C25	g/m³	< 0.10 ± 0.060	0.0 – 0.100	No
C26 - C29	g/m³	< 0.10 ± 0.060	0.0 – 0.100	No
C30 - C36	g/m³	< 0.10	0.0 – 0.100	No

Fluid 1 Blank (plastic) PrepWS xwTPH - WS: Total Petroleum Hydrocarbons Water Analysis: 9281.4				
		Results	Control Limits	Outside Limit (Yes/No)
C7 - C9	g/m³	< 0.10 ± 0.060	0.0 – 0.075	No
C10 - C11	g/m³	< 0.10 ± 0.060	0.0 – 0.100	No
C12 - C14	g/m³	< 0.10 ± 0.060	0.0 – 0.100	No
C15 - C20	g/m³	< 0.10 ± 0.060	0.0 – 0.100	No
C21 - C25	g/m³	< 0.10 ± 0.060	0.0 – 0.100	No
C26 - C29	g/m³	< 0.10 ± 0.060	0.0 – 0.100	No
C30 - C36	g/m³	< 0.10	0.0 – 0.100	No

Blank 2 PrepWS xwTPH - WS: Total Petroleum Hydrocarbons Water Analysis: 9281.20				
		Results	Control Limits	Outside Limit (Yes/No)
C7 - C9	g/m³	< 0.10 ± 0.060	0.0 – 0.075	No
C10 - C11	g/m³	< 0.10 ± 0.060	0.0 – 0.100	No
C12 - C14	g/m³	< 0.10 ± 0.060	0.0 – 0.100	No
C15 - C20	g/m³	< 0.10 ± 0.060	0.0 – 0.100	No
C21 - C25	g/m³	< 0.10 ± 0.060	0.0 – 0.100	No
C26 - C29	g/m³	< 0.10 ± 0.060	0.0 – 0.100	No
C30 - C36	g/m³	< 0.10	0.0 – 0.100	No

Blank 1 PrepWS TDigHCl - WS: Env. Waters with HCl Matrix: 148.14				
		Results	Control Limits	Outside Limit (Yes/No)
Total Mercury	g/m³	< 0.00011 ± 0.000071	-0.000106 – 0.000106	No

Blank 2 PrepWS TDigHCl - WS: Env. Waters with HCl Matrix: 148.16				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total Mercury	g/m³	< 0.00011 ± 0.000071	-0.000106 – 0.000106	No

20x Dilution PrepWS TDigHCl - WS: Env. Waters with HCl Matrix: 148.17				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total Mercury	g/m³	< 0.002 ± 0.000072	-0.0021 – 0.0021	No

20x Fluid 1 Blank (plastic) PrepWS TCLP PrepWS TDigHCl - WS: Env. Waters with HCl Matrix: 148.18				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total Mercury	g/m³	< 0.002 ± 0.000072	-0.0021 – 0.0021	No

Fluid 3 Blank (plastic) PrepWS SPLP PrepWS TDigHCl - WS: Env. Waters with HCl Matrix: 148.19				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total Mercury	g/m³	< 0.00011 ± 0.000071	-0.0021 – 0.0021	No

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 12900.13				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 12900.31				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 12901.13				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 12901.20				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 12901.20				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Blank 1 PrepWS xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 17485.1				
		Results	Control Limits	Outside Limit (Yes/No)
1-Methylnaphthalene	mg/kg dry wt	< 0.010 ± 0.032	0.0 – 0.0100	No
2-Methylnaphthalene	mg/kg dry wt	< 0.010 ± 0.032	0.0 – 0.0100	No
Acenaphthylene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Acenaphthene	mg/kg dry wt	< 0.010 ± 0.0060	0.0 – 0.0100	No
Anthracene	mg/kg dry wt	< 0.010 ± 0.0060	0.0 – 0.0100	No
Benzo[a]anthracene	mg/kg dry wt	< 0.010 ± 0.0063	0.0 – 0.0100	No
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.010 ± 0.0064	0.0 – 0.0100	No
Benzo[e]pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.010 ± 0.0064	0.0 – 0.0100	No
Benzo[k]fluoranthene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Chrysene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Fluoranthene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Fluorene	mg/kg dry wt	< 0.010 ± 0.0067	0.0 – 0.0100	No
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Naphthalene	mg/kg dry wt	< 0.05 ± 0.031	0.0 – 0.050	No
Perylene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Phenanthrene	mg/kg dry wt	< 0.010 ± 0.0067	0.0 – 0.0100	No
Pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No

blank PrepWS xsMeVOC PrepWS apHSVOCs - VOC Headspace Soil Analysis: 1085.4				
		Results	Control Limits	Outside Limit (Yes/No)
Bromobenzene	mg/kg dry wt	< 0.03 ± 0.037	0.0 – 0.30	No
Benzene	mg/kg dry wt	< 0.013 ± 0.036	0.0 – 0.30	No
1,3-Dichlorobenzene	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
Bromochloromethane	mg/kg dry wt	< 0.03	0.0 – 0.30	No
Bromodichloromethane	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
4-Chlorotoluene	mg/kg dry wt	< 0.03 ± 0.035	0.0 – 0.30	No
Bromoform (tribromomethane)	mg/kg dry wt	< 0.05 ± 0.036	0.0 – 6.0	No
Bromomethane (Methyl Bromide)	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
2-Butanone (MEK)	mg/kg dry wt	< 3 ± 0.37	0.0 – 30	No
n-Butylbenzene	mg/kg dry wt	< 0.03 ± 0.022	0.0 – 0.30	No
tert-Butylbenzene	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
Carbon disulphide	mg/kg dry wt	< 0.05 ± 0.29	0.0 – 0.30	No
Carbon tetrachloride	mg/kg dry wt	< 0.03 ± 0.028	0.0 – 0.30	No
Chlorobenzene (monochlorobenzene)	mg/kg dry wt	< 0.03 ± 0.037	0.0 – 0.30	No
Chloroethane	mg/kg dry wt	< 0.03 ± 0.035	0.0 – 0.30	No

blank PrepWS xsMeVOC PrepWS apHSVOCs - VOC Headspace Soil Analysis: 1085.4				
		Results	Control Limits	Outside Limit (Yes/No)
Chloroform (Trichloromethane)	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
Chloromethane	mg/kg dry wt	< 0.03 ± 0.037	0.0 – 0.30	No
4-Methylpentan-2-one (MIBK)	mg/kg dry wt	< 0.5 ± 0.36	0.0 – 3.0	No
Acetone	mg/kg dry wt	< 3 ± 3.7	0.0 – 40	No
1,2-Dibromo-3-chloropropane	mg/kg dry wt	< 0.05 ± 0.020	0.0 – 1.20	No
Dibromochloromethane	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
1,2-Dibromoethane (ethylene dibromide, EDB)	mg/kg dry wt	< 0.03 ± 0.031	0.0 – 0.30	No
Dibromomethane	mg/kg dry wt	< 0.03 ± 0.032	0.0 – 0.30	No
1,2-Dichlorobenzene	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
1,3-Dichloropropane	mg/kg dry wt	< 0.03 ± 0.031	0.0 – 0.30	No
Dichlorodifluoromethane	mg/kg dry wt	< 0.05 ± 0.032	0.0 – 0.60	No
1,1-Dichloroethane	mg/kg dry wt	< 0.03 ± 0.022	0.0 – 0.30	No
1,2-Dichloroethane	mg/kg dry wt	< 0.03 ± 0.033	0.0 – 0.30	No
1,1-Dichloroethene	mg/kg dry wt	< 0.03 ± 0.0057	0.0 – 0.30	No
cis-1,2-Dichloroethene	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
trans-1,2-Dichloroethene	mg/kg dry wt	< 0.03 ± 0.037	0.0 – 0.30	No
Dichloromethane (methylene chloride)	mg/kg dry wt	< 0.3 ± 0.52	0.0 – 3.0	No
1,2-Dichloropropane	mg/kg dry wt	< 0.03 ± 0.031	0.0 – 0.30	No
1,4-Dichlorobenzene	mg/kg dry wt	< 0.03 ± 0.12	0.0 – 0.30	No
2-Chlorotoluene	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
1,1-Dichloropropene	mg/kg dry wt	< 0.03 ± 0.0057	0.0 – 0.30	No
cis-1,3-Dichloropropene	mg/kg dry wt	< 0.03 ± 0.037	0.0 – 0.30	No
trans-1,3-Dichloropropene	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
Ethylbenzene	mg/kg dry wt	< 0.03 ± 0.027	0.0 – 0.30	No
Hexachlorobutadiene	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
Isopropylbenzene (Cumene)	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
4-Isopropyltoluene (p-Cymene)	mg/kg dry wt	< 0.03 ± 0.037	0.0 – 0.30	No
Methyl tert-butylether (MTBE)	mg/kg dry wt	< 0.03 ± 0.33	0.0 – 3.0	No
Naphthalene	mg/kg dry wt	< 0.03 ± 0.034	0.0 – 0.30	No
n-Propylbenzene	mg/kg dry wt	< 0.03 ± 0.037	0.0 – 0.30	No
sec-Butylbenzene	mg/kg dry wt	< 0.03 ± 0.037	0.0 – 0.30	No
Styrene	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
1,1,1,2-Tetrachloroethane	mg/kg dry wt	< 0.03 ± 0.039	0.0 – 0.30	No
1,1,2,2-Tetrachloroethane	mg/kg dry wt	< 0.03 ± 0.039	0.0 – 0.30	No
Tetrachloroethene (tetrachloroethylene)	mg/kg dry wt	< 0.03 ± 0.027	0.0 – 0.30	No
Toluene	mg/kg dry wt	< 0.03 ± 0.031	0.0 – 0.30	No
1,2,3-Trichlorobenzene	mg/kg dry wt	< 0.03 ± 0.032	0.0 – 0.30	No
1,2,4-Trichlorobenzene	mg/kg dry wt	< 0.03 ± 0.035	0.0 – 0.30	No
1,3,5-Trichlorobenzene	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
1,1,1-Trichloroethane	mg/kg dry wt	< 0.03 ± 0.040	0.0 – 0.30	No
1,1,2-Trichloroethane	mg/kg dry wt	< 0.03 ± 0.015	0.0 – 0.30	No
Trichloroethene (trichloroethylene)	mg/kg dry wt	< 0.03 ± 0.034	0.0 – 0.30	No
Trichlorofluoromethane	mg/kg dry wt	< 0.03 ± 0.034	0.0 – 0.30	No

blank PrepWS xsMeVOC PrepWS apHSVOCs - VOC Headspace Soil Analysis: 1085.4				
		Results	Control Limits	Outside Limit (Yes/No)
1,2,3-Trichloropropane	mg/kg dry wt	< 0.05 ± 0.032	0.0 – 6.0	No
1,1,2-Trichlorotrifluoroethane (Freon 113)	mg/kg dry wt	< 0.03 ± 0.35	0.0 – 0.30	No
1,2,4-Trimethylbenzene	mg/kg dry wt	< 0.03 ± 0.033	0.0 – 0.30	No
1,3,5-Trimethylbenzene	mg/kg dry wt	< 0.03 ± 0.034	0.0 – 0.30	No
Vinyl chloride	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
m&p-Xylene	mg/kg dry wt	< 0.03 ± 0.033	0.0 – 0.30	No
o-Xylene	mg/kg dry wt	< 0.03 ± 0.031	0.0 – 0.30	No

blank PrepWS xsMeVOC PrepWS apHSVOCs - VOC Headspace Soil Analysis: 1085.8				
		Results	Control Limits	Outside Limit (Yes/No)
Bromobenzene	mg/kg dry wt	< 0.03 ± 0.037	0.0 – 0.30	No
Benzene	mg/kg dry wt	< 0.013 ± 0.036	0.0 – 0.30	No
1,3-Dichlorobenzene	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
Bromochloromethane	mg/kg dry wt	< 0.03	0.0 – 0.30	No
Bromodichloromethane	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
4-Chlorotoluene	mg/kg dry wt	< 0.03 ± 0.035	0.0 – 0.30	No
Bromoform (tribromomethane)	mg/kg dry wt	< 0.05 ± 0.036	0.0 – 6.0	No
Bromomethane (Methyl Bromide)	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
2-Butanone (MEK)	mg/kg dry wt	< 3 ± 0.37	0.0 – 30	No
n-Butylbenzene	mg/kg dry wt	< 0.03 ± 0.022	0.0 – 0.30	No
tert-Butylbenzene	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
Carbon disulphide	mg/kg dry wt	< 0.05 ± 0.29	0.0 – 0.30	No
Carbon tetrachloride	mg/kg dry wt	< 0.03 ± 0.028	0.0 – 0.30	No
Chlorobenzene (monochlorobenzene)	mg/kg dry wt	< 0.03 ± 0.037	0.0 – 0.30	No
Chloroethane	mg/kg dry wt	< 0.03 ± 0.035	0.0 – 0.30	No
Chloroform (Trichloromethane)	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
Chloromethane	mg/kg dry wt	< 0.03 ± 0.037	0.0 – 0.30	No
4-Methylpentan-2-one (MIBK)	mg/kg dry wt	< 0.5 ± 0.36	0.0 – 3.0	No
Acetone	mg/kg dry wt	< 3 ± 3.7	0.0 – 40	No
1,2-Dibromo-3-chloropropane	mg/kg dry wt	< 0.05 ± 0.020	0.0 – 1.20	No
Dibromochloromethane	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
1,2-Dibromoethane (ethylene dibromide, EDB)	mg/kg dry wt	< 0.03 ± 0.031	0.0 – 0.30	No
Dibromomethane	mg/kg dry wt	< 0.03 ± 0.032	0.0 – 0.30	No
1,2-Dichlorobenzene	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
1,3-Dichloropropane	mg/kg dry wt	< 0.03 ± 0.031	0.0 – 0.30	No
Dichlorodifluoromethane	mg/kg dry wt	< 0.05 ± 0.032	0.0 – 0.60	No
1,1-Dichloroethane	mg/kg dry wt	< 0.03 ± 0.022	0.0 – 0.30	No
1,2-Dichloroethane	mg/kg dry wt	< 0.03 ± 0.033	0.0 – 0.30	No
1,1-Dichloroethene	mg/kg dry wt	< 0.03 ± 0.0057	0.0 – 0.30	No
cis-1,2-Dichloroethene	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
trans-1,2-Dichloroethene	mg/kg dry wt	< 0.03 ± 0.037	0.0 – 0.30	No
Dichloromethane (methylene chloride)	mg/kg dry wt	< 0.3 ± 0.52	0.0 – 3.0	No
1,2-Dichloropropane	mg/kg dry wt	< 0.03 ± 0.031	0.0 – 0.30	No
1,4-Dichlorobenzene	mg/kg dry wt	< 0.03 ± 0.12	0.0 – 0.30	No

blank PrepWS xsMeVOC PrepWS apHSVOCs - VOC Headspace Soil Analysis: 1085.8				
		Results	Control Limits	Outside Limit (Yes/No)
2-Chlorotoluene	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
1,1-Dichloropropene	mg/kg dry wt	< 0.03 ± 0.0057	0.0 – 0.30	No
cis-1,3-Dichloropropene	mg/kg dry wt	< 0.03 ± 0.037	0.0 – 0.30	No
trans-1,3-Dichloropropene	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
Ethylbenzene	mg/kg dry wt	< 0.03 ± 0.027	0.0 – 0.30	No
Hexachlorobutadiene	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
Isopropylbenzene (Cumene)	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
4-Isopropyltoluene (p-Cymene)	mg/kg dry wt	< 0.03 ± 0.037	0.0 – 0.30	No
Methyl tert-butylether (MTBE)	mg/kg dry wt	< 0.03 ± 0.33	0.0 – 3.0	No
Naphthalene	mg/kg dry wt	< 0.03 ± 0.034	0.0 – 0.30	No
n-Propylbenzene	mg/kg dry wt	< 0.03 ± 0.037	0.0 – 0.30	No
sec-Butylbenzene	mg/kg dry wt	< 0.03 ± 0.037	0.0 – 0.30	No
Styrene	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
1,1,1,2-Tetrachloroethane	mg/kg dry wt	< 0.03 ± 0.039	0.0 – 0.30	No
1,1,2,2-Tetrachloroethane	mg/kg dry wt	< 0.03 ± 0.039	0.0 – 0.30	No
Tetrachloroethene (tetrachloroethylene)	mg/kg dry wt	< 0.03 ± 0.027	0.0 – 0.30	No
Toluene	mg/kg dry wt	< 0.03 ± 0.031	0.0 – 0.30	No
1,2,3-Trichlorobenzene	mg/kg dry wt	< 0.03 ± 0.032	0.0 – 0.30	No
1,2,4-Trichlorobenzene	mg/kg dry wt	< 0.03 ± 0.035	0.0 – 0.30	No
1,3,5-Trichlorobenzene	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
1,1,1-Trichloroethane	mg/kg dry wt	< 0.03 ± 0.040	0.0 – 0.30	No
1,1,2-Trichloroethane	mg/kg dry wt	< 0.03 ± 0.015	0.0 – 0.30	No
Trichloroethene (trichloroethylene)	mg/kg dry wt	< 0.03 ± 0.034	0.0 – 0.30	No
Trichlorofluoromethane	mg/kg dry wt	< 0.03 ± 0.034	0.0 – 0.30	No
1,2,3-Trichloropropane	mg/kg dry wt	< 0.05 ± 0.032	0.0 – 6.0	No
1,1,2-Trichlorotrifluoroethane (Freon 113)	mg/kg dry wt	< 0.03 ± 0.35	0.0 – 0.30	No
1,2,4-Trimethylbenzene	mg/kg dry wt	< 0.03 ± 0.033	0.0 – 0.30	No
1,3,5-Trimethylbenzene	mg/kg dry wt	< 0.03 ± 0.034	0.0 – 0.30	No
Vinyl chloride	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
m&p-Xylene	mg/kg dry wt	< 0.03 ± 0.033	0.0 – 0.30	No
o-Xylene	mg/kg dry wt	< 0.03 ± 0.031	0.0 – 0.30	No

QC Spike QCs

LCS PrepWS xwTPH - WS: Total Petroleum Hydrocarbons Water Analysis: 9281.3				
		Results	Control Limits	Outside Limit (Yes/No)
Total hydrocarbons (C7 - C36)	%	105 ± 32	80 – 137	No

LCS PAH PrepWS xwIPAHsc - Polycyclic Aromatic Hydrocarbon Water Analysis: 6029.2				
		Results	Control Limits	Outside Limit (Yes/No)
Acenaphthene	%	116 ± 59	70 – 130	No
Acenaphthylene	%	106 ± 58	70 – 130	No
Anthracene	%	115 ± 42	70 – 130	No
Benzo[a]anthracene	%	113 ± 37	70 – 130	No
Benzo[a]pyrene (BAP)	%	125 ± 61	70 – 130	No
Benzo[b]fluoranthene + Benzo[j]fluoranthene	%	123 ± 60	70 – 130	No
Benzo[g,h,i]perylene	%	111 ± 58	70 – 130	No

LCS PAH PrepWS xwIPAHsc - Polycyclic Aromatic Hydrocarbon Water Analysis: 6029.2				
		Results	Control Limits	Outside Limit (Yes/No)
Benzo[k]fluoranthene	%	132 ± 59	70 – 130	**Yes** [#2]
Chrysene	%	117 ± 43	70 – 130	No
Dibenzo[a,h]anthracene	%	116 ± 61	70 – 130	No
Fluoranthene	%	114 ± 30	70 – 130	No
Fluorene	%	112 ± 50	70 – 130	No
Indeno(1,2,3-c,d)pyrene	%	109 ± 57	70 – 130	No
Naphthalene	%	102 ± 68	70 – 130	No
Phenanthrene	%	118 ± 36	70 – 130	No
Pyrene	%	118 ± 48	70 – 130	No

LCS TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 15306.3				
		Results	Control Limits	Outside Limit (Yes/No)
Total hydrocarbons (C7 - C36)	%	87 ± 43	74 – 108	No

LCS OC/PAH xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 17485.2				
		Results	Control Limits	Outside Limit (Yes/No)
1-Methylnaphthalene	%	90 ± 22	78 – 122	No
2-Methylnaphthalene	%	84 ± 21	72 – 117	No
Acenaphthylene	%	90.0 ± 8.2	75 – 118	No
Acenaphthene	%	96 ± 28	84 – 119	No
Anthracene	%	89 ± 27	79 – 121	No
Benzo[a]anthracene	%	94 ± 25	81 – 123	No
Benzo[a]pyrene (BAP)	%	98.0 ± 7.5	76 – 123	No
Benzo[b]fluoranthene + Benzo[j]fluoranthene	%	93 ± 19	80 – 121	No
Benzo[e]pyrene	%	85.0 ± 6.5	78 – 110	No
Benzo[g,h,i]perylene	%	93 ± 16	80 – 124	No
Benzo[k]fluoranthene	%	98 ± 13	79 – 121	No
Chrysene	%	97 ± 15	83 – 121	No
Dibenzo[a,h]anthracene	%	96 ± 13	78 – 124	No
Fluoranthene	%	94.0 ± 9.5	81 – 122	No
Fluorene	%	98 ± 12	86 – 122	No
Indeno(1,2,3-c,d)pyrene	%	95.0 ± 8.8	83 – 123	No
Naphthalene	%	95 ± 24	84 – 118	No
Perylene	%	89.0 ± 6.8	60 – 107	No
Phenanthrene	%	95 ± 14	84 – 120	No
Pyrene	%	94 ± 13	79 – 123	No

LCS PrepWS xsMeVOC PrepWS apHSVOCs - VOC Headspace Soil Analysis: 1085.3				
		Results	Control Limits	Outside Limit (Yes/No)
Bromobenzene	%	101 ± 29	70 – 130	No
Benzene	%	97 ± 30	70 – 130	No
1,3-Dichlorobenzene	%	103 ± 33	70 – 130	No
Bromochloromethane	%	101	70 – 130	No
Bromodichloromethane	%	101 ± 33	70 – 130	No
4-Chlorotoluene	%	99 ± 34	70 – 130	No
Bromoform (tribromomethane)	%	102 ± 31	70 – 130	No
Bromomethane (Methyl Bromide)	%	93 ± 30	70 – 130	No
2-Butanone (MEK)	%	99 ± 26	70 – 130	No

LCS PrepWS xsMeVOC PrepWS apHSVOCs - VOC Headspace Soil Analysis: 1085.3				
		Results	Control Limits	Outside Limit (Yes/No)
n-Butylbenzene	%	97 ± 55	70 – 130	No
tert-Butylbenzene	%	100 ± 31	70 – 130	No
Carbon disulphide	%	83 ± 39	70 – 130	No
Carbon tetrachloride	%	100 ± 49	70 – 130	No
Chlorobenzene (monochlorobenzene)	%	101 ± 29	70 – 130	No
Chloroethane	%	75 ± 26	70 – 130	No
Chloroform (Trichloromethane)	%	102 ± 33	70 – 130	No
Chloromethane	%	88 ± 25	70 – 130	No
4-Methylpentan-2-one (MIBK)	%	97 ± 30	70 – 130	No
Acetone	%	108 ± 29	70 – 130	No
1,2-Dibromo-3-chloropropane	%	107 ± 63	70 – 130	No
Dibromochloromethane	%	101 ± 33	70 – 130	No
1,2-Dibromoethane (ethylene dibromide, EDB)	%	102 ± 45	70 – 130	No
Dibromomethane	%	101 ± 43	70 – 130	No
1,2-Dichlorobenzene	%	104 ± 34	70 – 130	No
1,3-Dichloropropane	%	100 ± 45	70 – 130	No
Dichlorodifluoromethane	%	88 ± 37	70 – 130	No
1,1-Dichloroethane	%	104 ± 59	70 – 130	No
1,2-Dichloroethane	%	102 ± 39	70 – 130	No
1,1-Dichloroethene	%	101 ± 67	70 – 130	No
cis-1,2-Dichloroethene	%	104 ± 34	70 – 130	No
trans-1,2-Dichloroethene	%	99 ± 28	70 – 130	No
Dichloromethane (methylene chloride)	%	97 ± 41	70 – 130	No
1,2-Dichloropropane	%	102 ± 45	70 – 130	No
1,4-Dichlorobenzene	%	102 ± 31	70 – 130	No
2-Chlorotoluene	%	101 ± 33	70 – 130	No
1,1-Dichloropropene	%	100 ± 67	70 – 130	No
cis-1,3-Dichloropropene	%	96 ± 27	70 – 130	No
trans-1,3-Dichloropropene	%	102 ± 33	70 – 130	No
Ethylbenzene	%	102 ± 52	70 – 130	No
Hexachlorobutadiene	%	108 ± 33	70 – 130	No
Isopropylbenzene (Cumene)	%	97 ± 30	70 – 130	No
4-Isopropyltoluene (p-Cymene)	%	100 ± 29	70 – 130	No
Methyl tert-butylether (MTBE)	%	99 ± 38	70 – 130	No
Naphthalene	%	98 ± 36	70 – 130	No
n-Propylbenzene	%	101 ± 29	70 – 130	No
sec-Butylbenzene	%	105 ± 30	70 – 130	No
Styrene	%	97 ± 30	70 – 130	No
1,1,1,2-Tetrachloroethane	%	106 ± 20	70 – 130	No
1,1,2,2-Tetrachloroethane	%	103 ± 17	70 – 130	No
Tetrachloroethene (tetrachloroethylene)	%	99 ± 50	70 – 130	No
Toluene	%	98 ± 44	70 – 130	No
1,2,3-Trichlorobenzene	%	99 ± 40	70 – 130	No
1,2,4-Trichlorobenzene	%	101 ± 35	70 – 130	No
1,3,5-Trichlorobenzene	%	105 ± 34	70 – 130	No

LCS PrepWS xsMeVOC PrepWS apHSVOCs - VOC Headspace Soil Analysis: 1085.3				
		Results	Control Limits	Outside Limit (Yes/No)
1,1,1-Trichloroethane	%	102 ± 13	70 – 130	No
1,1,2-Trichloroethane	%	107 ± 67	70 – 130	No
Trichloroethene (trichloroethylene)	%	106 ± 39	70 – 130	No
Trichlorofluoromethane	%	97 ± 35	70 – 130	No
1,2,3-Trichloropropane	%	104 ± 44	70 – 130	No
1,1,2-Trichlorotrifluoroethane (Freon 113)	%	102 ± 35	70 – 130	No
1,2,4-Trimethylbenzene	%	97 ± 37	70 – 130	No
1,3,5-Trimethylbenzene	%	99 ± 36	70 – 130	No
Vinyl chloride	%	97 ± 30	70 – 130	No
m&p-Xylene	%	97 ± 39	70 – 130	No
o-Xylene	%	100 ± 45	70 – 130	No

LCS PrepWS xsMeVOC PrepWS apHSVOCs - VOC Headspace Soil Analysis: 1085.9				
		Results	Control Limits	Outside Limit (Yes/No)
Bromobenzene	%	99 ± 28	70 – 130	No
Benzene	%	95 ± 29	70 – 130	No
1,3-Dichlorobenzene	%	100 ± 33	70 – 130	No
Bromochloromethane	%	102	70 – 130	No
Bromodichloromethane	%	101 ± 33	70 – 130	No
4-Chlorotoluene	%	96 ± 33	70 – 130	No
Bromoform (tribromomethane)	%	103 ± 31	70 – 130	No
Bromomethane (Methyl Bromide)	%	90 ± 29	70 – 130	No
2-Butanone (MEK)	%	99 ± 26	70 – 130	No
n-Butylbenzene	%	93 ± 53	70 – 130	No
tert-Butylbenzene	%	96 ± 29	70 – 130	No
Carbon disulphide	%	80 ± 37	70 – 130	No
Carbon tetrachloride	%	96 ± 47	70 – 130	No
Chlorobenzene (monochlorobenzene)	%	99 ± 28	70 – 130	No
Chloroethane	%	72 ± 25	70 – 130	No
Chloroform (Trichloromethane)	%	102 ± 33	70 – 130	No
Chloromethane	%	84 ± 24	70 – 130	No
4-Methylpentan-2-one (MIBK)	%	99 ± 30	70 – 130	No
Acetone	%	108 ± 29	70 – 130	No
1,2-Dibromo-3-chloropropane	%	107 ± 63	70 – 130	No
Dibromochloromethane	%	102 ± 33	70 – 130	No
1,2-Dibromoethane (ethylene dibromide, EDB)	%	103 ± 46	70 – 130	No
Dibromomethane	%	102 ± 43	70 – 130	No
1,2-Dichlorobenzene	%	102 ± 33	70 – 130	No
1,3-Dichloropropane	%	99 ± 44	70 – 130	No
Dichlorodifluoromethane	%	80 ± 34	70 – 130	No
1,1-Dichloroethane	%	102 ± 58	70 – 130	No
1,2-Dichloroethane	%	103 ± 40	70 – 130	No
1,1-Dichloroethene	%	97 ± 65	70 – 130	No
cis-1,2-Dichloroethene	%	102 ± 33	70 – 130	No
trans-1,2-Dichloroethene	%	96 ± 27	70 – 130	No
Dichloromethane (methylene chloride)	%	97 ± 41	70 – 130	No

LCS PrepWS xsMeVOC PrepWS apHSVOCs - VOC Headspace Soil Analysis: 1085.9				
		Results	Control Limits	Outside Limit (Yes/No)
1,2-Dichloropropane	%	102 ± 45	70 – 130	No
1,4-Dichlorobenzene	%	99 ± 30	70 – 130	No
2-Chlorotoluene	%	97 ± 32	70 – 130	No
1,1-Dichloropropene	%	96 ± 64	70 – 130	No
cis-1,3-Dichloropropene	%	93 ± 27	70 – 130	No
trans-1,3-Dichloropropene	%	99 ± 32	70 – 130	No
Ethylbenzene	%	98 ± 50	70 – 130	No
Hexachlorobutadiene	%	101 ± 31	70 – 130	No
Isopropylbenzene (Cumene)	%	93 ± 28	70 – 130	No
4-Isopropyltoluene (p-Cymene)	%	96 ± 27	70 – 130	No
Methyl tert-butylether (MTBE)	%	100 ± 39	70 – 130	No
Naphthalene	%	95 ± 35	70 – 130	No
n-Propylbenzene	%	96 ± 27	70 – 130	No
sec-Butylbenzene	%	101 ± 29	70 – 130	No
Styrene	%	95 ± 29	70 – 130	No
1,1,1,2-Tetrachloroethane	%	105 ± 19	70 – 130	No
1,1,2,2-Tetrachloroethane	%	103 ± 17	70 – 130	No
Tetrachloroethene (tetrachloroethylene)	%	95 ± 48	70 – 130	No
Toluene	%	96 ± 43	70 – 130	No
1,2,3-Trichlorobenzene	%	94 ± 38	70 – 130	No
1,2,4-Trichlorobenzene	%	96 ± 33	70 – 130	No
1,3,5-Trichlorobenzene	%	100 ± 33	70 – 130	No
1,1,1-Trichloroethane	%	99 ± 12	70 – 130	No
1,1,2-Trichloroethane	%	108 ± 67	70 – 130	No
Trichloroethene (trichloroethylene)	%	103 ± 38	70 – 130	No
Trichlorofluoromethane	%	93 ± 34	70 – 130	No
1,2,3-Trichloropropane	%	104 ± 44	70 – 130	No
1,1,2-Trichlorotrifluoroethane (Freon 113)	%	98 ± 34	70 – 130	No
1,2,4-Trimethylbenzene	%	94 ± 36	70 – 130	No
1,3,5-Trimethylbenzene	%	95 ± 35	70 – 130	No
Vinyl chloride	%	91 ± 28	70 – 130	No
m&p-Xylene	%	95 ± 39	70 – 130	No
o-Xylene	%	97 ± 43	70 – 130	No

Sample Spike QCs

Spike PrepWS TDig - WS: Env. Waters Totals by ICP-MS (EWT): 23502.40				
		Results	Control Limits	Outside Limit (Yes/No)
Total Arsenic	%	105.0 ± 6.4	80 – 120	No
Total Cadmium	%	105.0 ± 8.5	80 – 120	No
Total Chromium	%	107.0 ± 8.6	80 – 120	No
Total Copper	%	103 ± 11	80 – 120	No
Total Lead	%	103.0 ± 6.2	80 – 120	No
Total Nickel	%	102 ± 13	80 – 120	No
Total Zinc	%	102.0 ± 8.2	80 – 120	No

sample spike PrepWS xwTPH - WS: Total Petroleum Hydrocarbons Water Analysis: 9281.19				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total hydrocarbons (C7 - C36)	%	127 ± 39	83 – 140	No

Sample Spike PAH PrepWS xwIPAHsc - Polycyclic Aromatic Hydrocarbon Water Analysis: 6029.10				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Acenaphthene	%	109 ± 55	70 – 130	No
Acenaphthylene	%	98 ± 53	70 – 130	No
Anthracene	%	112 ± 41	70 – 130	No
Benzo[a]anthracene	%	114 ± 37	70 – 130	No
Benzo[a]pyrene (BAP)	%	123 ± 60	70 – 130	No
Benzo[b]fluoranthene + Benzo[j]fluoranthene	%	121 ± 59	70 – 130	No
Benzo[g,h,i]perylene	%	106 ± 56	70 – 130	No
Benzo[k]fluoranthene	%	132 ± 59	70 – 130	**Yes** [#3]
Chrysene	%	119 ± 43	70 – 130	No
Dibenzo[a,h]anthracene	%	113 ± 59	70 – 130	No
Fluoranthene	%	111 ± 29	70 – 130	No
Fluorene	%	109 ± 48	70 – 130	No
Indeno(1,2,3-c,d)pyrene	%	105 ± 55	70 – 130	No
Naphthalene	%	90 ± 60	70 – 130	No
Phenanthrene	%	116 ± 35	70 – 130	No
Pyrene	%	119 ± 48	70 – 130	No

Matrix Spike TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 15306.7				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total hydrocarbons (C7 - C36)	%	86 ± 43	71 – 104	No

Reference Material QCs

1% 50ppb TRDig and TDig ME QC PrepWS TDig - WS: Env. Waters Totals by ICP-MS (EWT): 23502.29				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total Arsenic	g/m^3	0.0541 ± 0.0034	0.045 – 0.055	No
Total Cadmium	g/m^3	0.0490 ± 0.0040	0.045 – 0.055	No
Total Chromium	g/m^3	0.0541 ± 0.0044	0.045 – 0.055	No
Total Copper	g/m^3	0.0537 ± 0.0054	0.045 – 0.055	No
Total Lead	g/m^3	0.0506 ± 0.0031	0.045 – 0.055	No
Total Nickel	g/m^3	0.0531 ± 0.0064	0.045 – 0.055	No
Total Zinc	g/m^3	0.519 ± 0.042	0.45 – 0.55	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 12900.14				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total Recoverable Arsenic	mg/kg dry wt	10.7 ± 2.1	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.81 ± 0.16	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	25.6 ± 3.6	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	12.6 ± 2.4	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	32.3 ± 6.1	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.333 ± 0.079	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	13.4 ± 2.2	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	185 ± 28	166 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 12900.44				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total Recoverable Arsenic	mg/kg dry wt	11.0 ± 2.1	9.1 – 12.7	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 12900.44				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Cadmium	mg/kg dry wt	0.84 ± 0.16	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	25.5 ± 3.6	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	12.7 ± 2.4	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	32.5 ± 6.1	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.278 ± 0.075	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	14.0 ± 2.3	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	190 ± 28	166 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 12901.14				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	10.2 ± 2.1	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.79 ± 0.16	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	25.5 ± 3.6	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	13.1 ± 2.5	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	32.6 ± 6.1	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.296 ± 0.076	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	14.3 ± 2.3	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	199 ± 30	166 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 12901.53				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	11.4 ± 2.2	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.85 ± 0.17	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	26.4 ± 3.7	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	13.8 ± 2.6	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	33.8 ± 6.4	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.331 ± 0.078	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	14.7 ± 2.3	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	205 ± 31	166 – 230	No

Replicates

WS: ES - Ash by Muffle Furnace: 1489.18				
		Replicate 1	Replicate 2	Pass/Fail
Ash	g/100g dry wt	96.2 ± 1.4	96.1 ± 1.4	Pass

Analyst's Comments

[#1] The System Monitoring Compound (SMC) was above the acceptable recovery range. The sample results were accepted as there were no target compounds detected.

[#2] It was noted that the Laboratory Control Spike (LCS) recovery was elevated and above the acceptable recovery range. The corresponding sample results were accepted as there were no related positives detected in the samples.

[#3] The sample spike recovery was elevated and above the acceptable recovery range. The corresponding sample results were accepted as there were no related positives detected in the sample.

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Certificate of Analysis

Client:	WSP New Zealand Limited	**Lab No:**	4008719 SPv2
Contact:	Megan Baddiley	**Date Received:**	15-Oct-2025
	C/- WSP New Zealand Limited	**Date Reported:**	28-Oct-2025
	PO Box 5848	**Quote No:**	82748
	Auckland 1141	**Order No:**	1-C2466.16 / 2PE41
		Client Reference:	1-C2466.16 / 2PE41
		Submitted By:	Megan Baddiley

Sample Type: Soil

Sample Name:		BH2B_1149_0.1 14-Oct-2025	2B_SS01_0.1 14-Oct-2025	2B_SS02_0.1 14-Oct-2025	2B_SS03_0.1 14-Oct-2025	2B_SS04_0.1 14-Oct-2025
Lab Number:		4008719.1	4008719.2	4008719.3	4008719.4	4008719.5
Individual Tests						
Dry Matter	g/100g as rcvd	-	72	-	-	-
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	6	30	8	8	8
Total Recoverable Cadmium	mg/kg dry wt	0.18	0.19	0.22	0.24	0.33
Total Recoverable Chromium	mg/kg dry wt	14	32	15	13	15
Total Recoverable Copper	mg/kg dry wt	36	57	39	44	43
Total Recoverable Lead	mg/kg dry wt	15.1	11.5	9.0	15.0	55
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Nickel	mg/kg dry wt	20	17	15	18	18
Total Recoverable Zinc	mg/kg dry wt	83	97	120	120	194
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	-	< 0.014	-	-	-
alpha-BHC	mg/kg dry wt	-	< 0.014	-	-	-
beta-BHC	mg/kg dry wt	-	< 0.014	-	-	-
delta-BHC	mg/kg dry wt	-	< 0.014	-	-	-
gamma-BHC (Lindane)	mg/kg dry wt	-	< 0.014	-	-	-
cis-Chlordane	mg/kg dry wt	-	< 0.014	-	-	-
trans-Chlordane	mg/kg dry wt	-	< 0.014	-	-	-
2,4'-DDD	mg/kg dry wt	-	< 0.014	-	-	-
4,4'-DDD	mg/kg dry wt	-	< 0.014	-	-	-
2,4'-DDE	mg/kg dry wt	-	< 0.014	-	-	-
4,4'-DDE	mg/kg dry wt	-	< 0.014	-	-	-
2,4'-DDT	mg/kg dry wt	-	< 0.014	-	-	-
4,4'-DDT	mg/kg dry wt	-	< 0.014	-	-	-
Total DDT Isomers	mg/kg dry wt	-	< 0.09	-	-	-
Dieldrin	mg/kg dry wt	-	< 0.014	-	-	-
Endosulfan I	mg/kg dry wt	-	< 0.014	-	-	-
Endosulfan II	mg/kg dry wt	-	< 0.014	-	-	-
Endosulfan sulphate	mg/kg dry wt	-	< 0.014	-	-	-
Endrin	mg/kg dry wt	-	< 0.014	-	-	-
Endrin aldehyde	mg/kg dry wt	-	< 0.014	-	-	-
Endrin ketone	mg/kg dry wt	-	< 0.014	-	-	-
Heptachlor	mg/kg dry wt	-	< 0.014	-	-	-
Heptachlor epoxide	mg/kg dry wt	-	< 0.014	-	-	-
Hexachlorobenzene	mg/kg dry wt	-	< 0.014	-	-	-
Methoxychlor	mg/kg dry wt	-	< 0.014	-	-	-

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

Sample Type: Soil						
Sample Name:		BH2B_1149_0.1 14-Oct-2025	2B_SS01_0.1 14-Oct-2025	2B_SS02_0.1 14-Oct-2025	2B_SS03_0.1 14-Oct-2025	2B_SS04_0.1 14-Oct-2025
Lab Number:		4008719.1	4008719.2	4008719.3	4008719.4	4008719.5
Organonitro&phosphorus Pesticides Screen in Soil by GCMS						
Acetochlor	mg/kg dry wt	-	< 0.08	-	-	-
Alachlor	mg/kg dry wt	-	< 0.05	-	-	-
Atrazine	mg/kg dry wt	-	< 0.08	-	-	-
Atrazine-desethyl	mg/kg dry wt	-	< 0.08	-	-	-
Atrazine-desisopropyl	mg/kg dry wt	-	< 0.16	-	-	-
Azaconazole	mg/kg dry wt	-	< 0.04	-	-	-
Azinphos-methyl	mg/kg dry wt	-	< 0.16	-	-	-
Benalaxyl	mg/kg dry wt	-	< 0.04	-	-	-
Bitertanol	mg/kg dry wt	-	< 0.16	-	-	-
Bromacil	mg/kg dry wt	-	< 0.08	-	-	-
Bromopropylate	mg/kg dry wt	-	< 0.08	-	-	-
Butachlor	mg/kg dry wt	-	< 0.08	-	-	-
Captan	mg/kg dry wt	-	< 0.16	-	-	-
Carbaryl	mg/kg dry wt	-	< 0.08	-	-	-
Carbofuran	mg/kg dry wt	-	< 0.08	-	-	-
Chlorfluazuron	mg/kg dry wt	-	< 0.08	-	-	-
Chlorothalonil	mg/kg dry wt	-	< 0.08	-	-	-
Chlorpyrifos	mg/kg dry wt	-	< 0.08	-	-	-
Chlorpyrifos-methyl	mg/kg dry wt	-	< 0.08	-	-	-
Chlortoluron	mg/kg dry wt	-	< 0.16	-	-	-
Cyanazine	mg/kg dry wt	-	< 0.08	-	-	-
Cyfluthrin	mg/kg dry wt	-	< 0.10	-	-	-
Cyhalothrin	mg/kg dry wt	-	< 0.08	-	-	-
Cypermethrin	mg/kg dry wt	-	< 0.19	-	-	-
Deltamethrin (including Tralomethrin)	mg/kg dry wt	-	< 0.08	-	-	-
Diazinon	mg/kg dry wt	-	< 0.04	-	-	-
Dichlofluanid	mg/kg dry wt	-	< 0.08	-	-	-
Dichloran	mg/kg dry wt	-	< 0.2	-	-	-
Dichlorvos	mg/kg dry wt	-	< 0.09	-	-	-
Difenoconazole	mg/kg dry wt	-	< 0.11	-	-	-
Dimethoate	mg/kg dry wt	-	< 0.16	-	-	-
Diphenylamine	mg/kg dry wt	-	< 0.16	-	-	-
Diuron	mg/kg dry wt	-	< 0.08	-	-	-
Fenpropimorph	mg/kg dry wt	-	< 0.08	-	-	-
Fluazifop-butyl	mg/kg dry wt	-	< 0.08	-	-	-
Fluometuron	mg/kg dry wt	-	< 0.08	-	-	-
Flusilazole	mg/kg dry wt	-	< 0.08	-	-	-
Fluvalinate	mg/kg dry wt	-	< 0.06	-	-	-
Furalaxyl	mg/kg dry wt	-	< 0.04	-	-	-
Haloxyfop-methyl	mg/kg dry wt	-	< 0.08	-	-	-
Hexaconazole	mg/kg dry wt	-	< 0.08	-	-	-
Hexazinone	mg/kg dry wt	-	< 0.04	-	-	-
IPBC (3-Iodo-2-propynyl-n-butylcarbamate)	mg/kg dry wt	-	< 0.4	-	-	-
Kresoxim-methyl	mg/kg dry wt	-	< 0.04	-	-	-
Linuron	mg/kg dry wt	-	< 0.08	-	-	-
Malathion	mg/kg dry wt	-	< 0.08	-	-	-
Metalaxyl	mg/kg dry wt	-	< 0.08	-	-	-
Methamidophos	mg/kg dry wt	-	< 0.4	-	-	-
Metolachlor	mg/kg dry wt	-	< 0.05	-	-	-
Metribuzin	mg/kg dry wt	-	< 0.08	-	-	-
Molinate	mg/kg dry wt	-	< 0.16	-	-	-
Myclobutanil	mg/kg dry wt	-	< 0.08	-	-	-
Naled	mg/kg dry wt	-	< 0.4	-	-	-

Sample Type: Soil						
Sample Name:		BH2B_1149_0.1 14-Oct-2025	2B_SS01_0.1 14-Oct-2025	2B_SS02_0.1 14-Oct-2025	2B_SS03_0.1 14-Oct-2025	2B_SS04_0.1 14-Oct-2025
Lab Number:		4008719.1	4008719.2	4008719.3	4008719.4	4008719.5
Organonitro&phosphorus Pesticides Screen in Soil by GCMS						
Norflurazon	mg/kg dry wt	-	< 0.16	-	-	-
Oxadiazon	mg/kg dry wt	-	< 0.08	-	-	-
Oxyfluorfen	mg/kg dry wt	-	< 0.04	-	-	-
Paclobutrazol	mg/kg dry wt	-	< 0.08	-	-	-
Parathion-ethyl	mg/kg dry wt	-	< 0.08	-	-	-
Parathion-methyl	mg/kg dry wt	-	< 0.08	-	-	-
Pendimethalin	mg/kg dry wt	-	< 0.08	-	-	-
Permethrin	mg/kg dry wt	-	< 0.03	-	-	-
Pirimicarb	mg/kg dry wt	-	< 0.08	-	-	-
Pirimiphos-methyl	mg/kg dry wt	-	< 0.08	-	-	-
Prochloraz	mg/kg dry wt	-	< 0.4	-	-	-
Procymidone	mg/kg dry wt	-	< 0.08	-	-	-
Prometryn	mg/kg dry wt	-	< 0.04	-	-	-
Propachlor	mg/kg dry wt	-	< 0.08	-	-	-
Propanil	mg/kg dry wt	-	< 0.2	-	-	-
Propazine	mg/kg dry wt	-	< 0.04	-	-	-
Propiconazole	mg/kg dry wt	-	< 0.06	-	-	-
Pyriproxyfen	mg/kg dry wt	-	< 0.08	-	-	-
Quizalofop-ethyl	mg/kg dry wt	-	< 0.08	-	-	-
Simazine	mg/kg dry wt	-	< 0.08	-	-	-
Simetryn	mg/kg dry wt	-	< 0.08	-	-	-
Sulfentrazone	mg/kg dry wt	-	< 0.4	-	-	-
TCMTB [2-(thiocyanomethylthio) benzothiazole,Busan]	mg/kg dry wt	-	< 0.16	-	-	-
Tebuconazole	mg/kg dry wt	-	< 0.08	-	-	-
Terbacil	mg/kg dry wt	-	< 0.08	-	-	-
Terbumeton	mg/kg dry wt	-	< 0.08	-	-	-
Terbuthylazine	mg/kg dry wt	-	< 0.04	-	-	-
Terbuthylazine-desethyl	mg/kg dry wt	-	< 0.08	-	-	-
Terbutryn	mg/kg dry wt	-	< 0.08	-	-	-
Thiabendazole	mg/kg dry wt	-	< 0.4	-	-	-
Thiobencarb	mg/kg dry wt	-	< 0.08	-	-	-
Tolylfluanid	mg/kg dry wt	-	< 0.04	-	-	-
Triazophos	mg/kg dry wt	-	< 0.08	-	-	-
Trifluralin	mg/kg dry wt	-	< 0.08	-	-	-
Vinclozolin	mg/kg dry wt	-	< 0.08	-	-	-

Sample Name:		2B_SS05_0.1 14-Oct-2025	BH2B_1140_0.1 14-Oct-2025	BH2B_1140_0.5 14-Oct-2025	BH2B_1140_1.0 14-Oct-2025	BH2B_1105_0.1 14-Oct-2025
Lab Number:		4008719.6	4008719.7	4008719.8	4008719.9	4008719.10
Individual Tests						
Dry Matter	g/100g as rcvd	56	74	74	73	52
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	6	3	4	< 2	4
Total Recoverable Cadmium	mg/kg dry wt	0.28	< 0.10	< 0.10	< 0.10	0.44
Total Recoverable Chromium	mg/kg dry wt	13	8	9	7	9
Total Recoverable Copper	mg/kg dry wt	35	6	8	4	8
Total Recoverable Lead	mg/kg dry wt	13.8	13.6	15.7	14.0	13.0
Total Recoverable Mercury	mg/kg dry wt	< 0.10	0.11	< 0.10	0.18	0.13
Total Recoverable Nickel	mg/kg dry wt	13	2	3	< 2	3
Total Recoverable Zinc	mg/kg dry wt	123	27	33	16	32
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.018	< 0.014	< 0.014	< 0.014	< 0.019
alpha-BHC	mg/kg dry wt	< 0.018	< 0.014	< 0.014	< 0.014	< 0.019
beta-BHC	mg/kg dry wt	< 0.018	< 0.014	< 0.014	< 0.014	< 0.019
delta-BHC	mg/kg dry wt	< 0.018	< 0.014	< 0.014	< 0.014	< 0.019

Sample Type: Soil						
Sample Name:		2B_SS05_0.1 14-Oct-2025	BH2B_1140_0.1 14-Oct-2025	BH2B_1140_0.5 14-Oct-2025	BH2B_1140_1.0 14-Oct-2025	BH2B_1105_0.1 14-Oct-2025
Lab Number:		4008719.6	4008719.7	4008719.8	4008719.9	4008719.10
Organochlorine Pesticides Screening in Soil						
gamma-BHC (Lindane)	mg/kg dry wt	< 0.018	< 0.014	< 0.014	< 0.014	< 0.019
cis-Chlordane	mg/kg dry wt	< 0.018	< 0.014	< 0.014	< 0.014	< 0.019
trans-Chlordane	mg/kg dry wt	< 0.018	< 0.014	< 0.014	< 0.014	< 0.019
2,4'-DDD	mg/kg dry wt	< 0.018	< 0.014	< 0.014	< 0.014	< 0.019
4,4'-DDD	mg/kg dry wt	< 0.018	< 0.014	< 0.014	< 0.014	< 0.019
2,4'-DDE	mg/kg dry wt	< 0.018	< 0.014	< 0.014	< 0.014	< 0.019
4,4'-DDE	mg/kg dry wt	< 0.018	< 0.014	< 0.014	< 0.014	< 0.019
2,4'-DDT	mg/kg dry wt	< 0.018	< 0.014	< 0.014	< 0.014	< 0.019
4,4'-DDT	mg/kg dry wt	< 0.018	< 0.014	< 0.014	< 0.014	< 0.019
Total DDT Isomers	mg/kg dry wt	< 0.11	< 0.08	< 0.08	< 0.08	< 0.12
Dieldrin	mg/kg dry wt	< 0.018	< 0.014	< 0.014	< 0.014	< 0.019
Endosulfan I	mg/kg dry wt	< 0.018	< 0.014	< 0.014	< 0.014	< 0.019
Endosulfan II	mg/kg dry wt	< 0.018	< 0.014	< 0.014	< 0.014	< 0.019
Endosulfan sulphate	mg/kg dry wt	< 0.018	< 0.014	< 0.014	< 0.014	< 0.019
Endrin	mg/kg dry wt	< 0.018	< 0.014	< 0.014	< 0.014	< 0.019
Endrin aldehyde	mg/kg dry wt	< 0.018	< 0.014	< 0.014	< 0.014	< 0.019
Endrin ketone	mg/kg dry wt	< 0.018	< 0.014	< 0.014	< 0.014	< 0.019
Heptachlor	mg/kg dry wt	< 0.018	< 0.014	< 0.014	< 0.014	< 0.019
Heptachlor epoxide	mg/kg dry wt	< 0.018	< 0.014	< 0.014	< 0.014	< 0.019
Hexachlorobenzene	mg/kg dry wt	< 0.018	< 0.014	< 0.014	< 0.014	< 0.019
Methoxychlor	mg/kg dry wt	< 0.018	< 0.014	< 0.014	< 0.014	< 0.019
Organonitro&phosphorus Pesticides Screen in Soil by GCMS						
Acetochlor	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Alachlor	mg/kg dry wt	< 0.05	< 0.05	< 0.05	< 0.05	< 0.06
Atrazine	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Atrazine-desethyl	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Atrazine-desisopropyl	mg/kg dry wt	< 0.2	< 0.15	< 0.15	< 0.15	< 0.3
Azaconazole	mg/kg dry wt	< 0.05	< 0.04	< 0.04	< 0.04	< 0.06
Azinphos-methyl	mg/kg dry wt	< 0.2	< 0.15	< 0.15	< 0.15	< 0.3
Benalaxyl	mg/kg dry wt	< 0.05	< 0.04	< 0.04	< 0.04	< 0.06
Bitertanol	mg/kg dry wt	< 0.2	< 0.15	< 0.15	< 0.15	< 0.3
Bromacil	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Bromopropylate	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Butachlor	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Captan	mg/kg dry wt	< 0.2	< 0.15	< 0.15	< 0.15	< 0.3
Carbaryl	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Carbofuran	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Chlorfluazuron	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Chlorothalonil	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Chlorpyrifos	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Chlorpyrifos-methyl	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Chlortoluron	mg/kg dry wt	< 0.2	< 0.15	< 0.15	< 0.15	< 0.3
Cyanazine	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Cyfluthrin	mg/kg dry wt	< 0.12	< 0.09	< 0.09	< 0.09	< 0.13
Cyhalothrin	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Cypermethrin	mg/kg dry wt	< 0.3	< 0.18	< 0.18	< 0.18	< 0.3
Deltamethrin (including Tralomethrin)	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Diazinon	mg/kg dry wt	< 0.05	< 0.04	< 0.04	< 0.04	< 0.06
Dichlofluanid	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Dichloran	mg/kg dry wt	< 0.3	< 0.2	< 0.2	< 0.2	< 0.3
Dichlorvos	mg/kg dry wt	< 0.10	< 0.09	< 0.09	< 0.09	< 0.11
Difenoconazole	mg/kg dry wt	< 0.14	< 0.11	< 0.11	< 0.11	< 0.15
Dimethoate	mg/kg dry wt	< 0.2	< 0.15	< 0.15	< 0.15	< 0.3
Diphenylamine	mg/kg dry wt	< 0.2	< 0.15	< 0.15	< 0.15	< 0.3

Sample Type: Soil						
Sample Name:		2B_SS05_0.1 14-Oct-2025	BH2B_1140_0.1 14-Oct-2025	BH2B_1140_0.5 14-Oct-2025	BH2B_1140_1.0 14-Oct-2025	BH2B_1105_0.1 14-Oct-2025
Lab Number:		4008719.6	4008719.7	4008719.8	4008719.9	4008719.10
Organonitro&phosphorus Pesticides Screen in Soil by GCMS						
Diuron	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Fenpropimorph	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Fluazifop-butyl	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Fluometuron	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Flusilazole	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Fluvalinate	mg/kg dry wt	< 0.07	< 0.06	< 0.06	< 0.06	< 0.08
Furalaxyl	mg/kg dry wt	< 0.05	< 0.04	< 0.04	< 0.04	< 0.06
Haloxyfop-methyl	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Hexaconazole	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Hexazinone	mg/kg dry wt	< 0.05	< 0.04	< 0.04	< 0.04	< 0.06
IPBC (3-Iodo-2-propynyl-n-butylcarbamate)	mg/kg dry wt	< 0.5	< 0.4	< 0.4	< 0.4	< 0.6
Kresoxim-methyl	mg/kg dry wt	< 0.05	< 0.04	< 0.04	< 0.04	< 0.06
Linuron	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Malathion	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Metalaxyl	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Methamidophos	mg/kg dry wt	< 0.5	< 0.4	< 0.4	< 0.4	< 0.6
Metolachlor	mg/kg dry wt	< 0.05	< 0.05	< 0.05	< 0.05	< 0.06
Metribuzin	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Molinate	mg/kg dry wt	< 0.2	< 0.15	< 0.15	< 0.15	< 0.3
Myclobutanil	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Naled	mg/kg dry wt	< 0.5	< 0.4	< 0.4	< 0.4	< 0.6
Norflurazon	mg/kg dry wt	< 0.2	< 0.15	< 0.15	< 0.15	< 0.3
Oxadiazon	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Oxyfluorfen	mg/kg dry wt	< 0.05	< 0.04	< 0.04	< 0.04	< 0.06
Paclobutrazol	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Parathion-ethyl	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Parathion-methyl	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Pendimethalin	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Permethrin	mg/kg dry wt	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Pirimicarb	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Pirimiphos-methyl	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Prochloraz	mg/kg dry wt	< 0.5	< 0.4	< 0.4	< 0.4	< 0.6
Procymidone	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Prometryn	mg/kg dry wt	< 0.05	< 0.04	< 0.04	< 0.04	< 0.06
Propachlor	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Propanil	mg/kg dry wt	< 0.2	< 0.2	< 0.2	< 0.2	< 0.3
Propazine	mg/kg dry wt	< 0.05	< 0.04	< 0.04	< 0.04	< 0.06
Propiconazole	mg/kg dry wt	< 0.07	< 0.06	< 0.06	< 0.06	< 0.08
Pyriproxyfen	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Quizalofop-ethyl	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Simazine	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Simetryn	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Sulfentrazone	mg/kg dry wt	< 0.5	< 0.4	< 0.4	< 0.4	< 0.6
TCMTB [2-(thiocyanomethylthio) benzothiazole,Busan]	mg/kg dry wt	< 0.2	< 0.15	< 0.15	< 0.15	< 0.3
Tebuconazole	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Terbacil	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Terbumeton	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Terbuthylazine	mg/kg dry wt	< 0.05	< 0.04	< 0.04	< 0.04	< 0.06
Terbuthylazine-desethyl	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Terbutryn	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Thiabendazole	mg/kg dry wt	< 0.5	< 0.4	< 0.4	< 0.4	< 0.6
Thiobencarb	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Tolylfluanid	mg/kg dry wt	< 0.05	< 0.04	< 0.04	< 0.04	< 0.06

Sample Type: Soil						
Sample Name:		2B_SS05_0.1 14-Oct-2025	BH2B_1140_0.1 14-Oct-2025	BH2B_1140_0.5 14-Oct-2025	BH2B_1140_1.0 14-Oct-2025	BH2B_1105_0.1 14-Oct-2025
Lab Number:		4008719.6	4008719.7	4008719.8	4008719.9	4008719.10
Organonitro&phosphorus Pesticides Screen in Soil by GCMS						
Triazophos	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Trifluralin	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11
Vinclozolin	mg/kg dry wt	< 0.10	< 0.08	< 0.08	< 0.08	< 0.11

Sample Name:		BH2B_1105_0.4 14-Oct-2025	BH2B_1105_0.6 14-Oct-2025	BH2B_1104_0.1 14-Oct-2025	BH2B_1104_0.4 14-Oct-2025	BH2B_1104_1.0 14-Oct-2025
Lab Number:		4008719.11	4008719.12	4008719.13	4008719.14	4008719.15
Individual Tests						
Dry Matter	g/100g as rcvd	71	68	74	77	74
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	4	4	4	3	3
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Chromium	mg/kg dry wt	10	11	8	7	12
Total Recoverable Copper	mg/kg dry wt	5	6	8	4	6
Total Recoverable Lead	mg/kg dry wt	18.7	19.0	13.7	8.1	11.5
Total Recoverable Mercury	mg/kg dry wt	0.14	< 0.10	0.15	0.17	0.13
Total Recoverable Nickel	mg/kg dry wt	4	5	3	2	2
Total Recoverable Zinc	mg/kg dry wt	37	47	25	16	17
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.014	< 0.015	< 0.014	< 0.013	< 0.014
alpha-BHC	mg/kg dry wt	< 0.014	< 0.015	< 0.014	< 0.013	< 0.014
beta-BHC	mg/kg dry wt	< 0.014	< 0.015	< 0.014	< 0.013	< 0.014
delta-BHC	mg/kg dry wt	< 0.014	< 0.015	< 0.014	< 0.013	< 0.014
gamma-BHC (Lindane)	mg/kg dry wt	< 0.014	< 0.015	< 0.014	< 0.013	< 0.014
cis-Chlordane	mg/kg dry wt	< 0.014	< 0.015	< 0.014	< 0.013	< 0.014
trans-Chlordane	mg/kg dry wt	< 0.014	< 0.015	< 0.014	< 0.013	< 0.014
2,4'-DDD	mg/kg dry wt	< 0.014	< 0.015	< 0.014	< 0.013	< 0.014
4,4'-DDD	mg/kg dry wt	< 0.014	< 0.015	< 0.014	< 0.013	< 0.014
2,4'-DDE	mg/kg dry wt	< 0.014	< 0.015	< 0.014	< 0.013	< 0.014
4,4'-DDE	mg/kg dry wt	< 0.014	< 0.015	< 0.014	< 0.013	< 0.014
2,4'-DDT	mg/kg dry wt	< 0.014	< 0.015	< 0.014	< 0.013	< 0.014
4,4'-DDT	mg/kg dry wt	< 0.014	< 0.015	< 0.014	< 0.013	< 0.014
Total DDT Isomers	mg/kg dry wt	< 0.09	< 0.09	< 0.08	< 0.08	< 0.09
Dieldrin	mg/kg dry wt	< 0.014	< 0.015	< 0.014	< 0.013	< 0.014
Endosulfan I	mg/kg dry wt	< 0.014	< 0.015	< 0.014	< 0.013	< 0.014
Endosulfan II	mg/kg dry wt	< 0.014	< 0.015	< 0.014	< 0.013	< 0.014
Endosulfan sulphate	mg/kg dry wt	< 0.014	< 0.015	< 0.014	< 0.013	< 0.014
Endrin	mg/kg dry wt	< 0.014	< 0.015	< 0.014	< 0.013	< 0.014
Endrin aldehyde	mg/kg dry wt	< 0.014	< 0.015	< 0.014	< 0.013	< 0.014
Endrin ketone	mg/kg dry wt	< 0.014	< 0.015	< 0.014	< 0.013	< 0.014
Heptachlor	mg/kg dry wt	< 0.014	< 0.015	< 0.014	< 0.013	< 0.014
Heptachlor epoxide	mg/kg dry wt	< 0.014	< 0.015	< 0.014	< 0.013	< 0.014
Hexachlorobenzene	mg/kg dry wt	< 0.014	< 0.015	< 0.014	< 0.013	< 0.014
Methoxychlor	mg/kg dry wt	< 0.014	< 0.015	< 0.014	< 0.013	< 0.014
Organonitro&phosphorus Pesticides Screen in Soil by GCMS						
Acetochlor	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Alachlor	mg/kg dry wt	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Atrazine	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Atrazine-desethyl	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Atrazine-desisopropyl	mg/kg dry wt	< 0.16	< 0.16	< 0.15	< 0.15	< 0.15
Azaconazole	mg/kg dry wt	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04
Azinphos-methyl	mg/kg dry wt	< 0.16	< 0.16	< 0.15	< 0.15	< 0.15
Benalaxyl	mg/kg dry wt	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04
Bitertanol	mg/kg dry wt	< 0.16	< 0.16	< 0.15	< 0.15	< 0.15
Bromacil	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08

Sample Type: Soil						
Sample Name:		BH2B_1105_0.4 14-Oct-2025	BH2B_1105_0.6 14-Oct-2025	BH2B_1104_0.1 14-Oct-2025	BH2B_1104_0.4 14-Oct-2025	BH2B_1104_1.0 14-Oct-2025
Lab Number:		4008719.11	4008719.12	4008719.13	4008719.14	4008719.15
Organonitro&phosphorus Pesticides Screen in Soil by GCMS						
Bromopropylate	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Butachlor	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Captan	mg/kg dry wt	< 0.16	< 0.16	< 0.15	< 0.15	< 0.15
Carbaryl	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Carbofuran	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Chlorfluazuron	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Chlorothalonil	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Chlorpyrifos	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Chlorpyrifos-methyl	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Chlortoluron	mg/kg dry wt	< 0.16	< 0.16	< 0.15	< 0.15	< 0.15
Cyanazine	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Cyfluthrin	mg/kg dry wt	< 0.10	< 0.10	< 0.09	< 0.09	< 0.09
Cyhalothrin	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Cypermethrin	mg/kg dry wt	< 0.19	< 0.2	< 0.18	< 0.18	< 0.18
Deltamethrin (including Tralomethrin)	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Diazinon	mg/kg dry wt	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04
Dichlofluanid	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Dichloran	mg/kg dry wt	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Dichlorvos	mg/kg dry wt	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09
Difenoconazole	mg/kg dry wt	< 0.11	< 0.12	< 0.11	< 0.10	< 0.11
Dimethoate	mg/kg dry wt	< 0.16	< 0.16	< 0.15	< 0.15	< 0.15
Diphenylamine	mg/kg dry wt	< 0.16	< 0.16	< 0.15	< 0.15	< 0.15
Diuron	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Fenpropimorph	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Fluazifop-butyl	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Fluometuron	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Flusilazole	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Fluvalinate	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.05	< 0.06
Furalaxyl	mg/kg dry wt	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04
Haloxyfop-methyl	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Hexaconazole	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Hexazinone	mg/kg dry wt	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04
IPBC (3-Iodo-2-propynyl-n-butylcarbamate)	mg/kg dry wt	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
Kresoxim-methyl	mg/kg dry wt	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04
Linuron	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Malathion	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Metalaxyl	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Methamidophos	mg/kg dry wt	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
Metolachlor	mg/kg dry wt	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Metribuzin	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Molinate	mg/kg dry wt	< 0.16	< 0.16	< 0.15	< 0.15	< 0.15
Myclobutanil	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Naled	mg/kg dry wt	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
Norflurazon	mg/kg dry wt	< 0.16	< 0.16	< 0.15	< 0.15	< 0.15
Oxadiazon	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Oxyfluorfen	mg/kg dry wt	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04
Paclobutrazol	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Parathion-ethyl	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Parathion-methyl	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Pendimethalin	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Permethrin	mg/kg dry wt	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Pirimicarb	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Pirimiphos-methyl	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08

Sample Type: Soil						
Sample Name:		BH2B_1105_0.4 14-Oct-2025	BH2B_1105_0.6 14-Oct-2025	BH2B_1104_0.1 14-Oct-2025	BH2B_1104_0.4 14-Oct-2025	BH2B_1104_1.0 14-Oct-2025
Lab Number:		4008719.11	4008719.12	4008719.13	4008719.14	4008719.15
Organonitro&phosphorus Pesticides Screen in Soil by GCMS						
Prochloraz	mg/kg dry wt	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
Procymidone	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Prometryn	mg/kg dry wt	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04
Propachlor	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Propanil	mg/kg dry wt	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Propazine	mg/kg dry wt	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04
Propiconazole	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.05	< 0.06
Pyriproxyfen	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Quizalofop-ethyl	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Simazine	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Simetryn	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Sulfentrazone	mg/kg dry wt	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
TCMTB [2-(thiocyanomethylthio) benzothiazole,Busan]	mg/kg dry wt	< 0.16	< 0.16	< 0.15	< 0.15	< 0.15
Tebuconazole	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Terbacil	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Terbumeton	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Terbuthylazine	mg/kg dry wt	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04
Terbuthylazine-desethyl	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Terbutryn	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Thiabendazole	mg/kg dry wt	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
Thiobencarb	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Tolylfluanid	mg/kg dry wt	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04
Triazophos	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Trifluralin	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Vinclozolin	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08

Sample Name:		QAQC01 14-Oct-2025
Lab Number:		4008719.16
Individual Tests		
Dry Matter	g/100g as rcvd	71
Heavy Metals with Mercury, Screen Level		
Total Recoverable Arsenic	mg/kg dry wt	4
Total Recoverable Cadmium	mg/kg dry wt	< 0.10
Total Recoverable Chromium	mg/kg dry wt	9
Total Recoverable Copper	mg/kg dry wt	4
Total Recoverable Lead	mg/kg dry wt	15.8
Total Recoverable Mercury	mg/kg dry wt	0.16
Total Recoverable Nickel	mg/kg dry wt	3
Total Recoverable Zinc	mg/kg dry wt	33
Organochlorine Pesticides Screening in Soil		
Aldrin	mg/kg dry wt	< 0.014
alpha-BHC	mg/kg dry wt	< 0.014
beta-BHC	mg/kg dry wt	< 0.014
delta-BHC	mg/kg dry wt	< 0.014
gamma-BHC (Lindane)	mg/kg dry wt	< 0.014
cis-Chlordane	mg/kg dry wt	< 0.014
trans-Chlordane	mg/kg dry wt	< 0.014
2,4'-DDD	mg/kg dry wt	< 0.014
4,4'-DDD	mg/kg dry wt	< 0.014
2,4'-DDE	mg/kg dry wt	< 0.014
4,4'-DDE	mg/kg dry wt	< 0.014
2,4'-DDT	mg/kg dry wt	< 0.014
4,4'-DDT	mg/kg dry wt	< 0.014
Total DDT Isomers	mg/kg dry wt	< 0.09

Sample Type: Soil		
Sample Name:		QAQC01 14-Oct-2025
Lab Number:		4008719.16
Organochlorine Pesticides Screening in Soil		
Dieldrin	mg/kg dry wt	< 0.014
Endosulfan I	mg/kg dry wt	< 0.014
Endosulfan II	mg/kg dry wt	< 0.014
Endosulfan sulphate	mg/kg dry wt	< 0.014
Endrin	mg/kg dry wt	< 0.014
Endrin aldehyde	mg/kg dry wt	< 0.014
Endrin ketone	mg/kg dry wt	< 0.014
Heptachlor	mg/kg dry wt	< 0.014
Heptachlor epoxide	mg/kg dry wt	< 0.014
Hexachlorobenzene	mg/kg dry wt	< 0.014
Methoxychlor	mg/kg dry wt	< 0.014
Organonitro&phosphorus Pesticides Screen in Soil by GCMS		
Acetochlor	mg/kg dry wt	< 0.08
Alachlor	mg/kg dry wt	< 0.05
Atrazine	mg/kg dry wt	< 0.08
Atrazine-desethyl	mg/kg dry wt	< 0.08
Atrazine-desisopropyl	mg/kg dry wt	< 0.16
Azaconazole	mg/kg dry wt	< 0.04
Azinphos-methyl	mg/kg dry wt	< 0.16
Benalaxyl	mg/kg dry wt	< 0.04
Bitertanol	mg/kg dry wt	< 0.16
Bromacil	mg/kg dry wt	< 0.08
Bromopropylate	mg/kg dry wt	< 0.08
Butachlor	mg/kg dry wt	< 0.08
Captan	mg/kg dry wt	< 0.16
Carbaryl	mg/kg dry wt	< 0.08
Carbofuran	mg/kg dry wt	< 0.08
Chlorfluazuron	mg/kg dry wt	< 0.08
Chlorothalonil	mg/kg dry wt	< 0.08
Chlorpyrifos	mg/kg dry wt	< 0.08
Chlorpyrifos-methyl	mg/kg dry wt	< 0.08
Chlortoluron	mg/kg dry wt	< 0.16
Cyanazine	mg/kg dry wt	< 0.08
Cyfluthrin	mg/kg dry wt	< 0.10
Cyhalothrin	mg/kg dry wt	< 0.08
Cypermethrin	mg/kg dry wt	< 0.19
Deltamethrin (including Tralomethrin)	mg/kg dry wt	< 0.08
Diazinon	mg/kg dry wt	< 0.04
Dichlofluanid	mg/kg dry wt	< 0.08
Dichloran	mg/kg dry wt	< 0.2
Dichlorvos	mg/kg dry wt	< 0.09
Difenoconazole	mg/kg dry wt	< 0.11
Dimethoate	mg/kg dry wt	< 0.16
Diphenylamine	mg/kg dry wt	< 0.16
Diuron	mg/kg dry wt	< 0.08
Fenpropimorph	mg/kg dry wt	< 0.08
Fluazifop-butyl	mg/kg dry wt	< 0.08
Fluometuron	mg/kg dry wt	< 0.08
Flusilazole	mg/kg dry wt	< 0.08
Fluvalinate	mg/kg dry wt	< 0.06
Furalaxyl	mg/kg dry wt	< 0.04
Haloxyfop-methyl	mg/kg dry wt	< 0.08
Hexaconazole	mg/kg dry wt	< 0.08
Hexazinone	mg/kg dry wt	< 0.04

Sample Type: Soil		
Sample Name:		QAQC01 14-Oct-2025
Lab Number:		4008719.16
Organonitro&phosphorus Pesticides Screen in Soil by GCMS		
IPBC (3-Iodo-2-propynyl-n-butylcarbamate)	mg/kg dry wt	< 0.4
Kresoxim-methyl	mg/kg dry wt	< 0.04
Linuron	mg/kg dry wt	< 0.08
Malathion	mg/kg dry wt	< 0.08
Metalaxyl	mg/kg dry wt	< 0.08
Methamidophos	mg/kg dry wt	< 0.4
Metolachlor	mg/kg dry wt	< 0.05
Metribuzin	mg/kg dry wt	< 0.08
Molinate	mg/kg dry wt	< 0.16
Myclobutanil	mg/kg dry wt	< 0.08
Naled	mg/kg dry wt	< 0.4
Norflurazon	mg/kg dry wt	< 0.16
Oxadiazon	mg/kg dry wt	< 0.08
Oxyfluorfen	mg/kg dry wt	< 0.04
Paclobutrazol	mg/kg dry wt	< 0.08
Parathion-ethyl	mg/kg dry wt	< 0.08
Parathion-methyl	mg/kg dry wt	< 0.08
Pendimethalin	mg/kg dry wt	< 0.08
Permethrin	mg/kg dry wt	< 0.03
Pirimicarb	mg/kg dry wt	< 0.08
Pirimiphos-methyl	mg/kg dry wt	< 0.08
Prochloraz	mg/kg dry wt	< 0.4
Procymidone	mg/kg dry wt	< 0.08
Prometryn	mg/kg dry wt	< 0.04
Propachlor	mg/kg dry wt	< 0.08
Propanil	mg/kg dry wt	< 0.2
Propazine	mg/kg dry wt	< 0.04
Propiconazole	mg/kg dry wt	< 0.06
Pyriproxyfen	mg/kg dry wt	< 0.08
Quizalofop-ethyl	mg/kg dry wt	< 0.08
Simazine	mg/kg dry wt	< 0.08
Simetryn	mg/kg dry wt	< 0.08
Sulfentrazone	mg/kg dry wt	< 0.4
TCMTB [2-(thiocyanomethylthio) benzothiazole,Busan]	mg/kg dry wt	< 0.16
Tebuconazole	mg/kg dry wt	< 0.08
Terbacil	mg/kg dry wt	< 0.08
Terbumeton	mg/kg dry wt	< 0.08
Terbuthylazine	mg/kg dry wt	< 0.04
Terbuthylazine-desethyl	mg/kg dry wt	< 0.08
Terbutryn	mg/kg dry wt	< 0.08
Thiabendazole	mg/kg dry wt	< 0.4
Thiobencarb	mg/kg dry wt	< 0.08
Tolylfluanid	mg/kg dry wt	< 0.04
Triazophos	mg/kg dry wt	< 0.08
Trifluralin	mg/kg dry wt	< 0.08
Vinclozolin	mg/kg dry wt	< 0.08

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request.
Unless otherwise indicated, analyses were performed at Hill Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	1-16
Heavy Metals with Mercury, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required. US EPA 200.2 (modified), APHA 3125 B: Online Edition.	0.10 - 4 mg/kg dry wt	1-16
Organochlorine/nitro&phosphorus Pest.s Screen in Soils, GCMS	Sonication extraction, GC-ECD and GC-MS analysis. In-house based on US EPA 8081 and US EPA 8270.	0.010 - 0.2 mg/kg dry wt	2, 6-16
Dry Matter	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	2, 6-16

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 16-Oct-2025 and 28-Oct-2025. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

This certificate of analysis must not be reproduced, except in full, without the written consent of the signatory.



Ara Heron BSc (Tech)
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Quality Assurance Report

Client:	WSP New Zealand Limited	**Lab No:**	4008719 QCPv1
Contact:	Megan Baddiley C/- WSP New Zealand Limited PO Box 5848 Auckland 1141	**Date Received:**	15-Oct-2025
		Date Reported:	28-Oct-2025
		Quote No:	82748
		Order No:	1-C2466.16 / 2PE41
		Client Reference:	1-C2466.16 / 2PE41
		Submitted By:	Megan Baddiley

Sample Specific QCs

Organochlorine Pesticides Screening in Soil

		4008719.2	Control Limits	Outside Limit (Yes/No)
2,4,5,6-tetrachloro-m-xylene	%	105	40 – 120	No

Organonitro&phosphorus Pesticides Screen in Soil by GCMS

		4008719.2	Control Limits	Outside Limit (Yes/No)
Triphenylphosphate	%	90	40 – 120	No

Organochlorine Pesticides Screening in Soil

		4008719.6	Control Limits	Outside Limit (Yes/No)
2,4,5,6-tetrachloro-m-xylene	%	115	40 – 120	No

Organonitro&phosphorus Pesticides Screen in Soil by GCMS

		4008719.6	Control Limits	Outside Limit (Yes/No)
Triphenylphosphate	%	92	40 – 120	No

Organochlorine Pesticides Screening in Soil

		4008719.7	Control Limits	Outside Limit (Yes/No)
2,4,5,6-tetrachloro-m-xylene	%	109	40 – 120	No

Organonitro&phosphorus Pesticides Screen in Soil by GCMS

		4008719.7	Control Limits	Outside Limit (Yes/No)
Triphenylphosphate	%	84	40 – 120	No

Organochlorine Pesticides Screening in Soil

		4008719.8	Control Limits	Outside Limit (Yes/No)
2,4,5,6-tetrachloro-m-xylene	%	114	40 – 120	No

Organonitro&phosphorus Pesticides Screen in Soil by GCMS

		4008719.8	Control Limits	Outside Limit (Yes/No)
Triphenylphosphate	%	83	40 – 120	No

Organochlorine Pesticides Screening in Soil

		4008719.9	Control Limits	Outside Limit (Yes/No)
2,4,5,6-tetrachloro-m-xylene	%	113	40 – 120	No

Organonitro&phosphorus Pesticides Screen in Soil by GCMS

		4008719.9	Control Limits	Outside Limit (Yes/No)
Triphenylphosphate	%	87	40 – 120	No

Organochlorine Pesticides Screening in Soil

		4008719.10	Control Limits	Outside Limit (Yes/No)
2,4,5,6-tetrachloro-m-xylene	%	102	40 – 120	No

Organonitro&phosphorus Pesticides Screen in Soil by GCMS				
		4008719.10	Control Limits	Outside Limit (Yes/No)
Triphenylphosphate	%	92	40 – 120	No

Organochlorine Pesticides Screening in Soil				
		4008719.11	Control Limits	Outside Limit (Yes/No)
2,4,5,6-tetrachloro-m-xylene	%	105	40 – 120	No

Organonitro&phosphorus Pesticides Screen in Soil by GCMS				
		4008719.11	Control Limits	Outside Limit (Yes/No)
Triphenylphosphate	%	88	40 – 120	No

Organochlorine Pesticides Screening in Soil				
		4008719.12	Control Limits	Outside Limit (Yes/No)
2,4,5,6-tetrachloro-m-xylene	%	95	40 – 120	No

Organonitro&phosphorus Pesticides Screen in Soil by GCMS				
		4008719.12	Control Limits	Outside Limit (Yes/No)
Triphenylphosphate	%	88	40 – 120	No

Organochlorine Pesticides Screening in Soil				
		4008719.13	Control Limits	Outside Limit (Yes/No)
2,4,5,6-tetrachloro-m-xylene	%	106	40 – 120	No

Organonitro&phosphorus Pesticides Screen in Soil by GCMS				
		4008719.13	Control Limits	Outside Limit (Yes/No)
Triphenylphosphate	%	62	40 – 120	No

Organochlorine Pesticides Screening in Soil				
		4008719.14	Control Limits	Outside Limit (Yes/No)
2,4,5,6-tetrachloro-m-xylene	%	104	40 – 120	No

Organonitro&phosphorus Pesticides Screen in Soil by GCMS				
		4008719.14	Control Limits	Outside Limit (Yes/No)
Triphenylphosphate	%	85	40 – 120	No

Organochlorine Pesticides Screening in Soil				
		4008719.15	Control Limits	Outside Limit (Yes/No)
2,4,5,6-tetrachloro-m-xylene	%	106	40 – 120	No

Organonitro&phosphorus Pesticides Screen in Soil by GCMS				
		4008719.15	Control Limits	Outside Limit (Yes/No)
Triphenylphosphate	%	91	40 – 120	No

Organochlorine Pesticides Screening in Soil				
		4008719.16	Control Limits	Outside Limit (Yes/No)
2,4,5,6-tetrachloro-m-xylene	%	113	40 – 120	No

Organonitro&phosphorus Pesticides Screen in Soil by GCMS				
		4008719.16	Control Limits	Outside Limit (Yes/No)
Triphenylphosphate	%	89	40 – 120	No

Blank QCs

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 12870.13				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 12870.13				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 12870.45				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 12871.13				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 12871.32				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

50x Manual Dilution Digest Blank PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 12871.71				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Blank 1 PrepWS xsSHOC - WS: Organochlorine Pesticides Soil Analysis: 9225.1				
		Results	Control Limits	Outside Limit (Yes/No)
Aldrin	mg/kg dry wt	< 0.010 ± 0.0030	0.0 – 0.0100	No
alpha-BHC	mg/kg dry wt	< 0.010 ± 0.0030	0.0 – 0.0100	No

Blank 1 PrepWS xsSHOC - WS: Organochlorine Pesticides Soil Analysis: 9225.1				
		Results	Control Limits	Outside Limit (Yes/No)
beta-BHC	mg/kg dry wt	< 0.010 ± 0.0028	0.0 – 0.0100	No
delta-BHC	mg/kg dry wt	< 0.010 ± 0.0029	0.0 – 0.0100	No
gamma-BHC (Lindane)	mg/kg dry wt	< 0.010 ± 0.0031	0.0 – 0.0100	No
cis-Chlordane	mg/kg dry wt	< 0.010 ± 0.0030	0.0 – 0.0100	No
trans-Chlordane	mg/kg dry wt	< 0.010 ± 0.0030	0.0 – 0.0100	No
2,4'-DDD	mg/kg dry wt	< 0.010 ± 0.0029	0.0 – 0.0100	No
4,4'-DDD	mg/kg dry wt	< 0.010 ± 0.0024	0.0 – 0.0100	No
2,4'-DDE	mg/kg dry wt	< 0.010 ± 0.0030	0.0 – 0.0100	No
4,4'-DDE	mg/kg dry wt	< 0.010 ± 0.0023	0.0 – 0.0100	No
2,4'-DDT	mg/kg dry wt	< 0.010 ± 0.0021	0.0 – 0.0100	No
4,4'-DDT	mg/kg dry wt	< 0.010 ± 0.0017	0.0 – 0.0100	No
Dieldrin	mg/kg dry wt	< 0.010 ± 0.0026	0.0 – 0.0100	No
Endosulfan I	mg/kg dry wt	< 0.010 ± 0.0029	0.0 – 0.0100	No
Endosulfan II	mg/kg dry wt	< 0.010 ± 0.0026	0.0 – 0.0100	No
Endosulfan sulphate	mg/kg dry wt	< 0.010 ± 0.0013	0.0 – 0.0100	No
Endrin	mg/kg dry wt	< 0.010 ± 0.00048	0.0 – 0.0100	No
Endrin aldehyde	mg/kg dry wt	< 0.010 ± 0.0019	0.0 – 0.0100	No
Endrin ketone	mg/kg dry wt	< 0.010 ± 0.0024	0.0 – 0.0100	No
Heptachlor	mg/kg dry wt	< 0.010 ± 0.0029	0.0 – 0.0100	No
Heptachlor epoxide	mg/kg dry wt	< 0.010 ± 0.0031	0.0 – 0.0100	No
Hexachlorobenzene	mg/kg dry wt	< 0.010 ± 0.0029	0.0 – 0.0100	No
Methoxychlor	mg/kg dry wt	< 0.010 ± 0.00048	0.0 – 0.0100	No

Blank 1 PrepWS xsSHOC - WS: Organochlorine Pesticides Soil Analysis: 9226.1				
		Results	Control Limits	Outside Limit (Yes/No)
Aldrin	mg/kg dry wt	< 0.010 ± 0.0030	0.0 – 0.0100	No
alpha-BHC	mg/kg dry wt	< 0.010 ± 0.0030	0.0 – 0.0100	No
beta-BHC	mg/kg dry wt	< 0.010 ± 0.0028	0.0 – 0.0100	No
delta-BHC	mg/kg dry wt	< 0.010 ± 0.0029	0.0 – 0.0100	No
gamma-BHC (Lindane)	mg/kg dry wt	< 0.010 ± 0.0031	0.0 – 0.0100	No
cis-Chlordane	mg/kg dry wt	< 0.010 ± 0.0030	0.0 – 0.0100	No
trans-Chlordane	mg/kg dry wt	< 0.010 ± 0.0030	0.0 – 0.0100	No
2,4'-DDD	mg/kg dry wt	< 0.010 ± 0.0029	0.0 – 0.0100	No
4,4'-DDD	mg/kg dry wt	< 0.010 ± 0.0024	0.0 – 0.0100	No
2,4'-DDE	mg/kg dry wt	< 0.010 ± 0.0030	0.0 – 0.0100	No
4,4'-DDE	mg/kg dry wt	< 0.010 ± 0.0023	0.0 – 0.0100	No
2,4'-DDT	mg/kg dry wt	< 0.010 ± 0.0021	0.0 – 0.0100	No
4,4'-DDT	mg/kg dry wt	< 0.010 ± 0.0017	0.0 – 0.0100	No
Dieldrin	mg/kg dry wt	< 0.010 ± 0.0026	0.0 – 0.0100	No
Endosulfan I	mg/kg dry wt	< 0.010 ± 0.0029	0.0 – 0.0100	No
Endosulfan II	mg/kg dry wt	< 0.010 ± 0.0026	0.0 – 0.0100	No
Endosulfan sulphate	mg/kg dry wt	< 0.010 ± 0.0013	0.0 – 0.0100	No
Endrin	mg/kg dry wt	< 0.010 ± 0.00048	0.0 – 0.0100	No
Endrin aldehyde	mg/kg dry wt	< 0.010 ± 0.0019	0.0 – 0.0100	No
Endrin ketone	mg/kg dry wt	< 0.010 ± 0.0024	0.0 – 0.0100	No
Heptachlor	mg/kg dry wt	< 0.010 ± 0.0029	0.0 – 0.0100	No

Blank 1 PrepWS xsSHOC - WS: Organochlorine Pesticides Soil Analysis: 9226.1				
		Results	Control Limits	Outside Limit (Yes/No)
Heptachlor epoxide	mg/kg dry wt	< 0.010 ± 0.0031	0.0 – 0.0100	No
Hexachlorobenzene	mg/kg dry wt	< 0.010 ± 0.0029	0.0 – 0.0100	No
Methoxychlor	mg/kg dry wt	< 0.010 ± 0.00048	0.0 – 0.0100	No

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 12873.13				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 12873.36				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 12874.13				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 12874.40				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Blank 1 - Multiresidue Soil Analysis Worksheet: 4016.1				
		Results	Control Limits	Outside Limit (Yes/No)
Acetochlor	mg/kg dry wt	< 0.05 ± 0.029	0.0 – 0.0062	No

Blank 1 - Multiresidue Soil Analysis Worksheet: 4016.1				
		Results	Control Limits	Outside Limit (Yes/No)
Alachlor	mg/kg dry wt	< 0.05 ± 0.029	0.0 – 0.0031	No
Atrazine	mg/kg dry wt	< 0.05 ± 0.029	0.0 – 0.0062	No
Atrazine-desethyl	mg/kg dry wt	< 0.05 ± 0.030	0.0 – 0.0062	No
Atrazine-desisopropyl	mg/kg dry wt	< 0.10 ± 0.044	0.0 – 0.0123	No
Azaconazole	mg/kg dry wt	< 0.03 ± 0.0098	0.0 – 0.0031	No
Azinphos-methyl	mg/kg dry wt	< 0.10 ± 0.042	0.0 – 0.0123	No
Benalaxyl	mg/kg dry wt	< 0.03 ± 0.012	0.0 – 0.0031	No
Bitertanol	mg/kg dry wt	< 0.10 ± 0.022	0.0 – 0.0123	No
Bromacil	mg/kg dry wt	< 0.05 ± 0.029	0.0 – 0.0062	No
Bromopropylate	mg/kg dry wt	< 0.05 ± 0.030	0.0 – 0.0062	No
Butachlor	mg/kg dry wt	< 0.05 ± 0.029	0.0 – 0.0062	No
Captan	mg/kg dry wt	< 0.10 ± 0.051	0.0 – 0.0123	No
Carbaryl	mg/kg dry wt	< 0.05 ± 0.0048	0.0 – 0.0062	No
Carbofuran	mg/kg dry wt	< 0.05 ± 0.011	0.0 – 0.0062	No
Chlorfluazuron	mg/kg dry wt	< 0.05 ± 0.0048	0.0 – 0.0062	No
Chlorothalonil	mg/kg dry wt	< 0.05 ± 0.0048	0.0 – 0.0062	No
Chlorpyrifos	mg/kg dry wt	< 0.05 ± 0.028	0.0 – 0.0062	No
Chlorpyrifos-methyl	mg/kg dry wt	< 0.05 ± 0.027	0.0 – 0.0062	No
Chlortoluron	mg/kg dry wt	< 0.10 ± 0.041	0.0 – 0.0123	No
Cyanazine	mg/kg dry wt	< 0.05 ± 0.025	0.0 – 0.0062	No
Cyfluthrin	mg/kg dry wt	< 0.06 ± 0.031	0.0 – 0.0076	No
Cyhalothrin	mg/kg dry wt	< 0.05 ± 0.021	0.0 – 0.0062	No
Cypermethrin	mg/kg dry wt	< 0.12 ± 0.047	0.0 – 0.0151	No
Deltamethrin (including Tralomethrin)	mg/kg dry wt	< 0.05 ± 0.0048	0.0 – 0.0062	No
Diazinon	mg/kg dry wt	< 0.03 ± 0.012	0.0 – 0.0031	No
Dichlofluanid	mg/kg dry wt	< 0.05 ± 0.028	0.0 – 0.0062	No
Dichloran	mg/kg dry wt	< 0.2 ± 0.019	0.0 – 0.0154	No
Dichlorvos	mg/kg dry wt	< 0.09 ± 0.0085	0.0 – 0.0062	No
Difenoconazole	mg/kg dry wt	< 0.09 ± 0.0085	0.0 – 0.0087	No
Dimethoate	mg/kg dry wt	< 0.10 ± 0.042	0.0 – 0.0123	No
Diphenylamine	mg/kg dry wt	< 0.10 ± 0.049	0.0 – 0.0123	No
Diuron	mg/kg dry wt	< 0.05 ± 0.021	0.0 – 0.0062	No
Fenpropimorph	mg/kg dry wt	< 0.05 ± 0.0048	0.0 – 0.0062	No
Fluazifop-butyl	mg/kg dry wt	< 0.05 ± 0.029	0.0 – 0.0062	No
Fluometuron	mg/kg dry wt	< 0.05 ± 0.031	0.0 – 0.0062	No
Flusilazole	mg/kg dry wt	< 0.05 ± 0.022	0.0 – 0.0062	No
Fluvalinate	mg/kg dry wt	< 0.05 ± 0.0048	0.0 – 0.0044	No
Furalaxyl	mg/kg dry wt	< 0.03 ± 0.012	0.0 – 0.0031	No
Haloxyfop-methyl	mg/kg dry wt	< 0.05 ± 0.030	0.0 – 0.0062	No
Hexaconazole	mg/kg dry wt	< 0.05 ± 0.016	0.0 – 0.0062	No
Hexazinone	mg/kg dry wt	< 0.03 ± 0.012	0.0 – 0.0031	No
IPBC (3-Iodo-2-propynyl-n-butylcarbamate)	mg/kg dry wt	< 0.3 ± 0.12	0.0 – 0.031	No
Kresoxim-methyl	mg/kg dry wt	< 0.03 ± 0.012	0.0 – 0.0031	No
Linuron	mg/kg dry wt	< 0.05 ± 0.027	0.0 – 0.0062	No

Blank 1 - Multiresidue Soil Analysis Worksheet: 4016.1				
		Results	Control Limits	Outside Limit (Yes/No)
Malathion	mg/kg dry wt	< 0.05 ± 0.027	0.0 – 0.0062	No
Metalaxyl	mg/kg dry wt	< 0.05 ± 0.031	0.0 – 0.0062	No
Methamidophos	mg/kg dry wt	< 0.3 ± 0.019	0.0 – 0.031	No
Metolachlor	mg/kg dry wt	< 0.05 ± 0.030	0.0 – 0.0031	No
Metribuzin	mg/kg dry wt	< 0.05 ± 0.026	0.0 – 0.0062	No
Molinate	mg/kg dry wt	< 0.10 ± 0.049	0.0 – 0.0123	No
Myclobutanil	mg/kg dry wt	< 0.05 ± 0.028	0.0 – 0.0062	No
Naled	mg/kg dry wt	< 0.3 ± 0.019	0.0 – 0.031	No
Norflurazon	mg/kg dry wt	< 0.10 ± 0.052	0.0 – 0.0123	No
Oxadiazon	mg/kg dry wt	< 0.05 ± 0.030	0.0 – 0.0062	No
Oxyfluorfen	mg/kg dry wt	< 0.03 ± 0.012	0.0 – 0.0031	No
Paclobutrazol	mg/kg dry wt	< 0.05 ± 0.028	0.0 – 0.0062	No
Parathion-ethyl	mg/kg dry wt	< 0.05 ± 0.030	0.0 – 0.0062	No
Parathion-methyl	mg/kg dry wt	< 0.05 ± 0.029	0.0 – 0.0062	No
Pendimethalin	mg/kg dry wt	< 0.05 ± 0.030	0.0 – 0.0062	No
Permethrin	mg/kg dry wt	< 0.03 ± 0.012	0.0 – 0.00175	No
Pirimicarb	mg/kg dry wt	< 0.05 ± 0.021	0.0 – 0.0062	No
Pirimiphos-methyl	mg/kg dry wt	< 0.05 ± 0.029	0.0 – 0.0062	No
Prochloraz	mg/kg dry wt	< 0.3 ± 0.019	0.0 – 0.031	No
Procymidone	mg/kg dry wt	< 0.05 ± 0.029	0.0 – 0.0062	No
Prometryn	mg/kg dry wt	< 0.03 ± 0.012	0.0 – 0.0031	No
Propachlor	mg/kg dry wt	< 0.05 ± 0.032	0.0 – 0.0062	No
Propanil	mg/kg dry wt	< 0.2 ± 0.12	0.0 – 0.0123	No
Propazine	mg/kg dry wt	< 0.03 ± 0.012	0.0 – 0.0031	No
Propiconazole	mg/kg dry wt	< 0.05 ± 0.027	0.0 – 0.0044	No
Pyriproxyfen	mg/kg dry wt	< 0.05 ± 0.028	0.0 – 0.0062	No
Quizalofop-ethyl	mg/kg dry wt	< 0.05 ± 0.0048	0.0 – 0.0062	No
Simazine	mg/kg dry wt	< 0.05 ± 0.029	0.0 – 0.0062	No
Simetryn	mg/kg dry wt	< 0.05 ± 0.025	0.0 – 0.0062	No
Sulfentrazone	mg/kg dry wt	< 0.3 ± 0.019	0.0 – 0.031	No
TCMTB [2-(thiocyanomethylthio) benzothiazole,Busan]	mg/kg dry wt	< 0.10 ± 0.046	0.0 – 0.0123	No
Tebuconazole	mg/kg dry wt	< 0.05 ± 0.020	0.0 – 0.0062	No
Terbacil	mg/kg dry wt	< 0.05 ± 0.028	0.0 – 0.0062	No
Terbumeton	mg/kg dry wt	< 0.05 ± 0.027	0.0 – 0.0062	No
Terbuthylazine	mg/kg dry wt	< 0.03 ± 0.012	0.0 – 0.0031	No
Terbuthylazine-desethyl	mg/kg dry wt	< 0.05 ± 0.031	0.0 – 0.0062	No
Terbutryn	mg/kg dry wt	< 0.05 ± 0.029	0.0 – 0.0062	No
Thiabendazole	mg/kg dry wt	< 0.3 ± 0.019	0.0 – 0.031	No
Thiobencarb	mg/kg dry wt	< 0.05 ± 0.028	0.0 – 0.0062	No
Tolylfluanid	mg/kg dry wt	< 0.03 ± 0.0093	0.0 – 0.0031	No
Triazophos	mg/kg dry wt	< 0.05 ± 0.028	0.0 – 0.0062	No
Trifluralin	mg/kg dry wt	< 0.05 ± 0.032	0.0 – 0.0062	No
Vinclozolin	mg/kg dry wt	< 0.05 ± 0.029	0.0 – 0.0062	No

Blank 1 PrepWS xsSHOC - WS: Organochlorine Pesticides Soil Analysis: 9229.1				
		Results	Control Limits	Outside Limit (Yes/No)
Aldrin	mg/kg dry wt	< 0.010 ± 0.0030	0.0 – 0.0100	No
alpha-BHC	mg/kg dry wt	< 0.010 ± 0.0030	0.0 – 0.0100	No
beta-BHC	mg/kg dry wt	< 0.010 ± 0.0028	0.0 – 0.0100	No
delta-BHC	mg/kg dry wt	< 0.010 ± 0.0029	0.0 – 0.0100	No
gamma-BHC (Lindane)	mg/kg dry wt	< 0.010 ± 0.0031	0.0 – 0.0100	No
cis-Chlordane	mg/kg dry wt	< 0.010 ± 0.0030	0.0 – 0.0100	No
trans-Chlordane	mg/kg dry wt	< 0.010 ± 0.0030	0.0 – 0.0100	No
2,4'-DDD	mg/kg dry wt	< 0.010 ± 0.0029	0.0 – 0.0100	No
4,4'-DDD	mg/kg dry wt	< 0.010 ± 0.0024	0.0 – 0.0100	No
2,4'-DDE	mg/kg dry wt	< 0.010 ± 0.0030	0.0 – 0.0100	No
4,4'-DDE	mg/kg dry wt	< 0.010 ± 0.0023	0.0 – 0.0100	No
2,4'-DDT	mg/kg dry wt	< 0.010 ± 0.0021	0.0 – 0.0100	No
4,4'-DDT	mg/kg dry wt	< 0.010 ± 0.0017	0.0 – 0.0100	No
Dieldrin	mg/kg dry wt	< 0.010 ± 0.0026	0.0 – 0.0100	No
Endosulfan I	mg/kg dry wt	< 0.010 ± 0.0029	0.0 – 0.0100	No
Endosulfan II	mg/kg dry wt	< 0.010 ± 0.0026	0.0 – 0.0100	No
Endosulfan sulphate	mg/kg dry wt	< 0.010 ± 0.0013	0.0 – 0.0100	No
Endrin	mg/kg dry wt	< 0.010 ± 0.00048	0.0 – 0.0100	No
Endrin aldehyde	mg/kg dry wt	< 0.010 ± 0.0019	0.0 – 0.0100	No
Endrin ketone	mg/kg dry wt	< 0.010 ± 0.0024	0.0 – 0.0100	No
Heptachlor	mg/kg dry wt	< 0.010 ± 0.0029	0.0 – 0.0100	No
Heptachlor epoxide	mg/kg dry wt	< 0.010 ± 0.0031	0.0 – 0.0100	No
Hexachlorobenzene	mg/kg dry wt	< 0.010 ± 0.0029	0.0 – 0.0100	No
Methoxychlor	mg/kg dry wt	< 0.010 ± 0.00048	0.0 – 0.0100	No

Blank 1 - Multiresidue Soil Analysis Worksheet: 4018.1				
		Results	Control Limits	Outside Limit (Yes/No)
Acetochlor	mg/kg dry wt	< 0.05 ± 0.029	0.0 – 0.0062	No
Alachlor	mg/kg dry wt	< 0.05 ± 0.029	0.0 – 0.0031	No
Atrazine	mg/kg dry wt	< 0.05 ± 0.029	0.0 – 0.0062	No
Atrazine-desethyl	mg/kg dry wt	< 0.05 ± 0.030	0.0 – 0.0062	No
Atrazine-desisopropyl	mg/kg dry wt	< 0.10 ± 0.044	0.0 – 0.0123	No
Azaconazole	mg/kg dry wt	< 0.03 ± 0.0098	0.0 – 0.0031	No
Azinphos-methyl	mg/kg dry wt	< 0.10 ± 0.042	0.0 – 0.0123	No
Benalaxyl	mg/kg dry wt	< 0.03 ± 0.012	0.0 – 0.0031	No
Bitertanol	mg/kg dry wt	< 0.10 ± 0.022	0.0 – 0.0123	No
Bromacil	mg/kg dry wt	< 0.05 ± 0.029	0.0 – 0.0062	No
Bromopropylate	mg/kg dry wt	< 0.05 ± 0.030	0.0 – 0.0062	No
Butachlor	mg/kg dry wt	< 0.05 ± 0.029	0.0 – 0.0062	No
Captan	mg/kg dry wt	< 0.10 ± 0.051	0.0 – 0.0123	No
Carbaryl	mg/kg dry wt	< 0.05 ± 0.0048	0.0 – 0.0062	No
Carbofuran	mg/kg dry wt	< 0.05 ± 0.011	0.0 – 0.0062	No
Chlorfluazuron	mg/kg dry wt	< 0.05 ± 0.0048	0.0 – 0.0062	No
Chlorothalonil	mg/kg dry wt	< 0.05 ± 0.0048	0.0 – 0.0062	No
Chlorpyrifos	mg/kg dry wt	< 0.05 ± 0.028	0.0 – 0.0062	No
Chlorpyrifos-methyl	mg/kg dry wt	< 0.05 ± 0.027	0.0 – 0.0062	No

Blank 1 - Multiresidue Soil Analysis Worksheet: 4018.1				
		Results	Control Limits	Outside Limit (Yes/No)
Chlortoluron	mg/kg dry wt	< 0.10 ± 0.041	0.0 – 0.0123	No
Cyanazine	mg/kg dry wt	< 0.05 ± 0.025	0.0 – 0.0062	No
Cyfluthrin	mg/kg dry wt	< 0.06 ± 0.031	0.0 – 0.0076	No
Cyhalothrin	mg/kg dry wt	< 0.05 ± 0.021	0.0 – 0.0062	No
Cypermethrin	mg/kg dry wt	< 0.12 ± 0.047	0.0 – 0.0151	No
Deltamethrin (including Tralomethrin)	mg/kg dry wt	< 0.05 ± 0.0048	0.0 – 0.0062	No
Diazinon	mg/kg dry wt	< 0.03 ± 0.012	0.0 – 0.0031	No
Dichlofluanid	mg/kg dry wt	< 0.05 ± 0.028	0.0 – 0.0062	No
Dichloran	mg/kg dry wt	< 0.2 ± 0.019	0.0 – 0.0154	No
Dichlorvos	mg/kg dry wt	< 0.09 ± 0.0085	0.0 – 0.0062	No
Difenoconazole	mg/kg dry wt	< 0.09 ± 0.0085	0.0 – 0.0087	No
Dimethoate	mg/kg dry wt	< 0.10 ± 0.042	0.0 – 0.0123	No
Diphenylamine	mg/kg dry wt	< 0.10 ± 0.049	0.0 – 0.0123	No
Diuron	mg/kg dry wt	< 0.05 ± 0.021	0.0 – 0.0062	No
Fenpropimorph	mg/kg dry wt	< 0.05 ± 0.0048	0.0 – 0.0062	No
Fluazifop-butyl	mg/kg dry wt	< 0.05 ± 0.029	0.0 – 0.0062	No
Fluometuron	mg/kg dry wt	< 0.05 ± 0.031	0.0 – 0.0062	No
Flusilazole	mg/kg dry wt	< 0.05 ± 0.022	0.0 – 0.0062	No
Fluvalinate	mg/kg dry wt	< 0.05 ± 0.0048	0.0 – 0.0044	No
Furalaxyl	mg/kg dry wt	< 0.03 ± 0.012	0.0 – 0.0031	No
Haloxyfop-methyl	mg/kg dry wt	< 0.05 ± 0.030	0.0 – 0.0062	No
Hexaconazole	mg/kg dry wt	< 0.05 ± 0.016	0.0 – 0.0062	No
Hexazinone	mg/kg dry wt	< 0.03 ± 0.012	0.0 – 0.0031	No
IPBC (3-Iodo-2-propynyl-n-butylcarbamate)	mg/kg dry wt	< 0.3 ± 0.12	0.0 – 0.031	No
Kresoxim-methyl	mg/kg dry wt	< 0.03 ± 0.012	0.0 – 0.0031	No
Linuron	mg/kg dry wt	< 0.05 ± 0.027	0.0 – 0.0062	No
Malathion	mg/kg dry wt	< 0.05 ± 0.027	0.0 – 0.0062	No
Metalaxyl	mg/kg dry wt	< 0.05 ± 0.031	0.0 – 0.0062	No
Methamidophos	mg/kg dry wt	< 0.3 ± 0.019	0.0 – 0.031	No
Metolachlor	mg/kg dry wt	< 0.05 ± 0.030	0.0 – 0.0031	No
Metribuzin	mg/kg dry wt	< 0.05 ± 0.026	0.0 – 0.0062	No
Molinate	mg/kg dry wt	< 0.10 ± 0.049	0.0 – 0.0123	No
Myclobutanil	mg/kg dry wt	< 0.05 ± 0.028	0.0 – 0.0062	No
Naled	mg/kg dry wt	< 0.3 ± 0.019	0.0 – 0.031	No
Norflurazon	mg/kg dry wt	< 0.10 ± 0.052	0.0 – 0.0123	No
Oxadiazon	mg/kg dry wt	< 0.05 ± 0.030	0.0 – 0.0062	No
Oxyfluorfen	mg/kg dry wt	< 0.03 ± 0.012	0.0 – 0.0031	No
Paclobutrazol	mg/kg dry wt	< 0.05 ± 0.028	0.0 – 0.0062	No
Parathion-ethyl	mg/kg dry wt	< 0.05 ± 0.030	0.0 – 0.0062	No
Parathion-methyl	mg/kg dry wt	< 0.05 ± 0.029	0.0 – 0.0062	No
Pendimethalin	mg/kg dry wt	< 0.05 ± 0.030	0.0 – 0.0062	No
Permethrin	mg/kg dry wt	< 0.03 ± 0.012	0.0 – 0.00175	No
Pirimicarb	mg/kg dry wt	< 0.05 ± 0.021	0.0 – 0.0062	No
Pirimiphos-methyl	mg/kg dry wt	< 0.05 ± 0.029	0.0 – 0.0062	No

Blank 1 - Multiresidue Soil Analysis Worksheet: 4018.1				
		Results	Control Limits	Outside Limit (Yes/No)
Prochloraz	mg/kg dry wt	< 0.3 ± 0.019	0.0 – 0.031	No
Procymidone	mg/kg dry wt	< 0.05 ± 0.029	0.0 – 0.0062	No
Prometryn	mg/kg dry wt	< 0.03 ± 0.012	0.0 – 0.0031	No
Propachlor	mg/kg dry wt	< 0.05 ± 0.032	0.0 – 0.0062	No
Propanil	mg/kg dry wt	< 0.2 ± 0.12	0.0 – 0.0123	No
Propazine	mg/kg dry wt	< 0.03 ± 0.012	0.0 – 0.0031	No
Propiconazole	mg/kg dry wt	< 0.05 ± 0.027	0.0 – 0.0044	No
Pyriproxyfen	mg/kg dry wt	< 0.05 ± 0.028	0.0 – 0.0062	No
Quizalofop-ethyl	mg/kg dry wt	< 0.05 ± 0.0048	0.0 – 0.0062	No
Simazine	mg/kg dry wt	< 0.05 ± 0.029	0.0 – 0.0062	No
Simetryn	mg/kg dry wt	< 0.05 ± 0.025	0.0 – 0.0062	No
Sulfentrazone	mg/kg dry wt	< 0.3 ± 0.019	0.0 – 0.031	No
TCMTB [2-(thiocyanomethylthio) benzothiazole,Busan]	mg/kg dry wt	< 0.10 ± 0.046	0.0 – 0.0123	No
Tebuconazole	mg/kg dry wt	< 0.05 ± 0.020	0.0 – 0.0062	No
Terbacil	mg/kg dry wt	< 0.05 ± 0.028	0.0 – 0.0062	No
Terbumeton	mg/kg dry wt	< 0.05 ± 0.027	0.0 – 0.0062	No
Terbuthylazine	mg/kg dry wt	< 0.03 ± 0.012	0.0 – 0.0031	No
Terbuthylazine-desethyl	mg/kg dry wt	< 0.05 ± 0.031	0.0 – 0.0062	No
Terbutryn	mg/kg dry wt	< 0.05 ± 0.029	0.0 – 0.0062	No
Thiabendazole	mg/kg dry wt	< 0.3 ± 0.019	0.0 – 0.031	No
Thiobencarb	mg/kg dry wt	< 0.05 ± 0.028	0.0 – 0.0062	No
Tolylfluanid	mg/kg dry wt	< 0.03 ± 0.0093	0.0 – 0.0031	No
Triazophos	mg/kg dry wt	< 0.05 ± 0.028	0.0 – 0.0062	No
Trifluralin	mg/kg dry wt	< 0.05 ± 0.032	0.0 – 0.0062	No
Vinclozolin	mg/kg dry wt	< 0.05 ± 0.029	0.0 – 0.0062	No

QC Spike QCs

LCS OC/PAH PrepWS xsSHOC - WS: Organochlorine Pesticides Soil Analysis: 9225.2				
		Results	Control Limits	Outside Limit (Yes/No)
Aldrin	%	101 ± 31	80 – 121	No
alpha-BHC	%	101 ± 31	76 – 121	No
beta-BHC	%	90 ± 35	75 – 113	No
delta-BHC	%	100 ± 35	74 – 114	No
gamma-BHC (Lindane)	%	96 ± 27	78 – 116	No
cis-Chlordane	%	92 ± 30	78 – 118	No
trans-Chlordane	%	82 ± 25	76 – 121	No
2,4'-DDD	%	97 ± 35	75 – 114	No
4,4'-DDD	%	103 ± 50	75 – 120	No
2,4'-DDE	%	113 ± 37	73 – 118	No
4,4'-DDE	%	88 ± 45	73 – 116	No
2,4'-DDT	%	100 ± 53	70 – 124	No
4,4'-DDT	%	89 ± 52	65 – 120	No
Dieldrin	%	98 ± 44	84 – 124	No
Endosulfan I	%	102 ± 37	81 – 120	No
Endosulfan II	%	88 ± 39	72 – 117	No

LCS OC/PAH PrepWS xsSHOC - WS: Organochlorine Pesticides Soil Analysis: 9225.2				
		Results	Control Limits	Outside Limit (Yes/No)
Endosulfan sulphate	%	101 ± 63	76 – 120	No
Endrin	%	105 ± 70	78 – 124	No
Endrin aldehyde	%	103 ± 58	84 – 127	No
Endrin ketone	%	95 ± 46	69 – 115	No
Heptachlor	%	105 ± 36	74 – 120	No
Heptachlor epoxide	%	104 ± 30	79 – 119	No
Hexachlorobenzene	%	89 ± 31	77 – 116	No
Methoxychlor	%	97 ± 65	70 – 125	No

LCS OC/PAH PrepWS xsSHOC - WS: Organochlorine Pesticides Soil Analysis: 9226.2				
		Results	Control Limits	Outside Limit (Yes/No)
Aldrin	%	112 ± 34	80 – 121	No
alpha-BHC	%	111 ± 34	76 – 121	No
beta-BHC	%	99 ± 38	75 – 113	No
delta-BHC	%	112 ± 39	74 – 114	No
gamma-BHC (Lindane)	%	107 ± 30	78 – 116	No
cis-Chlordane	%	104 ± 34	78 – 118	No
trans-Chlordane	%	91 ± 28	76 – 121	No
2,4'-DDD	%	108 ± 39	75 – 114	No
4,4'-DDD	%	115 ± 56	75 – 120	No
2,4'-DDE	%	117 ± 38	73 – 118	No
4,4'-DDE	%	100 ± 51	73 – 116	No
2,4'-DDT	%	113 ± 59	70 – 124	No
4,4'-DDT	%	102 ± 60	65 – 120	No
Dieldrin	%	109 ± 48	84 – 124	No
Endosulfan I	%	114 ± 42	81 – 120	No
Endosulfan II	%	100 ± 45	72 – 117	No
Endosulfan sulphate	%	112 ± 70	76 – 120	No
Endrin	%	118 ± 78	78 – 124	No
Endrin aldehyde	%	115 ± 65	84 – 127	No
Endrin ketone	%	106 ± 51	69 – 115	No
Heptachlor	%	117 ± 40	74 – 120	No
Heptachlor epoxide	%	115 ± 33	79 – 119	No
Hexachlorobenzene	%	100 ± 35	77 – 116	No
Methoxychlor	%	109 ± 72	70 – 125	No

Screen LCS Mix5+ - Multiresidue Soil Analysis Worksheet: 4016.2				
		Results	Control Limits	Outside Limit (Yes/No)
Acetochlor	%	72 ± 25	45 – 133	No
Cyanazine	%	84 ± 38	44 – 106	No
Dichlorvos	%	57 ± 38	16.0 – 95	No
Fluvalinate	%	74 ± 49	43 – 95	No
Furalaxyl	%	84 ± 30	51 – 122	No
Hexaconazole	%	58 ± 35	38 – 92	No
IPBC (3-Iodo-2-propynyl-n-butylcarbamate)	%	39 ± 14	27 – 87	No
Pyriproxyfen	%	71 ± 28	52 – 103	No

Screen LCS Mix5+ - Multiresidue Soil Analysis Worksheet: 4016.2				
		Results	Control Limits	Outside Limit (Yes/No)
TCMTB [2-(thiocyanomethylthio) benzothiazole,Busan]	%	58 ± 26	21 – 92	No
Thiobencarb	%	89 ± 33	50 – 120	No

LCS OC/PAH PrepWS xsSHOC - WS: Organochlorine Pesticides Soil Analysis: 9229.2				
		Results	Control Limits	Outside Limit (Yes/No)
Aldrin	%	104 ± 32	80 – 121	No
alpha-BHC	%	102 ± 31	76 – 121	No
beta-BHC	%	101 ± 39	75 – 113	No
delta-BHC	%	105 ± 36	74 – 114	No
gamma-BHC (Lindane)	%	99 ± 28	78 – 116	No
cis-Chlordane	%	99 ± 32	78 – 118	No
trans-Chlordane	%	85 ± 26	76 – 121	No
2,4'-DDD	%	102 ± 37	75 – 114	No
4,4'-DDD	%	109 ± 53	75 – 120	No
2,4'-DDE	%	123 ± 40	73 – 118	**Yes** [#1]
4,4'-DDE	%	96 ± 49	73 – 116	No
2,4'-DDT	%	107 ± 56	70 – 124	No
4,4'-DDT	%	99 ± 58	65 – 120	No
Dieldrin	%	103 ± 46	84 – 124	No
Endosulfan I	%	108 ± 39	81 – 120	No
Endosulfan II	%	99 ± 44	72 – 117	No
Endosulfan sulphate	%	104 ± 65	76 – 120	No
Endrin	%	107 ± 71	78 – 124	No
Endrin aldehyde	%	108 ± 61	84 – 127	No
Endrin ketone	%	97 ± 47	69 – 115	No
Heptachlor	%	106 ± 37	74 – 120	No
Heptachlor epoxide	%	109 ± 31	79 – 119	No
Hexachlorobenzene	%	97 ± 33	77 – 116	No
Methoxychlor	%	118 ± 78	70 – 125	No

Screen LCS Mix2&4 - Multiresidue Soil Analysis Worksheet: 4018.2				
		Results	Control Limits	Outside Limit (Yes/No)
Alachlor	%	91 ± 32	54 – 112	No
Atrazine-desethyl	%	77 ± 26	44 – 102	No
Benalaxyl	%	99 ± 31	55 – 105	No
Bitertanol	%	20 ± 13	31 – 114	**Yes** [#2]
Bromopropylate	%	44 ± 14	46 – 100	**Yes** [#2]
Butachlor	%	69 ± 24	44 – 113	No
Chlorothalonil	%	84 ± 56	29 – 124	No
Chlortoluron	%	137 ± 67	29 – 134	**Yes** [#3]
Cyhalothrin	%	64 ± 34	41 – 101	No
Cypermethrin	%	79 ± 34	37 – 120	No
Deltamethrin (including Tralomethrin)	%	56 ± 37	41 – 122	No
Dichlofluanid	%	87 ± 34	31 – 126	No
Difenoconazole	%	52 ± 35	37 – 115	No
Dimethoate	%	32 ± 16	33 – 115	**Yes** [#2]

Screen LCS Mix2&4 - Multiresidue Soil Analysis Worksheet: 4018.2				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Diuron	%	107 ± 57	21 – 110	No
Fenpropimorph	%	36 ± 24	31 – 90	No
Fluazifop-butyl	%	81 ± 27	51 – 105	No
Fluometuron	%	96 ± 26	17.0 – 125	No
Haloxyfop-methyl	%	81 ± 26	60 – 107	No
Linuron	%	89 ± 36	12.0 – 126	No
Metalaxyl	%	93 ± 25	45 – 105	No
Metolachlor	%	104 ± 32	58 – 113	No
Molinate	%	111 ± 44	58 – 115	No
Norflurazon	%	97 ± 34	43 – 100	No
Oxyfluorfen	%	65 ± 20	37 – 98	No
Parathion-ethyl	%	68 ± 21	36 – 108	No
Parathion-methyl	%	69 ± 24	31 – 113	No
Pendimethalin	%	77 ± 23	38 – 122	No
Prochloraz	%	12.0 ± 8.0	23 – 105	**Yes** [#2]
Procymidone	%	93 ± 32	64 – 111	No
Prometryn	%	103 ± 38	49 – 120	No
Propachlor	%	107 ± 25	50 – 107	No
Propanil	%	82 ± 30	43 – 94	No
Propazine	%	78 ± 28	56 – 116	No
Simazine	%	69 ± 24	49 – 104	No
Simetryn	%	64 ± 29	37 – 100	No
Tebuconazole	%	63 ± 35	58 – 117	No
Terbacil	%	56 ± 22	13.0 – 120	No
Terbuthylazine	%	85 ± 28	53 – 112	No
Tolylfluanid	%	80 ± 39	26 – 130	No
Trifluralin	%	69 ± 17	48 – 107	No

Sample Spike QCs

Spike OC/PAH PrepWS xsSHOC - WS: Organochlorine Pesticides Soil Analysis: 9225.15				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Aldrin	%	107 ± 33	83 – 122	No
alpha-BHC	%	106 ± 32	80 – 122	No
beta-BHC	%	98 ± 38	79 – 114	No
delta-BHC	%	108 ± 37	76 – 118	No
gamma-BHC (Lindane)	%	102 ± 29	80 – 117	No
cis-Chlordane	%	99 ± 32	80 – 120	No
trans-Chlordane	%	89 ± 27	79 – 121	No
2,4'-DDD	%	104 ± 38	74 – 120	No
4,4'-DDD	%	110 ± 53	75 – 125	No
2,4'-DDE	%	117 ± 38	74 – 119	No
4,4'-DDE	%	95 ± 48	76 – 120	No
2,4'-DDT	%	108 ± 57	72 – 126	No
4,4'-DDT	%	97 ± 57	63 – 123	No
Dieldrin	%	105 ± 47	86 – 126	No
Endosulfan I	%	109 ± 40	83 – 120	No

Spike OC/PAH PrepWS xsSHOC - WS: Organochlorine Pesticides Soil Analysis: 9225.15				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Endosulfan II	%	94 ± 42	72 – 119	No
Endosulfan sulphate	%	109 ± 68	78 – 124	No
Endrin	%	114 ± 76	82 – 126	No
Endrin aldehyde	%	110 ± 62	84 – 131	No
Endrin ketone	%	102 ± 49	70 – 119	No
Heptachlor	%	111 ± 38	79 – 123	No
Heptachlor epoxide	%	111 ± 32	81 – 119	No
Hexachlorobenzene	%	95 ± 33	77 – 119	No
Methoxychlor	%	107 ± 71	71 – 133	No

Spike OC/PAH PrepWS xsSHOC - WS: Organochlorine Pesticides Soil Analysis: 9226.12				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Aldrin	%	117 ± 36	83 – 122	No
alpha-BHC	%	116 ± 35	80 – 122	No
beta-BHC	%	107 ± 41	79 – 114	No
delta-BHC	%	117 ± 40	76 – 118	No
gamma-BHC (Lindane)	%	111 ± 32	80 – 117	No
cis-Chlordane	%	107 ± 35	80 – 120	No
trans-Chlordane	%	94 ± 29	79 – 121	No
2,4'-DDD	%	114 ± 42	74 – 120	No
4,4'-DDD	%	122 ± 59	75 – 125	No
2,4'-DDE	%	128 ± 41	74 – 119	**Yes** [#4]
4,4'-DDE	%	102 ± 52	76 – 120	No
2,4'-DDT	%	112 ± 59	72 – 126	No
4,4'-DDT	%	96 ± 56	63 – 123	No
Dieldrin	%	113 ± 50	86 – 126	No
Endosulfan I	%	118 ± 43	83 – 120	No
Endosulfan II	%	102 ± 45	72 – 119	No
Endosulfan sulphate	%	116 ± 72	78 – 124	No
Endrin	%	122 ± 81	82 – 126	No
Endrin aldehyde	%	118 ± 67	84 – 131	No
Endrin ketone	%	111 ± 54	70 – 119	No
Heptachlor	%	123 ± 42	79 – 123	No
Heptachlor epoxide	%	119 ± 34	81 – 119	No
Hexachlorobenzene	%	102 ± 35	77 – 119	No
Methoxychlor	%	111 ± 74	71 – 133	No

Screen Sample Spike Mix5+ - Multiresidue Soil Analysis Worksheet: 4016.10				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Acetochlor	%	65 ± 22	48 – 114	No
Cyanazine	%	90 ± 41	48 – 121	No
Dichlorvos	%	131 ± 87	10.0 – 169	No
Fluvalinate	%	51 ± 34	39 – 151	No
Furalaxyl	%	101 ± 36	52 – 128	No
Hexaconazole	%	76 ± 46	43 – 117	No
IPBC (3-Iodo-2-propynyl-n-butylcarbamate)	%	127 ± 45	28 – 105	**Yes** [#4]
Pyriproxyfen	%	59 ± 24	58 – 114	No

Screen Sample Spike Mix5+ - Multiresidue Soil Analysis Worksheet: 4016.10				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
TCMTB [2-(thiocyanomethylthio) benzothiazole,Busan]	%	58 ± 26	15.0 – 117	No
Thiobencarb	%	92 ± 35	60 – 119	No

Spike OC/PAH PrepWS xsSHOC - WS: Organochlorine Pesticides Soil Analysis: 9229.36				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Aldrin	%	105 ± 32	83 – 122	No
alpha-BHC	%	109 ± 33	80 – 122	No
beta-BHC	%	105 ± 40	79 – 114	No
delta-BHC	%	110 ± 38	76 – 118	No
gamma-BHC (Lindane)	%	106 ± 30	80 – 117	No
cis-Chlordane	%	101 ± 33	80 – 120	No
trans-Chlordane	%	87 ± 27	79 – 121	No
2,4'-DDD	%	104 ± 38	74 – 120	No
4,4'-DDD	%	112 ± 54	75 – 125	No
2,4'-DDE	%	129 ± 42	74 – 119	**Yes** [#4]
4,4'-DDE	%	100 ± 51	76 – 120	No
2,4'-DDT	%	111 ± 58	72 – 126	No
4,4'-DDT	%	100 ± 59	63 – 123	No
Dieldrin	%	106 ± 47	86 – 126	No
Endosulfan I	%	110 ± 40	83 – 120	No
Endosulfan II	%	100 ± 45	72 – 119	No
Endosulfan sulphate	%	105 ± 66	78 – 124	No
Endrin	%	112 ± 74	82 – 126	No
Endrin aldehyde	%	110 ± 62	84 – 131	No
Endrin ketone	%	98 ± 48	70 – 119	No
Heptachlor	%	118 ± 41	79 – 123	No
Heptachlor epoxide	%	114 ± 32	81 – 119	No
Hexachlorobenzene	%	99 ± 34	77 – 119	No
Methoxychlor	%	125 ± 83	71 – 133	No

Screen Sample Spike Mix2&4 - Multiresidue Soil Analysis Worksheet: 4018.5				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Alachlor	%	74 ± 26	54 – 109	No
Atrazine-desethyl	%	77 ± 26	42 – 101	No
Benalaxyl	%	91 ± 28	64 – 109	No
Bitertanol	%	132 ± 82	30 – 171	No
Bromopropylate	%	96 ± 29	54 – 117	No
Butachlor	%	88 ± 31	56 – 116	No
Chlorothalonil	%	68 ± 45	26 – 129	No
Chlortoluron	%	100 ± 49	30 – 190	No
Cyhalothrin	%	90 ± 47	56 – 116	No
Cypermethrin	%	119 ± 51	51 – 144	No
Deltamethrin (including Tralomethrin)	%	112 ± 74	51 – 171	No
Dichlofluanid	%	89 ± 35	27 – 137	No
Difenoconazole	%	99 ± 66	53 – 132	No
Dimethoate	%	74 ± 36	37 – 127	No

Screen Sample Spike Mix2&4 - Multiresidue Soil Analysis Worksheet: 4018.5				
		Results	Control Limits	Outside Limit (Yes/No)
Diuron	%	99 ± 53	17.0 – 158	No
Fenpropimorph	%	107 ± 71	9.0 – 138	No
Fluazifop-butyl	%	88 ± 30	63 – 110	No
Fluometuron	%	109 ± 29	15.0 – 140	No
Haloxyfop-methyl	%	91 ± 29	57 – 120	No
Linuron	%	96 ± 39	11.0 – 124	No
Metalaxyl	%	73 ± 20	51 – 102	No
Metolachlor	%	95 ± 29	61 – 124	No
Molinate	%	112 ± 45	62 – 128	No
Norflurazon	%	96 ± 34	54 – 111	No
Oxyfluorfen	%	78 ± 24	35 – 122	No
Parathion-ethyl	%	81 ± 25	35 – 130	No
Parathion-methyl	%	70 ± 24	39 – 109	No
Pendimethalin	%	90 ± 27	45 – 131	No
Prochloraz	%	95 ± 63	22 – 152	No
Procymidone	%	92 ± 32	58 – 115	No
Prometryn	%	95 ± 35	57 – 120	No
Propachlor	%	112 ± 26	48 – 118	No
Propanil	%	84 ± 31	42 – 112	No
Propazine	%	63 ± 22	56 – 104	No
Simazine	%	64 ± 22	53 – 98	No
Simetryn	%	78 ± 35	37 – 118	No
Tebuconazole	%	119 ± 65	69 – 135	No
Terbacil	%	102 ± 40	30 – 129	No
Terbuthylazine	%	69 ± 23	48 – 105	No
Tolylfluanid	%	93 ± 45	13.0 – 141	No
Trifluralin	%	87 ± 22	46 – 120	No

Reference Material QCs

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 12870.14				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	11.6 ± 2.2	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.84 ± 0.16	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	26.0 ± 3.7	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	13.1 ± 2.5	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	33.8 ± 6.4	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.320 ± 0.078	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	15.0 ± 2.4	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	198 ± 30	166 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 12870.58				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	11.1 ± 2.2	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.83 ± 0.16	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	27.5 ± 3.9	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	13.3 ± 2.5	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	33.5 ± 6.3	28 – 38	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 12870.58				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Mercury	mg/kg dry wt	0.305 ± 0.077	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	14.8 ± 2.3	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	192 ± 29	166 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 12871.14				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	10.4 ± 2.1	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.81 ± 0.16	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	25.9 ± 3.7	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	12.4 ± 2.4	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	32.0 ± 6.0	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.335 ± 0.079	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	13.2 ± 2.2	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	184 ± 28	166 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 12871.45				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	11.4 ± 2.2	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.88 ± 0.17	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	27.1 ± 3.8	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	13.0 ± 2.5	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	34.6 ± 6.5	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.338 ± 0.079	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	14.8 ± 2.3	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	195 ± 29	166 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 12871.72				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	10.2 ± 2.1	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.80 ± 0.16	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	24.4 ± 3.5	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	13.3 ± 2.5	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	31.7 ± 6.0	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.293 ± 0.076	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	13.6 ± 2.2	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	186 ± 28	166 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 12873.14				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	11.7 ± 2.2	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.91 ± 0.17	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	28.8 ± 4.0	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	13.4 ± 2.5	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	34.4 ± 6.5	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.362 ± 0.081	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	14.8 ± 2.4	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	205 ± 31	166 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 12873.56				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	11.5 ± 2.2	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.89 ± 0.17	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	27.2 ± 3.8	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	13.3 ± 2.5	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	33.1 ± 6.2	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.321 ± 0.078	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	14.2 ± 2.3	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	200 ± 30	166 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 12874.14				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	11.1 ± 2.2	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.88 ± 0.17	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	26.3 ± 3.7	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	13.3 ± 2.5	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	34.8 ± 6.5	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.249 ± 0.073	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	14.0 ± 2.3	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	198 ± 30	166 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 12874.53				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	11.1 ± 2.2	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.89 ± 0.17	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	26.8 ± 3.8	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	13.4 ± 2.5	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	34.1 ± 6.4	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.328 ± 0.078	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	14.6 ± 2.3	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	198 ± 30	166 – 230	No

Analyst's Comments

[#1] It was noted that the Laboratory Control Spike (LCS) recovery was elevated and above the acceptable recovery range. The corresponding sample results were accepted as there were no related positives detected in the samples.

[#2] It was noted that the Laboratory Control Spike (LCS) recovery for this analyte was outside the acceptable recovery range. It is known that some compounds are affected by the un-ashed sand matrix used as the LCS.

[#3] It was noted that the Laboratory Control Spike (LCS) recovery was elevated and above the acceptable recovery range. The corresponding sample results were accepted because the sample spike recovery was within the expected range.

[#4] The sample spike recovery was elevated and above the acceptable recovery range. The corresponding sample results were accepted as there were no related positives detected in the sample.

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Certificate of Analysis

Client:	Aurecon New Zealand Limited	**Lab No:**	4006009 SPv2
Contact:	Andrew Allcock C/- Aurecon New Zealand Limited PO Box 9762 Newmarket Auckland 1149	**Date Received:**	10-Oct-2025
		Date Reported:	28-Oct-2025 **(Amended)**
		Quote No:	82714
		Order No:	
		Client Reference:	
		Submitted By:	Andrew Allcock

Sample Type: Soil

Sample Name:		BH2B_1160 1.40m 10-Oct-2025	BH2B_1160 10.70m 10-Oct-2025	BH2B_1160 16.00m 10-Oct-2025
Lab Number:		4006009.1	4006009.2	4006009.3
Individual Tests				
Dry Matter	g/100g as rcvd	69	79	76
Benzene	mg/kg dry wt	< 0.3	< 0.2	< 0.3
2-Butanone (MEK)	mg/kg dry wt	< 50	< 40	< 50
Carbon disulphide	mg/kg dry wt	< 0.3	< 0.3	< 0.3
4-Methylpentan-2-one (MIBK)	mg/kg dry wt	< 10	< 8	< 9
Acetone	mg/kg dry wt	< 50	< 40	< 50
Ethylbenzene	mg/kg dry wt	< 0.3	1.1	0.9
Methyl tert-butylether (MTBE)	mg/kg dry wt	< 0.3	< 0.3	< 0.3
Naphthalene	mg/kg dry wt	< 0.3	< 0.3	< 0.3
Toluene	mg/kg dry wt	< 0.3	0.5	1.0
m&p-Xylene	mg/kg dry wt	< 0.5	2.9	2.4
o-Xylene	mg/kg dry wt	< 0.3	0.7	0.7
Heavy Metals with Mercury, Screen Level				
Total Recoverable Arsenic	mg/kg dry wt	25	-	-
Total Recoverable Cadmium	mg/kg dry wt	0.17	-	-
Total Recoverable Chromium	mg/kg dry wt	17	-	-
Total Recoverable Copper	mg/kg dry wt	590	-	-
Total Recoverable Lead	mg/kg dry wt	142	-	-
Total Recoverable Mercury	mg/kg dry wt	< 0.10	-	-
Total Recoverable Nickel	mg/kg dry wt	5	-	-
Total Recoverable Zinc	mg/kg dry wt	210	-	-
Polycyclic Aromatic Hydrocarbons Screening in Soil*				
Total of Reported PAHs in Soil	mg/kg dry wt	< 0.4	< 0.3	< 0.4
1-Methylnaphthalene	mg/kg dry wt	< 0.014	0.022	0.028
2-Methylnaphthalene	mg/kg dry wt	< 0.014	0.025	0.028
Acenaphthylene	mg/kg dry wt	< 0.014	< 0.013	< 0.013
Acenaphthene	mg/kg dry wt	< 0.014	< 0.013	< 0.013
Anthracene	mg/kg dry wt	< 0.014	< 0.013	< 0.013
Benzo[a]anthracene	mg/kg dry wt	< 0.014	< 0.013	< 0.013
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.014	< 0.013	< 0.013
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 0.034	< 0.030	< 0.032
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 0.034	< 0.030	< 0.032
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.014	< 0.013	< 0.013
Benzo[e]pyrene	mg/kg dry wt	< 0.014	< 0.013	< 0.013
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.014	< 0.013	< 0.013

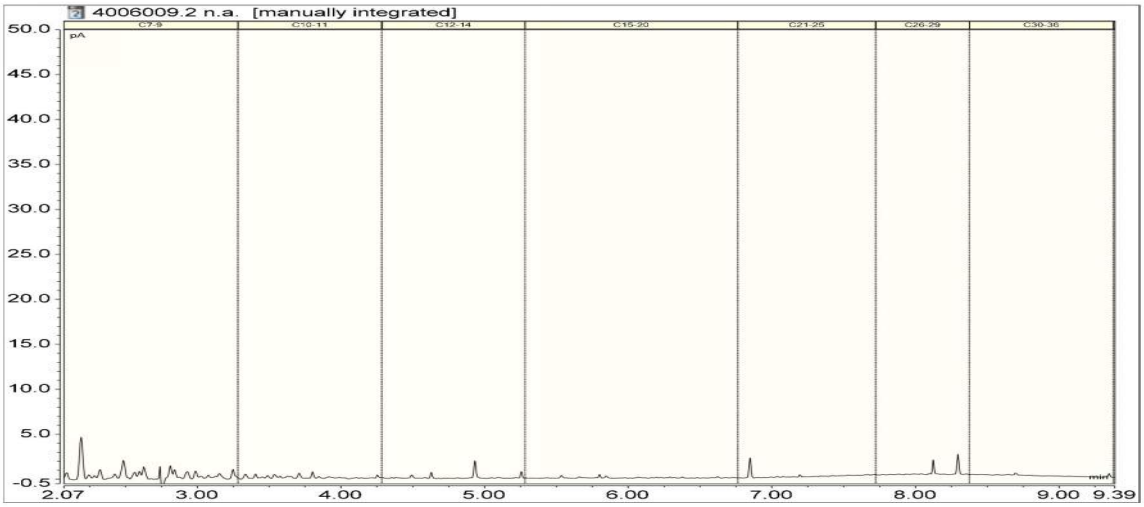
This Laboratory is accredited by International Accreditation New Zealand (IANZ), which represents New Zealand in the International Laboratory Accreditation Cooperation (ILAC). Through the ILAC Mutual Recognition Arrangement (ILAC-MRA) this accreditation is internationally recognised.
The tests reported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

Sample Type: Soil				
Sample Name:		BH2B_1160 1.40m 10-Oct-2025	BH2B_1160 10.70m 10-Oct-2025	BH2B_1160 16.00m 10-Oct-2025
Lab Number:		4006009.1	4006009.2	4006009.3
Polycyclic Aromatic Hydrocarbons Screening in Soil*				
Benzo[k]fluoranthene	mg/kg dry wt	< 0.014	< 0.013	< 0.013
Chrysene	mg/kg dry wt	< 0.014	< 0.013	< 0.013
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.014	< 0.013	< 0.013
Fluoranthene	mg/kg dry wt	< 0.014	< 0.013	< 0.013
Fluorene	mg/kg dry wt	< 0.014	< 0.013	< 0.013
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.014	< 0.013	< 0.013
Naphthalene	mg/kg dry wt	< 0.07	< 0.07	< 0.07
Perylene	mg/kg dry wt	< 0.014	0.020	0.018
Phenanthrene	mg/kg dry wt	< 0.014	< 0.013	< 0.013
Pyrene	mg/kg dry wt	< 0.014	< 0.013	< 0.013
Total Petroleum Hydrocarbons in Soil				
C7 - C9	mg/kg dry wt	< 20	49	56
C10 - C14	mg/kg dry wt	< 20	27	27
C15 - C36	mg/kg dry wt	< 40	83	42
Total hydrocarbons (C7 - C36)	mg/kg dry wt	< 80	159	125
BTEX in VOC Soils by Headspace GC-MS				
Benzene	mg/kg dry wt	< 0.03	0.03	0.05
Ethylbenzene	mg/kg dry wt	< 0.03	1.16	1.04
Toluene	mg/kg dry wt	< 0.03	0.47	1.00
m&p-Xylene	mg/kg dry wt	< 0.05	3.5	3.0
o-Xylene	mg/kg dry wt	< 0.03	0.76	0.70
Halogenated Aliphatics in VOC Soils by Headspace GC-MS				
Bromomethane (Methyl Bromide)	mg/kg dry wt	< 0.03	< 0.03	< 0.03
Carbon tetrachloride	mg/kg dry wt	< 0.03	< 0.03	< 0.03
Chloroethane	mg/kg dry wt	< 0.03	< 0.03	< 0.03
Chloromethane	mg/kg dry wt	< 0.03	< 0.03	< 0.03
1,2-Dibromo-3-chloropropane	mg/kg dry wt	< 0.05	< 0.05	< 0.05
1,2-Dibromoethane (ethylene dibromide, EDB)	mg/kg dry wt	< 0.03	< 0.03	< 0.03
Dibromomethane	mg/kg dry wt	< 0.03	< 0.03	< 0.03
1,3-Dichloropropane	mg/kg dry wt	< 0.03	< 0.03	< 0.03
Dichlorodifluoromethane	mg/kg dry wt	< 0.05	< 0.05	< 0.05
1,1-Dichloroethane	mg/kg dry wt	< 0.03	< 0.03	< 0.03
1,2-Dichloroethane	mg/kg dry wt	< 0.03	< 0.03	< 0.03
1,1-Dichloroethene	mg/kg dry wt	< 0.03	< 0.03	< 0.03
cis-1,2-Dichloroethene	mg/kg dry wt	< 0.03	< 0.03	< 0.03
trans-1,2-Dichloroethene	mg/kg dry wt	< 0.03	< 0.03	< 0.03
Dichloromethane (methylene chloride)	mg/kg dry wt	< 0.5	< 0.4	< 0.5
1,2-Dichloropropane	mg/kg dry wt	< 0.03	< 0.03	< 0.03
1,1-Dichloropropene	mg/kg dry wt	< 0.03	< 0.03	< 0.03
cis-1,3-Dichloropropene	mg/kg dry wt	< 0.03	< 0.03	< 0.03
trans-1,3-Dichloropropene	mg/kg dry wt	< 0.03	< 0.03	< 0.03
Hexachlorobutadiene	mg/kg dry wt	< 0.03	< 0.03	< 0.03
1,1,1,2-Tetrachloroethane	mg/kg dry wt	< 0.03	< 0.03	< 0.03
1,1,2,2-Tetrachloroethane	mg/kg dry wt	< 0.03	< 0.03	< 0.03
Tetrachloroethene (tetrachloroethylene)	mg/kg dry wt	< 0.03	< 0.03	< 0.03
1,1,1-Trichloroethane	mg/kg dry wt	< 0.03	< 0.03	< 0.03
1,1,2-Trichloroethane	mg/kg dry wt	< 0.03	< 0.03	< 0.03
Trichloroethene (trichloroethylene)	mg/kg dry wt	< 0.03	< 0.03	< 0.03
Trichlorofluoromethane	mg/kg dry wt	< 0.03	< 0.03	< 0.03
1,2,3-Trichloropropane	mg/kg dry wt	< 0.05	< 0.05	< 0.05
1,1,2-Trichlorotrifluoroethane (Freon 113)	mg/kg dry wt	< 0.03	< 0.03	< 0.03

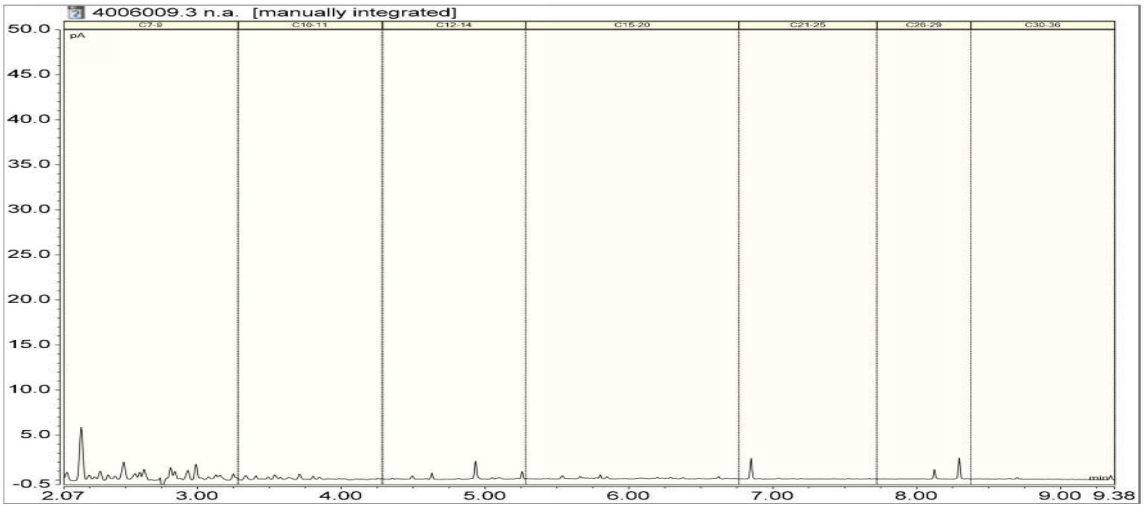
Sample Type: Soil				
Sample Name:		BH2B_1160 1.40m 10-Oct-2025	BH2B_1160 10.70m 10-Oct-2025	BH2B_1160 16.00m 10-Oct-2025
Lab Number:		4006009.1	4006009.2	4006009.3
Halogenated Aliphatics in VOC Soils by Headspace GC-MS				
Vinyl chloride	mg/kg dry wt	< 0.03	< 0.03	< 0.03
Halogenated Aliphatics in VOC Soils by Headspace GC-MS				
Bromomethane (Methyl Bromide)	mg/kg dry wt	< 0.3	< 0.3	< 0.3
Carbon tetrachloride	mg/kg dry wt	< 0.3	< 0.3	< 0.3
Chloroethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3
Chloromethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3
1,2-Dibromo-3-chloropropane	mg/kg dry wt	< 0.5	< 0.5	< 0.5
1,2-Dibromoethane (ethylene dibromide, EDB)	mg/kg dry wt	< 0.3	< 0.3	< 0.3
Dibromomethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3
1,3-Dichloropropane	mg/kg dry wt	< 0.3	< 0.3	< 0.3
Dichlorodifluoromethane	mg/kg dry wt	< 0.5	< 0.5	< 0.5
1,1-Dichloroethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3
1,2-Dichloroethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3
1,1-Dichloroethene	mg/kg dry wt	< 0.3	< 0.3	< 0.3
cis-1,2-Dichloroethene	mg/kg dry wt	< 0.3	< 0.3	< 0.3
trans-1,2-Dichloroethene	mg/kg dry wt	< 0.3	< 0.3	< 0.3
Dichloromethane (methylene chloride)	mg/kg dry wt	< 5	< 4	< 5
1,2-Dichloropropane	mg/kg dry wt	< 0.3	< 0.3	< 0.3
1,1-Dichloropropene	mg/kg dry wt	< 0.3	< 0.3	< 0.3
cis-1,3-Dichloropropene	mg/kg dry wt	< 0.3	< 0.3	< 0.3
trans-1,3-Dichloropropene	mg/kg dry wt	< 0.3	< 0.3	< 0.3
Hexachlorobutadiene	mg/kg dry wt	< 0.3	< 0.3	< 0.3
1,1,1,2-Tetrachloroethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3
1,1,2,2-Tetrachloroethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3
Tetrachloroethene (tetrachloroethylene)	mg/kg dry wt	< 0.3	< 0.3	< 0.3
1,1,1-Trichloroethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3
1,1,2-Trichloroethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3
Trichloroethene (trichloroethylene)	mg/kg dry wt	< 0.3	< 0.3	< 0.3
Trichlorofluoromethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3
1,2,3-Trichloropropane	mg/kg dry wt	< 0.5	< 0.5	< 0.5
1,1,2-Trichlorotrifluoroethane (Freon 113)	mg/kg dry wt	< 0.3	< 0.3	< 0.3
Vinyl chloride	mg/kg dry wt	< 0.3	< 0.3	< 0.3
Haloaromatics in VOC Soils by Headspace GC-MS				
Bromobenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3
1,3-Dichlorobenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3
4-Chlorotoluene	mg/kg dry wt	< 0.3	< 0.3	< 0.3
Chlorobenzene (monochlorobenzene)	mg/kg dry wt	< 0.3	< 0.3	< 0.3
1,2-Dichlorobenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3
1,4-Dichlorobenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3
2-Chlorotoluene	mg/kg dry wt	< 0.3	< 0.3	< 0.3
1,2,3-Trichlorobenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3
1,2,4-Trichlorobenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3
1,3,5-Trichlorobenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3
Halogenated Aromatics in VOC Soils by Headspace GC-MS*				
Bromobenzene	mg/kg dry wt	< 0.03	< 0.03	< 0.03
1,3-Dichlorobenzene	mg/kg dry wt	< 0.03	< 0.03	< 0.03
4-Chlorotoluene	mg/kg dry wt	< 0.03	< 0.03	< 0.03
Chlorobenzene (monochlorobenzene)	mg/kg dry wt	< 0.03	< 0.03	< 0.03
1,2-Dichlorobenzene	mg/kg dry wt	< 0.03	< 0.03	< 0.03
1,2-Dichloropropane	mg/kg dry wt	< 0.03	< 0.03	< 0.03

Sample Type: Soil				
Sample Name:		BH2B_1160 1.40m 10-Oct-2025	BH2B_1160 10.70m 10-Oct-2025	BH2B_1160 16.00m 10-Oct-2025
Lab Number:		4006009.1	4006009.2	4006009.3
Halogenated Aromatics in VOC Soils by Headspace GC-MS*				
1,4-Dichlorobenzene*	mg/kg dry wt	< 0.03	< 0.03	< 0.03
2-Chlorotoluene	mg/kg dry wt	< 0.03	< 0.03	< 0.03
1,2,3-Trichlorobenzene	mg/kg dry wt	< 0.03	< 0.03	< 0.03
1,2,4-Trichlorobenzene	mg/kg dry wt	< 0.03	< 0.03	< 0.03
1,3,5-Trichlorobenzene	mg/kg dry wt	< 0.03	< 0.03	< 0.03
Monoaromatic Hydrocarbons in VOC Soils by Headspace GC-MS				
n-Butylbenzene	mg/kg dry wt	< 0.03	0.17	0.07
tert-Butylbenzene	mg/kg dry wt	< 0.03	< 0.03	< 0.03
Isopropylbenzene (Cumene)	mg/kg dry wt	< 0.03	0.39	0.21
4-Isopropyltoluene (p-Cymene)	mg/kg dry wt	< 0.03	0.20	0.09
n-Propylbenzene	mg/kg dry wt	< 0.03	0.55	0.27
sec-Butylbenzene	mg/kg dry wt	< 0.03	0.14	0.07
Styrene	mg/kg dry wt	< 0.03	0.04	0.04
1,2,4-Trimethylbenzene	mg/kg dry wt	< 0.03	1.12	0.54
1,3,5-Trimethylbenzene	mg/kg dry wt	< 0.03	0.70	0.33
Monoaromatic Hydrocarbons in VOC Soils by Headspace GC-MS				
n-Butylbenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3
tert-Butylbenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3
Isopropylbenzene (Cumene)	mg/kg dry wt	< 0.3	0.4	0.3
4-Isopropyltoluene (p-Cymene)	mg/kg dry wt	< 0.3	0.3	< 0.3
n-Propylbenzene	mg/kg dry wt	< 0.3	0.5	0.3
sec-Butylbenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3
Styrene	mg/kg dry wt	< 0.3	< 0.3	< 0.3
1,2,4-Trimethylbenzene	mg/kg dry wt	< 0.3	1.0	0.5
1,3,5-Trimethylbenzene	mg/kg dry wt	< 0.3	0.6	0.4
Ketones in VOC Soils by Headspace GC-MS				
2-Butanone (MEK)	mg/kg dry wt	< 5	< 4	< 5
4-Methylpentan-2-one (MIBK)	mg/kg dry wt	< 1.0	< 0.8	< 0.9
Acetone	mg/kg dry wt	< 5	< 4	< 5
Methyl tert-butylether (MTBE)	mg/kg dry wt	< 0.03	< 0.03	< 0.03
Trihalomethanes in VOC Soils by Headspace GC-MS				
Bromodichloromethane	mg/kg dry wt	< 0.03	< 0.03	< 0.03
Bromoform (tribromomethane)	mg/kg dry wt	< 0.05	< 0.05	< 0.05
Chloroform (Trichloromethane)	mg/kg dry wt	< 0.03	< 0.03	< 0.03
Dibromochloromethane	mg/kg dry wt	< 0.03	< 0.03	< 0.03
Trihalomethanes in VOC Soils by Headspace GC-MS				
Bromodichloromethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3
Bromoform (tribromomethane)	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Chloroform (Trichloromethane)	mg/kg dry wt	< 0.3	< 0.3	< 0.3
Dibromochloromethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3
Other VOC in Soils by Headspace GC-MS				
Carbon disulphide	mg/kg dry wt	< 0.05	< 0.05	< 0.05
Naphthalene	mg/kg dry wt	< 0.05	0.06	< 0.05

4006009.2
BH2B_1160 10.70m 10-Oct-2025
Client Chromatogram for TPH by FID



4006009.3
BH2B_1160 16.00m 10-Oct-2025
Client Chromatogram for TPH by FID



Analyst's Comments

Amended Report: This certificate of analysis replaces report '4006009-SPv1' issued on 17-Oct-2025 at 4:36 pm.
Reason for amendment: Additional testing added as per clients request.

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request.
Unless otherwise indicated, analyses were performed at Hill Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Individual Tests			
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	1
Total of Reported PAHs in Soil	Sonication extraction, GC-MS/MS analysis. In-house based on US EPA 8270.	0.03 mg/kg dry wt	1-3
Dry Matter	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	1-3

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	BaP Potency Equivalence calculated from; Benzo(a)anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(j)fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Benzo(a)pyrene x 1.0 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Fluoranthene x 0.01 + Indeno(1,2,3-c,d)pyrene x 0.1. Ministry for the Environment. 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment.	0.024 mg/kg dry wt	1-3
Benzo[a]pyrene Toxic Equivalence (TEF)*	Benzo[a]pyrene Toxic Equivalence (TEF) calculated from; Benzo[a]pyrene x 1.0 + Benzo(a)anthracene x 0.1 + Benzo(b) fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Indeno(1,2,3-c,d)pyrene x 0.1. Guidelines for assessing and managing contaminated gasworks sites in New Zealand (GMG) (MfE, 1997).	0.024 mg/kg dry wt	1-3
TPH Oil Industry Profile + PAHscreen	Sonication extraction, GC-FID and GC-MS/MS analysis. Tested on as received sample. In-house based on US EPA 8015 and US EPA 8270.	0.010 - 70 mg/kg dry wt	1-3
Heavy Metals with Mercury, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required. US EPA 200.2 (modified), APHA 3125 B: Online Edition.	0.10 - 4 mg/kg dry wt	1
Volatile Organic Compounds Screening in Soil by Headspace GC-MS	Sonication extraction, Headspace GC-MS analysis. Tested on as received sample. In-house based on US EPA 8260 and 5021.	0.13 - 30 mg/kg dry wt	1-3
Volatile Organic Compounds Trace in Soil by Headspace GC-MS	Sonication extraction, Headspace GC-MS analysis. Tested on as received sample. In-house based on US EPA 8260 and 5021.	0.010 - 3 mg/kg dry wt	1-3
Total Petroleum Hydrocarbons in Soil			
Client Chromatogram for TPH by FID	Small peaks associated with QC compounds may be visible in chromatograms with low TPH concentrations. QC peaks are as follows: one peak in the C12 - 14 band, the C21 - 25 band and the C30 - 36 band. All QC peaks are corrected for in the reported TPH concentrations.	-	2-3
C7 - C9	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	1-3
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	1-3
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	1-3
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	1-3

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 15-Oct-2025 and 28-Oct-2025. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

This certificate of analysis must not be reproduced, except in full, without the written consent of the signatory.



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Quality Assurance Report

Client:	Aurecon New Zealand Limited	**Lab No:**	4006009	QCPv2
Contact:	Andrew Allcock	**Date Received:**	10-Oct-2025	
	C/- Aurecon New Zealand Limited	**Date Reported:**	28-Oct-2025	**(Amended)**
	PO Box 9762	**Quote No:**	82714	
	Newmarket	**Order No:**		
	Auckland 1149	**Client Reference:**		
		Submitted By:	Andrew Allcock	

Sample Specific QCs

Polycyclic Aromatic Hydrocarbons Screening in Soil

		4006009.1	Control Limits	Outside Limit (Yes/No)
1-methylnaphthalene-d10	%	105	65 – 130	No
Benzo[a]pyrene-d12	%	107	70 – 140	No
Fluoranthene-d10	%	102	66 – 130	No

System monitoring Compounds for VOC - % Recovery

		4006009.1	Control Limits	Outside Limit (Yes/No)
Dibromofluoromethane	%	105	80 – 120	No
Dibromofluoromethane	%	105	80 – 120	No
4-Bromofluorobenzene	%	89	80 – 120	No
4-Bromofluorobenzene	%	90	80 – 120	No
Toluene-d8	%	94	80 – 120	No
Toluene-d8	%	97	80 – 120	No

Polycyclic Aromatic Hydrocarbons Screening in Soil

		4006009.2	Control Limits	Outside Limit (Yes/No)
1-methylnaphthalene-d10	%	89	65 – 130	No
Benzo[a]pyrene-d12	%	98	70 – 140	No
Fluoranthene-d10	%	89	66 – 130	No

System monitoring Compounds for VOC - % Recovery

		4006009.2	Control Limits	Outside Limit (Yes/No)
Dibromofluoromethane	%	99	80 – 120	No
Dibromofluoromethane	%	95	80 – 120	No
4-Bromofluorobenzene	%	92	80 – 120	No
4-Bromofluorobenzene	%	99	80 – 120	No
Toluene-d8	%	99	80 – 120	No
Toluene-d8	%	108	80 – 120	No

Polycyclic Aromatic Hydrocarbons Screening in Soil

		4006009.3	Control Limits	Outside Limit (Yes/No)
1-methylnaphthalene-d10	%	98	65 – 130	No
Benzo[a]pyrene-d12	%	93	70 – 140	No
Fluoranthene-d10	%	102	66 – 130	No

System monitoring Compounds for VOC - % Recovery

		4006009.3	Control Limits	Outside Limit (Yes/No)
Dibromofluoromethane	%	99	80 – 120	No
Dibromofluoromethane	%	93	80 – 120	No

System monitoring Compounds for VOC - % Recovery				
		4006009.3	Control Limits	Outside Limit (Yes/No)
4-Bromofluorobenzene	%	89	80 – 120	No
4-Bromofluorobenzene	%	98	80 – 120	No
Toluene-d8	%	98	80 – 120	No
Toluene-d8	%	105	80 – 120	No

Blank QCs

Blank 1 PrepWS xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 17463.1				
		Results	Control Limits	Outside Limit (Yes/No)
1-Methylnaphthalene	mg/kg dry wt	< 0.010 ± 0.032	0.0 – 0.0100	No
2-Methylnaphthalene	mg/kg dry wt	< 0.010 ± 0.032	0.0 – 0.0100	No
Acenaphthylene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Acenaphthene	mg/kg dry wt	< 0.010 ± 0.0060	0.0 – 0.0100	No
Anthracene	mg/kg dry wt	< 0.010 ± 0.0060	0.0 – 0.0100	No
Benzo[a]anthracene	mg/kg dry wt	< 0.010 ± 0.0062	0.0 – 0.0100	No
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.010 ± 0.0064	0.0 – 0.0100	No
Benzo[e]pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.010 ± 0.0064	0.0 – 0.0100	No
Benzo[k]fluoranthene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Chrysene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Fluoranthene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Fluorene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Naphthalene	mg/kg dry wt	< 0.05 ± 0.031	0.0 – 0.050	No
Perylene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Phenanthrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No

Blank 1 PrepWS xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 17464.1				
		Results	Control Limits	Outside Limit (Yes/No)
1-Methylnaphthalene	mg/kg dry wt	< 0.010 ± 0.032	0.0 – 0.0100	No
2-Methylnaphthalene	mg/kg dry wt	< 0.010 ± 0.032	0.0 – 0.0100	No
Acenaphthylene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Acenaphthene	mg/kg dry wt	< 0.010 ± 0.0060	0.0 – 0.0100	No
Anthracene	mg/kg dry wt	< 0.010 ± 0.0060	0.0 – 0.0100	No
Benzo[a]anthracene	mg/kg dry wt	< 0.010 ± 0.0062	0.0 – 0.0100	No
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.010 ± 0.0064	0.0 – 0.0100	No
Benzo[e]pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.010 ± 0.0064	0.0 – 0.0100	No
Benzo[k]fluoranthene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Chrysene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Fluoranthene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Fluorene	mg/kg dry wt	< 0.010 ± 0.0067	0.0 – 0.0100	No

Blank 1 PrepWS xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 17464.1				
		Results	Control Limits	Outside Limit (Yes/No)
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Naphthalene	mg/kg dry wt	< 0.05 ± 0.032	0.0 – 0.050	No
Perylene	mg/kg dry wt	< 0.010 ± 0.0067	0.0 – 0.0100	No
Phenanthrene	mg/kg dry wt	< 0.010 ± 0.0067	0.0 – 0.0100	No
Pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 12867.13				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 12867.34				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

50x Manual Dilution Digest Blank PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 12867.56				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

blank PrepWS xsMeVOC PrepWS apHSVOCs - VOC Headspace Soil Analysis: 1081.4				
		Results	Control Limits	Outside Limit (Yes/No)
Bromobenzene	mg/kg dry wt	< 0.3 ± 0.13	0.0 – 0.30	No
Benzene	mg/kg dry wt	< 0.13 ± 0.060	0.0 – 0.30	No
1,3-Dichlorobenzene	mg/kg dry wt	< 0.3 ± 0.12	0.0 – 0.30	No
Bromochloromethane	mg/kg dry wt	< 0.3	0.0 – 0.30	No
Bromodichloromethane	mg/kg dry wt	< 0.3 ± 0.12	0.0 – 0.30	No
4-Chlorotoluene	mg/kg dry wt	< 0.3 ± 0.12	0.0 – 0.30	No
Bromoform (tribromomethane)	mg/kg dry wt	< 0.5 ± 0.60	0.0 – 6.0	No
Bromomethane (Methyl Bromide)	mg/kg dry wt	< 0.3 ± 0.59	0.0 – 0.30	No

blank PrepWS xsMeVOC PrepWS apHSVOCs - VOC Headspace Soil Analysis: 1081.4				
		Results	Control Limits	Outside Limit (Yes/No)
2-Butanone (MEK)	mg/kg dry wt	< 30 ± 3.7	0.0 – 30	No
n-Butylbenzene	mg/kg dry wt	< 0.3 ± 0.073	0.0 – 0.30	No
tert-Butylbenzene	mg/kg dry wt	< 0.3 ± 0.12	0.0 – 0.30	No
Carbon disulphide	mg/kg dry wt	< 0.3 ± 2.9	0.0 – 0.30	No
Carbon tetrachloride	mg/kg dry wt	< 0.3 ± 0.093	0.0 – 0.30	No
Chlorobenzene (monochlorobenzene)	mg/kg dry wt	< 0.3 ± 0.13	0.0 – 0.30	No
Chloroethane	mg/kg dry wt	< 0.3 ± 0.58	0.0 – 0.30	No
Chloroform (Trichloromethane)	mg/kg dry wt	< 0.3 ± 0.12	0.0 – 0.30	No
Chloromethane	mg/kg dry wt	< 0.3 ± 0.61	0.0 – 0.30	No
4-Methylpentan-2-one (MIBK)	mg/kg dry wt	< 5 ± 6.0	0.0 – 3.0	No
Acetone	mg/kg dry wt	< 30 ± 14	0.0 – 40	No
1,2-Dibromo-3-chloropropane	mg/kg dry wt	< 0.5 ± 0.33	0.0 – 1.20	No
Dibromochloromethane	mg/kg dry wt	< 0.3 ± 0.12	0.0 – 0.30	No
1,2-Dibromoethane (ethylene dibromide, EDB)	mg/kg dry wt	< 0.3 ± 0.51	0.0 – 0.30	No
Dibromomethane	mg/kg dry wt	< 0.3 ± 0.52	0.0 – 0.30	No
1,2-Dichlorobenzene	mg/kg dry wt	< 0.3 ± 0.12	0.0 – 0.30	No
1,3-Dichloropropane	mg/kg dry wt	< 0.3 ± 0.51	0.0 – 0.30	No
Dichlorodifluoromethane	mg/kg dry wt	< 0.5 ± 0.52	0.0 – 0.60	No
1,1-Dichloroethane	mg/kg dry wt	< 0.3 ± 0.15	0.0 – 0.30	No
1,2-Dichloroethane	mg/kg dry wt	< 0.3 ± 0.55	0.0 – 0.30	No
1,1-Dichloroethene	mg/kg dry wt	< 0.3 ± 0.038	0.0 – 0.30	No
cis-1,2-Dichloroethene	mg/kg dry wt	< 0.3 ± 0.12	0.0 – 0.30	No
trans-1,2-Dichloroethene	mg/kg dry wt	< 0.3 ± 0.25	0.0 – 0.30	No
Dichloromethane (methylene chloride)	mg/kg dry wt	< 3 ± 5.2	0.0 – 3.0	No
1,2-Dichloropropane	mg/kg dry wt	< 0.3 ± 0.51	0.0 – 0.30	No
1,4-Dichlorobenzene	mg/kg dry wt	< 0.3 ± 0.12	0.0 – 0.30	No
2-Chlorotoluene	mg/kg dry wt	< 0.3 ± 0.12	0.0 – 0.30	No
1,1-Dichloropropene	mg/kg dry wt	< 0.3 ± 0.019	0.0 – 0.30	No
cis-1,3-Dichloropropene	mg/kg dry wt	< 0.3 ± 0.61	0.0 – 0.30	No
trans-1,3-Dichloropropene	mg/kg dry wt	< 0.3 ± 0.59	0.0 – 0.30	No
Ethylbenzene	mg/kg dry wt	< 0.3 ± 0.045	0.0 – 0.30	No
Hexachlorobutadiene	mg/kg dry wt	< 0.3 ± 0.12	0.0 – 0.30	No
Isopropylbenzene (Cumene)	mg/kg dry wt	< 0.3 ± 0.12	0.0 – 0.30	No
4-Isopropyltoluene (p-Cymene)	mg/kg dry wt	< 0.3 ± 0.13	0.0 – 0.30	No
Methyl tert-butylether (MTBE)	mg/kg dry wt	< 0.3 ± 0.55	0.0 – 3.0	No
Naphthalene	mg/kg dry wt	< 0.3 ± 0.12	0.0 – 0.30	No
n-Propylbenzene	mg/kg dry wt	< 0.3 ± 0.13	0.0 – 0.30	No
sec-Butylbenzene	mg/kg dry wt	< 0.3 ± 0.13	0.0 – 0.30	No
Styrene	mg/kg dry wt	0.13 ± 0.13	0.0 – 0.30	No
1,1,1,2-Tetrachloroethane	mg/kg dry wt	< 0.3 ± 0.13	0.0 – 0.30	No
1,1,2,2-Tetrachloroethane	mg/kg dry wt	< 0.3 ± 0.65	0.0 – 0.30	No
Tetrachloroethene (tetrachloroethylene)	mg/kg dry wt	< 0.3 ± 0.45	0.0 – 0.30	No
Toluene	mg/kg dry wt	< 0.3 ± 0.051	0.0 – 0.30	No

blank PrepWS xsMeVOC PrepWS apHSVOCs - VOC Headspace Soil Analysis: 1081.4				
		Results	Control Limits	Outside Limit (Yes/No)
1,2,3-Trichlorobenzene	mg/kg dry wt	< 0.3 ± 0.11	0.0 – 0.30	No
1,2,4-Trichlorobenzene	mg/kg dry wt	< 0.3 ± 0.12	0.0 – 0.30	No
1,3,5-Trichlorobenzene	mg/kg dry wt	< 0.3 ± 0.12	0.0 – 0.30	No
1,1,1-Trichloroethane	mg/kg dry wt	< 0.3 ± 0.14	0.0 – 0.30	No
1,1,2-Trichloroethane	mg/kg dry wt	< 0.3 ± 0.25	0.0 – 0.30	No
Trichloroethene (trichloroethylene)	mg/kg dry wt	< 0.3 ± 0.12	0.0 – 0.30	No
Trichlorofluoromethane	mg/kg dry wt	< 0.3 ± 0.23	0.0 – 0.30	No
1,2,3-Trichloropropane	mg/kg dry wt	< 0.5 ± 0.52	0.0 – 6.0	No
1,1,2-Trichlorotrifluoroethane (Freon 113)	mg/kg dry wt	< 0.3 ± 0.58	0.0 – 0.30	No
1,2,4-Trimethylbenzene	mg/kg dry wt	< 0.3 ± 0.11	0.0 – 0.30	No
1,3,5-Trimethylbenzene	mg/kg dry wt	< 0.3 ± 0.12	0.0 – 0.30	No
Vinyl chloride	mg/kg dry wt	< 0.3 ± 0.60	0.0 – 0.30	No
m&p-Xylene	mg/kg dry wt	< 0.3 ± 0.054	0.0 – 0.30	No
o-Xylene	mg/kg dry wt	< 0.3 ± 0.051	0.0 – 0.30	No

blank PrepWS xsMeVOC PrepWS apHSVOCs - VOC Headspace Soil Analysis: 1081.8				
		Results	Control Limits	Outside Limit (Yes/No)
Bromobenzene	mg/kg dry wt	< 0.3 ± 0.13	0.0 – 0.30	No
Benzene	mg/kg dry wt	< 0.13 ± 0.060	0.0 – 0.30	No
1,3-Dichlorobenzene	mg/kg dry wt	< 0.3 ± 0.12	0.0 – 0.30	No
Bromochloromethane	mg/kg dry wt	< 0.3	0.0 – 0.30	No
Bromodichloromethane	mg/kg dry wt	< 0.3 ± 0.12	0.0 – 0.30	No
4-Chlorotoluene	mg/kg dry wt	< 0.3 ± 0.12	0.0 – 0.30	No
Bromoform (tribromomethane)	mg/kg dry wt	< 0.5 ± 0.60	0.0 – 6.0	No
Bromomethane (Methyl Bromide)	mg/kg dry wt	< 0.3 ± 0.59	0.0 – 0.30	No
2-Butanone (MEK)	mg/kg dry wt	< 30 ± 3.7	0.0 – 30	No
n-Butylbenzene	mg/kg dry wt	< 0.3 ± 0.073	0.0 – 0.30	No
tert-Butylbenzene	mg/kg dry wt	< 0.3 ± 0.12	0.0 – 0.30	No
Carbon disulphide	mg/kg dry wt	< 0.3 ± 2.9	0.0 – 0.30	No
Carbon tetrachloride	mg/kg dry wt	< 0.3 ± 0.093	0.0 – 0.30	No
Chlorobenzene (monochlorobenzene)	mg/kg dry wt	< 0.3 ± 0.13	0.0 – 0.30	No
Chloroethane	mg/kg dry wt	< 0.3 ± 0.58	0.0 – 0.30	No
Chloroform (Trichloromethane)	mg/kg dry wt	< 0.3 ± 0.12	0.0 – 0.30	No
Chloromethane	mg/kg dry wt	< 0.3 ± 0.61	0.0 – 0.30	No
4-Methylpentan-2-one (MIBK)	mg/kg dry wt	< 5 ± 6.0	0.0 – 3.0	No
Acetone	mg/kg dry wt	< 30 ± 14	0.0 – 40	No
1,2-Dibromo-3-chloropropane	mg/kg dry wt	< 0.5 ± 0.33	0.0 – 1.20	No
Dibromochloromethane	mg/kg dry wt	< 0.3 ± 0.12	0.0 – 0.30	No
1,2-Dibromoethane (ethylene dibromide, EDB)	mg/kg dry wt	< 0.3 ± 0.51	0.0 – 0.30	No
Dibromomethane	mg/kg dry wt	< 0.3 ± 0.52	0.0 – 0.30	No
1,2-Dichlorobenzene	mg/kg dry wt	< 0.3 ± 0.12	0.0 – 0.30	No
1,3-Dichloropropane	mg/kg dry wt	< 0.3 ± 0.51	0.0 – 0.30	No
Dichlorodifluoromethane	mg/kg dry wt	< 0.5 ± 0.52	0.0 – 0.60	No
1,1-Dichloroethane	mg/kg dry wt	< 0.3 ± 0.15	0.0 – 0.30	No

blank PrepWS xsMeVOC PrepWS apHSVOCs - VOC Headspace Soil Analysis: 1081.8				
		Results	Control Limits	Outside Limit (Yes/No)
1,2-Dichloroethane	mg/kg dry wt	< 0.3 ± 0.55	0.0 – 0.30	No
1,1-Dichloroethene	mg/kg dry wt	< 0.3 ± 0.038	0.0 – 0.30	No
cis-1,2-Dichloroethene	mg/kg dry wt	< 0.3 ± 0.12	0.0 – 0.30	No
trans-1,2-Dichloroethene	mg/kg dry wt	< 0.3 ± 0.25	0.0 – 0.30	No
Dichloromethane (methylene chloride)	mg/kg dry wt	< 3 ± 5.2	0.0 – 3.0	No
1,2-Dichloropropane	mg/kg dry wt	< 0.3 ± 0.51	0.0 – 0.30	No
1,4-Dichlorobenzene	mg/kg dry wt	< 0.3 ± 0.12	0.0 – 0.30	No
2-Chlorotoluene	mg/kg dry wt	< 0.3 ± 0.12	0.0 – 0.30	No
1,1-Dichloropropene	mg/kg dry wt	< 0.3 ± 0.019	0.0 – 0.30	No
cis-1,3-Dichloropropene	mg/kg dry wt	< 0.3 ± 0.61	0.0 – 0.30	No
trans-1,3-Dichloropropene	mg/kg dry wt	< 0.3 ± 0.59	0.0 – 0.30	No
Ethylbenzene	mg/kg dry wt	< 0.3 ± 0.045	0.0 – 0.30	No
Hexachlorobutadiene	mg/kg dry wt	< 0.3 ± 0.12	0.0 – 0.30	No
Isopropylbenzene (Cumene)	mg/kg dry wt	< 0.3 ± 0.12	0.0 – 0.30	No
4-Isopropyltoluene (p-Cymene)	mg/kg dry wt	< 0.3 ± 0.13	0.0 – 0.30	No
Methyl tert-butylether (MTBE)	mg/kg dry wt	< 0.3 ± 0.55	0.0 – 3.0	No
Naphthalene	mg/kg dry wt	< 0.3 ± 0.12	0.0 – 0.30	No
n-Propylbenzene	mg/kg dry wt	< 0.3 ± 0.13	0.0 – 0.30	No
sec-Butylbenzene	mg/kg dry wt	< 0.3 ± 0.13	0.0 – 0.30	No
Styrene	mg/kg dry wt	0.13 ± 0.13	0.0 – 0.30	No
1,1,1,2-Tetrachloroethane	mg/kg dry wt	< 0.3 ± 0.13	0.0 – 0.30	No
1,1,2,2-Tetrachloroethane	mg/kg dry wt	< 0.3 ± 0.65	0.0 – 0.30	No
Tetrachloroethene (tetrachloroethylene)	mg/kg dry wt	< 0.3 ± 0.45	0.0 – 0.30	No
Toluene	mg/kg dry wt	< 0.3 ± 0.051	0.0 – 0.30	No
1,2,3-Trichlorobenzene	mg/kg dry wt	< 0.3 ± 0.11	0.0 – 0.30	No
1,2,4-Trichlorobenzene	mg/kg dry wt	< 0.3 ± 0.12	0.0 – 0.30	No
1,3,5-Trichlorobenzene	mg/kg dry wt	< 0.3 ± 0.12	0.0 – 0.30	No
1,1,1-Trichloroethane	mg/kg dry wt	< 0.3 ± 0.14	0.0 – 0.30	No
1,1,2-Trichloroethane	mg/kg dry wt	< 0.3 ± 0.25	0.0 – 0.30	No
Trichloroethene (trichloroethylene)	mg/kg dry wt	< 0.3 ± 0.12	0.0 – 0.30	No
Trichlorofluoromethane	mg/kg dry wt	< 0.3 ± 0.23	0.0 – 0.30	No
1,2,3-Trichloropropane	mg/kg dry wt	< 0.5 ± 0.52	0.0 – 6.0	No
1,1,2-Trichlorotrifluoroethane (Freon 113)	mg/kg dry wt	< 0.3 ± 0.58	0.0 – 0.30	No
1,2,4-Trimethylbenzene	mg/kg dry wt	< 0.3 ± 0.11	0.0 – 0.30	No
1,3,5-Trimethylbenzene	mg/kg dry wt	< 0.3 ± 0.12	0.0 – 0.30	No
Vinyl chloride	mg/kg dry wt	< 0.3 ± 0.60	0.0 – 0.30	No
m&p-Xylene	mg/kg dry wt	< 0.3 ± 0.054	0.0 – 0.30	No
o-Xylene	mg/kg dry wt	< 0.3 ± 0.051	0.0 – 0.30	No

blank PrepWS xsMeVOC PrepWS apHSVOCs - VOC Headspace Soil Analysis: 1085.4				
		Results	Control Limits	Outside Limit (Yes/No)
Bromobenzene	mg/kg dry wt	< 0.03 ± 0.037	0.0 – 0.30	No
Benzene	mg/kg dry wt	< 0.013 ± 0.036	0.0 – 0.30	No
1,3-Dichlorobenzene	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No

blank PrepWS xsMeVOC PrepWS apHSVOCs - VOC Headspace Soil Analysis: 1085.4				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Bromochloromethane	mg/kg dry wt	< 0.03	0.0 – 0.30	No
Bromodichloromethane	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
4-Chlorotoluene	mg/kg dry wt	< 0.03 ± 0.035	0.0 – 0.30	No
Bromoform (tribromomethane)	mg/kg dry wt	< 0.05 ± 0.036	0.0 – 6.0	No
Bromomethane (Methyl Bromide)	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
2-Butanone (MEK)	mg/kg dry wt	< 3 ± 0.37	0.0 – 30	No
n-Butylbenzene	mg/kg dry wt	< 0.03 ± 0.022	0.0 – 0.30	No
tert-Butylbenzene	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
Carbon disulphide	mg/kg dry wt	< 0.05 ± 0.29	0.0 – 0.30	No
Carbon tetrachloride	mg/kg dry wt	< 0.03 ± 0.028	0.0 – 0.30	No
Chlorobenzene (monochlorobenzene)	mg/kg dry wt	< 0.03 ± 0.037	0.0 – 0.30	No
Chloroethane	mg/kg dry wt	< 0.03 ± 0.035	0.0 – 0.30	No
Chloroform (Trichloromethane)	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
Chloromethane	mg/kg dry wt	< 0.03 ± 0.037	0.0 – 0.30	No
4-Methylpentan-2-one (MIBK)	mg/kg dry wt	< 0.5 ± 0.36	0.0 – 3.0	No
Acetone	mg/kg dry wt	< 3 ± 3.7	0.0 – 40	No
1,2-Dibromo-3-chloropropane	mg/kg dry wt	< 0.05 ± 0.020	0.0 – 1.20	No
Dibromochloromethane	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
1,2-Dibromoethane (ethylene dibromide, EDB)	mg/kg dry wt	< 0.03 ± 0.031	0.0 – 0.30	No
Dibromomethane	mg/kg dry wt	< 0.03 ± 0.032	0.0 – 0.30	No
1,2-Dichlorobenzene	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
1,3-Dichloropropane	mg/kg dry wt	< 0.03 ± 0.031	0.0 – 0.30	No
Dichlorodifluoromethane	mg/kg dry wt	< 0.05 ± 0.032	0.0 – 0.60	No
1,1-Dichloroethane	mg/kg dry wt	< 0.03 ± 0.022	0.0 – 0.30	No
1,2-Dichloroethane	mg/kg dry wt	< 0.03 ± 0.033	0.0 – 0.30	No
1,1-Dichloroethene	mg/kg dry wt	< 0.03 ± 0.0057	0.0 – 0.30	No
cis-1,2-Dichloroethene	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
trans-1,2-Dichloroethene	mg/kg dry wt	< 0.03 ± 0.037	0.0 – 0.30	No
Dichloromethane (methylene chloride)	mg/kg dry wt	< 0.3 ± 0.52	0.0 – 3.0	No
1,2-Dichloropropane	mg/kg dry wt	< 0.03 ± 0.031	0.0 – 0.30	No
1,4-Dichlorobenzene	mg/kg dry wt	< 0.03 ± 0.12	0.0 – 0.30	No
2-Chlorotoluene	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
1,1-Dichloropropene	mg/kg dry wt	< 0.03 ± 0.0057	0.0 – 0.30	No
cis-1,3-Dichloropropene	mg/kg dry wt	< 0.03 ± 0.037	0.0 – 0.30	No
trans-1,3-Dichloropropene	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
Ethylbenzene	mg/kg dry wt	< 0.03 ± 0.027	0.0 – 0.30	No
Hexachlorobutadiene	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
Isopropylbenzene (Cumene)	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
4-Isopropyltoluene (p-Cymene)	mg/kg dry wt	< 0.03 ± 0.037	0.0 – 0.30	No
Methyl tert-butylether (MTBE)	mg/kg dry wt	< 0.03 ± 0.33	0.0 – 3.0	No
Naphthalene	mg/kg dry wt	< 0.03 ± 0.034	0.0 – 0.30	No
n-Propylbenzene	mg/kg dry wt	< 0.03 ± 0.037	0.0 – 0.30	No
sec-Butylbenzene	mg/kg dry wt	< 0.03 ± 0.037	0.0 – 0.30	No

blank PrepWS xsMeVOC PrepWS apHSVOCs - VOC Headspace Soil Analysis: 1085.4				
		Results	Control Limits	Outside Limit (Yes/No)
Styrene	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
1,1,1,2-Tetrachloroethane	mg/kg dry wt	< 0.03 ± 0.039	0.0 – 0.30	No
1,1,2,2-Tetrachloroethane	mg/kg dry wt	< 0.03 ± 0.039	0.0 – 0.30	No
Tetrachloroethene (tetrachloroethylene)	mg/kg dry wt	< 0.03 ± 0.027	0.0 – 0.30	No
Toluene	mg/kg dry wt	< 0.03 ± 0.031	0.0 – 0.30	No
1,2,3-Trichlorobenzene	mg/kg dry wt	< 0.03 ± 0.032	0.0 – 0.30	No
1,2,4-Trichlorobenzene	mg/kg dry wt	< 0.03 ± 0.035	0.0 – 0.30	No
1,3,5-Trichlorobenzene	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
1,1,1-Trichloroethane	mg/kg dry wt	< 0.03 ± 0.040	0.0 – 0.30	No
1,1,2-Trichloroethane	mg/kg dry wt	< 0.03 ± 0.015	0.0 – 0.30	No
Trichloroethene (trichloroethylene)	mg/kg dry wt	< 0.03 ± 0.034	0.0 – 0.30	No
Trichlorofluoromethane	mg/kg dry wt	< 0.03 ± 0.034	0.0 – 0.30	No
1,2,3-Trichloropropane	mg/kg dry wt	< 0.05 ± 0.032	0.0 – 6.0	No
1,1,2-Trichlorotrifluoroethane (Freon 113)	mg/kg dry wt	< 0.03 ± 0.35	0.0 – 0.30	No
1,2,4-Trimethylbenzene	mg/kg dry wt	< 0.03 ± 0.033	0.0 – 0.30	No
1,3,5-Trimethylbenzene	mg/kg dry wt	< 0.03 ± 0.034	0.0 – 0.30	No
Vinyl chloride	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
m&p-Xylene	mg/kg dry wt	< 0.03 ± 0.033	0.0 – 0.30	No
o-Xylene	mg/kg dry wt	< 0.03 ± 0.031	0.0 – 0.30	No

blank PrepWS xsMeVOC PrepWS apHSVOCs - VOC Headspace Soil Analysis: 1085.8				
		Results	Control Limits	Outside Limit (Yes/No)
Bromobenzene	mg/kg dry wt	< 0.03 ± 0.037	0.0 – 0.30	No
Benzene	mg/kg dry wt	< 0.013 ± 0.036	0.0 – 0.30	No
1,3-Dichlorobenzene	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
Bromochloromethane	mg/kg dry wt	< 0.03	0.0 – 0.30	No
Bromodichloromethane	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
4-Chlorotoluene	mg/kg dry wt	< 0.03 ± 0.035	0.0 – 0.30	No
Bromoform (tribromomethane)	mg/kg dry wt	< 0.05 ± 0.036	0.0 – 6.0	No
Bromomethane (Methyl Bromide)	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
2-Butanone (MEK)	mg/kg dry wt	< 3 ± 0.37	0.0 – 30	No
n-Butylbenzene	mg/kg dry wt	< 0.03 ± 0.022	0.0 – 0.30	No
tert-Butylbenzene	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
Carbon disulphide	mg/kg dry wt	< 0.05 ± 0.29	0.0 – 0.30	No
Carbon tetrachloride	mg/kg dry wt	< 0.03 ± 0.028	0.0 – 0.30	No
Chlorobenzene (monochlorobenzene)	mg/kg dry wt	< 0.03 ± 0.037	0.0 – 0.30	No
Chloroethane	mg/kg dry wt	< 0.03 ± 0.035	0.0 – 0.30	No
Chloroform (Trichloromethane)	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
Chloromethane	mg/kg dry wt	< 0.03 ± 0.037	0.0 – 0.30	No
4-Methylpentan-2-one (MIBK)	mg/kg dry wt	< 0.5 ± 0.36	0.0 – 3.0	No
Acetone	mg/kg dry wt	< 3 ± 3.7	0.0 – 40	No
1,2-Dibromo-3-chloropropane	mg/kg dry wt	< 0.05 ± 0.020	0.0 – 1.20	No
Dibromochloromethane	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
1,2-Dibromoethane (ethylene dibromide, EDB)	mg/kg dry wt	< 0.03 ± 0.031	0.0 – 0.30	No

blank PrepWS xsMeVOC PrepWS apHSVOCs - VOC Headspace Soil Analysis: 1085.8				
		Results	Control Limits	Outside Limit (Yes/No)
Dibromomethane	mg/kg dry wt	< 0.03 ± 0.032	0.0 – 0.30	No
1,2-Dichlorobenzene	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
1,3-Dichloropropane	mg/kg dry wt	< 0.03 ± 0.031	0.0 – 0.30	No
Dichlorodifluoromethane	mg/kg dry wt	< 0.05 ± 0.032	0.0 – 0.60	No
1,1-Dichloroethane	mg/kg dry wt	< 0.03 ± 0.022	0.0 – 0.30	No
1,2-Dichloroethane	mg/kg dry wt	< 0.03 ± 0.033	0.0 – 0.30	No
1,1-Dichloroethene	mg/kg dry wt	< 0.03 ± 0.0057	0.0 – 0.30	No
cis-1,2-Dichloroethene	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
trans-1,2-Dichloroethene	mg/kg dry wt	< 0.03 ± 0.037	0.0 – 0.30	No
Dichloromethane (methylene chloride)	mg/kg dry wt	< 0.3 ± 0.52	0.0 – 3.0	No
1,2-Dichloropropane	mg/kg dry wt	< 0.03 ± 0.031	0.0 – 0.30	No
1,4-Dichlorobenzene	mg/kg dry wt	< 0.03 ± 0.12	0.0 – 0.30	No
2-Chlorotoluene	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
1,1-Dichloropropene	mg/kg dry wt	< 0.03 ± 0.0057	0.0 – 0.30	No
cis-1,3-Dichloropropene	mg/kg dry wt	< 0.03 ± 0.037	0.0 – 0.30	No
trans-1,3-Dichloropropene	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
Ethylbenzene	mg/kg dry wt	< 0.03 ± 0.027	0.0 – 0.30	No
Hexachlorobutadiene	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
Isopropylbenzene (Cumene)	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
4-Isopropyltoluene (p-Cymene)	mg/kg dry wt	< 0.03 ± 0.037	0.0 – 0.30	No
Methyl tert-butylether (MTBE)	mg/kg dry wt	< 0.03 ± 0.33	0.0 – 3.0	No
Naphthalene	mg/kg dry wt	< 0.03 ± 0.034	0.0 – 0.30	No
n-Propylbenzene	mg/kg dry wt	< 0.03 ± 0.037	0.0 – 0.30	No
sec-Butylbenzene	mg/kg dry wt	< 0.03 ± 0.037	0.0 – 0.30	No
Styrene	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
1,1,1,2-Tetrachloroethane	mg/kg dry wt	< 0.03 ± 0.039	0.0 – 0.30	No
1,1,2,2-Tetrachloroethane	mg/kg dry wt	< 0.03 ± 0.039	0.0 – 0.30	No
Tetrachloroethene (tetrachloroethylene)	mg/kg dry wt	< 0.03 ± 0.027	0.0 – 0.30	No
Toluene	mg/kg dry wt	< 0.03 ± 0.031	0.0 – 0.30	No
1,2,3-Trichlorobenzene	mg/kg dry wt	< 0.03 ± 0.032	0.0 – 0.30	No
1,2,4-Trichlorobenzene	mg/kg dry wt	< 0.03 ± 0.035	0.0 – 0.30	No
1,3,5-Trichlorobenzene	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
1,1,1-Trichloroethane	mg/kg dry wt	< 0.03 ± 0.040	0.0 – 0.30	No
1,1,2-Trichloroethane	mg/kg dry wt	< 0.03 ± 0.015	0.0 – 0.30	No
Trichloroethene (trichloroethylene)	mg/kg dry wt	< 0.03 ± 0.034	0.0 – 0.30	No
Trichlorofluoromethane	mg/kg dry wt	< 0.03 ± 0.034	0.0 – 0.30	No
1,2,3-Trichloropropane	mg/kg dry wt	< 0.05 ± 0.032	0.0 – 6.0	No
1,1,2-Trichlorotrifluoroethane (Freon 113)	mg/kg dry wt	< 0.03 ± 0.35	0.0 – 0.30	No
1,2,4-Trimethylbenzene	mg/kg dry wt	< 0.03 ± 0.033	0.0 – 0.30	No
1,3,5-Trimethylbenzene	mg/kg dry wt	< 0.03 ± 0.034	0.0 – 0.30	No
Vinyl chloride	mg/kg dry wt	< 0.03 ± 0.036	0.0 – 0.30	No
m&p-Xylene	mg/kg dry wt	< 0.03 ± 0.033	0.0 – 0.30	No
o-Xylene	mg/kg dry wt	< 0.03 ± 0.031	0.0 – 0.30	No

QC Spike QCs

LCS OC/PAH xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 17463.2

		Results	Control Limits	Outside Limit (Yes/No)
1-Methylnaphthalene	%	94 ± 23	78 – 122	No
2-Methylnaphthalene	%	91 ± 23	72 – 117	No
Acenaphthylene	%	105.0 ± 9.5	75 – 118	No
Acenaphthene	%	105 ± 30	84 – 119	No
Anthracene	%	98 ± 30	79 – 121	No
Benzo[a]anthracene	%	103 ± 27	81 – 123	No
Benzo[a]pyrene (BAP)	%	102.0 ± 7.8	76 – 123	No
Benzo[b]fluoranthene + Benzo[j]fluoranthene	%	102 ± 21	80 – 121	No
Benzo[e]pyrene	%	90.0 ± 6.9	78 – 110	No
Benzo[g,h,i]perylene	%	95 ± 17	80 – 124	No
Benzo[k]fluoranthene	%	98 ± 13	79 – 121	No
Chrysene	%	98 ± 15	83 – 121	No
Dibenzo[a,h]anthracene	%	101 ± 13	78 – 124	No
Fluoranthene	%	101 ± 11	81 – 122	No
Fluorene	%	107 ± 13	86 – 122	No
Indeno(1,2,3-c,d)pyrene	%	102.0 ± 9.4	83 – 123	No
Naphthalene	%	93 ± 23	84 – 118	No
Perylene	%	95.0 ± 7.3	60 – 107	No
Phenanthrene	%	105 ± 15	84 – 120	No
Pyrene	%	110 ± 15	79 – 123	No

LCS TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 15285.3

		Results	Control Limits	Outside Limit (Yes/No)
Total hydrocarbons (C7 - C36)	%	83 ± 42	74 – 108	No

LCS TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 15286.3

		Results	Control Limits	Outside Limit (Yes/No)
Total hydrocarbons (C7 - C36)	%	83 ± 42	74 – 108	No

LCS OC/PAH xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 17464.2

		Results	Control Limits	Outside Limit (Yes/No)
1-Methylnaphthalene	%	88 ± 22	78 – 122	No
2-Methylnaphthalene	%	86 ± 21	72 – 117	No
Acenaphthylene	%	99.0 ± 9.0	75 – 118	No
Acenaphthene	%	103 ± 30	84 – 119	No
Anthracene	%	92 ± 28	79 – 121	No
Benzo[a]anthracene	%	106 ± 28	81 – 123	No
Benzo[a]pyrene (BAP)	%	109.0 ± 8.3	76 – 123	No
Benzo[b]fluoranthene + Benzo[j]fluoranthene	%	104 ± 22	80 – 121	No
Benzo[e]pyrene	%	91.0 ± 7.0	78 – 110	No
Benzo[g,h,i]perylene	%	110 ± 19	80 – 124	No
Benzo[k]fluoranthene	%	102 ± 13	79 – 121	No
Chrysene	%	103 ± 16	83 – 121	No
Dibenzo[a,h]anthracene	%	115 ± 15	78 – 124	No
Fluoranthene	%	104 ± 11	81 – 122	No
Fluorene	%	104 ± 13	86 – 122	No
Indeno(1,2,3-c,d)pyrene	%	118 ± 11	83 – 123	No

LCS OC/PAH xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 17464.2				
		Results	Control Limits	Outside Limit (Yes/No)
Naphthalene	%	106 ± 26	84 – 118	No
Perylene	%	101.0 ± 7.7	60 – 107	No
Phenanthrene	%	105 ± 15	84 – 120	No
Pyrene	%	116 ± 15	79 – 123	No

LCS PrepWS xsMeVOC PrepWS apHSVOCs - VOC Headspace Soil Analysis: 1081.3				
		Results	Control Limits	Outside Limit (Yes/No)
Bromobenzene	%	98 ± 28	70 – 130	No
Benzene	%	96 ± 29	70 – 130	No
1,3-Dichlorobenzene	%	101 ± 33	70 – 130	No
Bromochloromethane	%	101	70 – 130	No
Bromodichloromethane	%	95 ± 31	70 – 130	No
4-Chlorotoluene	%	100 ± 35	70 – 130	No
Bromoform (tribromomethane)	%	100 ± 31	70 – 130	No
Bromomethane (Methyl Bromide)	%	97 ± 32	70 – 130	No
2-Butanone (MEK)	%	92 ± 25	70 – 130	No
n-Butylbenzene	%	93 ± 53	70 – 130	No
tert-Butylbenzene	%	100 ± 31	70 – 130	No
Carbon disulphide	%	83 ± 39	70 – 130	No
Carbon tetrachloride	%	98 ± 48	70 – 130	No
Chlorobenzene (monochlorobenzene)	%	98 ± 28	70 – 130	No
Chloroethane	%	79 ± 27	70 – 130	No
Chloroform (Trichloromethane)	%	98 ± 32	70 – 130	No
Chloromethane	%	96 ± 27	70 – 130	No
4-Methylpentan-2-one (MIBK)	%	92 ± 29	70 – 130	No
Acetone	%	95 ± 29	70 – 130	No
1,2-Dibromo-3-chloropropane	%	97 ± 57	70 – 130	No
Dibromochloromethane	%	97 ± 32	70 – 130	No
1,2-Dibromoethane (ethylene dibromide, EDB)	%	96 ± 43	70 – 130	No
Dibromomethane	%	96 ± 41	70 – 130	No
1,2-Dichlorobenzene	%	101 ± 33	70 – 130	No
1,3-Dichloropropane	%	95 ± 42	70 – 130	No
Dichlorodifluoromethane	%	110 ± 47	70 – 130	No
1,1-Dichloroethane	%	100 ± 57	70 – 130	No
1,2-Dichloroethane	%	99 ± 38	70 – 130	No
1,1-Dichloroethene	%	100 ± 67	70 – 130	No
cis-1,2-Dichloroethene	%	100 ± 33	70 – 130	No
trans-1,2-Dichloroethene	%	96 ± 27	70 – 130	No
Dichloromethane (methylene chloride)	%	94 ± 40	70 – 130	No
1,2-Dichloropropane	%	98 ± 44	70 – 130	No
1,4-Dichlorobenzene	%	100 ± 31	70 – 130	No
2-Chlorotoluene	%	102 ± 33	70 – 130	No
1,1-Dichloropropene	%	98 ± 65	70 – 130	No
cis-1,3-Dichloropropene	%	88 ± 25	70 – 130	No
trans-1,3-Dichloropropene	%	94 ± 31	70 – 130	No
Ethylbenzene	%	100 ± 51	70 – 130	No

LCS PrepWS xsMeVOC PrepWS apHSVOCs - VOC Headspace Soil Analysis: 1081.3				
		Results	Control Limits	Outside Limit (Yes/No)
Hexachlorobutadiene	%	98 ± 30	70 – 130	No
Isopropylbenzene (Cumene)	%	99 ± 30	70 – 130	No
4-Isopropyltoluene (p-Cymene)	%	98 ± 28	70 – 130	No
Methyl tert-butylether (MTBE)	%	95 ± 37	70 – 130	No
Naphthalene	%	91 ± 33	70 – 130	No
n-Propylbenzene	%	99 ± 28	70 – 130	No
sec-Butylbenzene	%	105 ± 30	70 – 130	No
Styrene	%	97 ± 30	70 – 130	No
1,1,1,2-Tetrachloroethane	%	102 ± 19	70 – 130	No
1,1,2,2-Tetrachloroethane	%	89 ± 15	70 – 130	No
Tetrachloroethene (tetrachloroethylene)	%	102 ± 52	70 – 130	No
Toluene	%	98 ± 44	70 – 130	No
1,2,3-Trichlorobenzene	%	97 ± 39	70 – 130	No
1,2,4-Trichlorobenzene	%	95 ± 33	70 – 130	No
1,3,5-Trichlorobenzene	%	101 ± 33	70 – 130	No
1,1,1-Trichloroethane	%	98 ± 12	70 – 130	No
1,1,2-Trichloroethane	%	101 ± 63	70 – 130	No
Trichloroethene (trichloroethylene)	%	108 ± 39	70 – 130	No
Trichlorofluoromethane	%	99 ± 36	70 – 130	No
1,2,3-Trichloropropane	%	97 ± 41	70 – 130	No
1,1,2-Trichlorotrifluoroethane (Freon 113)	%	101 ± 35	70 – 130	No
1,2,4-Trimethylbenzene	%	97 ± 37	70 – 130	No
1,3,5-Trimethylbenzene	%	98 ± 36	70 – 130	No
Vinyl chloride	%	103 ± 31	70 – 130	No
m&p-Xylene	%	97 ± 39	70 – 130	No
o-Xylene	%	100 ± 45	70 – 130	No

LCS PrepWS xsMeVOC PrepWS apHSVOCs - VOC Headspace Soil Analysis: 1081.9				
		Results	Control Limits	Outside Limit (Yes/No)
Bromobenzene	%	100 ± 29	70 – 130	No
Benzene	%	99 ± 30	70 – 130	No
1,3-Dichlorobenzene	%	105 ± 34	70 – 130	No
Bromochloromethane	%	105	70 – 130	No
Bromodichloromethane	%	98 ± 32	70 – 130	No
4-Chlorotoluene	%	104 ± 36	70 – 130	No
Bromoform (tribromomethane)	%	104 ± 32	70 – 130	No
Bromomethane (Methyl Bromide)	%	100 ± 33	70 – 130	No
2-Butanone (MEK)	%	90 ± 24	70 – 130	No
n-Butylbenzene	%	98 ± 55	70 – 130	No
tert-Butylbenzene	%	104 ± 32	70 – 130	No
Carbon disulphide	%	86 ± 40	70 – 130	No
Carbon tetrachloride	%	102 ± 49	70 – 130	No
Chlorobenzene (monochlorobenzene)	%	101 ± 29	70 – 130	No
Chloroethane	%	82 ± 28	70 – 130	No
Chloroform (Trichloromethane)	%	102 ± 33	70 – 130	No
Chloromethane	%	99 ± 28	70 – 130	No

LCS PrepWS xsMeVOC PrepWS apHSVOCs - VOC Headspace Soil Analysis: 1081.9				
		Results	Control Limits	Outside Limit (Yes/No)
4-Methylpentan-2-one (MIBK)	%	88 ± 28	70 – 130	No
Acetone	%	97 ± 29	70 – 130	No
1,2-Dibromo-3-chloropropane	%	98 ± 57	70 – 130	No
Dibromochloromethane	%	100 ± 33	70 – 130	No
1,2-Dibromoethane (ethylene dibromide, EDB)	%	97 ± 43	70 – 130	No
Dibromomethane	%	97 ± 41	70 – 130	No
1,2-Dichlorobenzene	%	105 ± 34	70 – 130	No
1,3-Dichloropropane	%	98 ± 44	70 – 130	No
Dichlorodifluoromethane	%	118 ± 50	70 – 130	No
1,1-Dichloroethane	%	104 ± 59	70 – 130	No
1,2-Dichloroethane	%	101 ± 39	70 – 130	No
1,1-Dichloroethene	%	103 ± 68	70 – 130	No
cis-1,2-Dichloroethene	%	102 ± 33	70 – 130	No
trans-1,2-Dichloroethene	%	98 ± 28	70 – 130	No
Dichloromethane (methylene chloride)	%	98 ± 42	70 – 130	No
1,2-Dichloropropane	%	99 ± 44	70 – 130	No
1,4-Dichlorobenzene	%	104 ± 32	70 – 130	No
2-Chlorotoluene	%	106 ± 34	70 – 130	No
1,1-Dichloropropene	%	99 ± 66	70 – 130	No
cis-1,3-Dichloropropene	%	85 ± 24	70 – 130	No
trans-1,3-Dichloropropene	%	91 ± 30	70 – 130	No
Ethylbenzene	%	102 ± 52	70 – 130	No
Hexachlorobutadiene	%	111 ± 34	70 – 130	No
Isopropylbenzene (Cumene)	%	103 ± 31	70 – 130	No
4-Isopropyltoluene (p-Cymene)	%	102 ± 29	70 – 130	No
Methyl tert-butylether (MTBE)	%	94 ± 36	70 – 130	No
Naphthalene	%	92 ± 34	70 – 130	No
n-Propylbenzene	%	102 ± 29	70 – 130	No
sec-Butylbenzene	%	110 ± 31	70 – 130	No
Styrene	%	100 ± 31	70 – 130	No
1,1,1,2-Tetrachloroethane	%	104 ± 19	70 – 130	No
1,1,2,2-Tetrachloroethane	%	91 ± 15	70 – 130	No
Tetrachloroethene (tetrachloroethylene)	%	105 ± 53	70 – 130	No
Toluene	%	101 ± 45	70 – 130	No
1,2,3-Trichlorobenzene	%	100 ± 41	70 – 130	No
1,2,4-Trichlorobenzene	%	96 ± 33	70 – 130	No
1,3,5-Trichlorobenzene	%	102 ± 33	70 – 130	No
1,1,1-Trichloroethane	%	100 ± 13	70 – 130	No
1,1,2-Trichloroethane	%	103 ± 64	70 – 130	No
Trichloroethene (trichloroethylene)	%	111 ± 40	70 – 130	No
Trichlorofluoromethane	%	104 ± 38	70 – 130	No
1,2,3-Trichloropropane	%	100 ± 43	70 – 130	No
1,1,2-Trichlorotrifluoroethane (Freon 113)	%	107 ± 37	70 – 130	No
1,2,4-Trimethylbenzene	%	99 ± 38	70 – 130	No
1,3,5-Trimethylbenzene	%	101 ± 37	70 – 130	No

LCS PrepWS xsMeVOC PrepWS apHSVOCs - VOC Headspace Soil Analysis: 1081.9				
		Results	Control Limits	Outside Limit (Yes/No)
Vinyl chloride	%	108 ± 33	70 – 130	No
m&p-Xylene	%	100 ± 41	70 – 130	No
o-Xylene	%	104 ± 46	70 – 130	No

LCS PrepWS xsMeVOC PrepWS apHSVOCs - VOC Headspace Soil Analysis: 1085.3				
		Results	Control Limits	Outside Limit (Yes/No)
Bromobenzene	%	101 ± 29	70 – 130	No
Benzene	%	97 ± 30	70 – 130	No
1,3-Dichlorobenzene	%	103 ± 33	70 – 130	No
Bromochloromethane	%	101	70 – 130	No
Bromodichloromethane	%	101 ± 33	70 – 130	No
4-Chlorotoluene	%	99 ± 34	70 – 130	No
Bromoform (tribromomethane)	%	102 ± 31	70 – 130	No
Bromomethane (Methyl Bromide)	%	93 ± 30	70 – 130	No
2-Butanone (MEK)	%	99 ± 26	70 – 130	No
n-Butylbenzene	%	97 ± 55	70 – 130	No
tert-Butylbenzene	%	100 ± 31	70 – 130	No
Carbon disulphide	%	83 ± 39	70 – 130	No
Carbon tetrachloride	%	100 ± 49	70 – 130	No
Chlorobenzene (monochlorobenzene)	%	101 ± 29	70 – 130	No
Chloroethane	%	75 ± 26	70 – 130	No
Chloroform (Trichloromethane)	%	102 ± 33	70 – 130	No
Chloromethane	%	88 ± 25	70 – 130	No
4-Methylpentan-2-one (MIBK)	%	97 ± 30	70 – 130	No
Acetone	%	108 ± 29	70 – 130	No
1,2-Dibromo-3-chloropropane	%	107 ± 63	70 – 130	No
Dibromochloromethane	%	101 ± 33	70 – 130	No
1,2-Dibromoethane (ethylene dibromide, EDB)	%	102 ± 45	70 – 130	No
Dibromomethane	%	101 ± 43	70 – 130	No
1,2-Dichlorobenzene	%	104 ± 34	70 – 130	No
1,3-Dichloropropane	%	100 ± 45	70 – 130	No
Dichlorodifluoromethane	%	88 ± 37	70 – 130	No
1,1-Dichloroethane	%	104 ± 59	70 – 130	No
1,2-Dichloroethane	%	102 ± 39	70 – 130	No
1,1-Dichloroethene	%	101 ± 67	70 – 130	No
cis-1,2-Dichloroethene	%	104 ± 34	70 – 130	No
trans-1,2-Dichloroethene	%	99 ± 28	70 – 130	No
Dichloromethane (methylene chloride)	%	97 ± 41	70 – 130	No
1,2-Dichloropropane	%	102 ± 45	70 – 130	No
1,4-Dichlorobenzene	%	102 ± 31	70 – 130	No
2-Chlorotoluene	%	101 ± 33	70 – 130	No
1,1-Dichloropropene	%	100 ± 67	70 – 130	No
cis-1,3-Dichloropropene	%	96 ± 27	70 – 130	No
trans-1,3-Dichloropropene	%	102 ± 33	70 – 130	No
Ethylbenzene	%	102 ± 52	70 – 130	No
Hexachlorobutadiene	%	108 ± 33	70 – 130	No

LCS PrepWS xsMeVOC PrepWS apHSVOCs - VOC Headspace Soil Analysis: 1085.3				
		Results	Control Limits	Outside Limit (Yes/No)
Isopropylbenzene (Cumene)	%	97 ± 30	70 – 130	No
4-Isopropyltoluene (p-Cymene)	%	100 ± 29	70 – 130	No
Methyl tert-butylether (MTBE)	%	99 ± 38	70 – 130	No
Naphthalene	%	98 ± 36	70 – 130	No
n-Propylbenzene	%	101 ± 29	70 – 130	No
sec-Butylbenzene	%	105 ± 30	70 – 130	No
Styrene	%	97 ± 30	70 – 130	No
1,1,1,2-Tetrachloroethane	%	106 ± 20	70 – 130	No
1,1,2,2-Tetrachloroethane	%	103 ± 17	70 – 130	No
Tetrachloroethene (tetrachloroethylene)	%	99 ± 50	70 – 130	No
Toluene	%	98 ± 44	70 – 130	No
1,2,3-Trichlorobenzene	%	99 ± 40	70 – 130	No
1,2,4-Trichlorobenzene	%	101 ± 35	70 – 130	No
1,3,5-Trichlorobenzene	%	105 ± 34	70 – 130	No
1,1,1-Trichloroethane	%	102 ± 13	70 – 130	No
1,1,2-Trichloroethane	%	107 ± 67	70 – 130	No
Trichloroethene (trichloroethylene)	%	106 ± 39	70 – 130	No
Trichlorofluoromethane	%	97 ± 35	70 – 130	No
1,2,3-Trichloropropane	%	104 ± 44	70 – 130	No
1,1,2-Trichlorotrifluoroethane (Freon 113)	%	102 ± 35	70 – 130	No
1,2,4-Trimethylbenzene	%	97 ± 37	70 – 130	No
1,3,5-Trimethylbenzene	%	99 ± 36	70 – 130	No
Vinyl chloride	%	97 ± 30	70 – 130	No
m&p-Xylene	%	97 ± 39	70 – 130	No
o-Xylene	%	100 ± 45	70 – 130	No

LCS PrepWS xsMeVOC PrepWS apHSVOCs - VOC Headspace Soil Analysis: 1085.9				
		Results	Control Limits	Outside Limit (Yes/No)
Bromobenzene	%	99 ± 28	70 – 130	No
Benzene	%	95 ± 29	70 – 130	No
1,3-Dichlorobenzene	%	100 ± 33	70 – 130	No
Bromochloromethane	%	102	70 – 130	No
Bromodichloromethane	%	101 ± 33	70 – 130	No
4-Chlorotoluene	%	96 ± 33	70 – 130	No
Bromoform (tribromomethane)	%	103 ± 31	70 – 130	No
Bromomethane (Methyl Bromide)	%	90 ± 29	70 – 130	No
2-Butanone (MEK)	%	99 ± 26	70 – 130	No
n-Butylbenzene	%	93 ± 53	70 – 130	No
tert-Butylbenzene	%	96 ± 29	70 – 130	No
Carbon disulphide	%	80 ± 37	70 – 130	No
Carbon tetrachloride	%	96 ± 47	70 – 130	No
Chlorobenzene (monochlorobenzene)	%	99 ± 28	70 – 130	No
Chloroethane	%	72 ± 25	70 – 130	No
Chloroform (Trichloromethane)	%	102 ± 33	70 – 130	No
Chloromethane	%	84 ± 24	70 – 130	No
4-Methylpentan-2-one (MIBK)	%	99 ± 30	70 – 130	No

LCS PrepWS xsMeVOC PrepWS apHSVOCs - VOC Headspace Soil Analysis: 1085.9				
		Results	Control Limits	Outside Limit (Yes/No)
Acetone	%	108 ± 29	70 – 130	No
1,2-Dibromo-3-chloropropane	%	107 ± 63	70 – 130	No
Dibromochloromethane	%	102 ± 33	70 – 130	No
1,2-Dibromoethane (ethylene dibromide, EDB)	%	103 ± 46	70 – 130	No
Dibromomethane	%	102 ± 43	70 – 130	No
1,2-Dichlorobenzene	%	102 ± 33	70 – 130	No
1,3-Dichloropropane	%	99 ± 44	70 – 130	No
Dichlorodifluoromethane	%	80 ± 34	70 – 130	No
1,1-Dichloroethane	%	102 ± 58	70 – 130	No
1,2-Dichloroethane	%	103 ± 40	70 – 130	No
1,1-Dichloroethene	%	97 ± 65	70 – 130	No
cis-1,2-Dichloroethene	%	102 ± 33	70 – 130	No
trans-1,2-Dichloroethene	%	96 ± 27	70 – 130	No
Dichloromethane (methylene chloride)	%	97 ± 41	70 – 130	No
1,2-Dichloropropane	%	102 ± 45	70 – 130	No
1,4-Dichlorobenzene	%	99 ± 30	70 – 130	No
2-Chlorotoluene	%	97 ± 32	70 – 130	No
1,1-Dichloropropene	%	96 ± 64	70 – 130	No
cis-1,3-Dichloropropene	%	93 ± 27	70 – 130	No
trans-1,3-Dichloropropene	%	99 ± 32	70 – 130	No
Ethylbenzene	%	98 ± 50	70 – 130	No
Hexachlorobutadiene	%	101 ± 31	70 – 130	No
Isopropylbenzene (Cumene)	%	93 ± 28	70 – 130	No
4-Isopropyltoluene (p-Cymene)	%	96 ± 27	70 – 130	No
Methyl tert-butylether (MTBE)	%	100 ± 39	70 – 130	No
Naphthalene	%	95 ± 35	70 – 130	No
n-Propylbenzene	%	96 ± 27	70 – 130	No
sec-Butylbenzene	%	101 ± 29	70 – 130	No
Styrene	%	95 ± 29	70 – 130	No
1,1,1,2-Tetrachloroethane	%	105 ± 19	70 – 130	No
1,1,2,2-Tetrachloroethane	%	103 ± 17	70 – 130	No
Tetrachloroethene (tetrachloroethylene)	%	95 ± 48	70 – 130	No
Toluene	%	96 ± 43	70 – 130	No
1,2,3-Trichlorobenzene	%	94 ± 38	70 – 130	No
1,2,4-Trichlorobenzene	%	96 ± 33	70 – 130	No
1,3,5-Trichlorobenzene	%	100 ± 33	70 – 130	No
1,1,1-Trichloroethane	%	99 ± 12	70 – 130	No
1,1,2-Trichloroethane	%	108 ± 67	70 – 130	No
Trichloroethene (trichloroethylene)	%	103 ± 38	70 – 130	No
Trichlorofluoromethane	%	93 ± 34	70 – 130	No
1,2,3-Trichloropropane	%	104 ± 44	70 – 130	No
1,1,2-Trichlorotrifluoroethane (Freon 113)	%	98 ± 34	70 – 130	No
1,2,4-Trimethylbenzene	%	94 ± 36	70 – 130	No
1,3,5-Trimethylbenzene	%	95 ± 35	70 – 130	No
Vinyl chloride	%	91 ± 28	70 – 130	No

LCS PrepWS xsMeVOC PrepWS apHSVOCs - VOC Headspace Soil Analysis: 1085.9				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
m&p-Xylene	%	95 ± 39	70 – 130	No
o-Xylene	%	97 ± 43	70 – 130	No

Sample Spike QCs

Matrix Spike TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 15285.18				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total hydrocarbons (C7 - C36)	%	87 ± 43	71 – 104	No

Matrix Spike TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 15286.9				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total hydrocarbons (C7 - C36)	%	84 ± 43	71 – 104	No

Reference Material QCs

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 12867.14				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total Recoverable Arsenic	mg/kg dry wt	11.7 ± 2.2	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.92 ± 0.18	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	29.2 ± 4.1	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	14.7 ± 2.7	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	36.2 ± 6.8	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.378 ± 0.082	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	15.0 ± 2.4	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	211 ± 32	166 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 12867.21				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total Recoverable Arsenic	mg/kg dry wt	11.7 ± 2.2	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.82 ± 0.16	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	27.7 ± 3.9	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	14.0 ± 2.6	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	34.4 ± 6.5	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.331 ± 0.078	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	14.0 ± 2.3	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	206 ± 31	166 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 12867.57				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total Recoverable Arsenic	mg/kg dry wt	11.6 ± 2.2	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.94 ± 0.18	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	28.2 ± 3.9	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	14.8 ± 2.7	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	36.1 ± 6.8	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.353 ± 0.080	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	14.8 ± 2.4	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	211 ± 31	166 – 230	No

Analyst's Comments

Amended Report: This quality assurance report replaces report '4006009-QCPv1' issued on 17-Oct-2025 at 4:37 pm.
Reason for amendment: Additional testing added as per clients request.

HillLabs

ANALYSIS REQUEST

R J Hill Laboratories Limited
Ground Floor, 28 Heather Street
Parnell
Auckland 1052, New Zealand

0508 HILL LAB (44 555 22)
+64 7 858 2000
mail@hill-labs.co.nz
www.hill-labs.co.nz

Job No: **407 3451**
Date Recv: 13-Jan-26 17:09
Received by: Shraddha Pilli

Quote No

Primary Contact Henry McIntyre

Submitted By Megan Baddiley

Client Name WSP NZ

Address 3/100 Beaumont St
Auckland Central *Postcode* 1010

Phone *Mobile*

Email Henry.McIntyre@wsp.com

Charge To

Client Reference Northland Corridor

Order No 1-C2466.17

Results To *Reports will be emailed to Primary Contact by default. Additional Reports will be sent as specified below.*

☑ Email Primary Contact ☐ Email Submitter ☐ Email Client

☐ Email Other

☐ Other

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories
Date & Time: 13/01/26
Name: M Baddiley
Signature:

☑ *Tick if you require COC to be emailed back*

Samples will be processed at a Hill Labs site with the appropriate testing capability and capacity. Please inform the lab if you wish samples to be retained and analysed at the site of receipt.

Received at Hill Laboratories
Date & Time:
Name:
Signature:

ADDITIONAL INFORMATION

All samples to have the prefix
BH2B_2101_XX
Bin 1 of 1

Priority ☐ Low ☑ Normal ☐ High
☐ **Urgent** (ASAP, extra charge applies, please contact lab first)

Requested Reporting Date:

*Please ensure all asbestos samples are **individually double bagged** upon submission to the laboratory.*

No.	Sample Name	Sample Type	Sample Location	Sample Date/ Time	Tests Required (if not as per Quote)
1	BH2B_2101_1.0	Soil		13/01/26	Hold Cold
2	BH2B_2101_2.3				
3	BH2B_2101_3.6				
4	BH2B_2101_4.95				
5	BH2B_2101_7.3				
6	BH2B_2101_8.5				
7	BH2B_2101_10				
8	BH2B_2101_11				
9	BH2B_2101_12.5				
10	BH2B_2101_14				
11	BH2B_2101_15				
12	BH2B_2101_16				
13	BH2B_2101_QAQC1				

Temperature On Ar
15.3 °C
Temperature was measured on more arbitrarily chosen samples batch.

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

0508 HILL LAB (44 555 22)
[redacted]
mail@hill-labs.co.nz
www.**hill-labs**.co.nz

Job Information Summary

Client:	WSP New Zealand Limited	**Lab No:**	4073451
Contact:	Henry McIntyre	**Date Registered:**	15-Jan-2026 8:53 am
	C/- WSP New Zealand Limited	**Priority:**	High
	PO Box 5848	**Quote No:**	82748
	Auckland 1141	**Order No:**	1-C2466.17
		Client Reference:	Northland Corridor
		Add. Client Ref:	
		Submitted By:	Megan Baddiley
		Charge To:	WSP New Zealand Limited
		Target Date:	30-Jan-2026 4:30 pm

Samples

No	Sample Name	Sample Type	Containers	Tests Requested
1	BH2B_2101_13.0 13-Jan-2026	Soil	GSoil300, PSoil250	Hold Cold
2	BH2B_2101_2.3 13-Jan-2026	Soil	GSoil300, PSoil250	Hold Cold
3	BH2B_2101_3.6 13-Jan-2026	Soil	GSoil300, PSoil250	Hold Cold
4	BH2B_2101_4.95 13-Jan-2026	Soil	GSoil300, PSoil250	Hold Cold
5	BH2B_2101_7.3 13-Jan-2026	Soil	GSoil300, PSoil250	Semivolatile Organic Compounds Screening in Soil by GC-MS, Heavy Metals with Mercury, Screen Level, Organic Matter, Total Sulphur, Total Petroleum Hydrocarbons in Soil
6	BH2B_2101_8.5 13-Jan-2026	Soil	GSoil300, PSoil250	Hold Cold
7	BH2B_2101_10 13-Jan-2026	Soil	GSoil300, PSoil250	Hold Cold
8	BH2B_2101_11 13-Jan-2026	Soil	GSoil300, PSoil250	Hold Cold
9	BH2B_2101_12.5 13-Jan-2026	Soil	GSoil300, PSoil250	Hold Cold
10	BH2B_2101_14 13-Jan-2026	Soil	GSoil300, PSoil250	Hold Cold
11	BH2B_2101_15 13-Jan-2026	Soil	GSoil300, PSoil250	Hold Cold
12	BH2B_2101_16 13-Jan-2026	Soil	GSoil300, PSoil250	Semivolatile Organic Compounds Screening in Soil by GC-MS, Heavy Metals with Mercury, Screen Level, Organic Matter, Total Sulphur, Total Petroleum Hydrocarbons in Soil
13	BH2B_2101_QAQC1 13-Jan-2026	Soil	GSoil300, PSoil250	Semivolatile Organic Compounds Screening in Soil by GC-MS, Heavy Metals with Mercury, Screen Level, Organic Matter, Total Sulphur, Total Petroleum Hydrocarbons in Soil

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request.
Unless otherwise indicated, analyses were performed at Hill Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Individual Tests			
Environmental Solids Sample Drying	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	5, 12-13
Organic Matter	Calculation: 100 - Ash (dry wt).	0.04 g/100g dry wt	5, 12-13
Dry Matter	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	5, 12-13
Ash	Ignition in muffle furnace 550°C, 6hr, gravimetric. APHA 2540 G : Online Edition.	0.04 g/100g dry wt	5, 12-13

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Total Sulphur	LECO S144 Sulphur Determinator, high temperature furnace, infra-red detector. Subcontracted to SGS, Westport. ASTM 4239.	0.010 g/100g dry wt	5, 12-13
Heavy Metals with Mercury, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required. US EPA 200.2 (modified), APHA 3125 B: Online Edition.	0.10 - 4 mg/kg dry wt	5, 12-13
Semivolatile Organic Compounds Screening in Soil by GC-MS	Sonication extraction, GC-MS analysis. Tested on as received sample. In-house based on US EPA 8270.	0.024 - 30 mg/kg dry wt	5, 12-13
Total Petroleum Hydrocarbons in Soil			
Client Chromatogram for TPH by FID	Small peaks associated with QC compounds may be visible in chromatograms with low TPH concentrations. QC peaks are as follows: one peak in the C12 - 14 band, the C21 - 25 band and the C30 - 36 band. All QC peaks are corrected for in the reported TPH concentrations.	-	5, 12-13
C7 - C9	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	5, 12-13
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	5, 12-13
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	5, 12-13
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	5, 12-13

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Certificate of Analysis

Client:	WSP New Zealand Limited	**Lab No:**	4073451 SPv1
Contact:	Henry McIntyre C/- WSP New Zealand Limited PO Box 5848 Auckland 1141	**Date Received:**	13-Jan-2026
		Date Reported:	30-Jan-2026
		Quote No:	82748
		Order No:	1-C2466.17
		Client Reference:	Northland Corridor
		Submitted By:	Megan Baddiley

Sample Type: Soil

		Sample Name:	BH2B_2101_7.3 13-Jan-2026	BH2B_2101_16 13-Jan-2026	BH2B_2101_QAQC1 13-Jan-2026
		Lab Number:	4073451.5	4073451.12	4073451.13
Individual Tests					
Organic Matter*	g/100g dry wt		2.5	1.89	2.3
Dry Matter	g/100g as rcvd		87	88	86
Ash*	g/100g dry wt		97	98	98
Total Sulphur*‡	g/100g dry wt		0.060	0.150	0.130
Heavy Metals with Mercury, Screen Level					
Total Recoverable Arsenic	mg/kg dry wt		3	7	7
Total Recoverable Cadmium	mg/kg dry wt		< 0.10	0.75	0.23
Total Recoverable Chromium	mg/kg dry wt		7	5	5
Total Recoverable Copper	mg/kg dry wt		55	87	95
Total Recoverable Lead	mg/kg dry wt		7.8	17.4	16.4
Total Recoverable Mercury	mg/kg dry wt		< 0.10	< 0.10	< 0.10
Total Recoverable Nickel	mg/kg dry wt		23	26	21
Total Recoverable Zinc	mg/kg dry wt		55	220	75
Haloethers in SVOC Soil Samples by GC-MS					
Bis(2-chloroethoxy) methane	mg/kg dry wt		< 0.5	< 0.5	< 0.5
Bis(2-chloroethyl)ether	mg/kg dry wt		< 0.5	< 0.5	< 0.5
Bis(2-chloroisopropyl)ether	mg/kg dry wt		< 0.5	< 0.5	< 0.5
4-Bromophenyl phenyl ether	mg/kg dry wt		< 0.4	< 0.4	< 0.4
4-Chlorophenyl phenyl ether	mg/kg dry wt		< 0.5	< 0.5	< 0.5
Nitrogen containing compounds in SVOC Soil Samples by GC-MS					
2,4-Dinitrotoluene	mg/kg dry wt		< 1.0	< 1.0	< 1.0
2,6-Dinitrotoluene	mg/kg dry wt		< 1.0	< 1.0	< 1.0
Nitrobenzene	mg/kg dry wt		< 0.5	< 0.5	< 0.5
N-Nitrosodi-n-propylamine	mg/kg dry wt		< 0.7	< 0.7	< 0.7
N-Nitrosodiphenylamine + Diphenylamine	mg/kg dry wt		< 0.7	< 0.7	< 0.7
Organochlorine Pesticides in SVOC Soil Samples by GC-MS					
Aldrin	mg/kg dry wt		< 0.5	< 0.5	< 0.5
alpha-BHC	mg/kg dry wt		< 0.5	< 0.5	< 0.5
beta-BHC	mg/kg dry wt		< 0.5	< 0.5	< 0.5
delta-BHC	mg/kg dry wt		< 0.5	< 0.5	< 0.5
gamma-BHC (Lindane)	mg/kg dry wt		< 0.5	< 0.5	< 0.5
4,4'-DDD	mg/kg dry wt		< 0.5	< 0.5	< 0.5
4,4'-DDE	mg/kg dry wt		< 0.5	< 0.5	< 0.5
4,4'-DDT	mg/kg dry wt		< 1.0	< 1.0	< 1.0
Dieldrin	mg/kg dry wt		< 0.5	< 0.5	< 0.5
Endosulfan I	mg/kg dry wt		< 1.0	< 1.0	< 1.0
Endosulfan II	mg/kg dry wt		< 2	< 2	< 2

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

Sample Type: Soil				
Sample Name:		BH2B_2101_7.3 13-Jan-2026	BH2B_2101_16 13-Jan-2026	BH2B_2101_QAQC1 13-Jan-2026
Lab Number:		4073451.5	4073451.12	4073451.13
Organochlorine Pesticides in SVOC Soil Samples by GC-MS				
Endosulfan sulphate	mg/kg dry wt	< 1.0	< 1.0	< 1.0
Endrin	mg/kg dry wt	< 0.7	< 0.7	< 0.7
Endrin ketone	mg/kg dry wt	< 1.0	< 1.0	< 1.0
Heptachlor	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Heptachlor epoxide	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Hexachlorobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS*				
Acenaphthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Acenaphthylene	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Benzo[a]anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Benzo[k]fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5
1&2-Chloronaphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Chrysene	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Fluorene	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5
2-Methylnaphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Naphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Phenanthrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Pyrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 1.3	< 1.3	< 1.3
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 1.3	< 1.3	< 1.3
Phenols in SVOC Soil Samples by GC-MS				
4-Chloro-3-methylphenol	mg/kg dry wt	< 5	< 5	< 5
2-Chlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0
2,4-Dichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0
2,4-Dimethylphenol	mg/kg dry wt	< 3	< 3	< 3
3 & 4-Methylphenol (m- + p-cresol)	mg/kg dry wt	< 3	< 3	< 3
2-Methylphenol (o-cresol)	mg/kg dry wt	< 1.0	< 1.0	< 1.0
2-Nitrophenol	mg/kg dry wt	< 5	< 5	< 5
Pentachlorophenol (PCP)	mg/kg dry wt	< 30	< 30	< 30
Phenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0
2,4,5-Trichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0
2,4,6-Trichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0
Plasticisers in SVOC Soil Samples by GC-MS				
Bis(2-ethylhexyl)phthalate	mg/kg dry wt	< 5	< 5	< 5
Butylbenzylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0
Di(2-ethylhexyl)adipate	mg/kg dry wt	< 1.0	< 1.0	< 1.0
Diethylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0
Dimethylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0
Di-n-butylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0
Di-n-octylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0
Other Halogenated compounds in SVOC Soil Samples by GC-MS				
1,2-Dichlorobenzene	mg/kg dry wt	< 0.7	< 0.7	< 0.7
1,3-Dichlorobenzene	mg/kg dry wt	< 0.7	< 0.7	< 0.7
1,4-Dichlorobenzene	mg/kg dry wt	< 0.7	< 0.7	< 0.7
Hexachlorobutadiene	mg/kg dry wt	< 0.7	< 0.7	< 0.7

Sample Type: Soil				
Sample Name:		BH2B_2101_7.3 13-Jan-2026	BH2B_2101_16 13-Jan-2026	BH2B_2101_QAQC1 13-Jan-2026
Lab Number:		4073451.5	4073451.12	4073451.13
Other Halogenated compounds in SVOC Soil Samples by GC-MS				
Hexachloroethane	mg/kg dry wt	< 0.7	< 0.7	< 0.7
1,2,4-Trichlorobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Other compounds in SVOC Soil Samples by GC-MS				
Benzyl alcohol	mg/kg dry wt	< 10	< 10	< 10
Carbazole	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Dibenzofuran	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Isophorone	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Total Petroleum Hydrocarbons in Soil				
C7 - C9	mg/kg dry wt	< 20	< 20	< 20
C10 - C14	mg/kg dry wt	< 20	< 20	< 20
C15 - C36	mg/kg dry wt	< 40	< 40	< 40
Total hydrocarbons (C7 - C36)	mg/kg dry wt	< 80	< 80	< 80

Analyst's Comments

‡ Analysis subcontracted to an external provider. Refer to the Summary of Methods section for more details.

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request. Unless otherwise indicated, analyses were performed at Hill Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Individual Tests			
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	5, 12-13
Organic Matter*	Calculation: 100 - Ash (dry wt).	0.04 g/100g dry wt	5, 12-13
Dry Matter	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	5, 12-13
Ash*	Ignition in muffle furnace 550°C, 6hr, gravimetric. APHA 2540 G : Online Edition.	0.04 g/100g dry wt	5, 12-13
Total Sulphur*	LECO S144 Sulphur Determinator, high temperature furnace, infra-red detector. Subcontracted to SGS, Westport. ASTM 4239.	0.010 g/100g dry wt	5, 12-13
Heavy Metals with Mercury, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required. US EPA 200.2 (modified), APHA 3125 B: Online Edition.	0.10 - 4 mg/kg dry wt	5, 12-13
Semivolatile Organic Compounds Screening in Soil by GC-MS	Sonication extraction, GC-MS analysis. Tested on as received sample. In-house based on US EPA 8270.	0.024 - 30 mg/kg dry wt	5, 12-13
Total Petroleum Hydrocarbons in Soil			
C7 - C9	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	5, 12-13
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	5, 12-13
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	5, 12-13
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	5, 12-13

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 22-Jan-2026 and 30-Jan-2026. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

This certificate of analysis must not be reproduced, except in full, without the written consent of the signatory.



Kim Harrison MSc
Client Services Manager - Environmental

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Quality Assurance Report

Client:	WSP New Zealand Limited	**Lab No:**	4073451	QCPv1
Contact:	Henry McIntyre C/- WSP New Zealand Limited PO Box 5848 Auckland 1141	**Date Received:**	13-Jan-2026	
		Date Reported:	30-Jan-2026	
		Quote No:	82748	
		Order No:	1-C2466.17	
		Client Reference:	Northland Corridor	
		Submitted By:	Megan Baddiley	

Sample Specific QCs

SMC Compounds in SVOC Soil Samples by GC-MS

		4073451.5	Control Limits	Outside Limit (Yes/No)
2-fluorobiphenyl	%	79	40 – 120	No
2-fluorophenol	%	88	40 – 120	No
Nitrobenzene-d5	%	110	40 – 120	No
Phenol-d5	%	72	40 – 120	No
Terphenyl-d14	%	75	40 – 120	No
2,4,6-Tribromophenol	%	97	40 – 120	No

SMC Compounds in SVOC Soil Samples by GC-MS

		4073451.12	Control Limits	Outside Limit (Yes/No)
2-fluorobiphenyl	%	80	40 – 120	No
2-fluorophenol	%	87	40 – 120	No
Nitrobenzene-d5	%	112	40 – 120	No
Phenol-d5	%	71	40 – 120	No
Terphenyl-d14	%	86	40 – 120	No
2,4,6-Tribromophenol	%	101	40 – 120	No

SMC Compounds in SVOC Soil Samples by GC-MS

		4073451.13	Control Limits	Outside Limit (Yes/No)
2-fluorobiphenyl	%	75	40 – 120	No
2-fluorophenol	%	89	40 – 120	No
Nitrobenzene-d5	%	121	40 – 120	**Yes** [#1]
Phenol-d5	%	76	40 – 120	No
Terphenyl-d14	%	81	40 – 120	No
2,4,6-Tribromophenol	%	108	40 – 120	No

Blank QCs

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13296.13

		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13296.44				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13297.13				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13297.29				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13298.13				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13298.45				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13298.45				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Blank 1 - WS: ES - Ash by Muffle Furnace: 1513.1				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Ash	g/100g dry wt	< 0.04 ± 0.027	-0.0050 – 0.0050	No

Blank 2 - WS: ES - Ash by Muffle Furnace: 1513.2				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Ash	g/100g dry wt	< 0.04 ± 0.027	-0.0050 – 0.0050	No

QC Spike QCs

LCS TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 15524.3				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total hydrocarbons (C7 - C36)	%	87 ± 43	74 – 108	No

Sample Spike QCs

Matrix Spike TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 15524.41				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total hydrocarbons (C7 - C36)	%	85 ± 43	71 – 104	No

Reference Material QCs

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13296.14				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total Recoverable Arsenic	mg/kg dry wt	11.5 ± 2.2	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.92 ± 0.18	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	29.6 ± 4.1	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	14.0 ± 2.6	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	35.2 ± 6.6	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.382 ± 0.082	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	15.4 ± 2.4	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	207 ± 31	166 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13296.27				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total Recoverable Arsenic	mg/kg dry wt	11.0 ± 2.2	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.87 ± 0.17	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	27.2 ± 3.8	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	23.0 ± 3.9	11.0 – 15.3	**Yes**
Total Recoverable Lead	mg/kg dry wt	33.6 ± 6.3	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.348 ± 0.080	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	14.8 ± 2.3	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	202 ± 30	166 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13297.14				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total Recoverable Arsenic	mg/kg dry wt	11.4 ± 2.2	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.89 ± 0.17	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	27.2 ± 3.8	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	14.0 ± 2.6	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	34.0 ± 6.4	28 – 38	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13297.14				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Mercury	mg/kg dry wt	0.356 ± 0.080	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	14.4 ± 2.3	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	207 ± 31	166 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13297.56				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	11.1 ± 2.2	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.85 ± 0.17	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	26.1 ± 3.7	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	13.5 ± 2.5	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	32.6 ± 6.1	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.343 ± 0.079	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	13.8 ± 2.2	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	195 ± 29	166 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13298.14				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	11.4 ± 2.2	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.92 ± 0.18	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	29.0 ± 4.0	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	14.3 ± 2.6	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	35.4 ± 6.7	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.375 ± 0.082	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	14.7 ± 2.3	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	208 ± 31	166 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13298.31				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	11.8 ± 2.2	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.91 ± 0.18	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	29.3 ± 4.1	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	14.1 ± 2.6	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	35.4 ± 6.7	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.344 ± 0.079	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	15.3 ± 2.4	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	208 ± 31	166 – 230	No

Analyst's Comments

[#1] The System Monitoring Compound (SMC) recovery was over the acceptable recovery range. The results were accepted as the remaining SMC's were acceptable.

Hill Labs

ANALYSIS REQUEST

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Parnell
Auckland 1052, New Zealand

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Job No: **407 6439**

Date Recv: 16-Jan-26 13:31

Received by: Meg Vallabh

Quote No

Primary Contact Henry.mcintyre@wsp.com

Submitted By

Client Name WSP NZ Ltd

Address 100 Beaumont Street Westhaven

Postcode 1010

Phone *Mobi* [redacted]

Email

Charge To

Client Reference 1-C2466.16

Order No

Results To *Reports will be emailed to Primary Contact by default. Additional Reports will be sent as specified below.*

☑ Email Primary Contact ☑ Email Submitter ☐ Email Client

☐ Email Other [redacted]

☐ Other

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories

Date & Time: 16/1/26 13:20

Name: Henry mcintyre

☑ Tick if you require COC to be emailed back

Signature:

Samples will be processed at a Hill Labs site with the appropriate testing capability and capacity. Please inform the lab if you wish samples to be retained and analysed at the site of receipt.

Received at Hill Laboratories

Date & Time:

Name:

Signature:

ADDITIONAL INFORMATION

Priority ☐ Low ☑ Normal ☐ High

☐ **Urgent** (ASAP, extra charge applies, please contact lab first)

Requested Reporting Date:

Please ensure all asbest[os] **double bagged** upon s[ubmission]

Temperature On Arrival

4.3 °C

Temperature was measured on one or more arbitrarily chosen samples in this batch.

No.	Sample Name	Sample Type	Sample Location	Sample Date/ Time	
1	BH2B_2101_17.5	Soil	BH2B_2101	14/1/26	Cold hold
2	BH2B_2101_18.5				
3	BH2B_2101_20.0				
4	BH2B_2101_21.4				
5	BH2B_2101_22.9				
6	BH2B_2101_24.0				
7	BH2B_2101_25.0				
8	BH2B_2101_27.0				
9	BH2B_2101_28.5				
10	BH2B_2101_30.0				
11	BH2B_2101_31.5			15/1/26	
12	BH2B_2101_33.3				
13	BH2B_2101_34.3				

No.	Sample Name	Sample Material	Sample Location	Sample Date	Tests Required (if not as per Quote)
14	BH2B_2101 _ 35.5	Soil	BH2B_2101	15/1/26	Cold hold
15	BH2B _2101_ 36.6				
16	BH2B_2101 _ 38.0				
17	BH2B _2101 _ 40.0				
18	BH2B_2101_42.0			16/1/26	
19	BH2B_2101 _ 43.6				
20	BH2B _2101 _ 45.0				
21	BH2B _2101 _ 49.6				
22	BH2B _2101 _ 48.1				
23	BH2B_2101 _ 49.7				
24	BH2B_2101_QAQC02				
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
41					

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

0508 HILL LAB (44 555 22)
[redacted]
mail@hill-labs.co.nz
www.**hill-labs**.co.nz

Job Information Summary

Client:	WSP New Zealand Limited	**Lab No:**	4076439
Contact:	Henry McIntyre	**Date Registered:**	17-Jan-2026 11:11 am
	C/- WSP New Zealand Limited	**Priority:**	High
	PO Box 5848	**Quote No:**	82748
	Auckland 1141	**Order No:**	1-C2466.16
		Client Reference:	1-C2466.16
		Add. Client Ref:	
		Submitted By:	Henry McIntyre
		Charge To:	WSP New Zealand Limited
		Target Date:	30-Jan-2026 4:30 pm

Samples

No	Sample Name	Sample Type	Containers	Tests Requested
1	BH2B_2101_17.5 14-Jan-2026	Soil	GSoil300, cPSoil250	Hold Cold
2	BH2B_2101_18.5 14-Jan-2026	Soil	GSoil300, PSoil250	Hold Cold
3	BH2B_2101_20.0 14-Jan-2026	Soil	GSoil300, PSoil250	Semivolatile Organic Compounds Screening in Soil by GC-MS, Heavy Metals with Mercury, Screen Level, Organic Matter, Total Sulphur, Total Petroleum Hydrocarbons in Soil
4	BH2B_2101_21.4 14-Jan-2026	Soil	GSoil300, PSoil250	Semivolatile Organic Compounds Screening in Soil by GC-MS, Heavy Metals with Mercury, Screen Level, Organic Matter, Total Sulphur, Total Petroleum Hydrocarbons in Soil
5	BH2B_2101_22.9 14-Jan-2026	Soil	GSoil300, PSoil250	Hold Cold
6	BH2B_2101_24.0 14-Jan-2026	Soil	GSoil300, PSoil250	Semivolatile Organic Compounds Screening in Soil by GC-MS, Heavy Metals with Mercury, Screen Level, Organic Matter, Total Sulphur, Total Petroleum Hydrocarbons in Soil
7	BH2B_2101_25.0 14-Jan-2026	Soil	cGSoil, PSoil250	Hold Cold
8	BH2B_2101_27.0 14-Jan-2026	Soil	GSoil300, PSoil250	Hold Cold
9	BH2B_2101_28.5 14-Jan-2026	Soil	GSoil300, PSoil250	Hold Cold
10	BH2B_2101_30.0 14-Jan-2026	Soil	GSoil300, PSoil250	Hold Cold
11	BH2B_2101_31.5 15-Jan-2026	Soil	GSoil300, PSoil250	Hold Cold
12	BH2B_2101_33.3 15-Jan-2026	Soil	GSoil300, PSoil250	Hold Cold
13	BH2B_2101_34.2 15-Jan-2026	Soil	GSoil300, PSoil250	Hold Cold
14	BH2B_2101_35.5 15-Jan-2026	Soil	GSoil300, PSoil250	Hold Cold
15	BH2B_2101_36.6 15-Jan-2026	Soil	GSoil300, PSoil250	Hold Cold
16	BH2B_2101_38.0 15-Jan-2026	Soil	GSoil300, PSoil250	Hold Cold
17	BH2B_2101_40.0 15-Jan-2026	Soil	GSoil300, PSoil250	Hold Cold
18	BH2B_2101_42.0 16-Jan-2026	Soil	GSoil300, PSoil250	Hold Cold
19	BH2B_2101_43.6 16-Jan-2026	Soil	GSoil300, PSoil250	Hold Cold
20	BH2B_2101_45.0 16-Jan-2026	Soil	GSoil300, PSoil250	Semivolatile Organic Compounds Screening in Soil by GC-MS, Heavy Metals with Mercury, Screen Level, Organic Matter, Total Sulphur, Total Petroleum Hydrocarbons in Soil
21	BH2B_2101_46.6 16-Jan-2026	Soil	GSoil300, PSoil250	Hold Cold
22	BH2B_2101_48.1 16-Jan-2026	Soil	GSoil300, PSoil250	Hold Cold
23	BH2B_2101_49.7 16-Jan-2026	Soil	GSoil300, PSoil250	Semivolatile Organic Compounds Screening in Soil by GC-MS, Heavy Metals with Mercury, Screen Level, Organic Matter, Total Sulphur, Total Petroleum Hydrocarbons in Soil
24	BH2B_2101_QAQC02 16-Jan-2026	Soil	GSoil300, PSoil250	Semivolatile Organic Compounds Screening in Soil by GC-MS, Heavy Metals with Mercury, Screen Level, Organic Matter, Total Sulphur, Total Petroleum Hydrocarbons in Soil

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request.
Unless otherwise indicated, analyses were performed at Hill Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Individual Tests			
Environmental Solids Sample Drying	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	3-4, 6, 20, 23-24
Organic Matter	Calculation: 100 - Ash (dry wt).	0.04 g/100g dry wt	3-4, 6, 20, 23-24
Dry Matter	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	3-4, 6, 20, 23-24
Ash	Ignition in muffle furnace 550°C, 6hr, gravimetric. APHA 2540 G : Online Edition.	0.04 g/100g dry wt	3-4, 6, 20, 23-24
Total Sulphur	LECO S144 Sulphur Determinator, high temperature furnace, infra-red detector. Subcontracted to SGS, Westport. ASTM 4239.	0.010 g/100g dry wt	3-4, 6, 20, 23-24
Heavy Metals with Mercury, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required. US EPA 200.2 (modified), APHA 3125 B: Online Edition.	0.10 - 4 mg/kg dry wt	3-4, 6, 20, 23-24
Semivolatile Organic Compounds Screening in Soil by GC-MS	Sonication extraction, GC-MS analysis. Tested on as received sample. In-house based on US EPA 8270.	0.024 - 30 mg/kg dry wt	3-4, 6, 20, 23-24
Total Petroleum Hydrocarbons in Soil			
Client Chromatogram for TPH by FID	Small peaks associated with QC compounds may be visible in chromatograms with low TPH concentrations. QC peaks are as follows: one peak in the C12 - 14 band, the C21 - 25 band and the C30 - 36 band. All QC peaks are corrected for in the reported TPH concentrations.	-	3-4, 6, 20, 23-24
C7 - C9	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	3-4, 6, 20, 23-24
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	3-4, 6, 20, 23-24
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	3-4, 6, 20, 23-24
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	3-4, 6, 20, 23-24

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Certificate of Analysis

Client:	WSP New Zealand Limited	**Lab No:**	4076439	SPv1
Contact:	Henry McIntyre	**Date Received:**	16-Jan-2026	
	C/- WSP New Zealand Limited	**Date Reported:**	30-Jan-2026	
	PO Box 5848	**Quote No:**	82748	
	Auckland 1141	**Order No:**	1-C2466.16	
		Client Reference:	1-C2466.16	
		Submitted By:	Henry McIntyre	

Sample Type: Soil

Sample Name:		BH2B_2101_20.0 14-Jan-2026	BH2B_2101_21.4 14-Jan-2026	BH2B_2101_24.0 14-Jan-2026	BH2B_2101_45.0 16-Jan-2026	BH2B_2101_49.7 16-Jan-2026
Lab Number:		4076439.3	4076439.4	4076439.6	4076439.20	4076439.23
Individual Tests						
Organic Matter*	g/100g dry wt	2.8	2.4	2.5	3.1	2.5
Dry Matter	g/100g as rcvd	84	80	85	83	84
Ash*	g/100g dry wt	97	98	98	97	97
Total Sulphur*‡	g/100g dry wt	0.060	0.090	< 0.010	0.53	0.040
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	< 2	8	< 2	3	4
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	< 0.10	< 0.10	0.17	0.12
Total Recoverable Chromium	mg/kg dry wt	7	8	10	8	5
Total Recoverable Copper	mg/kg dry wt	54	68	32	29	31
Total Recoverable Lead	mg/kg dry wt	6.4	13.3	7.2	8.6	8.1
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Nickel	mg/kg dry wt	18	37	22	18	18
Total Recoverable Zinc	mg/kg dry wt	18	82	26	63	58
Haloethers in SVOC Soil Samples by GC-MS						
Bis(2-chloroethoxy) methane	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-chloroethyl)ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-chloroisopropyl)ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4-Bromophenyl phenyl ether	mg/kg dry wt	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
4-Chlorophenyl phenyl ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Nitrogen containing compounds in SVOC Soil Samples by GC-MS						
2,4-Dinitrotoluene	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,6-Dinitrotoluene	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Nitrobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
N-Nitrosodi-n-propylamine	mg/kg dry wt	< 0.7	< 0.8	< 0.8	< 0.8	< 0.8
N-Nitrosodiphenylamine + Diphenylamine	mg/kg dry wt	< 0.7	< 0.8	< 0.8	< 0.8	< 0.8
Organochlorine Pesticides in SVOC Soil Samples by GC-MS						
Aldrin	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
alpha-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
beta-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
delta-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
gamma-BHC (Lindane)	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4,4'-DDD	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4,4'-DDE	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4,4'-DDT	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dieldrin	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Endosulfan I	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Endosulfan II	mg/kg dry wt	< 2	< 2	< 2	< 2	< 2

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

Sample Type: Soil						
Sample Name:		BH2B_2101_20.0 14-Jan-2026	BH2B_2101_21.4 14-Jan-2026	BH2B_2101_24.0 14-Jan-2026	BH2B_2101_45.0 16-Jan-2026	BH2B_2101_49.7 16-Jan-2026
Lab Number:		4076439.3	4076439.4	4076439.6	4076439.20	4076439.23
Organochlorine Pesticides in SVOC Soil Samples by GC-MS						
Endosulfan sulphate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Endrin	mg/kg dry wt	< 0.7	< 0.8	< 0.8	< 0.8	< 0.8
Endrin ketone	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Heptachlor	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Heptachlor epoxide	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Hexachlorobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS*						
Acenaphthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[a]anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[k]fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1&2-Chloronaphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
2-Methylnaphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
Phenols in SVOC Soil Samples by GC-MS						
4-Chloro-3-methylphenol	mg/kg dry wt	< 5	< 5	< 5	< 5	< 5
2-Chlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4-Dichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4-Dimethylphenol	mg/kg dry wt	< 3	< 3	< 3	< 3	< 3
3 & 4-Methylphenol (m- + p-cresol)	mg/kg dry wt	< 3	< 3	< 3	< 3	< 3
2-Methylphenol (o-cresol)	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Nitrophenol	mg/kg dry wt	< 5	< 5	< 5	< 5	< 5
Pentachlorophenol (PCP)	mg/kg dry wt	< 30	< 30	< 30	< 30	< 30
Phenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4,5-Trichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4,6-Trichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Plasticisers in SVOC Soil Samples by GC-MS						
Bis(2-ethylhexyl)phthalate	mg/kg dry wt	< 5	< 5	< 5	< 5	< 5
Butylbenzylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Di(2-ethylhexyl)adipate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Diethylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dimethylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Di-n-butylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Di-n-octylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Other Halogenated compounds in SVOC Soil Samples by GC-MS						
1,2-Dichlorobenzene	mg/kg dry wt	< 0.7	< 0.8	< 0.8	< 0.8	< 0.8
1,3-Dichlorobenzene	mg/kg dry wt	< 0.7	< 0.8	< 0.8	< 0.8	< 0.8
1,4-Dichlorobenzene	mg/kg dry wt	< 0.7	< 0.8	< 0.8	< 0.8	< 0.8
Hexachlorobutadiene	mg/kg dry wt	< 0.7	< 0.8	< 0.8	< 0.8	< 0.8

Sample Type: Soil						
Sample Name:		BH2B_2101_20.0 14-Jan-2026	BH2B_2101_21.4 14-Jan-2026	BH2B_2101_24.0 14-Jan-2026	BH2B_2101_45.0 16-Jan-2026	BH2B_2101_49.7 16-Jan-2026
Lab Number:		4076439.3	4076439.4	4076439.6	4076439.20	4076439.23
Other Halogenated compounds in SVOC Soil Samples by GC-MS						
Hexachloroethane	mg/kg dry wt	< 0.7	< 0.8	< 0.8	< 0.8	< 0.8
1,2,4-Trichlorobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Other compounds in SVOC Soil Samples by GC-MS						
Benzyl alcohol	mg/kg dry wt	< 10	< 10	< 10	< 10	< 10
Carbazole	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibenzofuran	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Isophorone	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Total Petroleum Hydrocarbons in Soil						
C7 - C9	mg/kg dry wt	< 20	< 20	< 20	< 20	< 20
C10 - C14	mg/kg dry wt	< 20	< 20	< 20	< 20	< 20
C15 - C36	mg/kg dry wt	< 40	< 40	< 40	< 40	< 40
Total hydrocarbons (C7 - C36)	mg/kg dry wt	< 80	< 80	< 80	< 80	< 80

Sample Name:		BH2B_2101_QAQC02 16-Jan-2026
Lab Number:		4076439.24
Individual Tests		
Organic Matter*	g/100g dry wt	2.8
Dry Matter	g/100g as rcvd	86
Ash*	g/100g dry wt	97
Total Sulphur*‡	g/100g dry wt	0.070
Heavy Metals with Mercury, Screen Level		
Total Recoverable Arsenic	mg/kg dry wt	< 2
Total Recoverable Cadmium	mg/kg dry wt	< 0.10
Total Recoverable Chromium	mg/kg dry wt	6
Total Recoverable Copper	mg/kg dry wt	58
Total Recoverable Lead	mg/kg dry wt	6.6
Total Recoverable Mercury	mg/kg dry wt	< 0.10
Total Recoverable Nickel	mg/kg dry wt	17
Total Recoverable Zinc	mg/kg dry wt	19
Haloethers in SVOC Soil Samples by GC-MS		
Bis(2-chloroethoxy) methane	mg/kg dry wt	< 0.5
Bis(2-chloroethyl)ether	mg/kg dry wt	< 0.5
Bis(2-chloroisopropyl)ether	mg/kg dry wt	< 0.5
4-Bromophenyl phenyl ether	mg/kg dry wt	< 0.4
4-Chlorophenyl phenyl ether	mg/kg dry wt	< 0.5
Nitrogen containing compounds in SVOC Soil Samples by GC-MS		
2,4-Dinitrotoluene	mg/kg dry wt	< 1.0
2,6-Dinitrotoluene	mg/kg dry wt	< 1.0
Nitrobenzene	mg/kg dry wt	< 0.5
N-Nitrosodi-n-propylamine	mg/kg dry wt	< 0.7
N-Nitrosodiphenylamine + Diphenylamine	mg/kg dry wt	< 0.7
Organochlorine Pesticides in SVOC Soil Samples by GC-MS		
Aldrin	mg/kg dry wt	< 0.5
alpha-BHC	mg/kg dry wt	< 0.5
beta-BHC	mg/kg dry wt	< 0.5
delta-BHC	mg/kg dry wt	< 0.5
gamma-BHC (Lindane)	mg/kg dry wt	< 0.5
4,4'-DDD	mg/kg dry wt	< 0.5
4,4'-DDE	mg/kg dry wt	< 0.5
4,4'-DDT	mg/kg dry wt	< 1.0
Dieldrin	mg/kg dry wt	< 0.5
Endosulfan I	mg/kg dry wt	< 1.0
Endosulfan II	mg/kg dry wt	< 2
Endosulfan sulphate	mg/kg dry wt	< 1.0

Sample Type: Soil		
Sample Name:		BH2B_2101_QAQC02 16-Jan-2026
Lab Number:		4076439.24
Organochlorine Pesticides in SVOC Soil Samples by GC-MS		
Endrin	mg/kg dry wt	< 0.7
Endrin ketone	mg/kg dry wt	< 1.0
Heptachlor	mg/kg dry wt	< 0.5
Heptachlor epoxide	mg/kg dry wt	< 0.5
Hexachlorobenzene	mg/kg dry wt	< 0.5
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS*		
Acenaphthene	mg/kg dry wt	< 0.5
Acenaphthylene	mg/kg dry wt	< 0.5
Anthracene	mg/kg dry wt	< 0.5
Benzo[a]anthracene	mg/kg dry wt	< 0.5
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.5
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.5
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.5
Benzo[k]fluoranthene	mg/kg dry wt	< 0.5
1&2-Chloronaphthalene	mg/kg dry wt	< 0.5
Chrysene	mg/kg dry wt	< 0.5
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.5
Fluoranthene	mg/kg dry wt	< 0.5
Fluorene	mg/kg dry wt	< 0.5
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.5
2-Methylnaphthalene	mg/kg dry wt	< 0.5
Naphthalene	mg/kg dry wt	< 0.5
Phenanthrene	mg/kg dry wt	< 0.5
Pyrene	mg/kg dry wt	< 0.5
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 1.3
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 1.3
Phenols in SVOC Soil Samples by GC-MS		
4-Chloro-3-methylphenol	mg/kg dry wt	< 5
2-Chlorophenol	mg/kg dry wt	< 1.0
2,4-Dichlorophenol	mg/kg dry wt	< 1.0
2,4-Dimethylphenol	mg/kg dry wt	< 3
3 & 4-Methylphenol (m- + p-cresol)	mg/kg dry wt	< 3
2-Methylphenol (o-cresol)	mg/kg dry wt	< 1.0
2-Nitrophenol	mg/kg dry wt	< 5
Pentachlorophenol (PCP)	mg/kg dry wt	< 30
Phenol	mg/kg dry wt	< 1.0
2,4,5-Trichlorophenol	mg/kg dry wt	< 1.0
2,4,6-Trichlorophenol	mg/kg dry wt	< 1.0
Plasticisers in SVOC Soil Samples by GC-MS		
Bis(2-ethylhexyl)phthalate	mg/kg dry wt	< 5
Butylbenzylphthalate	mg/kg dry wt	< 1.0
Di(2-ethylhexyl)adipate	mg/kg dry wt	< 1.0
Diethylphthalate	mg/kg dry wt	< 1.0
Dimethylphthalate	mg/kg dry wt	< 1.0
Di-n-butylphthalate	mg/kg dry wt	< 1.0
Di-n-octylphthalate	mg/kg dry wt	< 1.0
Other Halogenated compounds in SVOC Soil Samples by GC-MS		
1,2-Dichlorobenzene	mg/kg dry wt	< 0.7
1,3-Dichlorobenzene	mg/kg dry wt	< 0.7
1,4-Dichlorobenzene	mg/kg dry wt	< 0.7
Hexachlorobutadiene	mg/kg dry wt	< 0.7
Hexachloroethane	mg/kg dry wt	< 0.7

Sample Type: Soil		
Sample Name:		BH2B_2101_QAQC02 16-Jan-2026
Lab Number:		4076439.24
Other Halogenated compounds in SVOC Soil Samples by GC-MS		
1,2,4-Trichlorobenzene	mg/kg dry wt	< 0.5
Other compounds in SVOC Soil Samples by GC-MS		
Benzyl alcohol	mg/kg dry wt	< 10
Carbazole	mg/kg dry wt	< 0.5
Dibenzofuran	mg/kg dry wt	< 0.5
Isophorone	mg/kg dry wt	< 0.5
Total Petroleum Hydrocarbons in Soil		
C7 - C9	mg/kg dry wt	< 20
C10 - C14	mg/kg dry wt	< 20
C15 - C36	mg/kg dry wt	< 40
Total hydrocarbons (C7 - C36)	mg/kg dry wt	< 80

Analyst's Comments

‡ Analysis subcontracted to an external provider. Refer to the Summary of Methods section for more details.

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request. Unless otherwise indicated, analyses were performed at Hill Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Individual Tests			
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	3-4, 6, 20, 23-24
Organic Matter*	Calculation: 100 - Ash (dry wt).	0.04 g/100g dry wt	3-4, 6, 20, 23-24
Dry Matter	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	3-4, 6, 20, 23-24
Ash*	Ignition in muffle furnace 550°C, 6hr, gravimetric. APHA 2540 G : Online Edition.	0.04 g/100g dry wt	3-4, 6, 20, 23-24
Total Sulphur*	LECO S144 Sulphur Determinator, high temperature furnace, infra-red detector. Subcontracted to SGS, Westport. ASTM 4239.	0.010 g/100g dry wt	3-4, 6, 20, 23-24
Heavy Metals with Mercury, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required. US EPA 200.2 (modified), APHA 3125 B: Online Edition.	0.10 - 4 mg/kg dry wt	3-4, 6, 20, 23-24
Semivolatile Organic Compounds Screening in Soil by GC-MS	Sonication extraction, GC-MS analysis. Tested on as received sample. In-house based on US EPA 8270.	0.024 - 30 mg/kg dry wt	3-4, 6, 20, 23-24
Total Petroleum Hydrocarbons in Soil			
C7 - C9	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	3-4, 6, 20, 23-24
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	3-4, 6, 20, 23-24
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	3-4, 6, 20, 23-24
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	3-4, 6, 20, 23-24

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 22-Jan-2026 and 30-Jan-2026. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

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Quality Assurance Report

Client:	WSP New Zealand Limited	**Lab No:**	4076439	QCPv1
Contact:	Henry McIntyre C/- WSP New Zealand Limited PO Box 5848 Auckland 1141	**Date Received:**	16-Jan-2026	
		Date Reported:	30-Jan-2026	
		Quote No:	82748	
		Order No:	1-C2466.16	
		Client Reference:	1-C2466.16	
		Submitted By:	Henry McIntyre	

Sample Specific QCs

SMC Compounds in SVOC Soil Samples by GC-MS

		4076439.3	Control Limits	Outside Limit (Yes/No)
2-fluorobiphenyl	%	77	40 – 120	No
2-fluorophenol	%	84	40 – 120	No
Nitrobenzene-d5	%	111	40 – 120	No
Phenol-d5	%	72	40 – 120	No
Terphenyl-d14	%	74	40 – 120	No
2,4,6-Tribromophenol	%	94	40 – 120	No

SMC Compounds in SVOC Soil Samples by GC-MS

		4076439.4	Control Limits	Outside Limit (Yes/No)
2-fluorobiphenyl	%	69	40 – 120	No
2-fluorophenol	%	77	40 – 120	No
Nitrobenzene-d5	%	92	40 – 120	No
Phenol-d5	%	60	40 – 120	No
Terphenyl-d14	%	67	40 – 120	No
2,4,6-Tribromophenol	%	82	40 – 120	No

SMC Compounds in SVOC Soil Samples by GC-MS

		4076439.6	Control Limits	Outside Limit (Yes/No)
2-fluorobiphenyl	%	74	40 – 120	No
2-fluorophenol	%	85	40 – 120	No
Nitrobenzene-d5	%	103	40 – 120	No
Phenol-d5	%	70	40 – 120	No
Terphenyl-d14	%	75	40 – 120	No
2,4,6-Tribromophenol	%	88	40 – 120	No

SMC Compounds in SVOC Soil Samples by GC-MS

		4076439.20	Control Limits	Outside Limit (Yes/No)
2-fluorobiphenyl	%	64	40 – 120	No
2-fluorophenol	%	78	40 – 120	No
Nitrobenzene-d5	%	100	40 – 120	No
Phenol-d5	%	66	40 – 120	No
Terphenyl-d14	%	67	40 – 120	No
2,4,6-Tribromophenol	%	80	40 – 120	No

SMC Compounds in SVOC Soil Samples by GC-MS				
		4076439.23	Control Limits	Outside Limit (Yes/No)
2-fluorobiphenyl	%	75	40 – 120	No
2-fluorophenol	%	83	40 – 120	No
Nitrobenzene-d5	%	107	40 – 120	No
Phenol-d5	%	64	40 – 120	No
Terphenyl-d14	%	77	40 – 120	No
2,4,6-Tribromophenol	%	93	40 – 120	No

SMC Compounds in SVOC Soil Samples by GC-MS				
		4076439.24	Control Limits	Outside Limit (Yes/No)
2-fluorobiphenyl	%	77	40 – 120	No
2-fluorophenol	%	88	40 – 120	No
Nitrobenzene-d5	%	100	40 – 120	No
Phenol-d5	%	73	40 – 120	No
Terphenyl-d14	%	73	40 – 120	No
2,4,6-Tribromophenol	%	94	40 – 120	No

Blank QCs

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13296.13				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13296.44				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13297.13				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13297.29				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13298.13				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13298.45				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Blank 1 - WS: ES - Ash by Muffle Furnace: 1513.1				
		Results	Control Limits	Outside Limit (Yes/No)
Ash	g/100g dry wt	< 0.04 ± 0.027	-0.0050 – 0.0050	No

Blank 2 - WS: ES - Ash by Muffle Furnace: 1513.2				
		Results	Control Limits	Outside Limit (Yes/No)
Ash	g/100g dry wt	< 0.04 ± 0.027	-0.0050 – 0.0050	No

QC Spike QCs

LCS TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 15524.3				
		Results	Control Limits	Outside Limit (Yes/No)
Total hydrocarbons (C7 - C36)	%	87 ± 43	74 – 108	No

Sample Spike QCs

Matrix Spike TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 15524.41				
		Results	Control Limits	Outside Limit (Yes/No)
Total hydrocarbons (C7 - C36)	%	85 ± 43	71 – 104	No

Reference Material QCs

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13296.14

		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	11.5 ± 2.2	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.92 ± 0.18	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	29.6 ± 4.1	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	14.0 ± 2.6	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	35.2 ± 6.6	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.382 ± 0.082	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	15.4 ± 2.4	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	207 ± 31	166 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13296.27

		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	11.0 ± 2.2	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.87 ± 0.17	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	27.2 ± 3.8	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	23.0 ± 3.9	11.0 – 15.3	**Yes**
Total Recoverable Lead	mg/kg dry wt	33.6 ± 6.3	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.348 ± 0.080	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	14.8 ± 2.3	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	202 ± 30	166 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13297.14

		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	11.4 ± 2.2	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.89 ± 0.17	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	27.2 ± 3.8	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	14.0 ± 2.6	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	34.0 ± 6.4	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.356 ± 0.080	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	14.4 ± 2.3	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	207 ± 31	166 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13297.56

		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	11.1 ± 2.2	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.85 ± 0.17	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	26.1 ± 3.7	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	13.5 ± 2.5	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	32.6 ± 6.1	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.343 ± 0.079	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	13.8 ± 2.2	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	195 ± 29	166 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13298.14

		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	11.4 ± 2.2	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.92 ± 0.18	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	29.0 ± 4.0	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	14.3 ± 2.6	11.0 – 15.3	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13298.14				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total Recoverable Lead	mg/kg dry wt	35.4 ± 6.7	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.375 ± 0.082	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	14.7 ± 2.3	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	208 ± 31	166 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13298.31				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total Recoverable Arsenic	mg/kg dry wt	11.8 ± 2.2	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.91 ± 0.18	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	29.3 ± 4.1	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	14.1 ± 2.6	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	35.4 ± 6.7	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.344 ± 0.079	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	15.3 ± 2.4	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	208 ± 31	166 – 230	No

Replicates

WS: ES - Ash by Muffle Furnace: 1513.14				
		Replicate 1	**Replicate 2**	**Pass/Fail**
Ash	g/100g dry wt	97.2 ± 1.5	97.3 ± 1.5	Pass

HillLabs

ANALYSIS REQUEST

R J Hill Laboratories Limited
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Parnell
Auckland 1052, New Zealand

0508 HILL LAB (44 555 22)
+64 7 858 2000
mail@hill-labs.co.nz
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Job No: **408 6908**

Date Recv: 30-Jan-26 14:21

Received by: Shraddha Pilli

Quote No

Primary Contact [redacted]

Submitted By

Client Name WSP NZ Ltd

Address 100 Beaumont Street

Postcode 1010

Phone *Mobile* [redacted]

Email

Charge To

Client Reference 1-C2466.16

Order No

Results To *Reports will be emailed to Primary Contact by default. Additional Reports will be sent as specified below.*

☑ Email Primary Contact ☐ Email Submitter ☐ Email Client

☐ Email Other [redacted]

☐ Other

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories

Date & Time: 30/1/26 14:20

Name: Henry McIntyre

☑ *Tick if you require COC to be emailed back*

Signature:

Samples will be processed at a Hill Labs site with the appropriate testing capability and capacity. Please inform the lab if you wish samples to be retained and analysed at the site of receipt.

Received at Hill Laboratories

Date & Time:

Name:

Signature:

ADDITIONAL INFORMATION

Priority ☐ Low ☑ Normal ☐ High ☐ Urgent (ASAP, extra charge applies, please contact lab first)

Requested Reporting Date:

*Please ensure all asbestos samples are **individually double bagged** upon submission to the laboratory.*

No.	Sample Name	Sample Type	Sample Location	Sample Date/ Time	Tests Required (if not as per Quote)
1	BH2B_2147_1.00	Soil	BH2B-2147	30/1/26	Cold hold
2	BH2B_2147_2.20				
3	BH2B_2147_3.59				
4	BH2B_2147_4.95				
5	BH2B_2147_6.60				
6	BH2B_2147_8.80				
7	BH2B_2147_9.90				
8					
9					
10					
11					
12					
13					

Temperature On Arrival

10.8 °C

Temperature was measured on one or more arbitrarily chosen samples in this batch.

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

0508 HILL LAB (44 555 22)
[redacted]
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Job Information Summary

Client:	WSP New Zealand Limited	**Lab No:**	4086908
Contact:	Henry McIntyre	**Date Registered:**	31-Jan-2026 11:38 am
	C/- WSP New Zealand Limited	**Priority:**	High
	PO Box 5848	**Quote No:**	82748
	Auckland 1141	**Order No:**	1-C2466.16
		Client Reference:	1-C2466.16
		Add. Client Ref:	
		Submitted By:	Megan Baddiley
		Charge To:	WSP New Zealand Limited
		Target Date:	16-Feb-2026 4:30 pm

Samples

No	Sample Name	Sample Type	Containers	Tests Requested
1	BH2B_2147_1.00 30-Jan-2026	Soil	cGSoil	Hold Cold
2	BH2B_2147_2.20 30-Jan-2026	Soil	cGSoil	Hold Cold
3	BH2B_2147_3.59 30-Jan-2026	Soil	cGSoil, cpBag	Hold Cold
4	BH2B_2147_4.95 30-Jan-2026	Soil	cGSoil, cpBag	Semivolatile Organic Compounds Screening in Soil by GC-MS, Heavy Metals with Mercury, Screen Level, Total Petroleum Hydrocarbons in Soil, Polycyclic Aromatic Hydrocarbons Trace in Soil
5	BH2B_2147_6.60 30-Jan-2026	Soil	cGSoil, cpBag	Hold Cold
6	BH2B_2147_8.80 30-Jan-2026	Soil	cGSoil, cpBag	Hold Cold
7	BH2B_2147_9.90 30-Jan-2026	Soil	cGSoil, cpBag	Hold Cold

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request. Unless otherwise indicated, analyses were performed at Hill Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Individual Tests			
Environmental Solids Sample Drying	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	4
Dry Matter	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	4
Heavy Metals with Mercury, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required. US EPA 200.2 (modified), APHA 3125 B: Online Edition.	0.10 - 4 mg/kg dry wt	4
Polycyclic Aromatic Hydrocarbons Trace in Soil	Sonication extraction, GC-MS/MS analysis. Tested on as received sample. In-house based on US EPA 8270.	0.002 - 0.03 mg/kg dry wt	4
Semivolatile Organic Compounds Screening in Soil by GC-MS	Sonication extraction, GC-MS analysis. Tested on as received sample. In-house based on US EPA 8270.	0.024 - 30 mg/kg dry wt	4
Total Petroleum Hydrocarbons in Soil			
Client Chromatogram for TPH by FID	Small peaks associated with QC compounds may be visible in chromatograms with low TPH concentrations. QC peaks are as follows: one peak in the C12 - 14 band, the C21 - 25 band and the C30 - 36 band. All QC peaks are corrected for in the reported TPH concentrations.	-	4
C7 - C9	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	4

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	4
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	4
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	4

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Certificate of Analysis

Client:	WSP New Zealand Limited	**Lab No:**	4086908 SPv1
Contact:	Henry McIntyre	**Date Received:**	30-Jan-2026
	C/- WSP New Zealand Limited	**Date Reported:**	16-Feb-2026
	PO Box 5848	**Quote No:**	82748
	Auckland 1141	**Order No:**	1-C2466.16
		Client Reference:	1-C2466.16
		Submitted By:	Megan Baddiley

Sample Type: Soil

Sample Name:		BH2B_2147_4.95 30-Jan-2026
Lab Number:		4086908.4
Individual Tests		
Dry Matter	g/100g as rcvd	80
Heavy Metals with Mercury, Screen Level		
Total Recoverable Arsenic	mg/kg dry wt	< 4
Total Recoverable Cadmium	mg/kg dry wt	< 0.2
Total Recoverable Chromium	mg/kg dry wt	8
Total Recoverable Copper	mg/kg dry wt	65
Total Recoverable Lead	mg/kg dry wt	7.7
Total Recoverable Mercury	mg/kg dry wt	< 0.2
Total Recoverable Nickel	mg/kg dry wt	21
Total Recoverable Zinc	mg/kg dry wt	39
Polycyclic Aromatic Hydrocarbons Trace in Soil		
Total of Reported PAHs in Soil	mg/kg dry wt	< 9
1-Methylnaphthalene	mg/kg dry wt	< 0.002
2-Methylnaphthalene	mg/kg dry wt	< 0.002
Acenaphthene	mg/kg dry wt	< 0.002
Acenaphthylene	mg/kg dry wt	< 0.002
Anthracene	mg/kg dry wt	< 0.002
Benzo[a]anthracene	mg/kg dry wt	< 0.002
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.002
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.002
Benzo[e]pyrene	mg/kg dry wt	< 0.002
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.002
Benzo[k]fluoranthene	mg/kg dry wt	< 0.002
Chrysene	mg/kg dry wt	< 0.002
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.002
Fluoranthene	mg/kg dry wt	< 0.002
Fluorene	mg/kg dry wt	< 0.002
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.002
Naphthalene	mg/kg dry wt	< 0.010
Perylene	mg/kg dry wt	< 0.002
Phenanthrene	mg/kg dry wt	< 0.002
Pyrene	mg/kg dry wt	< 0.002
Haloethers in SVOC Soil Samples by GC-MS		
Bis(2-chloroethoxy) methane	mg/kg dry wt	< 0.5
Bis(2-chloroethyl)ether	mg/kg dry wt	< 0.5
Bis(2-chloroisopropyl)ether	mg/kg dry wt	< 0.5
4-Bromophenyl phenyl ether	mg/kg dry wt	< 0.4

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

Sample Type: Soil		
Sample Name:		BH2B_2147_4.95 30-Jan-2026
Lab Number:		4086908.4
Haloethers in SVOC Soil Samples by GC-MS		
4-Chlorophenyl phenyl ether	mg/kg dry wt	< 0.5
Nitrogen containing compounds in SVOC Soil Samples by GC-MS		
2,4-Dinitrotoluene	mg/kg dry wt	< 1.0
2,6-Dinitrotoluene	mg/kg dry wt	< 1.0
Nitrobenzene	mg/kg dry wt	< 0.5
N-Nitrosodi-n-propylamine	mg/kg dry wt	< 0.8
N-Nitrosodiphenylamine + Diphenylamine	mg/kg dry wt	< 0.8
Organochlorine Pesticides in SVOC Soil Samples by GC-MS		
Aldrin	mg/kg dry wt	< 0.5
alpha-BHC	mg/kg dry wt	< 0.5
beta-BHC	mg/kg dry wt	< 0.5
delta-BHC	mg/kg dry wt	< 0.5
gamma-BHC (Lindane)	mg/kg dry wt	< 0.5
4,4'-DDD	mg/kg dry wt	< 0.5
4,4'-DDE	mg/kg dry wt	< 0.5
4,4'-DDT	mg/kg dry wt	< 1.0
Dieldrin	mg/kg dry wt	< 0.5
Endosulfan I	mg/kg dry wt	< 1.0
Endosulfan II	mg/kg dry wt	< 2
Endosulfan sulphate	mg/kg dry wt	< 1.0
Endrin	mg/kg dry wt	< 0.8
Endrin ketone	mg/kg dry wt	< 1.0
Heptachlor	mg/kg dry wt	< 0.5
Heptachlor epoxide	mg/kg dry wt	< 0.5
Hexachlorobenzene	mg/kg dry wt	< 0.5
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS*		
Acenaphthene	mg/kg dry wt	< 0.5
Acenaphthylene	mg/kg dry wt	< 0.5
Anthracene	mg/kg dry wt	< 0.5
Benzo[a]anthracene	mg/kg dry wt	< 0.5
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.5
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.5
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.5
Benzo[k]fluoranthene	mg/kg dry wt	< 0.5
1&2-Chloronaphthalene	mg/kg dry wt	< 0.5
Chrysene	mg/kg dry wt	< 0.5
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.5
Fluoranthene	mg/kg dry wt	< 0.5
Fluorene	mg/kg dry wt	< 0.5
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.5
2-Methylnaphthalene	mg/kg dry wt	< 0.5
Naphthalene	mg/kg dry wt	< 0.5
Phenanthrene	mg/kg dry wt	< 0.5
Pyrene	mg/kg dry wt	< 0.5
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 1.3
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 1.3
Phenols in SVOC Soil Samples by GC-MS		
4-Chloro-3-methylphenol	mg/kg dry wt	< 5
2-Chlorophenol	mg/kg dry wt	< 1.0
2,4-Dichlorophenol	mg/kg dry wt	< 1.0
2,4-Dimethylphenol	mg/kg dry wt	< 3
3 & 4-Methylphenol (m- + p-cresol)	mg/kg dry wt	< 3

Sample Type: Soil		
Sample Name:		BH2B_2147_4.95 30-Jan-2026
Lab Number:		4086908.4
Phenols in SVOC Soil Samples by GC-MS		
2-Methylphenol (o-cresol)	mg/kg dry wt	< 1.0
2-Nitrophenol	mg/kg dry wt	< 5
Pentachlorophenol (PCP)	mg/kg dry wt	< 30
Phenol	mg/kg dry wt	< 1.0
2,4,5-Trichlorophenol	mg/kg dry wt	< 1.0
2,4,6-Trichlorophenol	mg/kg dry wt	< 1.0
Plasticisers in SVOC Soil Samples by GC-MS		
Bis(2-ethylhexyl)phthalate	mg/kg dry wt	< 5
Butylbenzylphthalate	mg/kg dry wt	< 1.0
Di(2-ethylhexyl)adipate	mg/kg dry wt	< 1.0
Diethylphthalate	mg/kg dry wt	< 1.0
Dimethylphthalate	mg/kg dry wt	< 1.0
Di-n-butylphthalate	mg/kg dry wt	< 1.0
Di-n-octylphthalate	mg/kg dry wt	< 1.0
Other Halogenated compounds in SVOC Soil Samples by GC-MS		
1,2-Dichlorobenzene	mg/kg dry wt	< 0.8
1,3-Dichlorobenzene	mg/kg dry wt	< 0.8
1,4-Dichlorobenzene	mg/kg dry wt	< 0.8
Hexachlorobutadiene	mg/kg dry wt	< 0.8
Hexachloroethane	mg/kg dry wt	< 0.8
1,2,4-Trichlorobenzene	mg/kg dry wt	< 0.5
Other compounds in SVOC Soil Samples by GC-MS		
Benzyl alcohol	mg/kg dry wt	< 10
Carbazole	mg/kg dry wt	< 0.5
Dibenzofuran	mg/kg dry wt	< 0.5
Isophorone	mg/kg dry wt	< 0.5
Total Petroleum Hydrocarbons in Soil		
C7 - C9	mg/kg dry wt	< 20
C10 - C14	mg/kg dry wt	< 20
C15 - C36	mg/kg dry wt	< 40
Total hydrocarbons (C7 - C36)	mg/kg dry wt	< 80

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request.
Unless otherwise indicated, analyses were performed at Hill Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Individual Tests			
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	4
Dry Matter	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	4
Heavy Metals with Mercury, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required. US EPA 200.2 (modified), APHA 3125 B: Online Edition.	0.10 - 4 mg/kg dry wt	4
Polycyclic Aromatic Hydrocarbons Trace in Soil	Sonication extraction, GC-MS/MS analysis. Tested on as received sample. In-house based on US EPA 8270.	0.002 - 0.03 mg/kg dry wt	4
Semivolatile Organic Compounds Screening in Soil by GC-MS	Sonication extraction, GC-MS analysis. Tested on as received sample. In-house based on US EPA 8270.	0.024 - 30 mg/kg dry wt	4
Total Petroleum Hydrocarbons in Soil			

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
C7 - C9	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	4
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	4
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	4
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	4

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 10-Feb-2026 and 16-Feb-2026. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

This certificate of analysis must not be reproduced, except in full, without the written consent of the signatory.



Ara Heron BSc (Tech)
Client Services Manager - Environmental

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Quality Assurance Report

Client:	WSP New Zealand Limited	**Lab No:**	4086908	QCPv1
Contact:	Henry McIntyre C/- WSP New Zealand Limited PO Box 5848 Auckland 1141	**Date Received:**	30-Jan-2026	
		Date Reported:	16-Feb-2026	
		Quote No:	82748	
		Order No:	1-C2466.16	
		Client Reference:	1-C2466.16	
		Submitted By:	Megan Baddiley	

Sample Specific QCs

Polycyclic Aromatic Hydrocarbons Trace in Soil

		4086908.4	Control Limits	Outside Limit (Yes/No)
1-methylnaphthalene-d10	%	98	50 – 120	No
Benzo[a]pyrene-d12	%	98	50 – 140	No
Fluoranthene-d10	%	96	54 – 140	No

SMC Compounds in SVOC Soil Samples by GC-MS

		4086908.4	Control Limits	Outside Limit (Yes/No)
2-fluorobiphenyl	%	92	40 – 120	No
2-fluorophenol	%	100	40 – 120	No
Nitrobenzene-d5	%	81	40 – 120	No
Phenol-d5	%	81	40 – 120	No
Terphenyl-d14	%	95	40 – 120	No
2,4,6-Tribromophenol	%	80	40 – 120	No

Blank QCs

Trace Blank - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 17823.1

		Results	Control Limits	Outside Limit (Yes/No)
1-Methylnaphthalene	mg/kg dry wt	< 0.002 ± 0.0063	0.0 – 0.00133	No
2-Methylnaphthalene	mg/kg dry wt	< 0.002 ± 0.0063	0.0 – 0.00133	No
Acenaphthene	mg/kg dry wt	< 0.002 ± 0.0013	0.0 – 0.00133	No
Acenaphthylene	mg/kg dry wt	< 0.002 ± 0.0014	0.0 – 0.00133	No
Anthracene	mg/kg dry wt	< 0.002 ± 0.0012	0.0 – 0.00133	No
Benzo[a]anthracene	mg/kg dry wt	< 0.002 ± 0.0013	0.0 – 0.00133	No
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.002 ± 0.0014	0.0 – 0.00133	No
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.002 ± 0.0013	0.0 – 0.00133	No
Benzo[e]pyrene	mg/kg dry wt	< 0.002 ± 0.0014	0.0 – 0.00133	No
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.002 ± 0.0013	0.0 – 0.00133	No
Benzo[k]fluoranthene	mg/kg dry wt	< 0.002 ± 0.0014	0.0 – 0.00133	No
Chrysene	mg/kg dry wt	< 0.002 ± 0.0014	0.0 – 0.00133	No
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.002 ± 0.0014	0.0 – 0.00133	No
Fluoranthene	mg/kg dry wt	< 0.002 ± 0.0014	0.0 – 0.00133	No
Fluorene	mg/kg dry wt	< 0.002 ± 0.0014	0.0 – 0.00133	No
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.002 ± 0.0014	0.0 – 0.00133	No
Naphthalene	mg/kg dry wt	< 0.010 ± 0.0063	0.0 – 0.0067	No
Perylene	mg/kg dry wt	< 0.002 ± 0.0014	0.0 – 0.00133	No

Trace Blank - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 17823.1				
		Results	Control Limits	Outside Limit (Yes/No)
Phenanthrene	mg/kg dry wt	< 0.002 ± 0.0014	0.0 – 0.00133	No
Pyrene	mg/kg dry wt	< 0.002 ± 0.0014	0.0 – 0.00133	No

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13402.13				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13402.39				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

50x Manual Dilution Digest Blank PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13402.73				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

100x Manual Dilution Digest Blank PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13402.76				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 4 ± 1.3	-4.0 – 4.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.2 ± 0.065	-0.20 – 0.20	No
Total Recoverable Chromium	mg/kg dry wt	< 4 ± 1.4	-4.0 – 4.0	No
Total Recoverable Copper	mg/kg dry wt	< 4 ± 1.3	-4.0 – 4.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.8 ± 0.26	-0.80 – 0.80	No
Total Recoverable Mercury	mg/kg dry wt	< 0.2 ± 0.066	-0.20 – 0.20	No
Total Recoverable Nickel	mg/kg dry wt	< 4 ± 1.4	-4.0 – 4.0	No
Total Recoverable Zinc	mg/kg dry wt	< 8 ± 2.7	-8.0 – 8.0	No

QC Spike QCs

LCS TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 15560.3

		Results	Control Limits	Outside Limit (Yes/No)
Total hydrocarbons (C7 - C36)	%	78 ± 42	74 – 108	No

Trace LCS - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 17823.2

		Results	Control Limits	Outside Limit (Yes/No)
1-Methylnaphthalene	%	114 ± 28	83 – 128	No
2-Methylnaphthalene	%	111 ± 28	76 – 123	No
Acenaphthene	%	114 ± 33	80 – 129	No
Acenaphthylene	%	106.0 ± 9.6	75 – 128	No
Anthracene	%	102 ± 31	78 – 126	No
Benzo[a]anthracene	%	108 ± 29	79 – 129	No
Benzo[a]pyrene (BAP)	%	108.0 ± 8.3	76 – 132	No
Benzo[b]fluoranthene + Benzo[j]fluoranthene	%	114 ± 24	77 – 129	No
Benzo[e]pyrene	%	108.0 ± 8.3	73 – 118	No
Benzo[g,h,i]perylene	%	100 ± 18	75 – 132	No
Benzo[k]fluoranthene	%	122 ± 16	79 – 131	No
Chrysene	%	115 ± 18	80 – 133	No
Dibenzo[a,h]anthracene	%	99 ± 13	68 – 136	No
Fluoranthene	%	109 ± 11	80 – 131	No
Fluorene	%	112 ± 14	83 – 130	No
Indeno(1,2,3-c,d)pyrene	%	98.0 ± 9.1	70 – 129	No
Naphthalene	%	102 ± 25	79 – 125	No
Perylene	%	95.0 ± 7.3	58 – 100	No
Phenanthrene	%	119 ± 17	80 – 130	No
Pyrene	%	105 ± 14	79 – 134	No

Sample Spike QCs

Matrix Spike TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 15560.19

		Results	Control Limits	Outside Limit (Yes/No)
Total hydrocarbons (C7 - C36)	%	77 ± 42	71 – 104	No

Trace Sample Spike - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 17823.9

		Results	Control Limits	Outside Limit (Yes/No)
1-Methylnaphthalene	%	112 ± 28	72 – 134	No
2-Methylnaphthalene	%	109 ± 27	64 – 131	No
Acenaphthene	%	113 ± 33	76 – 129	No
Acenaphthylene	%	102.0 ± 9.2	71 – 132	No
Anthracene	%	100 ± 31	76 – 129	No
Benzo[a]anthracene	%	110 ± 29	77 – 134	No
Benzo[a]pyrene (BAP)	%	106.0 ± 8.1	76 – 137	No
Benzo[b]fluoranthene + Benzo[j]fluoranthene	%	115 ± 24	72 – 137	No
Benzo[e]pyrene	%	109.0 ± 8.3	70 – 125	No
Benzo[g,h,i]perylene	%	102 ± 18	69 – 137	No
Benzo[k]fluoranthene	%	121 ± 16	78 – 133	No
Chrysene	%	114 ± 17	79 – 138	No
Dibenzo[a,h]anthracene	%	103 ± 14	64 – 136	No
Fluoranthene	%	106 ± 11	80 – 132	No
Fluorene	%	109 ± 13	82 – 128	No

Trace Sample Spike - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 17823.9				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Indeno(1,2,3-c,d)pyrene	%	100.0 ± 9.3	62 – 137	No
Naphthalene	%	100 ± 25	71 – 128	No
Perylene	%	108.0 ± 8.3	68 – 123	No
Phenanthrene	%	115 ± 17	72 – 135	No
Pyrene	%	108 ± 14	77 – 139	No

Reference Material QCs

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13402.14				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total Recoverable Arsenic	mg/kg dry wt	11.6 ± 2.2	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.83 ± 0.16	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	28.9 ± 4.0	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	14.3 ± 2.6	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	34.6 ± 6.5	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.386 ± 0.082	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	15.3 ± 2.4	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	212 ± 32	166 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13402.57				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total Recoverable Arsenic	mg/kg dry wt	11.3 ± 2.2	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.83 ± 0.16	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	28.5 ± 4.0	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	13.7 ± 2.5	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	33.5 ± 6.3	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.369 ± 0.081	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	15.1 ± 2.4	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	204 ± 31	166 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13402.74				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total Recoverable Arsenic	mg/kg dry wt	10.8 ± 2.1	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.78 ± 0.16	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	27.4 ± 3.8	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	12.9 ± 2.4	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	31.6 ± 6.0	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.314 ± 0.077	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	13.7 ± 2.2	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	189 ± 28	166 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13402.77				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total Recoverable Arsenic	mg/kg dry wt	10.4 ± 2.1	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.83 ± 0.16	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	26.8 ± 3.8	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	12.9 ± 2.4	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	31.6 ± 5.9	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.342 ± 0.079	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	13.5 ± 2.2	11.7 – 16.3	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13402.77				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total Recoverable Zinc	mg/kg dry wt	192 ± 29	166 – 230	No

Hill Labs

ANALYSIS REQUEST

R J Hill Laboratories Limited
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Parnell
Auckland 1052, New Zealand

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mail@hill-labs.co.nz
www.hill-labs.co.nz

Job No: **409 1264**

Date Recv: 04-Feb-26 16:13

Received by: Shraddha Pilli

Quote No

Primary Contact [redacted]

Submitted By henry

Client Name WSP NZ Ltd

Address 100 Beaumont Street

Postcode

Phone *Mob* [redacted]

Email

Charge To

Client Reference 1-C2466.16

Order No

Results To *Reports will be emailed to Primary Contact by default. Additional Reports will be sent as specified below.*

☑ Email Primary Contact ☑ Email Submitter ☐ Email Client

☐ Email Other [redacted]

☐ Other

ADDITIONAL INFORMATION

updated contact number

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories

☑ *Tick if you require COC to be emailed back*

Date & Time: 4/2/26 16:16

Name: Henry M.

Signature:

Samples will be processed at a Hill Labs site with the appropriate testing capability and capacity. Please inform the lab if you wish samples to be retained and analysed at the site of receipt.

Received at Hill Laboratories

Date & Time:

Name:

Signature:

Priority ☐ Low ☑ Normal ☐ High ☐ Urgent (ASAP, extra charge applies, please contact lab first)

Requested Reporting Date:

*Please ensure all asbestos samples are **individually double bagged** upon submission to the laboratory.*

No.	Sample Name	Sample Type	Sample Location	Sample Date/ Time	Tests Required (if not as per Quote)
1	BH2B_2147_13.95	Soil	BH2B_2147	2/2/26	hold cold
2	BH2B_2147_15.45				
3	BH2B_2147 16.95				
4	BH2B_2147 18.65				
5	BH2B_2147_20.00				
6	BH2B_2147_21.50				
7	BH2B_2147_23.00			3/2/26	
8	BH2B_2147_26.05				
9	BH2B_2147_28.10			4/2/26	
10	BH2B_2147_29.70				
11	BH2B_2147_31.50				
12	BH2B_2147_32.90				
13	BH2B-2147-34.80				

No.	Sample Name	Sample Material	Sample Location	Sample Date	Tests Required (If not as per Quote)
14	~~36.40~~	Soil	BH2B-2147	4/2/26.	~~Leach~~ hold
15	BH2B_2147_36.40				
16	BH2B-2147_37.30				
17	BH2B_2147_39.7				
18	BH2B_2147_QAQC01			2/2/26	
19	BH2B_2147_QAQC02			4/2/26	
20					
21					Temperature On Arrival
22					12.9 °C
23					Temperature was measured on one or more arbitrarily chosen samples in this batch.
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
41					

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Private Bag 3205
Hamilton 3240 New Zealand

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Job Information Summary

Client:	WSP New Zealand Limited	**Lab No:**	4091264
Contact:	Henry McIntyre	**Date Registered:**	07-Feb-2026 2:53 pm
	C/- WSP New Zealand Limited	**Priority:**	High
	PO Box 5848	**Quote No:**	82748
	Auckland 1141	**Order No:**	1-C2466.16
		Client Reference:	1-C2466.16
		Add. Client Ref:	
		Submitted By:	Henry McIntyre
		Charge To:	WSP New Zealand Limited
		Target Date:	12-Feb-2026 4:30 pm

Samples

No	Sample Name	Sample Type	Containers	Tests Requested
1	BH2B_2147_13.95 02-Feb-2026	Soil	GSoil300, PSoil250	Hold Cold
2	BH2B_2147_15.45 02-Feb-2026	Soil	GSoil300, PSoil250	Hold Cold
3	BH2B_2147_16.95 02-Feb-2026	Soil	GSoil300, PSoil250	Semivolatile Organic Compounds Screening in Soil by GC-MS, Heavy Metals with Mercury, Screen Level, Total Petroleum Hydrocarbons in Soil, Polycyclic Aromatic Hydrocarbons Trace in Soil
4	BH2B_2147_18.65 02-Feb-2026	Soil	GSoil300, PSoil250	Hold Cold
5	BH2B_2147_20.00 02-Feb-2026	Soil	GSoil300, PSoil250	Hold Cold
6	BH2B_2147_21.50 02-Feb-2026	Soil	GSoil300, PSoil250	Hold Cold
7	BH2B_2147_23.00 03-Feb-2026	Soil	GSoil300, PSoil250	Hold Cold
8	BH2B_2147_26.05 03-Feb-2026	Soil	GSoil300, PSoil250	Hold Cold
9	BH2B_2147_28.10 04-Feb-2026	Soil	GSoil300, PSoil250	Hold Cold
10	BH2B_2147_29.70 04-Feb-2026	Soil	GSoil300, PSoil250	Hold Cold
11	BH2B_2147_31.50 04-Feb-2026	Soil	GSoil300, PSoil250	Hold Cold
12	BH2B_2147_32.90 04-Feb-2026	Soil	GSoil300, PSoil250	Semivolatile Organic Compounds Screening in Soil by GC-MS, Heavy Metals with Mercury, Screen Level, Polycyclic Aromatic Hydrocarbons Trace in Soil, Total Petroleum Hydrocarbons in Soil
13	BH2B_2147_34.80 04-Feb-2026	Soil	GSoil300, PSoil250	Semivolatile Organic Compounds Screening in Soil by GC-MS, Heavy Metals with Mercury, Screen Level, Polycyclic Aromatic Hydrocarbons Trace in Soil, Total Petroleum Hydrocarbons in Soil
14	BH2B_2147_36.40 04-Feb-2026	Soil	GSoil300, PSoil250	Hold Cold
15	BH2B_2147_37.30 04-Feb-2026	Soil	GSoil300, PSoil250	Hold Cold
16	BH2B_2147_39.70 04-Feb-2026	Soil	GSoil300, PSoil250	Hold Cold
17	BH2B_2147_QAQC01 02-Feb-2026	Soil	GSoil300, PSoil250	Hold Cold
18	BH2B_2147_QAQC02 04-Feb-2026	Soil	GSoil300, PSoil250	Semivolatile Organic Compounds Screening in Soil by GC-MS, Heavy Metals with Mercury, Screen Level, Polycyclic Aromatic Hydrocarbons Trace in Soil, Total Petroleum Hydrocarbons in Soil

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request.
Unless otherwise indicated, analyses were performed at Hill Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Individual Tests			
Environmental Solids Sample Drying	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	3, 12-13, 18

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Dry Matter	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	3, 12-13, 18
Heavy Metals with Mercury, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required. US EPA 200.2 (modified), APHA 3125 B: Online Edition.	0.10 - 4 mg/kg dry wt	3, 12-13, 18
Polycyclic Aromatic Hydrocarbons Trace in Soil	Sonication extraction, GC-MS/MS analysis. Tested on as received sample. In-house based on US EPA 8270.	0.002 - 0.03 mg/kg dry wt	3, 12-13, 18
Semivolatile Organic Compounds Screening in Soil by GC-MS	Sonication extraction, GC-MS analysis. Tested on as received sample. In-house based on US EPA 8270.	0.024 - 30 mg/kg dry wt	3, 12-13, 18
Total Petroleum Hydrocarbons in Soil			
Client Chromatogram for TPH by FID	Small peaks associated with QC compounds may be visible in chromatograms with low TPH concentrations. QC peaks are as follows: one peak in the C12 - 14 band, the C21 - 25 band and the C30 - 36 band. All QC peaks are corrected for in the reported TPH concentrations.	-	3, 12-13, 18
C7 - C9	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	3, 12-13, 18
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	3, 12-13, 18
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	3, 12-13, 18
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	3, 12-13, 18

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Certificate of Analysis

Client:	WSP New Zealand Limited	**Lab No:**	4091264 SPv1
Contact:	Henry McIntyre C/- WSP New Zealand Limited PO Box 5848 Auckland 1141	**Date Received:**	04-Feb-2026
		Date Reported:	13-Feb-2026
		Quote No:	82748
		Order No:	1-C2466.16
		Client Reference:	1-C2466.16
		Submitted By:	Henry McIntyre

Sample Type: Soil

Sample Name:		BH2B_2147_16.95 02-Feb-2026	BH2B_2147_32.90 04-Feb-2026	BH2B_2147_34.80 04-Feb-2026	BH2B_2147_QAQC02 04-Feb-2026
Lab Number:		4091264.3	4091264.12	4091264.13	4091264.18
Individual Tests					
Dry Matter	g/100g as rcvd	78	85	82	82
Heavy Metals with Mercury, Screen Level					
Total Recoverable Arsenic	mg/kg dry wt	5	3	< 2	< 2
Total Recoverable Cadmium	mg/kg dry wt	< 0.2	< 0.10	< 0.10	< 0.10
Total Recoverable Chromium	mg/kg dry wt	8	6	13	12
Total Recoverable Copper	mg/kg dry wt	33	34	17	15
Total Recoverable Lead	mg/kg dry wt	6.9	6.2	4.5	4.3
Total Recoverable Mercury	mg/kg dry wt	< 0.2	< 0.10	< 0.10	< 0.10
Total Recoverable Nickel	mg/kg dry wt	24	19	14	15
Total Recoverable Zinc	mg/kg dry wt	33	50	45	46
Polycyclic Aromatic Hydrocarbons Trace in Soil*					
Total of Reported PAHs in Soil	mg/kg dry wt	< 9	< 0.05	< 0.05	< 0.05
1-Methylnaphthalene	mg/kg dry wt	< 0.002	< 0.002	< 0.002	< 0.002
2-Methylnaphthalene	mg/kg dry wt	< 0.002	< 0.002	< 0.002	< 0.002
Acenaphthene	mg/kg dry wt	< 0.002	< 0.002	< 0.002	< 0.002
Acenaphthylene	mg/kg dry wt	< 0.002	< 0.002	< 0.002	< 0.002
Anthracene	mg/kg dry wt	< 0.002	< 0.002	< 0.002	< 0.002
Benzo[a]anthracene	mg/kg dry wt	< 0.002	< 0.002	< 0.002	< 0.002
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.002	< 0.002	< 0.002	< 0.002
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.002	< 0.002	< 0.002	< 0.002
Benzo[e]pyrene	mg/kg dry wt	< 0.002	< 0.002	< 0.002	< 0.002
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.002	< 0.002	< 0.002	< 0.002
Benzo[k]fluoranthene	mg/kg dry wt	< 0.002	< 0.002	< 0.002	< 0.002
Chrysene	mg/kg dry wt	< 0.002	< 0.002	< 0.002	< 0.002
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.002	< 0.002	< 0.002	< 0.002
Fluoranthene	mg/kg dry wt	< 0.002	< 0.002	< 0.002	< 0.002
Fluorene	mg/kg dry wt	< 0.002	< 0.002	< 0.002	< 0.002
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.002	< 0.002	< 0.002	< 0.002
Naphthalene	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010
Perylene	mg/kg dry wt	< 0.002	< 0.002	< 0.002	< 0.002
Phenanthrene	mg/kg dry wt	< 0.002	< 0.002	< 0.002	< 0.002
Pyrene	mg/kg dry wt	< 0.002	< 0.002	< 0.002	< 0.002
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	-	< 0.0049	< 0.0049	< 0.0049
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	-	< 0.0049	< 0.0049	< 0.0049

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

Sample Type: Soil					
Sample Name:		BH2B_2147_16.95 02-Feb-2026	BH2B_2147_32.90 04-Feb-2026	BH2B_2147_34.80 04-Feb-2026	BH2B_2147_QAQC02 04-Feb-2026
Lab Number:		4091264.3	4091264.12	4091264.13	4091264.18
Haloethers in SVOC Soil Samples by GC-MS					
Bis(2-chloroethoxy) methane	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-chloroethyl)ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-chloroisopropyl)ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5
4-Bromophenyl phenyl ether	mg/kg dry wt	< 0.4	< 0.4	< 0.4	< 0.4
4-Chlorophenyl phenyl ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5
Nitrogen containing compounds in SVOC Soil Samples by GC-MS					
2,4-Dinitrotoluene	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0
2,6-Dinitrotoluene	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0
Nitrobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5
N-Nitrosodi-n-propylamine	mg/kg dry wt	< 0.8	< 0.8	< 0.8	< 0.8
N-Nitrosodiphenylamine + Diphenylamine	mg/kg dry wt	< 0.8	< 0.8	< 0.8	< 0.8
Organochlorine Pesticides in SVOC Soil Samples by GC-MS					
Aldrin	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5
alpha-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5
beta-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5
delta-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5
gamma-BHC (Lindane)	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5
4,4'-DDD	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5
4,4'-DDE	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5
4,4'-DDT	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0
Dieldrin	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5
Endosulfan I	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0
Endosulfan II	mg/kg dry wt	< 2	< 2	< 2	< 2
Endosulfan sulphate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0
Endrin	mg/kg dry wt	< 0.8	< 0.8	< 0.8	< 0.8
Endrin ketone	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0
Heptachlor	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5
Heptachlor epoxide	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5
Hexachlorobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS*					
Acenaphthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[a]anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[k]fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5
1&2-Chloronaphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5
2-Methylnaphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 1.3	< 1.3	< 1.3	< 1.3
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 1.3	< 1.3	< 1.3	< 1.3

Sample Type: Soil					
Sample Name:		BH2B_2147_16.95 02-Feb-2026	BH2B_2147_32.90 04-Feb-2026	BH2B_2147_34.80 04-Feb-2026	BH2B_2147_QAQC02 04-Feb-2026
Lab Number:		4091264.3	4091264.12	4091264.13	4091264.18
Phenols in SVOC Soil Samples by GC-MS					
4-Chloro-3-methylphenol	mg/kg dry wt	< 5	< 5	< 5	< 5
2-Chlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0
2,4-Dichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0
2,4-Dimethylphenol	mg/kg dry wt	< 3	< 3	< 3	< 3
3 & 4-Methylphenol (m- + p-cresol)	mg/kg dry wt	< 3	< 3	< 3	< 3
2-Methylphenol (o-cresol)	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0
2-Nitrophenol	mg/kg dry wt	< 5	< 5	< 5	< 5
Pentachlorophenol (PCP)	mg/kg dry wt	< 30	< 30	< 30	< 30
Phenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0
2,4,5-Trichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0
2,4,6-Trichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0
Plasticisers in SVOC Soil Samples by GC-MS					
Bis(2-ethylhexyl)phthalate	mg/kg dry wt	< 5	< 5	< 5	< 5
Butylbenzylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0
Di(2-ethylhexyl)adipate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0
Diethylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0
Dimethylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0
Di-n-butylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0
Di-n-octylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0
Other Halogenated compounds in SVOC Soil Samples by GC-MS					
1,2-Dichlorobenzene	mg/kg dry wt	< 0.8	< 0.8	< 0.8	< 0.8
1,3-Dichlorobenzene	mg/kg dry wt	< 0.8	< 0.8	< 0.8	< 0.8
1,4-Dichlorobenzene	mg/kg dry wt	< 0.8	< 0.8	< 0.8	< 0.8
Hexachlorobutadiene	mg/kg dry wt	< 0.8	< 0.8	< 0.8	< 0.8
Hexachloroethane	mg/kg dry wt	< 0.8	< 0.8	< 0.8	< 0.8
1,2,4-Trichlorobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5
Other compounds in SVOC Soil Samples by GC-MS					
Benzyl alcohol	mg/kg dry wt	< 10	< 10	< 10	< 10
Carbazole	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5
Dibenzofuran	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5
Isophorone	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5
Total Petroleum Hydrocarbons in Soil					
C7 - C9	mg/kg dry wt	< 20	< 20	< 20	< 20
C10 - C14	mg/kg dry wt	< 20	< 20	< 20	< 20
C15 - C36	mg/kg dry wt	< 40	< 40	< 40	< 40
Total hydrocarbons (C7 - C36)	mg/kg dry wt	< 80	< 80	< 80	< 80

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request. Unless otherwise indicated, analyses were performed at Hill Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Individual Tests			
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	3, 12-13, 18
Dry Matter	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	3, 12-13, 18

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Heavy Metals with Mercury, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required. US EPA 200.2 (modified), APHA 3125 B: Online Edition.	0.10 - 4 mg/kg dry wt	3, 12-13, 18
Polycyclic Aromatic Hydrocarbons Trace in Soil	Sonication extraction, GC-MS/MS analysis. Tested on as received sample. In-house based on US EPA 8270.	0.002 - 0.03 mg/kg dry wt	3, 12-13, 18
Semivolatile Organic Compounds Screening in Soil by GC-MS	Sonication extraction, GC-MS analysis. Tested on as received sample. In-house based on US EPA 8270.	0.024 - 30 mg/kg dry wt	3, 12-13, 18
Total Petroleum Hydrocarbons in Soil			
C7 - C9	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	3, 12-13, 18
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	3, 12-13, 18
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	3, 12-13, 18
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	3, 12-13, 18

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 10-Feb-2026 and 13-Feb-2026. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

This certificate of analysis must not be reproduced, except in full, without the written consent of the signatory.



Ara Heron BSc (Tech)
Client Services Manager - Environmental

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Quality Assurance Report

Client:	WSP New Zealand Limited	**Lab No:**	4091264	QCPv1
Contact:	Henry McIntyre C/- WSP New Zealand Limited PO Box 5848 Auckland 1141	**Date Received:**	04-Feb-2026	
		Date Reported:	13-Feb-2026	
		Quote No:	82748	
		Order No:	1-C2466.16	
		Client Reference:	1-C2466.16	
		Submitted By:	Henry McIntyre	

Sample Specific QCs

Polycyclic Aromatic Hydrocarbons Trace in Soil

		4091264.3	Control Limits	Outside Limit (Yes/No)
1-methylnaphthalene-d10	%	99	50 – 120	No
Benzo[a]pyrene-d12	%	99	50 – 140	No
Fluoranthene-d10	%	98	54 – 140	No

SMC Compounds in SVOC Soil Samples by GC-MS

		4091264.3	Control Limits	Outside Limit (Yes/No)
2-fluorobiphenyl	%	92	40 – 120	No
2-fluorophenol	%	96	40 – 120	No
Nitrobenzene-d5	%	75	40 – 120	No
Phenol-d5	%	64	40 – 120	No
Terphenyl-d14	%	100	40 – 120	No
2,4,6-Tribromophenol	%	66	40 – 120	No

Polycyclic Aromatic Hydrocarbons Trace in Soil

		4091264.12	Control Limits	Outside Limit (Yes/No)
1-methylnaphthalene-d10	%	99	50 – 120	No
Benzo[a]pyrene-d12	%	99	50 – 140	No
Fluoranthene-d10	%	97	54 – 140	No

SMC Compounds in SVOC Soil Samples by GC-MS

		4091264.12	Control Limits	Outside Limit (Yes/No)
2-fluorobiphenyl	%	90	40 – 120	No
2-fluorophenol	%	92	40 – 120	No
Nitrobenzene-d5	%	79	40 – 120	No
Phenol-d5	%	73	40 – 120	No
Terphenyl-d14	%	85	40 – 120	No
2,4,6-Tribromophenol	%	62	40 – 120	No

Polycyclic Aromatic Hydrocarbons Trace in Soil

		4091264.13	Control Limits	Outside Limit (Yes/No)
1-methylnaphthalene-d10	%	100	50 – 120	No
Benzo[a]pyrene-d12	%	102	50 – 140	No
Fluoranthene-d10	%	98	54 – 140	No

SMC Compounds in SVOC Soil Samples by GC-MS

		4091264.13	Control Limits	Outside Limit (Yes/No)
2-fluorobiphenyl	%	90	40 – 120	No
2-fluorophenol	%	98	40 – 120	No

SMC Compounds in SVOC Soil Samples by GC-MS				
		4091264.13	Control Limits	Outside Limit (Yes/No)
Nitrobenzene-d5	%	80	40 – 120	No
Phenol-d5	%	77	40 – 120	No
Terphenyl-d14	%	88	40 – 120	No
2,4,6-Tribromophenol	%	69	40 – 120	No

Polycyclic Aromatic Hydrocarbons Trace in Soil				
		4091264.18	Control Limits	Outside Limit (Yes/No)
1-methylnaphthalene-d10	%	88	50 – 120	No
Benzo[a]pyrene-d12	%	84	50 – 140	No
Fluoranthene-d10	%	93	54 – 140	No

SMC Compounds in SVOC Soil Samples by GC-MS				
		4091264.18	Control Limits	Outside Limit (Yes/No)
2-fluorobiphenyl	%	87	40 – 120	No
2-fluorophenol	%	93	40 – 120	No
Nitrobenzene-d5	%	83	40 – 120	No
Phenol-d5	%	77	40 – 120	No
Terphenyl-d14	%	90	40 – 120	No
2,4,6-Tribromophenol	%	70	40 – 120	No

Blank QCs

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13390.13				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13390.40				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

50x Manual Dilution Digest Blank PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13390.57				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No

50x Manual Dilution Digest Blank PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13390.57				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Trace Blank - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 17823.1				
		Results	Control Limits	Outside Limit (Yes/No)
1-Methylnaphthalene	mg/kg dry wt	< 0.002 ± 0.0063	0.0 – 0.00133	No
2-Methylnaphthalene	mg/kg dry wt	< 0.002 ± 0.0063	0.0 – 0.00133	No
Acenaphthene	mg/kg dry wt	< 0.002 ± 0.0013	0.0 – 0.00133	No
Acenaphthylene	mg/kg dry wt	< 0.002 ± 0.0014	0.0 – 0.00133	No
Anthracene	mg/kg dry wt	< 0.002 ± 0.0012	0.0 – 0.00133	No
Benzo[a]anthracene	mg/kg dry wt	< 0.002 ± 0.0013	0.0 – 0.00133	No
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.002 ± 0.0014	0.0 – 0.00133	No
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.002 ± 0.0013	0.0 – 0.00133	No
Benzo[e]pyrene	mg/kg dry wt	< 0.002 ± 0.0014	0.0 – 0.00133	No
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.002 ± 0.0013	0.0 – 0.00133	No
Benzo[k]fluoranthene	mg/kg dry wt	< 0.002 ± 0.0014	0.0 – 0.00133	No
Chrysene	mg/kg dry wt	< 0.002 ± 0.0014	0.0 – 0.00133	No
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.002 ± 0.0014	0.0 – 0.00133	No
Fluoranthene	mg/kg dry wt	< 0.002 ± 0.0014	0.0 – 0.00133	No
Fluorene	mg/kg dry wt	< 0.002 ± 0.0014	0.0 – 0.00133	No
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.002 ± 0.0014	0.0 – 0.00133	No
Naphthalene	mg/kg dry wt	< 0.010 ± 0.0063	0.0 – 0.0067	No
Perylene	mg/kg dry wt	< 0.002 ± 0.0014	0.0 – 0.00133	No
Phenanthrene	mg/kg dry wt	< 0.002 ± 0.0014	0.0 – 0.00133	No
Pyrene	mg/kg dry wt	< 0.002 ± 0.0014	0.0 – 0.00133	No

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13392.13				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13392.48				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No

50x Manual Dilution Digest Blank PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13392.74				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13400.53				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

QC Spike QCs

Trace LCS - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 17823.2				
		Results	Control Limits	Outside Limit (Yes/No)
1-Methylnaphthalene	%	114 ± 28	83 – 128	No
2-Methylnaphthalene	%	111 ± 28	76 – 123	No
Acenaphthene	%	114 ± 33	80 – 129	No
Acenaphthylene	%	106.0 ± 9.6	75 – 128	No
Anthracene	%	102 ± 31	78 – 126	No
Benzo[a]anthracene	%	108 ± 29	79 – 129	No
Benzo[a]pyrene (BAP)	%	108.0 ± 8.3	76 – 132	No
Benzo[b]fluoranthene + Benzo[j]fluoranthene	%	114 ± 24	77 – 129	No
Benzo[e]pyrene	%	108.0 ± 8.3	73 – 118	No
Benzo[g,h,i]perylene	%	100 ± 18	75 – 132	No
Benzo[k]fluoranthene	%	122 ± 16	79 – 131	No
Chrysene	%	115 ± 18	80 – 133	No
Dibenzo[a,h]anthracene	%	99 ± 13	68 – 136	No
Fluoranthene	%	109 ± 11	80 – 131	No
Fluorene	%	112 ± 14	83 – 130	No
Indeno(1,2,3-c,d)pyrene	%	98.0 ± 9.1	70 – 129	No
Naphthalene	%	102 ± 25	79 – 125	No
Perylene	%	95.0 ± 7.3	58 – 100	No
Phenanthrene	%	119 ± 17	80 – 130	No
Pyrene	%	105 ± 14	79 – 134	No

LCS TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 15566.3				
		Results	Control Limits	Outside Limit (Yes/No)
Total hydrocarbons (C7 - C36)	%	86 ± 43	74 – 108	No

LCS TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 15567.3				
		Results	Control Limits	Outside Limit (Yes/No)
Total hydrocarbons (C7 - C36)	%	77 ± 42	74 – 108	No

Sample Spike QCs

Trace Sample Spike - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 17823.9				
		Results	Control Limits	Outside Limit (Yes/No)
1-Methylnaphthalene	%	112 ± 28	72 – 134	No
2-Methylnaphthalene	%	109 ± 27	64 – 131	No
Acenaphthene	%	113 ± 33	76 – 129	No
Acenaphthylene	%	102.0 ± 9.2	71 – 132	No
Anthracene	%	100 ± 31	76 – 129	No
Benzo[a]anthracene	%	110 ± 29	77 – 134	No
Benzo[a]pyrene (BAP)	%	106.0 ± 8.1	76 – 137	No
Benzo[b]fluoranthene + Benzo[j]fluoranthene	%	115 ± 24	72 – 137	No
Benzo[e]pyrene	%	109.0 ± 8.3	70 – 125	No

Trace Sample Spike - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 17823.9				
		Results	Control Limits	Outside Limit (Yes/No)
Benzo[g,h,i]perylene	%	102 ± 18	69 – 137	No
Benzo[k]fluoranthene	%	121 ± 16	78 – 133	No
Chrysene	%	114 ± 17	79 – 138	No
Dibenzo[a,h]anthracene	%	103 ± 14	64 – 136	No
Fluoranthene	%	106 ± 11	80 – 132	No
Fluorene	%	109 ± 13	82 – 128	No
Indeno(1,2,3-c,d)pyrene	%	100.0 ± 9.3	62 – 137	No
Naphthalene	%	100 ± 25	71 – 128	No
Perylene	%	108.0 ± 8.3	68 – 123	No
Phenanthrene	%	115 ± 17	72 – 135	No
Pyrene	%	108 ± 14	77 – 139	No

Matrix Spike TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 15566.12				
		Results	Control Limits	Outside Limit (Yes/No)
Total hydrocarbons (C7 - C36)	%	88 ± 43	71 – 104	No

Matrix Spike TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 15567.32				
		Results	Control Limits	Outside Limit (Yes/No)
Total hydrocarbons (C7 - C36)	%	83 ± 42	71 – 104	No

Reference Material QCs

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13390.14				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	11.7 ± 2.2	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.85 ± 0.17	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	28.6 ± 4.0	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	13.9 ± 2.6	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	33.5 ± 6.3	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.298 ± 0.076	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	14.7 ± 2.3	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	203 ± 30	166 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13390.22				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	11.8 ± 2.2	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.91 ± 0.18	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	29.0 ± 4.1	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	14.1 ± 2.6	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	35.3 ± 6.6	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.329 ± 0.078	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	15.2 ± 2.4	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	207 ± 31	166 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13390.58				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	10.7 ± 2.1	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.83 ± 0.16	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	25.8 ± 3.7	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	12.6 ± 2.4	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	31.5 ± 5.9	28 – 38	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13390.58				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Mercury	mg/kg dry wt	0.329 ± 0.078	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	13.1 ± 2.2	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	190 ± 28	166 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13392.14				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Cadmium	mg/kg dry wt	0.90 ± 0.17	0.70 – 0.98	No
Total Recoverable Lead	mg/kg dry wt	35.5 ± 6.7	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.375 ± 0.082	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	15.6 ± 2.4	11.7 – 16.3	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13392.30				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Cadmium	mg/kg dry wt	0.89 ± 0.17	0.70 – 0.98	No
Total Recoverable Lead	mg/kg dry wt	35.6 ± 6.7	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.353 ± 0.080	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	15.7 ± 2.5	11.7 – 16.3	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13392.75				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Cadmium	mg/kg dry wt	0.79 ± 0.16	0.70 – 0.98	No
Total Recoverable Lead	mg/kg dry wt	31.6 ± 6.0	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.335 ± 0.079	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	14.2 ± 2.3	11.7 – 16.3	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13400.54				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	12.5 ± 2.3	9.1 – 12.7	No
Total Recoverable Chromium	mg/kg dry wt	30.2 ± 4.2	21 – 30	No [#1]
Total Recoverable Copper	mg/kg dry wt	15.1 ± 2.7	11.0 – 15.3	No [#1]
Total Recoverable Zinc	mg/kg dry wt	221 ± 33	166 – 230	No

Replicates

WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 17823.6				
		Replicate 1	Replicate 2	Pass/Fail
Acenaphthene	mg/kg dry wt	< 0.002 ± 0.0014	< 0.0019 ± 0.0014	Pass
Anthracene	mg/kg dry wt	< 0.002 ± 0.0014	< 0.0019 ± 0.0014	Pass
Acenaphthylene	mg/kg dry wt	< 0.002 ± 0.0014	< 0.0019 ± 0.0014	Pass
Benzo[a]anthracene	mg/kg dry wt	< 0.002 ± 0.0014	< 0.0019 ± 0.0014	Pass
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.002 ± 0.0014	< 0.0019 ± 0.0014	Pass
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.002 ± 0.0014	< 0.0019 ± 0.0014	Pass
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.002 ± 0.0014	< 0.0019 ± 0.0014	Pass
Benzo[k]fluoranthene	mg/kg dry wt	< 0.002 ± 0.0014	< 0.0019 ± 0.0014	Pass
Chrysene	mg/kg dry wt	< 0.002 ± 0.0014	< 0.0019 ± 0.0014	Pass
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.002 ± 0.0014	< 0.0019 ± 0.0014	Pass
Fluoranthene	mg/kg dry wt	< 0.002 ± 0.0014	< 0.0019 ± 0.0014	Pass
Fluorene	mg/kg dry wt	< 0.002 ± 0.0014	< 0.0019 ± 0.0014	Pass
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.002 ± 0.0014	< 0.0019 ± 0.0014	Pass
Naphthalene	mg/kg dry wt	< 0.010 ± 0.0067	< 0.010 ± 0.0067	Pass
Phenanthrene	mg/kg dry wt	< 0.002 ± 0.0014	< 0.0019 ± 0.0014	Pass

WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 17823.6				
		Replicate 1	**Replicate 2**	**Pass/Fail**
Pyrene	mg/kg dry wt	< 0.002 ± 0.0014	< 0.0019 ± 0.0014	Pass

Analyst's Comments

#1 The recovery for this analyte was outside the acceptable recovery range of the method. The corresponding sample result was accepted because the related recovery in the other QC material analysed was within the expected range.

HillLabs

ANALYSIS REQUEST

R J Hill Laboratories Limited
Ground Floor, 28 Heather Street
Parnell
Auckland 1052, New Zealand

0508 HILL LAB (44 555 22)
+64 7 858 2000
mail@hill-labs.co.nz
www.hill-labs.co.nz

Job No: **405 9456**

Date Recv: 16-Dec-25 15:41

Received by: Meg Vallabh

Quote No

Primary Contact Henry McIntyre

Submitted By Megan Baddiley

Client Name WSP NZ

Address 3/100 Beaumont St
Auckland Central *Postcode* 1010

Phone *Mobile*

Email [redacted]

Charge To [redacted]

Client Reference Northland Corridor

Order No 1-C2466.17

Results To *Reports will be emailed to Primary Contact by default. Additional Reports will be sent as specified below.*

☑ Email Primary Contact ☐ Email Submitter ☐ Email Client

☐ Email Other

☐ Other

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories

☑ Tick if you require COC to be emailed back

Date & Time: 16/12/25

Name: M Baddiley

Signature:

Samples will be processed at a Hill Labs site with the appropriate testing capability and capacity. Please inform the lab if you wish samples to be retained and analysed at the site of receipt.

Received at Hill Laboratories

Date & Time:

Name:

Signature:

ADDITIONAL INFORMATION

1 of 2 pages

Priority ☐ Low ☑ Normal ☐ High

☑ **Urgent** (ASAP, extra charge applies, please contact lab first)

Requested Reporting Date:

*Please ensure all asbestos samples are **individually double bagged** upon submission to the laboratory.*

No.	Sample Name	Sample Type	Sample Location	Sample Date/ Time	Tests Required (if not as per Quote)
1	2B_2146_4.6	Soil		15/12/25	Hold cold
2	2B_2146_5.0				
3	2B_2146_6.0				
4	2B_2146_6.5				
5	2B_2146_7.5				
6	2B_2146_8.5				
7	2B_2146_9.5				
8	2B_2146_10.4				
9	2B_2146_11				
10	2B_2146_12.5				
11	2B_2146_13.4				
12	2B_2146_14.5			↓	
13	2B_2146_15.5	✓		16/12/25	✓

Temperature On Arrival
11.1 °C
Temperature was measured on one or more arbitrarily chosen samples in this batch.

No.	Sample Name	Sample Material	Sample Location	Sample Date	Tests Required (if not as per Quote)
14	28_2146_16.4	Soil		16/12/25	Hold cold
15	28-2146_17.5	↓		↓	↓
16	28-2146_18.5				
17	28_2146_19.5				
18	28_2146_20.5				
19	28_2146_21.5				
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HillLabs

ANALYSIS REQUEST

R J Hill Laboratories Limited
Ground Floor, 28 Heather Street
Parnell
Auckland 1052, New Zealand

0508 HILL LAB (44 555 22)
+64 7 858 2000
mail@hill-labs.co.nz
www.hill-labs.co.nz

Office use only (Job No)

Quote No

Primary Contact Henry M Tetlow

Submitted By Megan Beddeley

Client Name WSP NZ

Address 3/100 Beaumont St
Auckland Central *Postcode* 1010

Phone *Mobile*

Email [redacted]

Charge To [redacted]

Client Reference Northland Corridor

Order No 1-C2466.17

Results To *Reports will be emailed to Primary Contact by default. Additional Reports will be sent as specified below.*

☑ *Email Primary Contact* ☐ *Email Submitter* ☐ *Email Client*

☐ *Email Other*

☐ *Other*

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories

Date & Time: 16/12/25

Name: M Beddeley

☐ *Tick if you require COC to be emailed back*

Signature:

Samples will be processed at a Hill Labs site with the appropriate testing capability and capacity. Please inform the lab if you wish samples to be retained and analysed at the site of receipt.

Received at Hill Laboratories

Date & Time:

Name:

Signature:

ADDITIONAL INFORMATION

2 of 2

Priority ☐ **Low** ☑ **Normal** ☐ **High**

☑ **Urgent** (ASAP, extra charge applies, please contact lab first)

Requested Reporting Date:

*Please ensure all asbestos samples are **individually double bagged** upon submission to the laboratory.*

No.	Sample Name	Sample Type	Sample Location	Sample Date/ Time	Tests Required (if not as per Quote)
1	QA&C01	soil		15/12/25	Hold
2	2B_2145_1.5				
3	2B_2145_3.5				
4	2B_2145_4.4				
5	2B_2145_5.0				
6	2B_2145_6.0				
7	2B_2145_6.5				
8	2B_2145_7.5				
9	2B_2145_8.5				
10	2B_2145_9.5				
11	2B_2145_10.4				
12	2B_2145_11				
13	2B_2145_12.5				

No.	Sample Name	Sample Material	Sample Location	Sample Date	Tests Required (if not as per Quote)
14	2B-2148-13.4	Soil		15/12/25	Hold cold
15	2B_2148_14.5			↓	
16	2B_2148_15.5			16/12/25	
17	2B_2148_16.4				
18	2B_2148_17.5				
19	2B_2148_18.5				
20	2B_2148_19.5				
21	2B_2148_20.5				
22	2B_2148_21.5				
23					
24					
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41					

Northland samples

Sample name	Depth	PID	Observations	Containers	Analysis	Comments
			15-Dec-25			
QAQC01	9.5			G300	HM+Hg, TPH	
2B_2148_1.5	1.5	1.1		G300	TPH, HM +Hg	
2B_2148_2.5	2.5	2		G300	Hold cold	
2B_2148_4.6	4.6	2		P250, G300	TPH, HM +Hg	
2B_2148_5.0	5	1.6		P250, G300	Hold cold	
2B_2148_6.0	6	2.6	HC odour first noted	P250, G300	Organics, TPH, SVOC, HM+Hg	
2B_2148_6.5	6.5	5		P250, G300	Hold cold	
2B_2148_7.5	7.5	5.9		P250, G300	Hold cold	
2B_2148_8.5	8.5	13		P250, G300	Hold cold	
2B_2148_9.5*	9.5	52.8	Green mottling/staining	P250, G300	Organics, TPH, SVOC, HM+Hg	
2B_2148_10.4	10.4	56.9		P250, G300	Hold cold	
2B_2148_11	11	56.4		P250, G300	Hold cold	
2B_2148_12.5	12.5	37.3		P250, G300	Hold cold	
2B_2148_13.4	13.4	117	Stronger HC	P250, G300	Organics, TPH, SVOC, HM+Hg	Additional TPH analysis without silica gel filter (discuss with Graham)
2B_2148_14.5	14.5	67		P250, G300	Hold cold	
			16-Dec-25			
2B_2148_15.5	15.5	77.2		P250, G300	Organics, TPH, SVOC, HM+Hg	Additional TPH analysis without silica gel filter (discuss with Graham)
2B_2148_16.4	16.4	56.8		P250, G300	Hold cold	
2B_2148_17.5	17.5	49.1		P250, G300	Hold cold	
2B_2148_18.5	18.5	57.6		P250, G300	Hold cold	
2B_2148_19.5	19.5	34.5		P250, G300	Hold cold	
2B_2148_20.5	20.5	41.7	HC odour	P250, G300	Organics, TPH, SVOC, HM+Hg	
2B_2148_21.5	21.5	30		P250, G300	Hold cold	

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Job Information Summary

Client:	WSP New Zealand Limited	**Lab No:**	4059456
Contact:	Henry McIntyre	**Date Registered:**	17-Dec-2025 10:57 am
	C/- WSP New Zealand Limited	**Priority:**	High
	PO Box 5848	**Quote No:**	82748
	Auckland 1141	**Order No:**	I-C2466.17
		Client Reference:	Northland Corridor
		Add. Client Ref:	
		Submitted By:	Megan Baddiley
		Charge To:	WSP New Zealand Limited
		Target Date:	22-Dec-2025 4:30 pm

Samples

No	Sample Name	Sample Type	Containers	Tests Requested
1	2B_2148_4.6 15-Dec-2025	Soil	GSoil300, PSoil250	Heavy Metals with Mercury, Screen Level, Total Petroleum Hydrocarbons in Soil
2	2B_2148_5.0 15-Dec-2025	Soil	GSoil300, PSoil250	Hold Cold
3	2B_2148_6.0 15-Dec-2025	Soil	GSoil300, PSoil250	Semivolatile Organic Compounds Screening in Soil by GC-MS, Organic Matter, Heavy Metals with Mercury, Screen Level, Total Petroleum Hydrocarbons in Soil, Total Sulphur
4	2B_2148_6.5 15-Dec-2025	Soil	GSoil300, PSoil250	Hold Cold
5	2B_2148_7.5 15-Dec-2025	Soil	GSoil300, cPSoil250	Hold Cold
6	2B_2148_8.5 15-Dec-2025	Soil	GSoil300, PSoil250	Hold Cold
7	2B_2148_9.5 15-Dec-2025	Soil	GSoil300, PSoil250	Semivolatile Organic Compounds Screening in Soil by GC-MS, Organic Matter, Heavy Metals with Mercury, Screen Level, Total Petroleum Hydrocarbons in Soil, Total Sulphur
8	2B_2148_10.4 15-Dec-2025	Soil	GSoil300, PSoil250	Hold Cold
9	2B_2148_11 15-Dec-2025	Soil	GSoil300, PSoil250	Hold Cold
10	2B_2148_12.5 15-Dec-2025	Soil	GSoil300, PSoil250	Hold Cold
11	2B_2148_13.4 15-Dec-2025	Soil	GSoil300, PSoil250	Semivolatile Organic Compounds Screening in Soil by GC-MS, Organic Matter, Heavy Metals with Mercury, Screen Level, Total Petroleum Hydrocarbons in Soil, Total Sulphur
12	2B_2148_14.5 15-Dec-2025	Soil	GSoil300, PSoil250	Hold Cold
13	2B_2148_15.5 16-Dec-2025	Soil	GSoil300, PSoil250	Semivolatile Organic Compounds Screening in Soil by GC-MS, Organic Matter, Heavy Metals with Mercury, Screen Level, Total Petroleum Hydrocarbons in Soil, Total Sulphur
14	2B_2148_16.4 16-Dec-2025	Soil	GSoil300, PSoil250	Hold Cold
15	2B_2148_17.5 16-Dec-2025	Soil	GSoil300, PSoil250	Hold Cold
16	2B_2148_18.5 16-Dec-2025	Soil	GSoil300, PSoil250	Hold Cold
17	2B_2148_19.5 16-Dec-2025	Soil	GSoil300, PSoil250	Hold Cold
18	2B_2148_20.5 16-Dec-2025	Soil	GSoil300, PSoil250	Semivolatile Organic Compounds Screening in Soil by GC-MS, Organic Matter, Heavy Metals with Mercury, Screen Level, Total Petroleum Hydrocarbons in Soil, Total Sulphur
19	2B_2148_21.5 16-Dec-2025	Soil	GSoil300, PSoil250	Hold Cold
20	2B_2148_1.5 16-Dec-2025	Soil	GSoil300	Heavy Metals with Mercury, Screen Level, Total Petroleum Hydrocarbons in Soil
21	2B_2148_2.5 16-Dec-2025	Soil	GSoil300	Hold Cold
22	QAQC01 16-Dec-2025	Soil	GSoil300	Heavy Metals with Mercury, Screen Level

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request.
Unless otherwise indicated, analyses were performed at Hill Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Individual Tests			
Environmental Solids Sample Drying	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	1, 3, 7, 11, 13, 18, 20, 22
Organic Matter	Calculation: 100 - Ash (dry wt).	0.04 g/100g dry wt	3, 7, 11, 13, 18
Dry Matter	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	1, 3, 7, 11, 13, 18, 20
Ash	Ignition in muffle furnace 550°C, 6hr, gravimetric. APHA 2540 G : Online Edition.	0.04 g/100g dry wt	3, 7, 11, 13, 18
Total Sulphur	LECO S144 Sulphur Determinator, high temperature furnace, infra-red detector. Subcontracted to SGS, Westport. ASTM 4239.	0.010 g/100g dry wt	3, 7, 11, 13, 18
Heavy Metals with Mercury, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required. US EPA 200.2 (modified), APHA 3125 B: Online Edition.	0.10 - 4 mg/kg dry wt	1, 3, 7, 11, 13, 18, 20, 22
Semivolatile Organic Compounds Screening in Soil by GC-MS	Sonication extraction, GC-MS analysis. Tested on as received sample. In-house based on US EPA 8270.	0.024 - 30 mg/kg dry wt	3, 7, 11, 13, 18
Total Petroleum Hydrocarbons in Soil			
Client Chromatogram for TPH by FID	Small peaks associated with QC compounds may be visible in chromatograms with low TPH concentrations. QC peaks are as follows: one peak in the C12 - 14 band, the C21 - 25 band and the C30 - 36 band. All QC peaks are corrected for in the reported TPH concentrations.	-	1, 3, 7, 11, 13, 18, 20
C7 - C9	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	1, 3, 7, 11, 13, 18, 20
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	1, 3, 7, 11, 13, 18, 20
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	1, 3, 7, 11, 13, 18, 20
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	1, 3, 7, 11, 13, 18, 20

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Certificate of Analysis

Client:	WSP New Zealand Limited	**Lab No:**	4059456 SPv2
Contact:	Henry McIntyre	**Date Received:**	16-Dec-2025
	C/- WSP New Zealand Limited	**Date Reported:**	31-Dec-2025
	PO Box 5848	**Quote No:**	82748
	Auckland 1141	**Order No:**	I-C2466.17
		Client Reference:	Northland Corridor
		Submitted By:	Megan Baddiley

Sample Type: Soil

Sample Name:		2B_2148_4.6 15-Dec-2025	2B_2148_6.0 15-Dec-2025	2B_2148_9.5 15-Dec-2025	2B_2148_13.4 15-Dec-2025	2B_2148_15.5 16-Dec-2025
Lab Number:		4059456.1	4059456.3	4059456.7	4059456.11	4059456.13
Individual Tests						
Organic Matter*	g/100g dry wt	-	4.8	4.3	4.6	4.5
Dry Matter	g/100g as rcvd	83	84	82	85	82
Ash*	g/100g dry wt	-	95	96	95	95
Total Sulphur*‡	g/100g dry wt	-	1.00	1.00	0.98	0.94
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	7	7	7	7	8
Total Recoverable Cadmium	mg/kg dry wt	0.17	0.20	0.26	0.22	0.20
Total Recoverable Chromium	mg/kg dry wt	7	10	12	9	14
Total Recoverable Copper	mg/kg dry wt	14	13	14	13	14
Total Recoverable Lead	mg/kg dry wt	10.0	7.9	8.7	8.3	9.2
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Nickel	mg/kg dry wt	20	20	22	18	20
Total Recoverable Zinc	mg/kg dry wt	69	66	73	78	77
Haloethers in SVOC Soil Samples by GC-MS						
Bis(2-chloroethoxy) methane	mg/kg dry wt	-	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-chloroethyl)ether	mg/kg dry wt	-	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-chloroisopropyl)ether	mg/kg dry wt	-	< 0.5	< 0.5	< 0.5	< 0.5
4-Bromophenyl phenyl ether	mg/kg dry wt	-	< 0.4	< 0.4	< 0.4	< 0.4
4-Chlorophenyl phenyl ether	mg/kg dry wt	-	< 0.5	< 0.5	< 0.5	< 0.5
Nitrogen containing compounds in SVOC Soil Samples by GC-MS						
2,4-Dinitrotoluene	mg/kg dry wt	-	< 1.0	< 1.0	< 1.0	< 1.0
2,6-Dinitrotoluene	mg/kg dry wt	-	< 1.0	< 1.0	< 1.0	< 1.0
Nitrobenzene	mg/kg dry wt	-	< 0.5	< 0.5	< 0.5	< 0.5
N-Nitrosodi-n-propylamine	mg/kg dry wt	-	< 0.7	< 0.8	< 0.7	< 0.8
N-Nitrosodiphenylamine + Diphenylamine	mg/kg dry wt	-	< 0.7	< 0.8	< 0.7	< 0.8
Organochlorine Pesticides in SVOC Soil Samples by GC-MS						
Aldrin	mg/kg dry wt	-	< 0.5	< 0.5	< 0.5	< 0.5
alpha-BHC	mg/kg dry wt	-	< 0.5	< 0.5	< 0.5	< 0.5
beta-BHC	mg/kg dry wt	-	< 0.5	< 0.5	< 0.5	< 0.5
delta-BHC	mg/kg dry wt	-	< 0.5	< 0.5	< 0.5	< 0.5
gamma-BHC (Lindane)	mg/kg dry wt	-	< 0.5	< 0.5	< 0.5	< 0.5
4,4'-DDD	mg/kg dry wt	-	< 0.5	< 0.5	< 0.5	< 0.5
4,4'-DDE	mg/kg dry wt	-	< 0.5	< 0.5	< 0.5	< 0.5
4,4'-DDT	mg/kg dry wt	-	< 1.0	< 1.0	< 1.0	< 1.0
Dieldrin	mg/kg dry wt	-	< 0.5	< 0.5	< 0.5	< 0.5
Endosulfan I	mg/kg dry wt	-	< 1.0	< 1.0	< 1.0	< 1.0
Endosulfan II	mg/kg dry wt	-	< 2	< 2	< 2	< 2

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

Sample Type: Soil						
Sample Name:		2B_2148_4.6 15-Dec-2025	2B_2148_6.0 15-Dec-2025	2B_2148_9.5 15-Dec-2025	2B_2148_13.4 15-Dec-2025	2B_2148_15.5 16-Dec-2025
Lab Number:		4059456.1	4059456.3	4059456.7	4059456.11	4059456.13
Organochlorine Pesticides in SVOC Soil Samples by GC-MS						
Endosulfan sulphate	mg/kg dry wt	-	< 1.0	< 1.0	< 1.0	< 1.0
Endrin	mg/kg dry wt	-	< 0.7	< 0.8	< 0.7	< 0.8
Endrin ketone	mg/kg dry wt	-	< 1.0	< 1.0	< 1.0	< 1.0
Heptachlor	mg/kg dry wt	-	< 0.5	< 0.5	< 0.5	< 0.5
Heptachlor epoxide	mg/kg dry wt	-	< 0.5	< 0.5	< 0.5	< 0.5
Hexachlorobenzene	mg/kg dry wt	-	< 0.5	< 0.5	< 0.5	< 0.5
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS*						
Acenaphthene	mg/kg dry wt	-	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	mg/kg dry wt	-	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	mg/kg dry wt	-	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[a]anthracene	mg/kg dry wt	-	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[a]pyrene (BAP)	mg/kg dry wt	-	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	-	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[g,h,i]perylene	mg/kg dry wt	-	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[k]fluoranthene	mg/kg dry wt	-	< 0.5	< 0.5	< 0.5	< 0.5
1&2-Chloronaphthalene	mg/kg dry wt	-	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	mg/kg dry wt	-	< 0.5	< 0.5	< 0.5	< 0.5
Dibenzo[a,h]anthracene	mg/kg dry wt	-	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	mg/kg dry wt	-	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	mg/kg dry wt	-	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	-	< 0.5	< 0.5	< 0.5	< 0.5
2-Methylnaphthalene	mg/kg dry wt	-	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	mg/kg dry wt	-	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	mg/kg dry wt	-	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	mg/kg dry wt	-	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	-	< 1.3	< 1.3	< 1.3	< 1.3
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	-	< 1.3	< 1.3	< 1.3	< 1.3
Phenols in SVOC Soil Samples by GC-MS						
4-Chloro-3-methylphenol	mg/kg dry wt	-	< 5	< 5	< 5	< 5
2-Chlorophenol	mg/kg dry wt	-	< 1.0	< 1.0	< 1.0	< 1.0
2,4-Dichlorophenol	mg/kg dry wt	-	< 1.0	< 1.0	< 1.0	< 1.0
2,4-Dimethylphenol	mg/kg dry wt	-	< 3	< 3	< 3	< 3
3 & 4-Methylphenol (m- + p-cresol)	mg/kg dry wt	-	< 3	< 3	< 3	< 3
2-Methylphenol (o-cresol)	mg/kg dry wt	-	< 1.0	< 1.0	< 1.0	< 1.0
2-Nitrophenol	mg/kg dry wt	-	< 5	< 5	< 5	< 5
Pentachlorophenol (PCP)	mg/kg dry wt	-	< 30	< 30	< 30	< 30
Phenol	mg/kg dry wt	-	< 1.0	< 1.0	< 1.0	< 1.0
2,4,5-Trichlorophenol	mg/kg dry wt	-	< 1.0	< 1.0	< 1.0	< 1.0
2,4,6-Trichlorophenol	mg/kg dry wt	-	< 1.0	< 1.0	< 1.0	< 1.0
Plasticisers in SVOC Soil Samples by GC-MS						
Bis(2-ethylhexyl)phthalate	mg/kg dry wt	-	< 5	< 5	< 5	< 5
Butylbenzylphthalate	mg/kg dry wt	-	< 1.0	< 1.0	< 1.0	< 1.0
Di(2-ethylhexyl)adipate	mg/kg dry wt	-	< 1.0	< 1.0	< 1.0	< 1.0
Diethylphthalate	mg/kg dry wt	-	< 1.0	< 1.0	< 1.0	< 1.0
Dimethylphthalate	mg/kg dry wt	-	< 1.0	< 1.0	< 1.0	< 1.0
Di-n-butylphthalate	mg/kg dry wt	-	< 1.0	< 1.0	< 1.0	< 1.0
Di-n-octylphthalate	mg/kg dry wt	-	< 1.0	< 1.0	< 1.0	< 1.0
Other Halogenated compounds in SVOC Soil Samples by GC-MS						
1,2-Dichlorobenzene	mg/kg dry wt	-	< 0.7	< 0.8	< 0.7	< 0.8
1,3-Dichlorobenzene	mg/kg dry wt	-	< 0.7	< 0.8	< 0.7	< 0.8
1,4-Dichlorobenzene	mg/kg dry wt	-	< 0.7	< 0.8	< 0.7	< 0.8
Hexachlorobutadiene	mg/kg dry wt	-	< 0.7	< 0.8	< 0.7	< 0.8

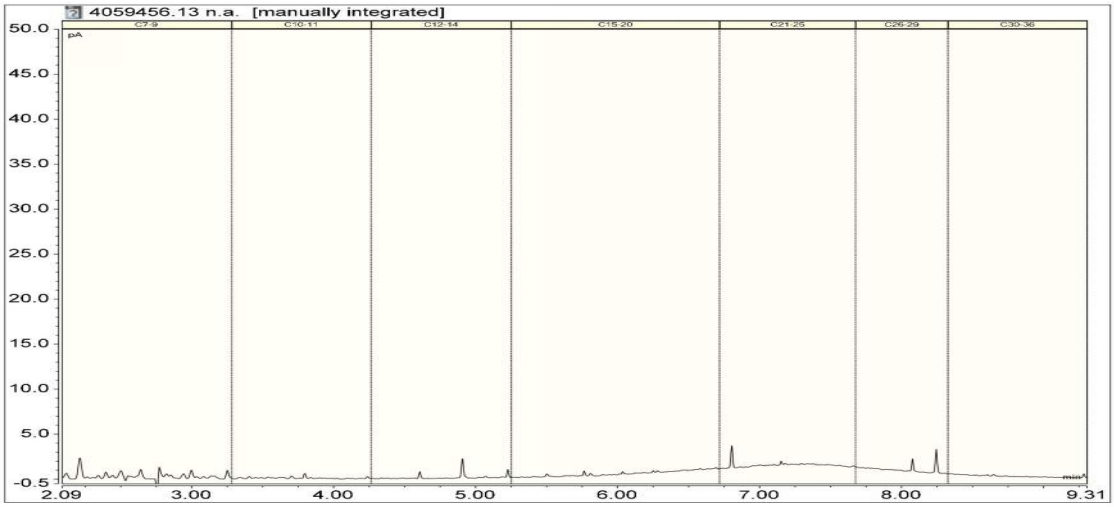
Sample Type: Soil						
Sample Name:		2B_2148_4.6 15-Dec-2025	2B_2148_6.0 15-Dec-2025	2B_2148_9.5 15-Dec-2025	2B_2148_13.4 15-Dec-2025	2B_2148_15.5 16-Dec-2025
Lab Number:		4059456.1	4059456.3	4059456.7	4059456.11	4059456.13
Other Halogenated compounds in SVOC Soil Samples by GC-MS						
Hexachloroethane	mg/kg dry wt	-	< 0.7	< 0.8	< 0.7	< 0.8
1,2,4-Trichlorobenzene	mg/kg dry wt	-	< 0.5	< 0.5	< 0.5	< 0.5
Other compounds in SVOC Soil Samples by GC-MS						
Benzyl alcohol	mg/kg dry wt	-	< 10	< 10	< 10	< 10
Carbazole	mg/kg dry wt	-	< 0.5	< 0.5	< 0.5	< 0.5
Dibenzofuran	mg/kg dry wt	-	< 0.5	< 0.5	< 0.5	< 0.5
Isophorone	mg/kg dry wt	-	< 0.5	< 0.5	< 0.5	< 0.5
Total Petroleum Hydrocarbons in Soil						
C7 - C9	mg/kg dry wt	< 20	< 20	< 20	< 20	< 20
C10 - C14	mg/kg dry wt	< 20	< 20	< 20	< 20	< 20
C15 - C36	mg/kg dry wt	< 40	< 40	< 40	< 40	169
Total hydrocarbons (C7 - C36)	mg/kg dry wt	< 80	< 80	< 80	< 80	191

Sample Name:		2B_2148_20.5 16-Dec-2025	2B_2148_1.5 16-Dec-2025	QAQC01 16-Dec-2025
Lab Number:		4059456.18	4059456.20	4059456.22
Individual Tests				
Organic Matter*	g/100g dry wt	4.8	-	-
Dry Matter	g/100g as rcvd	86	80	-
Ash*	g/100g dry wt	95	-	-
Total Sulphur*‡	g/100g dry wt	1.00	-	-
Heavy Metals with Mercury, Screen Level				
Total Recoverable Arsenic	mg/kg dry wt	8	7	6
Total Recoverable Cadmium	mg/kg dry wt	0.17	0.30	0.25
Total Recoverable Chromium	mg/kg dry wt	8	10	10
Total Recoverable Copper	mg/kg dry wt	13	35	16
Total Recoverable Lead	mg/kg dry wt	8.6	21	9.9
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	< 0.10
Total Recoverable Nickel	mg/kg dry wt	18	15	23
Total Recoverable Zinc	mg/kg dry wt	65	64	73
Haloethers in SVOC Soil Samples by GC-MS				
Bis(2-chloroethoxy) methane	mg/kg dry wt	< 0.5	-	-
Bis(2-chloroethyl)ether	mg/kg dry wt	< 0.5	-	-
Bis(2-chloroisopropyl)ether	mg/kg dry wt	< 0.5	-	-
4-Bromophenyl phenyl ether	mg/kg dry wt	< 0.4	-	-
4-Chlorophenyl phenyl ether	mg/kg dry wt	< 0.5	-	-
Nitrogen containing compounds in SVOC Soil Samples by GC-MS				
2,4-Dinitrotoluene	mg/kg dry wt	< 1.0	-	-
2,6-Dinitrotoluene	mg/kg dry wt	< 1.0	-	-
Nitrobenzene	mg/kg dry wt	< 0.5	-	-
N-Nitrosodi-n-propylamine	mg/kg dry wt	< 0.7	-	-
N-Nitrosodiphenylamine + Diphenylamine	mg/kg dry wt	< 0.7	-	-
Organochlorine Pesticides in SVOC Soil Samples by GC-MS				
Aldrin	mg/kg dry wt	< 0.5	-	-
alpha-BHC	mg/kg dry wt	< 0.5	-	-
beta-BHC	mg/kg dry wt	< 0.5	-	-
delta-BHC	mg/kg dry wt	< 0.5	-	-
gamma-BHC (Lindane)	mg/kg dry wt	< 0.5	-	-
4,4'-DDD	mg/kg dry wt	< 0.5	-	-
4,4'-DDE	mg/kg dry wt	< 0.5	-	-
4,4'-DDT	mg/kg dry wt	< 1.0	-	-
Dieldrin	mg/kg dry wt	< 0.5	-	-
Endosulfan I	mg/kg dry wt	< 1.0	-	-
Endosulfan II	mg/kg dry wt	< 2	-	-
Endosulfan sulphate	mg/kg dry wt	< 1.0	-	-

Sample Type: Soil				
Sample Name:		2B_2148_20.5 16-Dec-2025	2B_2148_1.5 16-Dec-2025	QAQC01 16-Dec-2025
Lab Number:		4059456.18	4059456.20	4059456.22
Organochlorine Pesticides in SVOC Soil Samples by GC-MS				
Endrin	mg/kg dry wt	< 0.7	-	-
Endrin ketone	mg/kg dry wt	< 1.0	-	-
Heptachlor	mg/kg dry wt	< 0.5	-	-
Heptachlor epoxide	mg/kg dry wt	< 0.5	-	-
Hexachlorobenzene	mg/kg dry wt	< 0.5	-	-
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS*				
Acenaphthene	mg/kg dry wt	< 0.5	-	-
Acenaphthylene	mg/kg dry wt	< 0.5	-	-
Anthracene	mg/kg dry wt	< 0.5	-	-
Benzo[a]anthracene	mg/kg dry wt	< 0.5	-	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.5	-	-
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.5	-	-
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.5	-	-
Benzo[k]fluoranthene	mg/kg dry wt	< 0.5	-	-
1&2-Chloronaphthalene	mg/kg dry wt	< 0.5	-	-
Chrysene	mg/kg dry wt	< 0.5	-	-
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.5	-	-
Fluoranthene	mg/kg dry wt	< 0.5	-	-
Fluorene	mg/kg dry wt	< 0.5	-	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.5	-	-
2-Methylnaphthalene	mg/kg dry wt	< 0.5	-	-
Naphthalene	mg/kg dry wt	< 0.5	-	-
Phenanthrene	mg/kg dry wt	< 0.5	-	-
Pyrene	mg/kg dry wt	< 0.5	-	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 1.3	-	-
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 1.3	-	-
Phenols in SVOC Soil Samples by GC-MS				
4-Chloro-3-methylphenol	mg/kg dry wt	< 5	-	-
2-Chlorophenol	mg/kg dry wt	< 1.0	-	-
2,4-Dichlorophenol	mg/kg dry wt	< 1.0	-	-
2,4-Dimethylphenol	mg/kg dry wt	< 3	-	-
3 & 4-Methylphenol (m- + p-cresol)	mg/kg dry wt	< 3	-	-
2-Methylphenol (o-cresol)	mg/kg dry wt	< 1.0	-	-
2-Nitrophenol	mg/kg dry wt	< 5	-	-
Pentachlorophenol (PCP)	mg/kg dry wt	< 30	-	-
Phenol	mg/kg dry wt	< 1.0	-	-
2,4,5-Trichlorophenol	mg/kg dry wt	< 1.0	-	-
2,4,6-Trichlorophenol	mg/kg dry wt	< 1.0	-	-
Plasticisers in SVOC Soil Samples by GC-MS				
Bis(2-ethylhexyl)phthalate	mg/kg dry wt	< 5	-	-
Butylbenzylphthalate	mg/kg dry wt	< 1.0	-	-
Di(2-ethylhexyl)adipate	mg/kg dry wt	< 1.0	-	-
Diethylphthalate	mg/kg dry wt	< 1.0	-	-
Dimethylphthalate	mg/kg dry wt	< 1.0	-	-
Di-n-butylphthalate	mg/kg dry wt	< 1.0	-	-
Di-n-octylphthalate	mg/kg dry wt	< 1.0	-	-
Other Halogenated compounds in SVOC Soil Samples by GC-MS				
1,2-Dichlorobenzene	mg/kg dry wt	< 0.7	-	-
1,3-Dichlorobenzene	mg/kg dry wt	< 0.7	-	-
1,4-Dichlorobenzene	mg/kg dry wt	< 0.7	-	-
Hexachlorobutadiene	mg/kg dry wt	< 0.7	-	-
Hexachloroethane	mg/kg dry wt	< 0.7	-	-

Sample Type: Soil				
	Sample Name:	2B_2148_20.5 16-Dec-2025	2B_2148_1.5 16-Dec-2025	QAQC01 16-Dec-2025
	Lab Number:	4059456.18	4059456.20	4059456.22
Other Halogenated compounds in SVOC Soil Samples by GC-MS				
1,2,4-Trichlorobenzene	mg/kg dry wt	< 0.5	-	-
Other compounds in SVOC Soil Samples by GC-MS				
Benzyl alcohol	mg/kg dry wt	< 10	-	-
Carbazole	mg/kg dry wt	< 0.5	-	-
Dibenzofuran	mg/kg dry wt	< 0.5	-	-
Isophorone	mg/kg dry wt	< 0.5	-	-
Total Petroleum Hydrocarbons in Soil				
C7 - C9	mg/kg dry wt	< 20	< 20	-
C10 - C14	mg/kg dry wt	< 20	< 20	-
C15 - C36	mg/kg dry wt	< 40	< 40	-
Total hydrocarbons (C7 - C36)	mg/kg dry wt	< 80	< 80	-

4059456.13
2B_2148_15.5 16-Dec-2025
Client Chromatogram for TPH by FID



Analyst's Comments

‡ Analysis subcontracted to an external provider. Refer to the Summary of Methods section for more details.

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request. Unless otherwise indicated, analyses were performed at Hill Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Individual Tests			
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	1, 3, 7, 11, 13, 18, 20, 22
Organic Matter*	Calculation: 100 - Ash (dry wt).	0.04 g/100g dry wt	3, 7, 11, 13, 18
Dry Matter	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	1, 3, 7, 11, 13, 18, 20
Ash*	Ignition in muffle furnace 550°C, 6hr, gravimetric. APHA 2540 G : Online Edition.	0.04 g/100g dry wt	3, 7, 11, 13, 18
Total Sulphur*	LECO S144 Sulphur Determinator, high temperature furnace, infra-red detector. Subcontracted to SGS, Westport. ASTM 4239.	0.010 g/100g dry wt	3, 7, 11, 13, 18

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Heavy Metals with Mercury, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required. US EPA 200.2 (modified), APHA 3125 B: Online Edition.	0.10 - 4 mg/kg dry wt	1, 3, 7, 11, 13, 18, 20, 22
Semivolatile Organic Compounds Screening in Soil by GC-MS	Sonication extraction, GC-MS analysis. Tested on as received sample. In-house based on US EPA 8270.	0.024 - 30 mg/kg dry wt	3, 7, 11, 13, 18
Total Petroleum Hydrocarbons in Soil			
Client Chromatogram for TPH by FID	Small peaks associated with QC compounds may be visible in chromatograms with low TPH concentrations. QC peaks are as follows: one peak in the C12 - 14 band, the C21 - 25 band and the C30 - 36 band. All QC peaks are corrected for in the reported TPH concentrations.	-	13
C7 - C9	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	1, 3, 7, 11, 13, 18, 20
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	1, 3, 7, 11, 13, 18, 20
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	1, 3, 7, 11, 13, 18, 20
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	1, 3, 7, 11, 13, 18, 20

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 18-Dec-2025 and 31-Dec-2025. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

This certificate of analysis must not be reproduced, except in full, without the written consent of the signatory.



Ara Heron BSc (Tech)
Client Services Manager - Environmental

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Quality Assurance Report

Client:	WSP New Zealand Limited	**Lab No:**	4059456 QCPv1
Contact:	Henry McIntyre C/- WSP New Zealand Limited PO Box 5848 Auckland 1141	**Date Received:**	16-Dec-2025
		Date Reported:	31-Dec-2025
		Quote No:	82748
		Order No:	I-C2466.17
		Client Reference:	Northland Corridor
		Submitted By:	Megan Baddiley

Sample Specific QCs

SMC Compounds in SVOC Soil Samples by GC-MS

		4059456.3	Control Limits	Outside Limit (Yes/No)
2-fluorobiphenyl	%	99	40 – 120	No
2-fluorophenol	%	106	40 – 120	No
Nitrobenzene-d5	%	95	40 – 120	No
Phenol-d5	%	87	40 – 120	No
Terphenyl-d14	%	102	40 – 120	No
2,4,6-Tribromophenol	%	77	40 – 120	No

SMC Compounds in SVOC Soil Samples by GC-MS

		4059456.7	Control Limits	Outside Limit (Yes/No)
2-fluorobiphenyl	%	92	40 – 120	No
2-fluorophenol	%	96	40 – 120	No
Nitrobenzene-d5	%	87	40 – 120	No
Phenol-d5	%	82	40 – 120	No
Terphenyl-d14	%	96	40 – 120	No
2,4,6-Tribromophenol	%	72	40 – 120	No

SMC Compounds in SVOC Soil Samples by GC-MS

		4059456.11	Control Limits	Outside Limit (Yes/No)
2-fluorobiphenyl	%	95	40 – 120	No
2-fluorophenol	%	100	40 – 120	No
Nitrobenzene-d5	%	92	40 – 120	No
Phenol-d5	%	90	40 – 120	No
Terphenyl-d14	%	101	40 – 120	No
2,4,6-Tribromophenol	%	77	40 – 120	No

SMC Compounds in SVOC Soil Samples by GC-MS

		4059456.13	Control Limits	Outside Limit (Yes/No)
2-fluorobiphenyl	%	90	40 – 120	No
2-fluorophenol	%	98	40 – 120	No
Nitrobenzene-d5	%	84	40 – 120	No
Phenol-d5	%	85	40 – 120	No
Terphenyl-d14	%	96	40 – 120	No
2,4,6-Tribromophenol	%	71	40 – 120	No

SMC Compounds in SVOC Soil Samples by GC-MS				
		4059456.18	Control Limits	Outside Limit (Yes/No)
2-fluorobiphenyl	%	93	40 – 120	No
2-fluorophenol	%	99	40 – 120	No
Nitrobenzene-d5	%	88	40 – 120	No
Phenol-d5	%	87	40 – 120	No
Terphenyl-d14	%	97	40 – 120	No
2,4,6-Tribromophenol	%	76	40 – 120	No

Blank QCs

Blank 1 - WS: ES - Ash by Muffle Furnace: 1504.1				
		Results	Control Limits	Outside Limit (Yes/No)
Ash	g/100g dry wt	< 0.04 ± 0.027	-0.0050 – 0.0050	No

Blank 2 - WS: ES - Ash by Muffle Furnace: 1504.2				
		Results	Control Limits	Outside Limit (Yes/No)
Ash	g/100g dry wt	< 0.04 ± 0.027	-0.0050 – 0.0050	No

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13206.13				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13206.36				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13208.13				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13208.40				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

50x Manual Dilution Digest Blank PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13208.70				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13210.13				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13210.35				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13211.13				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13211.13				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13211.25				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

QC Spike QCs

LCS TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 15469.3				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total hydrocarbons (C7 - C36)	%	84 ± 43	74 – 108	No

LCS TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 15470.3				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total hydrocarbons (C7 - C36)	%	85 ± 43	74 – 108	No

Sample Spike QCs

Matrix Spike TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 15469.42				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total hydrocarbons (C7 - C36)	%	86 ± 43	71 – 104	No

Matrix Spike TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 15470.21				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total hydrocarbons (C7 - C36)	%	70 ± 41	71 – 104	**Yes** [#1]

Reference Material QCs

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13206.14				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total Recoverable Arsenic	mg/kg dry wt	11.5 ± 2.2	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.92 ± 0.18	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	28.6 ± 4.0	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	13.8 ± 2.6	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	35.4 ± 6.7	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.302 ± 0.076	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	15.0 ± 2.4	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	210 ± 31	166 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13206.50				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total Recoverable Arsenic	mg/kg dry wt	11.6 ± 2.2	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.83 ± 0.16	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	27.6 ± 3.9	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	13.8 ± 2.6	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	34.8 ± 6.5	28 – 38	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13206.50				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total Recoverable Mercury	mg/kg dry wt	0.323 ± 0.078	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	14.8 ± 2.4	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	198 ± 30	166 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13208.14				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total Recoverable Arsenic	mg/kg dry wt	11.2 ± 2.2	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.88 ± 0.17	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	28.4 ± 4.0	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	15.6 ± 2.8	11.0 – 15.3	**Yes** [#2]
Total Recoverable Lead	mg/kg dry wt	35.5 ± 6.7	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.332 ± 0.079	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	15.2 ± 2.4	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	219 ± 33	166 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13208.57				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total Recoverable Arsenic	mg/kg dry wt	11.1 ± 2.2	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.85 ± 0.16	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	28.8 ± 4.0	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	14.0 ± 2.6	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	33.1 ± 6.2	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.340 ± 0.079	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	14.6 ± 2.3	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	196 ± 29	166 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13208.71				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total Recoverable Arsenic	mg/kg dry wt	9.7 ± 2.0	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.82 ± 0.16	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	24.5 ± 3.5	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	12.7 ± 2.4	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	30.9 ± 5.8	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.293 ± 0.076	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	13.4 ± 2.2	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	189 ± 28	166 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13210.14				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total Recoverable Arsenic	mg/kg dry wt	12.0 ± 2.3	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.92 ± 0.18	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	29.9 ± 4.2	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	15.2 ± 2.8	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	36.9 ± 6.9	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.335 ± 0.079	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	16.0 ± 2.5	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	215 ± 32	166 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13210.49				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	11.2 ± 2.2	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.85 ± 0.17	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	28.4 ± 4.0	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	14.1 ± 2.6	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	34.9 ± 6.6	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.322 ± 0.078	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	15.6 ± 2.4	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	212 ± 32	166 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13211.14				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	11.2 ± 2.2	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.87 ± 0.17	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	28.4 ± 4.0	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	14.3 ± 2.6	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	34.0 ± 6.4	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.368 ± 0.081	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	14.8 ± 2.4	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	207 ± 31	166 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13211.35				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	10.2 ± 2.1	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.85 ± 0.17	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	27.3 ± 3.8	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	14.1 ± 2.6	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	32.7 ± 6.2	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.355 ± 0.080	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	14.7 ± 2.3	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	193 ± 29	166 – 230	No

Replicates

WS: ES - Ash by Muffle Furnace: 1504.10				
		Replicate 1	Replicate 2	Pass/Fail
Ash	g/100g dry wt	95.2 ± 1.4	95.2 ± 1.4	Pass

Analyst's Comments

[#1] Affected sample repeated, all other samples accepted as the laboratory control spike passes within limits.

[#2] The recovery for this analyte was outside the acceptable recovery range of the method. The corresponding sample result was accepted because the related recovery in the other QC material analysed was within the expected range.

Hill Labs

ANALYSIS REQUEST

R J Hill Laboratories Limited
Ground Floor, 28 Heather Street
Parnell
Auckland 1052, New Zealand

Job No: **406 1277**

Date Recv: 18-Dec-25 08:46

0508 HILL LAB (44 555 22)
+64 7 858 2000
mail@hill-labs.co.nz
www.hill-labs.co.nz

Received by: Meg Vallabh

Quote No

Primary Contact [redacted]

Submitted By Henry McIntyre

Client Name WSP NZ Ltd

Address 3/100 Beaumont Street Westhaven
Auckland *Postcode* 1010

Phone *Mobile* [redacted]

Email

Charge To

Client Reference 1-C2466.17

Order No

Results To *Reports will be emailed to Primary Contact by default. Additional Reports will be sent as specified below.*

☑ Email Primary Contact ☑ Email Submitter ☐ Email Client
☑ Email Other [redacted]
☐ Other

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories

Date & Time: 18/ Dec /25
Name: Henry McIntyre
Signature:

☑ *Tick if you require COC to be emailed back*

Samples will be processed at a Hill Labs site with the appropriate testing capability and capacity. Please inform the lab if you wish samples to be retained and analysed at the site of receipt.

Received at Hill Laboratories

Date & Time:
Name:
Signature:

ADDITIONAL INFORMATION

Priority ☐ Low ☑ Normal ☐ High
☐ **Urgent** (ASAP, extra charge applies, please contact lab first)

Requested Reporting Date:

*Please ensure all asbestos samples are **individually double bagged** upon submission to the laboratory.*

No.	Sample Name	Sample Type	Sample Location	Sample Date/ Time	Tests Required (if not as per Quote)
1	BH2B-2148/25.0	Soil	BH2B-2148	16/12/25	hold, cold
2	BH2B-2148/26.0				
3	BH2B-2148/28.0				
4	BH2B-2148/29.2				
5	BH2B-2148/30.0				
6	BH2B-2148/32.0				
7	BH2B-2148/33.5			17/12/25	
8	BH2B-2148/34.5				
9	BH2B-2148/35.5				
10	BH2B-2148/36.5				
11	BH2B-2148/37.8				
12	BH2B-2148/39.5				
13	BH2B-2148/41.0				

No.	Sample Name	Sample Material	Sample Location	Sample Date	Tests Required (if not as per Quote)
14	BH2B_2148/ 42	Soil	DH2B_2148	17/12/25	hold, call
15	BH2B_2148/ 43.5				
16	BH2B_2148/44.5				
17	BH2B_2148/45.5				
18	BH2B_2148/46.4				
19	BH2B_2148/48.0				
20	BH2B_2148/ 49.6				
21	QAQC02				
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
41					

Temperature On Arrival

7.3 °C

Temperature was measured on one or more arbitrarily chosen samples in this batch.

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

0508 HILL LAB (44 555 22)
[redacted]
mail@hill-labs.co.nz
www.**hill-labs**.co.nz

Job Information Summary

Client:	WSP New Zealand Limited	**Lab No:**	4061277
Contact:	Henry McIntyre	**Date Registered:**	19-Dec-2025 10:09 am
	C/- WSP New Zealand Limited	**Priority:**	High
	PO Box 5848	**Quote No:**	82748
	Auckland 1141	**Order No:**	1-C2466.17
		Client Reference:	1-C2466.17
		Add. Client Ref:	
		Submitted By:	Henry McIntyre
		Charge To:	WSP New Zealand Limited
		Target Date:	06-Jan-2026 4:30 pm

Samples

No	Sample Name	Sample Type	Containers	Tests Requested
1	BH2B_2148/25.0 16-Dec-2025	Soil	GSoil300, PSoil250	Hold Cold
2	BH2B_2148/26.0 16-Dec-2025	Soil	GSoil300, PSoil250	Hold Cold
3	BH2B_2148/28.0 16-Dec-2025	Soil	GSoil300, PSoil250	Hold Cold
4	BH2B_2148/29.2 16-Dec-2025	Soil	GSoil300	Hold Cold
5	BH2B_2148/30.0 16-Dec-2025	Soil	GSoil300, PSoil250	Hold Cold
6	BH2B_2148/32.0 16-Dec-2025	Soil	GSoil300, PSoil250	Hold Cold
7	BH2B_2148/33.5 17-Dec-2025	Soil	GSoil300, cpBag	Hold Cold
8	BH2B_2148/34.5 17-Dec-2025	Soil	GSoil300, cpBag	Hold Cold
9	BH2B_2148/35.5 17-Dec-2025	Soil	GSoil300, cpBag	Hold Cold
10	BH2B_2148/36.5 17-Dec-2025	Soil	GSoil300, cpBag	Hold Cold
11	BH2B_2148/37.8 17-Dec-2025	Soil	GSoil300, cpBag	Hold Cold
12	BH2B_2148/39.5 17-Dec-2025	Soil	GSoil300, cpBag	Hold Cold
13	BH2B_2148/41.0 17-Dec-2025	Soil	GSoil300, cpBag	Semivolatile Organic Compounds Screening in Soil by GC-MS, Organic Matter, Heavy Metals with Mercury, Screen Level, Total Sulphur, Total Petroleum Hydrocarbons in Soil
14	BH2B_2148/42 17-Dec-2025	Soil	GSoil300, cpBag	Hold Cold
15	BH2B_2148/43.5 17-Dec-2025	Soil	GSoil300, cpBag	Hold Cold
16	BH2B_2148/44.5 17-Dec-2025	Soil	GSoil300, PSoil250	Hold Cold
17	BH2B_2148/45.5 17-Dec-2025	Soil	GSoil300, cpBag	Semivolatile Organic Compounds Screening in Soil by GC-MS, Organic Matter, Heavy Metals with Mercury, Screen Level, Total Sulphur, Total Petroleum Hydrocarbons in Soil
18	BH2B_2148/46.5 17-Dec-2025	Soil	GSoil300, cpBag	Hold Cold
19	BH2B_2148/48.0 17-Dec-2025	Soil	GSoil300, cpBag	Hold Cold
20	BH2B_2148/49.6 17-Dec-2025	Soil	GSoil300, cpBag	Hold Cold
21	QAQC02 17-Dec-2025	Soil	GSoil300	Heavy Metals with Mercury, Screen Level, TPH Oil Industry Profile + PAHscreen
22	BH2B_2148/23.0 17-Dec-2025	Soil	GSoil300, PSoil250	Hold Cold
23	BH2B_2148/24.0 17-Dec-2025	Soil	GSoil300, PSoil250	Semivolatile Organic Compounds Screening in Soil by GC-MS, Organic Matter, Heavy Metals with Mercury, Screen Level, Total Sulphur, Total Petroleum Hydrocarbons in Soil
24	BH2B_2148 17-Dec-2025	Soil	PSoil250	Hold Cold

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request. Unless otherwise indicated, analyses were performed at Hill Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Individual Tests			
Environmental Solids Sample Drying	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	13, 17, 21, 23
Organic Matter	Calculation: 100 - Ash (dry wt).	0.04 g/100g dry wt	13, 17, 23
Total of Reported PAHs in Soil	Sonication extraction, GC-MS/MS analysis. In-house based on US EPA 8270.	0.03 mg/kg dry wt	21
Dry Matter	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	13, 17, 21, 23
Ash	Ignition in muffle furnace 550°C, 6hr, gravimetric. APHA 2540 G : Online Edition.	0.04 g/100g dry wt	13, 17, 23
Total Sulphur	LECO S144 Sulphur Determinator, high temperature furnace, infra-red detector. Subcontracted to SGS, Westport. ASTM 4239.	0.010 g/100g dry wt	13, 17, 23
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES	BaP Potency Equivalence calculated from; Benzo(a) anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(j) fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Benzo(a) pyrene x 1.0 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Fluoranthene x 0.01 + Indeno(1,2,3-c,d)pyrene x 0.1. Ministry for the Environment. 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment.	0.024 mg/kg dry wt	21
Benzo[a]pyrene Toxic Equivalence (TEF)	Benzo[a]pyrene Toxic Equivalence (TEF) calculated from; Benzo[a]pyrene x 1.0 + Benzo(a)anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Indeno(1,2,3-c,d)pyrene x 0.1. Guidelines for assessing and managing contaminated gasworks sites in New Zealand (GMG) (MfE, 1997).	0.024 mg/kg dry wt	21
TPH Oil Industry Profile + PAHscreen	Sonication extraction, GC-FID and GC-MS/MS analysis. Tested on as received sample. In-house based on US EPA 8015 and US EPA 8270.	0.010 - 70 mg/kg dry wt	21
Heavy Metals with Mercury, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required. US EPA 200.2 (modified), APHA 3125 B: Online Edition.	0.10 - 4 mg/kg dry wt	13, 17, 21, 23
Semivolatile Organic Compounds Screening in Soil by GC-MS	Sonication extraction, GC-MS analysis. Tested on as received sample. In-house based on US EPA 8270.	0.024 - 30 mg/kg dry wt	13, 17, 23
Total Petroleum Hydrocarbons in Soil			
C7 - C9	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	13, 17, 21, 23
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	13, 17, 21, 23
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	13, 17, 21, 23
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	13, 17, 21, 23

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Certificate of Analysis

Client:	WSP New Zealand Limited	**Lab No:**	4061277	SPv2
Contact:	Henry McIntyre C/- WSP New Zealand Limited PO Box 5848 Auckland 1141	**Date Received:**	18-Dec-2025	
		Date Reported:	12-Jan-2026	
		Quote No:	82748	
		Order No:	1-C2466.17	
		Client Reference:	1-C2466.17	
		Submitted By:	Henry McIntyre	

Sample Type: Soil

		Sample Name:	BH2B_2148/41.0 17-Dec-2025	BH2B_2148/45.5 17-Dec-2025	QAQC02 17-Dec-2025	BH2B_2148/24.0 17-Dec-2025
		Lab Number:	4061277.13	4061277.17	4061277.21	4061277.23
Individual Tests						
Organic Matter*	g/100g dry wt		4.1	4.3	-	4.1
Dry Matter	g/100g as rcvd		87	87	88	85
Ash*	g/100g dry wt		96	96	-	96
Total Sulphur*‡	g/100g dry wt		0.98	0.31	-	1.00
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt		5	5	5	5
Total Recoverable Cadmium	mg/kg dry wt		0.27	0.21	0.22	0.20
Total Recoverable Chromium	mg/kg dry wt		9	10	9	8
Total Recoverable Copper	mg/kg dry wt		15	14	15	12
Total Recoverable Lead	mg/kg dry wt		7.7	7.8	7.6	8.2
Total Recoverable Mercury	mg/kg dry wt		< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Nickel	mg/kg dry wt		19	18	17	17
Total Recoverable Zinc	mg/kg dry wt		83	79	80	67
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Total of Reported PAHs in Soil	mg/kg dry wt		-	-	< 0.3	-
1-Methylnaphthalene	mg/kg dry wt		-	-	< 0.012	-
2-Methylnaphthalene	mg/kg dry wt		-	-	< 0.012	-
Acenaphthylene	mg/kg dry wt		-	-	< 0.012	-
Acenaphthene	mg/kg dry wt		-	-	< 0.012	-
Anthracene	mg/kg dry wt		-	-	< 0.012	-
Benzo[a]anthracene	mg/kg dry wt		-	-	< 0.012	-
Benzo[a]pyrene (BAP)	mg/kg dry wt		-	-	< 0.012	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt		-	-	< 0.027	-
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt		-	-	< 0.027	-
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt		-	-	< 0.012	-
Benzo[e]pyrene	mg/kg dry wt		-	-	< 0.012	-
Benzo[g,h,i]perylene	mg/kg dry wt		-	-	< 0.012	-
Benzo[k]fluoranthene	mg/kg dry wt		-	-	< 0.012	-
Chrysene	mg/kg dry wt		-	-	< 0.012	-
Dibenzo[a,h]anthracene	mg/kg dry wt		-	-	< 0.012	-
Fluoranthene	mg/kg dry wt		-	-	< 0.012	-
Fluorene	mg/kg dry wt		-	-	< 0.012	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt		-	-	< 0.012	-
Naphthalene	mg/kg dry wt		-	-	< 0.06	-
Perylene	mg/kg dry wt		-	-	< 0.012	-

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

Sample Type: Soil					
Sample Name:		BH2B_2148/41.0 17-Dec-2025	BH2B_2148/45.5 17-Dec-2025	QAQC02 17-Dec-2025	BH2B_2148/24.0 17-Dec-2025
Lab Number:		4061277.13	4061277.17	4061277.21	4061277.23
Polycyclic Aromatic Hydrocarbons Screening in Soil*					
Phenanthrene	mg/kg dry wt	-	-	< 0.012	-
Pyrene	mg/kg dry wt	-	-	< 0.012	-
Haloethers in SVOC Soil Samples by GC-MS					
Bis(2-chloroethoxy) methane	mg/kg dry wt	< 0.5	< 0.5	-	< 0.5
Bis(2-chloroethyl)ether	mg/kg dry wt	< 0.5	< 0.5	-	< 0.5
Bis(2-chloroisopropyl)ether	mg/kg dry wt	< 0.5	< 0.5	-	< 0.5
4-Bromophenyl phenyl ether	mg/kg dry wt	< 0.4	< 0.4	-	< 0.4
4-Chlorophenyl phenyl ether	mg/kg dry wt	< 0.5	< 0.5	-	< 0.5
Nitrogen containing compounds in SVOC Soil Samples by GC-MS					
2,4-Dinitrotoluene	mg/kg dry wt	< 1.0	< 1.0	-	< 1.0
2,6-Dinitrotoluene	mg/kg dry wt	< 1.0	< 1.0	-	< 1.0
Nitrobenzene	mg/kg dry wt	< 0.5	< 0.5	-	< 0.5
N-Nitrosodi-n-propylamine	mg/kg dry wt	< 0.7	< 0.7	-	< 0.7
N-Nitrosodiphenylamine + Diphenylamine	mg/kg dry wt	< 0.7	< 0.7	-	< 0.7
Organochlorine Pesticides in SVOC Soil Samples by GC-MS					
Aldrin	mg/kg dry wt	< 0.5	< 0.5	-	< 0.5
alpha-BHC	mg/kg dry wt	< 0.5	< 0.5	-	< 0.5
beta-BHC	mg/kg dry wt	< 0.5	< 0.5	-	< 0.5
delta-BHC	mg/kg dry wt	< 0.5	< 0.5	-	< 0.5
gamma-BHC (Lindane)	mg/kg dry wt	< 0.5	< 0.5	-	< 0.5
4,4'-DDD	mg/kg dry wt	< 0.5	< 0.5	-	< 0.5
4,4'-DDE	mg/kg dry wt	< 0.5	< 0.5	-	< 0.5
4,4'-DDT	mg/kg dry wt	< 1.0	< 1.0	-	< 1.0
Dieldrin	mg/kg dry wt	< 0.5	< 0.5	-	< 0.5
Endosulfan I	mg/kg dry wt	< 1.0	< 1.0	-	< 1.0
Endosulfan II	mg/kg dry wt	< 2	< 2	-	< 2
Endosulfan sulphate	mg/kg dry wt	< 1.0	< 1.0	-	< 1.0
Endrin	mg/kg dry wt	< 0.7	< 0.7	-	< 0.7
Endrin ketone	mg/kg dry wt	< 1.0	< 1.0	-	< 1.0
Heptachlor	mg/kg dry wt	< 0.5	< 0.5	-	< 0.5
Heptachlor epoxide	mg/kg dry wt	< 0.5	< 0.5	-	< 0.5
Hexachlorobenzene	mg/kg dry wt	< 0.5	< 0.5	-	< 0.5
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS*					
Acenaphthene	mg/kg dry wt	< 0.5	< 0.5	-	< 0.5
Acenaphthylene	mg/kg dry wt	< 0.5	< 0.5	-	< 0.5
Anthracene	mg/kg dry wt	< 0.5	< 0.5	-	< 0.5
Benzo[a]anthracene	mg/kg dry wt	< 0.5	< 0.5	-	< 0.5
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.5	< 0.5	-	< 0.5
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.5	< 0.5	-	< 0.5
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.5	< 0.5	-	< 0.5
Benzo[k]fluoranthene	mg/kg dry wt	< 0.5	< 0.5	-	< 0.5
1&2-Chloronaphthalene	mg/kg dry wt	< 0.5	< 0.5	-	< 0.5
Chrysene	mg/kg dry wt	< 0.5	< 0.5	-	< 0.5
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.5	< 0.5	-	< 0.5
Fluoranthene	mg/kg dry wt	< 0.5	< 0.5	-	< 0.5
Fluorene	mg/kg dry wt	< 0.5	< 0.5	-	< 0.5
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.5	< 0.5	-	< 0.5
2-Methylnaphthalene	mg/kg dry wt	< 0.5	< 0.5	-	< 0.5
Naphthalene	mg/kg dry wt	< 0.5	< 0.5	-	< 0.5
Phenanthrene	mg/kg dry wt	< 0.5	< 0.5	-	< 0.5
Pyrene	mg/kg dry wt	< 0.5	< 0.5	-	< 0.5
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 1.3	< 1.3	-	< 1.3

Sample Type: Soil					
Sample Name:		BH2B_2148/41.0 17-Dec-2025	BH2B_2148/45.5 17-Dec-2025	QAQC02 17-Dec-2025	BH2B_2148/24.0 17-Dec-2025
Lab Number:		4061277.13	4061277.17	4061277.21	4061277.23
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS*					
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 1.3	< 1.3	-	< 1.3
Phenols in SVOC Soil Samples by GC-MS					
4-Chloro-3-methylphenol	mg/kg dry wt	< 5	< 5	-	< 5
2-Chlorophenol	mg/kg dry wt	< 1.0	< 1.0	-	< 1.0
2,4-Dichlorophenol	mg/kg dry wt	< 1.0	< 1.0	-	< 1.0
2,4-Dimethylphenol	mg/kg dry wt	< 3	< 3	-	< 3
3 & 4-Methylphenol (m- + p-cresol)	mg/kg dry wt	< 3	< 3	-	< 3
2-Methylphenol (o-cresol)	mg/kg dry wt	< 1.0	< 1.0	-	< 1.0
2-Nitrophenol	mg/kg dry wt	< 5	< 5	-	< 5
Pentachlorophenol (PCP)	mg/kg dry wt	< 30	< 30	-	< 30
Phenol	mg/kg dry wt	< 1.0	< 1.0	-	< 1.0
2,4,5-Trichlorophenol	mg/kg dry wt	< 1.0	< 1.0	-	< 1.0
2,4,6-Trichlorophenol	mg/kg dry wt	< 1.0	< 1.0	-	< 1.0
Plasticisers in SVOC Soil Samples by GC-MS					
Bis(2-ethylhexyl)phthalate	mg/kg dry wt	< 5	< 5	-	< 5
Butylbenzylphthalate	mg/kg dry wt	< 1.0	< 1.0	-	< 1.0
Di(2-ethylhexyl)adipate	mg/kg dry wt	< 1.0	< 1.0	-	< 1.0
Diethylphthalate	mg/kg dry wt	< 1.0	< 1.0	-	< 1.0
Dimethylphthalate	mg/kg dry wt	< 1.0	< 1.0	-	< 1.0
Di-n-butylphthalate	mg/kg dry wt	< 1.0	< 1.0	-	< 1.0
Di-n-octylphthalate	mg/kg dry wt	< 1.0	< 1.0	-	< 1.0
Other Halogenated compounds in SVOC Soil Samples by GC-MS					
1,2-Dichlorobenzene	mg/kg dry wt	< 0.7	< 0.7	-	< 0.7
1,3-Dichlorobenzene	mg/kg dry wt	< 0.7	< 0.7	-	< 0.7
1,4-Dichlorobenzene	mg/kg dry wt	< 0.7	< 0.7	-	< 0.7
Hexachlorobutadiene	mg/kg dry wt	< 0.7	< 0.7	-	< 0.7
Hexachloroethane	mg/kg dry wt	< 0.7	< 0.7	-	< 0.7
1,2,4-Trichlorobenzene	mg/kg dry wt	< 0.5	< 0.5	-	< 0.5
Other compounds in SVOC Soil Samples by GC-MS					
Benzyl alcohol	mg/kg dry wt	< 10	< 10	-	< 10
Carbazole	mg/kg dry wt	< 0.5	< 0.5	-	< 0.5
Dibenzofuran	mg/kg dry wt	< 0.5	< 0.5	-	< 0.5
Isophorone	mg/kg dry wt	< 0.5	< 0.5	-	< 0.5
Total Petroleum Hydrocarbons in Soil					
C7 - C9	mg/kg dry wt	< 20	< 20	< 20	< 20
C10 - C14	mg/kg dry wt	< 20	< 20	< 20	< 20
C15 - C36	mg/kg dry wt	< 40	< 40	< 40	< 40
Total hydrocarbons (C7 - C36)	mg/kg dry wt	< 80	< 80	< 80	< 80

Analyst's Comments

‡ Analysis subcontracted to an external provider. Refer to the Summary of Methods section for more details.

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request.
Unless otherwise indicated, analyses were performed at Hill Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Individual Tests			
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	13, 17, 21, 23

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Organic Matter*	Calculation: 100 - Ash (dry wt).	0.04 g/100g dry wt	13, 17, 23
Total of Reported PAHs in Soil	Sonication extraction, GC-MS/MS analysis. In-house based on US EPA 8270.	0.03 mg/kg dry wt	21
Dry Matter	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	13, 17, 21, 23
Ash*	Ignition in muffle furnace 550°C, 6hr, gravimetric. APHA 2540 G : Online Edition.	0.04 g/100g dry wt	13, 17, 23
Total Sulphur*	LECO S144 Sulphur Determinator, high temperature furnace, infra-red detector. Subcontracted to SGS, Westport. ASTM 4239.	0.010 g/100g dry wt	13, 17, 23
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	BaP Potency Equivalence calculated from; Benzo(a)anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(j)fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Benzo(a)pyrene x 1.0 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Fluoranthene x 0.01 + Indeno(1,2,3-c,d)pyrene x 0.1. Ministry for the Environment. 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment.	0.024 mg/kg dry wt	21
Benzo[a]pyrene Toxic Equivalence (TEF)*	Benzo[a]pyrene Toxic Equivalence (TEF) calculated from; Benzo[a]pyrene x 1.0 + Benzo(a)anthracene x 0.1 + Benzo(b) fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Indeno(1,2,3-c,d)pyrene x 0.1. Guidelines for assessing and managing contaminated gasworks sites in New Zealand (GMG) (MfE, 1997).	0.024 mg/kg dry wt	21
TPH Oil Industry Profile + PAHscreen	Sonication extraction, GC-FID and GC-MS/MS analysis. Tested on as received sample. In-house based on US EPA 8015 and US EPA 8270.	0.010 - 70 mg/kg dry wt	21
Heavy Metals with Mercury, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required. US EPA 200.2 (modified), APHA 3125 B: Online Edition.	0.10 - 4 mg/kg dry wt	13, 17, 21, 23
Semivolatile Organic Compounds Screening in Soil by GC-MS	Sonication extraction, GC-MS analysis. Tested on as received sample. In-house based on US EPA 8270.	0.024 - 30 mg/kg dry wt	13, 17, 23
Total Petroleum Hydrocarbons in Soil			
C7 - C9	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	13, 17, 21, 23
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	13, 17, 21, 23
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	13, 17, 21, 23
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	13, 17, 21, 23

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 19-Dec-2025 and 12-Jan-2026. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

This certificate of analysis must not be reproduced, except in full, without the written consent of the signatory.



Kim Harrison MSc
Client Services Manager - Environmental

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Hamilton 3240 New Zealand

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Quality Assurance Report

Client:	WSP New Zealand Limited	**Lab No:**	4061277	QCPv1
Contact:	Henry McIntyre C/- WSP New Zealand Limited PO Box 5848 Auckland 1141	**Date Received:**	18-Dec-2025	
		Date Reported:	12-Jan-2026	
		Quote No:	82748	
		Order No:	1-C2466.17	
		Client Reference:	1-C2466.17	
		Submitted By:	Henry McIntyre	

Sample Specific QCs

SMC Compounds in SVOC Soil Samples by GC-MS

		4061277.13	Control Limits	Outside Limit (Yes/No)
2-fluorobiphenyl	%	92	40 – 120	No
2-fluorophenol	%	89	40 – 120	No
Nitrobenzene-d5	%	91	40 – 120	No
Phenol-d5	%	80	40 – 120	No
Terphenyl-d14	%	92	40 – 120	No
2,4,6-Tribromophenol	%	70	40 – 120	No

SMC Compounds in SVOC Soil Samples by GC-MS

		4061277.17	Control Limits	Outside Limit (Yes/No)
2-fluorobiphenyl	%	96	40 – 120	No
2-fluorophenol	%	95	40 – 120	No
Nitrobenzene-d5	%	93	40 – 120	No
Phenol-d5	%	85	40 – 120	No
Terphenyl-d14	%	92	40 – 120	No
2,4,6-Tribromophenol	%	71	40 – 120	No

Polycyclic Aromatic Hydrocarbons Screening in Soil

		4061277.21	Control Limits	Outside Limit (Yes/No)
1-methylnaphthalene-d10	%	93	65 – 130	No
Benzo[a]pyrene-d12	%	93	70 – 140	No
Fluoranthene-d10	%	89	66 – 130	No

SMC Compounds in SVOC Soil Samples by GC-MS

		4061277.23	Control Limits	Outside Limit (Yes/No)
2-fluorobiphenyl	%	85	40 – 120	No
2-fluorophenol	%	88	40 – 120	No
Nitrobenzene-d5	%	85	40 – 120	No
Phenol-d5	%	77	40 – 120	No
Terphenyl-d14	%	81	40 – 120	No
2,4,6-Tribromophenol	%	58	40 – 120	No

Blank QCs

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13219.13

		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13219.13				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13219.47				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

50x Manual Dilution Digest Blank PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13219.64				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Blank 1 PrepWS xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 17701.1				
		Results	Control Limits	Outside Limit (Yes/No)
1-Methylnaphthalene	mg/kg dry wt	< 0.010 ± 0.032	0.0 – 0.0100	No
2-Methylnaphthalene	mg/kg dry wt	< 0.010 ± 0.032	0.0 – 0.0100	No
Acenaphthylene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Acenaphthene	mg/kg dry wt	< 0.010 ± 0.0061	0.0 – 0.0100	No
Anthracene	mg/kg dry wt	< 0.010 ± 0.0060	0.0 – 0.0100	No
Benzo[a]anthracene	mg/kg dry wt	< 0.010 ± 0.0062	0.0 – 0.0100	No
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.010 ± 0.0064	0.0 – 0.0100	No
Benzo[e]pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.010 ± 0.0064	0.0 – 0.0100	No
Benzo[k]fluoranthene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Chrysene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Fluoranthene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Fluorene	mg/kg dry wt	< 0.010 ± 0.0067	0.0 – 0.0100	No
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Naphthalene	mg/kg dry wt	< 0.05 ± 0.032	0.0 – 0.050	No

Blank 1 PrepWS xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 17701.1				
		Results	Control Limits	Outside Limit (Yes/No)
Phenanthrene	mg/kg dry wt	< 0.010 ± 0.0067	0.0 – 0.0100	No
Perylene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No

Blank 1 - WS: ES - Ash by Muffle Furnace: 1505.1				
		Results	Control Limits	Outside Limit (Yes/No)
Ash	g/100g dry wt	< 0.04 ± 0.027	-0.0050 – 0.0050	No

Blank 2 - WS: ES - Ash by Muffle Furnace: 1505.2				
		Results	Control Limits	Outside Limit (Yes/No)
Ash	g/100g dry wt	< 0.04 ± 0.027	-0.0050 – 0.0050	No

QC Spike QCs

LCS TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 15478.3				
		Results	Control Limits	Outside Limit (Yes/No)
Total hydrocarbons (C7 - C36)	%	81 ± 42	74 – 108	No

LCS OC/PAH xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 17701.2				
		Results	Control Limits	Outside Limit (Yes/No)
1-Methylnaphthalene	%	90 ± 22	78 – 122	No
2-Methylnaphthalene	%	86 ± 21	72 – 117	No
Acenaphthylene	%	89.0 ± 8.1	75 – 118	No
Acenaphthene	%	99 ± 29	84 – 119	No
Anthracene	%	85 ± 26	79 – 121	No
Benzo[a]anthracene	%	93 ± 25	81 – 123	No
Benzo[a]pyrene (BAP)	%	93.0 ± 7.1	76 – 123	No
Benzo[b]fluoranthene + Benzo[j]fluoranthene	%	89 ± 19	80 – 121	No
Benzo[e]pyrene	%	81.0 ± 6.2	78 – 110	No
Benzo[g,h,i]perylene	%	90 ± 16	80 – 124	No
Benzo[k]fluoranthene	%	90 ± 12	79 – 121	No
Chrysene	%	93 ± 14	83 – 121	No
Dibenzo[a,h]anthracene	%	92 ± 12	78 – 124	No
Fluoranthene	%	92.0 ± 9.3	81 – 122	No
Fluorene	%	97 ± 12	86 – 122	No
Indeno(1,2,3-c,d)pyrene	%	93.0 ± 8.6	83 – 123	No
Naphthalene	%	96 ± 24	84 – 118	No
Phenanthrene	%	95 ± 14	84 – 120	No
Perylene	%	87.0 ± 6.7	60 – 107	No
Pyrene	%	96 ± 13	79 – 123	No

Sample Spike QCs

Matrix Spike TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 15478.32				
		Results	Control Limits	Outside Limit (Yes/No)
Total hydrocarbons (C7 - C36)	%	84 ± 43	71 – 104	No

Reference Material QCs

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13219.14				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	10.8 ± 2.1	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.88 ± 0.17	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	28.0 ± 3.9	21 – 30	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13219.14				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total Recoverable Copper	mg/kg dry wt	14.2 ± 2.6	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	34.1 ± 6.4	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.371 ± 0.081	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	15.2 ± 2.4	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	202 ± 30	166 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13219.55				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total Recoverable Arsenic	mg/kg dry wt	10.3 ± 2.1	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.77 ± 0.15	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	26.5 ± 3.7	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	13.2 ± 2.5	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	31.9 ± 6.0	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.336 ± 0.079	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	14.7 ± 2.3	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	188 ± 28	166 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13219.65				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total Recoverable Arsenic	mg/kg dry wt	10.0 ± 2.0	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.77 ± 0.15	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	25.2 ± 3.6	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	12.6 ± 2.4	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	30.4 ± 5.7	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.331 ± 0.078	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	14.0 ± 2.3	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	188 ± 28	166 – 230	No

HillLabs

ANALYSIS REQUEST

R J Hill Laboratories Limited
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Parnell
Auckland 1052, New Zealand

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+64 7 858 2000
mail@hill-labs.co.nz
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Job No: 408 1709

Date Recv: 23-Jan-26 13:43

Received by: Meg Vallabh

Quote No

Primary Contact [redacted]

Submitted By

Client Name WSP NZ LTD

Address 100 Beaumont street

Postcode 1010

Phone *Mobile* [redacted]

Email

Charge To

Client Reference 1-C2486.16

Order No

Results To *Reports will be emailed to Primary Contact by default. Additional Reports will be sent as specified below.*

☑ Email Primary Contact ☑ Email Submitter ☐ Email Client
☑ Email Other [redacted]
☐ Other

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories

☑ *Tick if you require COC to be emailed back*

Date & Time: 23/1/26 13:30.

Name: Henry McIntyre

Signature:

Samples will be processed at a Hill Labs site with the appropriate testing capability and capacity. Please inform the lab if you wish samples to be retained and analysed at the site of receipt.

Received at Hill Laboratories

Date & Time:

Name:

Signature:

ADDITIONAL INFORMATION

Priority ☐ Low ☑ Normal ☐ High
☐ Urgent (ASAP, extra charge applies, please contact lab first)

Requested Reporting Date:

*Please ensure all asbestos samples are **individually double bagged** upon submission to the laboratory.*

No.	Sample Name	Sample Type	Sample Location	Sample Date/ Time	Tests Required (if not as per Quote)
1	BH2B_2149_1.80	Soil	BH2B_2149	22/1/26	hold cold
2	BH2B_2149_3.65				
3	BH2B_2149_5.50				
4	BH2B_2149_6.95				
5	BH2B_2149_8.15				
6	BH2B_2149_9.90				
7	BH2B_2149_11.15			23/1/26	
8	BH2B_2149_13.15				
9	BH2B_2149_14.40				
10	BH2B_2149_15.75				
11	BH2B_2149_17.60				
12	BH2B_2149_QAQC01				
13					

Temperature On Arrival
5 °C
Temperature was measured on one or more arbitrarily chosen samples in this batch

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Private Bag 3205
Hamilton 3240 New Zealand

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Job Information Summary

Client:	WSP New Zealand Limited	**Lab No:**	4081709
Contact:	Henry McIntyre	**Date Registered:**	24-Jan-2026 1:20 pm
	C/- WSP New Zealand Limited	**Priority:**	High
	PO Box 5848	**Quote No:**	82748
	Auckland 1141	**Order No:**	1-C2466.16
		Client Reference:	1-C2466.16
		Add. Client Ref:	
		Submitted By:	Henry McIntyre
		Charge To:	WSP New Zealand Limited
		Target Date:	03-Feb-2026 4:30 pm

Samples

No	Sample Name	Sample Type	Containers	Tests Requested
1	BH2B_2149_1.80 22-Jan-2026	Soil	GSoil300	Hold Cold
2	BH2B_2149_3.65 22-Jan-2026	Soil	GSoil300, PSoil250	Semivolatile Organic Compounds Screening in Soil by GC-MS, Heavy Metals with Mercury, Screen Level, TPH Oil Industry Profile + PAHscreen
3	BH2B_2149_5.50 22-Jan-2026	Soil	GSoil300, PSoil250	Hold Cold
4	BH2B_2149_6.95 22-Jan-2026	Soil	GSoil300, PSoil250	Hold Cold
5	BH2B_2149_8.15 22-Jan-2026	Soil	GSoil300, PSoil250	Hold Cold
6	BH2B_2149_9.90 22-Jan-2026	Soil	GSoil300, PSoil250	Hold Cold
7	BH2B_2149_11.15 23-Jan-2026	Soil	GSoil300, PSoil250	Hold Cold
8	BH2B_2149_13.15 23-Jan-2026	Soil	GSoil300, PSoil250	Hold Cold
9	BH2B_2149_14.40 23-Jan-2026	Soil	GSoil300, PSoil250	Hold Cold
10	BH2B_2149_15.75 23-Jan-2026	Soil	GSoil300, PSoil250	Semivolatile Organic Compounds Screening in Soil by GC-MS, Heavy Metals with Mercury, Screen Level, TPH Oil Industry Profile + PAHscreen
11	BH2B_2149_17.60 23-Jan-2026	Soil	GSoil300, cPSoil250	Hold Cold
12	BH2B_2149_QAQC1 23-Jan-2026	Soil	GSoil300, PSoil250	Semivolatile Organic Compounds Screening in Soil by GC-MS, Heavy Metals with Mercury, Screen Level, TPH Oil Industry Profile + PAHscreen

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request.
Unless otherwise indicated, analyses were performed at Hill Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Individual Tests			
Environmental Solids Sample Drying	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	2, 10, 12
Total of Reported PAHs in Soil	Sonication extraction, GC-MS/MS analysis. In-house based on US EPA 8270.	0.03 mg/kg dry wt	2, 10, 12
Dry Matter	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	2, 10, 12

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES	BaP Potency Equivalence calculated from; Benzo(a) anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(j) fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Benzo(a) pyrene x 1.0 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Fluoranthene x 0.01 + Indeno(1,2,3-c,d)pyrene x 0.1. Ministry for the Environment. 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment.	0.024 mg/kg dry wt	2, 10, 12
Benzo[a]pyrene Toxic Equivalence (TEF)	Benzo[a]pyrene Toxic Equivalence (TEF) calculated from; Benzo[a]pyrene x 1.0 + Benzo(a)anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Indeno(1,2,3-c,d)pyrene x 0.1. Guidelines for assessing and managing contaminated gasworks sites in New Zealand (GMG) (MfE, 1997).	0.024 mg/kg dry wt	2, 10, 12
TPH Oil Industry Profile + PAHscreen	Sonication extraction, GC-FID and GC-MS/MS analysis. Tested on as received sample. In-house based on US EPA 8015 and US EPA 8270.	0.010 - 70 mg/kg dry wt	2, 10, 12
Heavy Metals with Mercury, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required. US EPA 200.2 (modified), APHA 3125 B: Online Edition.	0.10 - 4 mg/kg dry wt	2, 10, 12
Semivolatile Organic Compounds Screening in Soil by GC-MS	Sonication extraction, GC-MS analysis. Tested on as received sample. In-house based on US EPA 8270.	0.024 - 30 mg/kg dry wt	2, 10, 12
Total Petroleum Hydrocarbons in Soil			
C7 - C9	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	2, 10, 12
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	2, 10, 12
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	2, 10, 12
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	2, 10, 12

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Certificate of Analysis

Client:	WSP New Zealand Limited	**Lab No:**	4081709 SPv2
Contact:	Henry McIntyre C/- WSP New Zealand Limited PO Box 5848 Auckland 1141	**Date Received:**	23-Jan-2026
		Date Reported:	05-Feb-2026
		Quote No:	82748
		Order No:	1-C2466.16
		Client Reference:	1-C2466.16
		Submitted By:	Henry McIntyre

Sample Type: Soil

		Sample Name:	BH2B_2149_3.65 22-Jan-2026	BH2B_2149_15.75 23-Jan-2026	BH2B_2149_QAQC1 23-Jan-2026
		Lab Number:	4081709.2	4081709.10	4081709.12
Individual Tests					
Dry Matter	g/100g as rcvd		68	80	80
Heavy Metals with Mercury, Screen Level					
Total Recoverable Arsenic	mg/kg dry wt		7	7	9
Total Recoverable Cadmium	mg/kg dry wt		0.86	0.22	0.21
Total Recoverable Chromium	mg/kg dry wt		8	8	7
Total Recoverable Copper	mg/kg dry wt		12	12	11
Total Recoverable Lead	mg/kg dry wt		8.3	7.9	7.0
Total Recoverable Mercury	mg/kg dry wt		< 0.10	< 0.10	< 0.10
Total Recoverable Nickel	mg/kg dry wt		36	18	17
Total Recoverable Zinc	mg/kg dry wt		86	62	51
Polycyclic Aromatic Hydrocarbons Screening in Soil*					
Total of Reported PAHs in Soil	mg/kg dry wt		< 0.4	< 0.3	< 0.3
1-Methylnaphthalene	mg/kg dry wt		< 0.015	< 0.012	< 0.013
2-Methylnaphthalene	mg/kg dry wt		< 0.015	< 0.012	< 0.013
Acenaphthylene	mg/kg dry wt		< 0.015	< 0.012	< 0.013
Acenaphthene	mg/kg dry wt		< 0.015	< 0.012	< 0.013
Anthracene	mg/kg dry wt		< 0.015	< 0.012	< 0.013
Benzo[a]anthracene	mg/kg dry wt		< 0.015	< 0.012	< 0.013
Benzo[a]pyrene (BAP)	mg/kg dry wt		< 0.015	< 0.012	< 0.013
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt		< 0.035	< 0.029	< 0.030
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt		< 0.035	< 0.029	< 0.030
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt		< 0.015	< 0.012	< 0.013
Benzo[e]pyrene	mg/kg dry wt		< 0.015	< 0.012	< 0.013
Benzo[g,h,i]perylene	mg/kg dry wt		< 0.015	< 0.012	< 0.013
Benzo[k]fluoranthene	mg/kg dry wt		< 0.015	< 0.012	< 0.013
Chrysene	mg/kg dry wt		< 0.015	< 0.012	< 0.013
Dibenzo[a,h]anthracene	mg/kg dry wt		< 0.015	< 0.012	< 0.013
Fluoranthene	mg/kg dry wt		< 0.015	< 0.012	< 0.013
Fluorene	mg/kg dry wt		< 0.015	< 0.012	< 0.013
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt		< 0.015	< 0.012	< 0.013
Naphthalene	mg/kg dry wt		< 0.08	< 0.06	< 0.07
Perylene	mg/kg dry wt		< 0.015	< 0.012	< 0.013
Phenanthrene	mg/kg dry wt		< 0.015	< 0.012	< 0.013
Pyrene	mg/kg dry wt		0.019	0.023	0.024

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

Sample Type: Soil				
Sample Name:		BH2B_2149_3.65 22-Jan-2026	BH2B_2149_15.75 23-Jan-2026	BH2B_2149_QAQC1 23-Jan-2026
Lab Number:		4081709.2	4081709.10	4081709.12
Haloethers in SVOC Soil Samples by GC-MS				
Bis(2-chloroethoxy) methane	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Bis(2-chloroethyl)ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Bis(2-chloroisopropyl)ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5
4-Bromophenyl phenyl ether	mg/kg dry wt	< 0.5	< 0.4	< 0.4
4-Chlorophenyl phenyl ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Nitrogen containing compounds in SVOC Soil Samples by GC-MS				
2,4-Dinitrotoluene	mg/kg dry wt	< 1.0	< 1.0	< 1.0
2,6-Dinitrotoluene	mg/kg dry wt	< 1.0	< 1.0	< 1.0
Nitrobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5
N-Nitrosodi-n-propylamine	mg/kg dry wt	< 0.9	< 0.8	< 0.8
N-Nitrosodiphenylamine + Diphenylamine	mg/kg dry wt	< 0.9	< 0.8	< 0.8
Organochlorine Pesticides in SVOC Soil Samples by GC-MS				
Aldrin	mg/kg dry wt	< 0.5	< 0.5	< 0.5
alpha-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5
beta-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5
delta-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5
gamma-BHC (Lindane)	mg/kg dry wt	< 0.5	< 0.5	< 0.5
4,4'-DDD	mg/kg dry wt	< 0.5	< 0.5	< 0.5
4,4'-DDE	mg/kg dry wt	< 0.5	< 0.5	< 0.5
4,4'-DDT	mg/kg dry wt	< 1.0	< 1.0	< 1.0
Dieldrin	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Endosulfan I	mg/kg dry wt	< 1.0	< 1.0	< 1.0
Endosulfan II	mg/kg dry wt	< 2	< 2	< 2
Endosulfan sulphate	mg/kg dry wt	< 1.0	< 1.0	< 1.0
Endrin	mg/kg dry wt	< 0.9	< 0.8	< 0.8
Endrin ketone	mg/kg dry wt	< 1.0	< 1.0	< 1.0
Heptachlor	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Heptachlor epoxide	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Hexachlorobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS				
Acenaphthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Acenaphthylene	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Benzo[a]anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Benzo[k]fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5
1&2-Chloronaphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Chrysene	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Fluorene	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5
2-Methylnaphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Naphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Phenanthrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Pyrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Phenols in SVOC Soil Samples by GC-MS				
4-Chloro-3-methylphenol	mg/kg dry wt	< 5	< 5	< 5
2-Chlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0
2,4-Dichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0
2,4-Dimethylphenol	mg/kg dry wt	< 3	< 3	< 3

Sample Type: Soil				
Sample Name:		BH2B_2149_3.65 22-Jan-2026	BH2B_2149_15.75 23-Jan-2026	BH2B_2149_QAQC1 23-Jan-2026
Lab Number:		4081709.2	4081709.10	4081709.12
Phenols in SVOC Soil Samples by GC-MS				
3 & 4-Methylphenol (m- + p-cresol)	mg/kg dry wt	< 3	< 3	< 3
2-Methylphenol (o-cresol)	mg/kg dry wt	< 1.0	< 1.0	< 1.0
2-Nitrophenol	mg/kg dry wt	< 5	< 5	< 5
Pentachlorophenol (PCP)	mg/kg dry wt	< 30	< 30	< 30
Phenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0
2,4,5-Trichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0
2,4,6-Trichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0
Plasticisers in SVOC Soil Samples by GC-MS				
Bis(2-ethylhexyl)phthalate	mg/kg dry wt	< 5	< 5	< 5
Butylbenzylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0
Di(2-ethylhexyl)adipate	mg/kg dry wt	< 1.0	< 1.0	< 1.0
Diethylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0
Dimethylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0
Di-n-butylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0
Di-n-octylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0
Other Halogenated compounds in SVOC Soil Samples by GC-MS				
1,2-Dichlorobenzene	mg/kg dry wt	< 0.9	< 0.8	< 0.8
1,3-Dichlorobenzene	mg/kg dry wt	< 0.9	< 0.8	< 0.8
1,4-Dichlorobenzene	mg/kg dry wt	< 0.9	< 0.8	< 0.8
Hexachlorobutadiene	mg/kg dry wt	< 0.9	< 0.8	< 0.8
Hexachloroethane	mg/kg dry wt	< 0.9	< 0.8	< 0.8
1,2,4-Trichlorobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Other compounds in SVOC Soil Samples by GC-MS				
Benzyl alcohol	mg/kg dry wt	< 10	< 10	< 10
Carbazole	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Dibenzofuran	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Isophorone	mg/kg dry wt	< 0.5	< 0.5	< 0.5
Total Petroleum Hydrocarbons in Soil				
C7 - C9	mg/kg dry wt	< 30	< 20	< 20
C10 - C14	mg/kg dry wt	< 20	< 20	< 20
C15 - C36	mg/kg dry wt	< 40	< 40	< 40
Total hydrocarbons (C7 - C36)	mg/kg dry wt	< 90	< 80	< 80

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request.
Unless otherwise indicated, analyses were performed at Hill Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Individual Tests			
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	2, 10, 12
Total of Reported PAHs in Soil	Sonication extraction, GC-MS/MS analysis. In-house based on US EPA 8270.	0.03 mg/kg dry wt	2, 10, 12
Dry Matter	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	2, 10, 12

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	BaP Potency Equivalence calculated from; Benzo(a)anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(j)fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Benzo(a)pyrene x 1.0 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Fluoranthene x 0.01 + Indeno(1,2,3-c,d)pyrene x 0.1. Ministry for the Environment. 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment.	0.024 mg/kg dry wt	2, 10, 12
Benzo[a]pyrene Toxic Equivalence (TEF)*	Benzo[a]pyrene Toxic Equivalence (TEF) calculated from; Benzo[a]pyrene x 1.0 + Benzo(a)anthracene x 0.1 + Benzo(b) fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Indeno(1,2,3-c,d)pyrene x 0.1. Guidelines for assessing and managing contaminated gasworks sites in New Zealand (GMG) (MfE, 1997).	0.024 mg/kg dry wt	2, 10, 12
TPH Oil Industry Profile + PAHscreen	Sonication extraction, GC-FID and GC-MS/MS analysis. Tested on as received sample. In-house based on US EPA 8015 and US EPA 8270.	0.010 - 70 mg/kg dry wt	2, 10, 12
Heavy Metals with Mercury, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required. US EPA 200.2 (modified), APHA 3125 B: Online Edition.	0.10 - 4 mg/kg dry wt	2, 10, 12
Semivolatile Organic Compounds Screening in Soil by GC-MS	Sonication extraction, GC-MS analysis. Tested on as received sample. In-house based on US EPA 8270.	0.024 - 30 mg/kg dry wt	2, 10, 12
Total Petroleum Hydrocarbons in Soil			
C7 - C9	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	2, 10, 12
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	2, 10, 12
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	2, 10, 12
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	2, 10, 12

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 31-Jan-2026 and 04-Feb-2026. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

This certificate of analysis must not be reproduced, except in full, without the written consent of the signatory.



Graham Corban MSc Tech (Hons)
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Quality Assurance Report

Client:	WSP New Zealand Limited	**Lab No:**	4081709	QCPv1
Contact:	Henry McIntyre C/- WSP New Zealand Limited PO Box 5848 Auckland 1141	**Date Received:**	23-Jan-2026	
		Date Reported:	05-Feb-2026	
		Quote No:	82748	
		Order No:	1-C2466.16	
		Client Reference:	1-C2466.16	
		Submitted By:	Henry McIntyre	

Sample Specific QCs

Polycyclic Aromatic Hydrocarbons Screening in Soil

		4081709.2	Control Limits	Outside Limit (Yes/No)
1-methylnaphthalene-d10	%	95	65 – 130	No
Benzo[a]pyrene-d12	%	96	70 – 140	No
Fluoranthene-d10	%	96	66 – 130	No

SMC Compounds in SVOC Soil Samples by GC-MS

		4081709.2	Control Limits	Outside Limit (Yes/No)
2-fluorobiphenyl	%	81	40 – 120	No
2-fluorophenol	%	95	40 – 120	No
Nitrobenzene-d5	%	83	40 – 120	No
Phenol-d5	%	78	40 – 120	No
Terphenyl-d14	%	77	40 – 120	No
2,4,6-Tribromophenol	%	70	40 – 120	No

Polycyclic Aromatic Hydrocarbons Screening in Soil

		4081709.10	Control Limits	Outside Limit (Yes/No)
1-methylnaphthalene-d10	%	92	65 – 130	No
Benzo[a]pyrene-d12	%	92	70 – 140	No
Fluoranthene-d10	%	93	66 – 130	No

SMC Compounds in SVOC Soil Samples by GC-MS

		4081709.10	Control Limits	Outside Limit (Yes/No)
2-fluorobiphenyl	%	67	40 – 120	No
2-fluorophenol	%	81	40 – 120	No
Nitrobenzene-d5	%	72	40 – 120	No
Phenol-d5	%	68	40 – 120	No
Terphenyl-d14	%	82	40 – 120	No
2,4,6-Tribromophenol	%	61	40 – 120	No

Polycyclic Aromatic Hydrocarbons Screening in Soil

		4081709.12	Control Limits	Outside Limit (Yes/No)
1-methylnaphthalene-d10	%	90	65 – 130	No
Benzo[a]pyrene-d12	%	89	70 – 140	No
Fluoranthene-d10	%	89	66 – 130	No

SMC Compounds in SVOC Soil Samples by GC-MS

		4081709.12	Control Limits	Outside Limit (Yes/No)
2-fluorobiphenyl	%	72	40 – 120	No
2-fluorophenol	%	90	40 – 120	No

SMC Compounds in SVOC Soil Samples by GC-MS				
		4081709.12	Control Limits	Outside Limit (Yes/No)
Nitrobenzene-d5	%	79	40 – 120	No
Phenol-d5	%	73	40 – 120	No
Terphenyl-d14	%	80	40 – 120	No
2,4,6-Tribromophenol	%	64	40 – 120	No

Blank QCs

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13335.13				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13335.31				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13338.13				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13338.35				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Blank 1 PrepWS xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 17798.1				
		Results	Control Limits	Outside Limit (Yes/No)
1-Methylnaphthalene	mg/kg dry wt	< 0.010 ± 0.032	0.0 – 0.0100	No
2-Methylnaphthalene	mg/kg dry wt	< 0.010 ± 0.032	0.0 – 0.0100	No
Acenaphthylene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Acenaphthene	mg/kg dry wt	< 0.010 ± 0.0060	0.0 – 0.0100	No
Anthracene	mg/kg dry wt	< 0.010 ± 0.0061	0.0 – 0.0100	No
Benzo[a]anthracene	mg/kg dry wt	< 0.010 ± 0.0062	0.0 – 0.0100	No
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.010 ± 0.0064	0.0 – 0.0100	No
Benzo[e]pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.010 ± 0.0064	0.0 – 0.0100	No
Benzo[k]fluoranthene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Chrysene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Fluoranthene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Fluorene	mg/kg dry wt	< 0.010 ± 0.0067	0.0 – 0.0100	No
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Naphthalene	mg/kg dry wt	< 0.05 ± 0.031	0.0 – 0.050	No
Phenanthrene	mg/kg dry wt	< 0.010 ± 0.0067	0.0 – 0.0100	No
Perylene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No

QC Spike QCs

LCS TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 15537.3				
		Results	Control Limits	Outside Limit (Yes/No)
Total hydrocarbons (C7 - C36)	%	81 ± 42	74 – 108	No

LCS OC/PAH xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 17798.2				
		Results	Control Limits	Outside Limit (Yes/No)
1-Methylnaphthalene	%	101 ± 25	78 – 122	No
2-Methylnaphthalene	%	93 ± 23	72 – 117	No
Acenaphthylene	%	99.0 ± 9.0	75 – 118	No
Acenaphthene	%	105 ± 30	84 – 119	No
Anthracene	%	98 ± 30	79 – 121	No
Benzo[a]anthracene	%	102 ± 27	81 – 123	No
Benzo[a]pyrene (BAP)	%	109.0 ± 8.3	76 – 123	No
Benzo[b]fluoranthene + Benzo[j]fluoranthene	%	104 ± 22	80 – 121	No
Benzo[e]pyrene	%	95.0 ± 7.3	78 – 110	No
Benzo[g,h,i]perylene	%	103 ± 18	80 – 124	No
Benzo[k]fluoranthene	%	108 ± 14	79 – 121	No
Chrysene	%	104 ± 16	83 – 121	No
Dibenzo[a,h]anthracene	%	109 ± 14	78 – 124	No
Fluoranthene	%	103 ± 11	81 – 122	No
Fluorene	%	106 ± 13	86 – 122	No
Indeno(1,2,3-c,d)pyrene	%	105.0 ± 9.7	83 – 123	No
Naphthalene	%	106 ± 26	84 – 118	No
Phenanthrene	%	105 ± 15	84 – 120	No

LCS OC/PAH xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 17798.2				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Perylene	%	98.0 ± 7.5	60 – 107	No
Pyrene	%	107 ± 14	79 – 123	No

Sample Spike QCs

Matrix Spike TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 15537.14				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total hydrocarbons (C7 - C36)	%	86 ± 43	71 – 104	No

Reference Material QCs

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13335.14				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total Recoverable Arsenic	mg/kg dry wt	11.3 ± 2.2	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.87 ± 0.17	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	27.1 ± 3.8	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	13.6 ± 2.5	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	32.4 ± 6.1	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.394 ± 0.083	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	14.3 ± 2.3	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	196 ± 29	166 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13335.49				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total Recoverable Arsenic	mg/kg dry wt	10.6 ± 2.1	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.88 ± 0.17	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	26.3 ± 3.7	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	12.8 ± 2.4	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	33.5 ± 6.3	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.355 ± 0.080	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	13.6 ± 2.2	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	191 ± 29	166 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13338.14				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total Recoverable Arsenic	mg/kg dry wt	11.4 ± 2.2	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.91 ± 0.17	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	28.2 ± 4.0	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	13.8 ± 2.6	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	34.6 ± 6.5	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.387 ± 0.082	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	14.6 ± 2.3	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	200 ± 30	166 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13338.49				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total Recoverable Arsenic	mg/kg dry wt	11.1 ± 2.2	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.90 ± 0.17	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	27.2 ± 3.8	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	13.4 ± 2.5	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	33.0 ± 6.2	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.343 ± 0.079	0.24 – 0.40	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13338.49				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total Recoverable Nickel	mg/kg dry wt	14.4 ± 2.3	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	200 ± 30	166 – 230	No

ANALYSIS REQUEST

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Auckland 1052, New Zealand

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Job No: **408 4844**

Date Recv: 28-Jan-26 15:44

Received by: Meg Vallabh

Quote No

Primary Contact [redacted]

Submitted By

Client Name WSP NZ Ltd

Address 100 Beaumont Street Westhaven Auckland Postcode 1010

Phone [redacted] Mobile

Email

Charge To

Client Reference 1-C2466.16

Order No

Results To *Reports will be emailed to Primary Contact by default. Additional Reports will be sent as specified below.*

☑ Email Primary Contact ☐ Email Submitter ☐ Email Client

☐ Email Other [redacted]

☐ Other

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories

Date & Time: 28/1/26 15:39

Name: Henry McIntyre

☑ Tick if you require COC to be emailed back

Signature:

Samples will be processed at a Hill Labs site with the appropriate testing capability and capacity. Please inform the lab if you wish samples to be retained and analysed at the site of receipt.

Received at Hill Laboratories

Date & Time:

Name:

Signature:

ADDITIONAL INFORMATION

all samples begin with prefix BH2B-2149-

Priority ☐ Low ☑ Normal ☐ High ☐ Urgent (ASAP, extra charge applies, please contact lab first)

Requested Reporting Date:

*Please ensure all asbestos samples are **individually double bagged** upon submission to the laboratory.*

No.	Sample Name	Sample Type	Sample Location	Sample Date/ Time	Tests Required (if not as per Quote)
1	~~BH2B-2149-1945~~	~~Soil~~	~~BH2B-2149~~	27/1/26	hold cold
2	BH2B_2149_19.95	Soil			
3	BH2B-2149_22.1				
4	BH2B-2149_24.80				
5	BH2B-2149_26.45				Temperature On Arrival 4.3 °C
6	BH2B_2149_27.70				
7	BH2B_2149_29.50				Temperature was measured on one or more arbitrarily chosen samples in this batch.
8	BH2B_2149_31.20				
9	BH2B_2149_32.40			28/1/26	
10	BH2B_2149_34.10				
11	BH2B-2149_35.85				
12	BH2B-2149 37.00				
13	BH2B_2149 38.4				

PTO

No.	Sample Name	Sample Material	Sample Location	Sample Date	Tests Required (if not as per Quote)
14	BH2B_2149_39.90	Soil	BH2B-2149	28/1/26	hold
15	BH2B_2149_QAQC02		~~2HH~~	27/1/26	
16	BH2B_2149_QAQC03			28/1/26	
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
41					

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Private Bag 3205
Hamilton 3240 New Zealand

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Job Information Summary

Client:	WSP New Zealand Limited	**Lab No:**	4084844
Contact:	Henry McIntyre	**Date Registered:**	29-Jan-2026 10:05 am
	C/- WSP New Zealand Limited	**Priority:**	High
	PO Box 5848	**Quote No:**	82748
	Auckland 1141	**Order No:**	1-C2466.16
		Client Reference:	1-C2466.16
		Add. Client Ref:	
		Submitted By:	Megan Baddiley
		Charge To:	WSP New Zealand Limited
		Target Date:	03-Feb-2026 4:30 pm

Samples

No	Sample Name	Sample Type	Containers	Tests Requested
1	BH2B_2149_19.95 27-Jan-2026	Soil	GSoil300, PSoil250	Hold Cold
2	BH2B_2149_22.10 27-Jan-2026	Soil	GSoil300, PSoil250	Semivolatile Organic Compounds Screening in Soil by GC-MS, Heavy Metals with Mercury, Screen Level, TPH Oil Industry Profile + PAHscreen
3	BH2B_2149_24.80 27-Jan-2026	Soil	GSoil300, PSoil250	Hold Cold
4	BH2B_2149_26.45 27-Jan-2026	Soil	GSoil300, PSoil250	Semivolatile Organic Compounds Screening in Soil by GC-MS, Heavy Metals with Mercury, Screen Level, TPH Oil Industry Profile + PAHscreen
5	BH2B_2149_27.70 27-Jan-2026	Soil	GSoil300, PSoil250	Hold Cold
6	BH2B_2149_29.50 27-Jan-2026	Soil	GSoil300, PSoil250	Hold Cold
7	BH2B_2149_31.20 27-Jan-2026	Soil	GSoil300, PSoil250	Hold Cold
8	BH2B_2149_32.40 28-Jan-2026	Soil	GSoil300, PSoil250	Hold Cold
9	BH2B_2149_34.10 28-Jan-2026	Soil	GSoil300, PSoil250	Hold Cold
10	BH2B_2149_35.85 28-Jan-2026	Soil	GSoil300, PSoil250	Semivolatile Organic Compounds Screening in Soil by GC-MS, Heavy Metals with Mercury, Screen Level, TPH Oil Industry Profile + PAHscreen
11	BH2B_2149_37.00 28-Jan-2026	Soil	GSoil300, PSoil250	Semivolatile Organic Compounds Screening in Soil by GC-MS, Heavy Metals with Mercury, Screen Level, TPH Oil Industry Profile + PAHscreen
12	BH2B_2149_38.4 28-Jan-2026	Soil	GSoil300	Hold Cold
13	BH2B_2149_39.90 28-Jan-2026	Soil	GSoil300, cpBag	Hold Cold
14	BH2B_2149_QAQC02 27-Jan-2026	Soil	GSoil300, PSoil250	Semivolatile Organic Compounds Screening in Soil by GC-MS, Heavy Metals with Mercury, Screen Level, TPH Oil Industry Profile + PAHscreen
15	BH2B_2149_QAQC03 28-Jan-2026	Soil	GSoil300, PSoil250	Hold Cold
16	BH2B_2149_18.75 28-Jan-2026	Soil	PSoil250	Hold Cold

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request. Unless otherwise indicated, analyses were performed at Hill Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Individual Tests			
Environmental Solids Sample Drying	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	2, 4, 10-11, 14
Total of Reported PAHs in Soil	Sonication extraction, GC-MS/MS analysis. In-house based on US EPA 8270.	0.03 mg/kg dry wt	2, 4, 10-11, 14

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Dry Matter	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	2, 4, 10-11, 14
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES	BaP Potency Equivalence calculated from; Benzo(a) anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(j) fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Benzo(a) pyrene x 1.0 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Fluoranthene x 0.01 + Indeno(1,2,3-c,d)pyrene x 0.1. Ministry for the Environment. 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment.	0.024 mg/kg dry wt	2, 4, 10-11, 14
Benzo[a]pyrene Toxic Equivalence (TEF)	Benzo[a]pyrene Toxic Equivalence (TEF) calculated from; Benzo[a]pyrene x 1.0 + Benzo(a)anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Indeno(1,2,3-c,d)pyrene x 0.1. Guidelines for assessing and managing contaminated gasworks sites in New Zealand (GMG) (MfE, 1997).	0.024 mg/kg dry wt	2, 4, 10-11, 14
TPH Oil Industry Profile + PAHscreen	Sonication extraction, GC-FID and GC-MS/MS analysis. Tested on as received sample. In-house based on US EPA 8015 and US EPA 8270.	0.010 - 70 mg/kg dry wt	2, 4, 10-11, 14
Heavy Metals with Mercury, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required. US EPA 200.2 (modified), APHA 3125 B: Online Edition.	0.10 - 4 mg/kg dry wt	2, 4, 10-11, 14
Semivolatile Organic Compounds Screening in Soil by GC-MS	Sonication extraction, GC-MS analysis. Tested on as received sample. In-house based on US EPA 8270.	0.024 - 30 mg/kg dry wt	2, 4, 10-11, 14
Total Petroleum Hydrocarbons in Soil			
C7 - C9	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	2, 4, 10-11, 14
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	2, 4, 10-11, 14
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	2, 4, 10-11, 14
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	2, 4, 10-11, 14

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Certificate of Analysis

Client:	WSP New Zealand Limited	**Lab No:**	4084844 SPv2
Contact:	Henry McIntyre C/- WSP New Zealand Limited PO Box 5848 Auckland 1141	**Date Received:**	28-Jan-2026
		Date Reported:	05-Feb-2026
		Quote No:	82748
		Order No:	1-C2466.16
		Client Reference:	1-C2466.16
		Submitted By:	Megan Baddiley

Sample Type: Soil

Sample Name:		BH2B_2149_22.10 27-Jan-2026	BH2B_2149_26.45 27-Jan-2026	BH2B_2149_35.85 28-Jan-2026	BH2B_2149_37.00 28-Jan-2026	BH2B_2149_QA QC02 27-Jan-2026
Lab Number:		4084844.2	4084844.4	4084844.10	4084844.11	4084844.14
Individual Tests						
Dry Matter	g/100g as rcvd	76	85	79	83	75
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	6	7	7	8	7
Total Recoverable Cadmium	mg/kg dry wt	0.24	0.31	0.17	0.18	0.26
Total Recoverable Chromium	mg/kg dry wt	8	8	8	8	8
Total Recoverable Copper	mg/kg dry wt	17	18	13	14	18
Total Recoverable Lead	mg/kg dry wt	8.5	8.5	9.4	9.0	8.6
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Nickel	mg/kg dry wt	18	20	20	21	19
Total Recoverable Zinc	mg/kg dry wt	80	86	72	78	90
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Total of Reported PAHs in Soil	mg/kg dry wt	< 0.4	< 0.3	< 0.4	< 0.3	< 0.4
1-Methylnaphthalene	mg/kg dry wt	< 0.013	< 0.012	0.019	0.019	< 0.014
2-Methylnaphthalene	mg/kg dry wt	< 0.013	< 0.012	0.015	0.013	< 0.014
Acenaphthylene	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.014
Acenaphthene	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.014
Anthracene	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.014
Benzo[a]anthracene	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.014
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.014
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 0.031	< 0.028	< 0.031	< 0.029	< 0.033
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 0.031	< 0.028	< 0.031	< 0.029	< 0.032
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.014
Benzo[e]pyrene	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.014
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.014
Benzo[k]fluoranthene	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.014
Chrysene	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.014
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.014
Fluoranthene	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.014
Fluorene	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.014
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.014
Naphthalene	mg/kg dry wt	< 0.07	< 0.06	< 0.07	< 0.06	< 0.07
Perylene	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.014
Phenanthrene	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.014
Pyrene	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.014

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

Sample Type: Soil						
Sample Name:		BH2B_2149_22.1 0 27-Jan-2026	BH2B_2149_26.4 5 27-Jan-2026	BH2B_2149_35.8 5 28-Jan-2026	BH2B_2149_37.0 0 28-Jan-2026	BH2B_2149_QA QC02 27-Jan-2026
Lab Number:		4084844.2	4084844.4	4084844.10	4084844.11	4084844.14
Haloethers in SVOC Soil Samples by GC-MS						
Bis(2-chloroethoxy) methane	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-chloroethyl)ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-chloroisopropyl)ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4-Bromophenyl phenyl ether	mg/kg dry wt	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
4-Chlorophenyl phenyl ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Nitrogen containing compounds in SVOC Soil Samples by GC-MS						
2,4-Dinitrotoluene	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,6-Dinitrotoluene	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Nitrobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
N-Nitrosodi-n-propylamine	mg/kg dry wt	< 0.8	< 0.7	< 0.8	< 0.8	< 0.8
N-Nitrosodiphenylamine + Diphenylamine	mg/kg dry wt	< 0.8	< 0.7	< 0.8	< 0.8	< 0.8
Organochlorine Pesticides in SVOC Soil Samples by GC-MS						
Aldrin	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
alpha-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
beta-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
delta-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
gamma-BHC (Lindane)	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4,4'-DDD	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4,4'-DDE	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4,4'-DDT	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dieldrin	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Endosulfan I	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Endosulfan II	mg/kg dry wt	< 2	< 2	< 2	< 2	< 2
Endosulfan sulphate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Endrin	mg/kg dry wt	< 0.8	< 0.7	< 0.8	< 0.8	< 0.8
Endrin ketone	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Heptachlor	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Heptachlor epoxide	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Hexachlorobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS						
Acenaphthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[a]anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[k]fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1&2-Chloronaphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
2-Methylnaphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Phenols in SVOC Soil Samples by GC-MS						
4-Chloro-3-methylphenol	mg/kg dry wt	< 5	< 5	< 5	< 5	< 5
2-Chlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4-Dichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Sample Type: Soil						
Sample Name:		BH2B_2149_22.10 27-Jan-2026	BH2B_2149_26.45 27-Jan-2026	BH2B_2149_35.85 28-Jan-2026	BH2B_2149_37.00 28-Jan-2026	BH2B_2149_QAQC02 27-Jan-2026
Lab Number:		4084844.2	4084844.4	4084844.10	4084844.11	4084844.14
Phenols in SVOC Soil Samples by GC-MS						
2,4-Dimethylphenol	mg/kg dry wt	< 3	< 3	< 3	< 3	< 3
3 & 4-Methylphenol (m- + p-cresol)	mg/kg dry wt	< 3	< 3	< 3	< 3	< 3
2-Methylphenol (o-cresol)	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Nitrophenol	mg/kg dry wt	< 5	< 5	< 5	< 5	< 5
Pentachlorophenol (PCP)	mg/kg dry wt	< 30	< 30	< 30	< 30	< 30
Phenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4,5-Trichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4,6-Trichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Plasticisers in SVOC Soil Samples by GC-MS						
Bis(2-ethylhexyl)phthalate	mg/kg dry wt	< 5	< 5	< 5	< 5	< 5
Butylbenzylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Di(2-ethylhexyl)adipate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Diethylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dimethylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Di-n-butylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Di-n-octylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Other Halogenated compounds in SVOC Soil Samples by GC-MS						
1,2-Dichlorobenzene	mg/kg dry wt	< 0.8	< 0.7	< 0.8	< 0.8	< 0.8
1,3-Dichlorobenzene	mg/kg dry wt	< 0.8	< 0.7	< 0.8	< 0.8	< 0.8
1,4-Dichlorobenzene	mg/kg dry wt	< 0.8	< 0.7	< 0.8	< 0.8	< 0.8
Hexachlorobutadiene	mg/kg dry wt	< 0.8	< 0.7	< 0.8	< 0.8	< 0.8
Hexachloroethane	mg/kg dry wt	< 0.8	< 0.7	< 0.8	< 0.8	< 0.8
1,2,4-Trichlorobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Other compounds in SVOC Soil Samples by GC-MS						
Benzyl alcohol	mg/kg dry wt	< 10	< 10	< 10	< 10	< 10
Carbazole	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibenzofuran	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Isophorone	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Total Petroleum Hydrocarbons in Soil						
C7 - C9	mg/kg dry wt	< 20	< 20	< 20	< 20	< 20
C10 - C14	mg/kg dry wt	< 20	< 20	< 20	< 20	< 20
C15 - C36	mg/kg dry wt	< 40	< 40	< 40	< 40	< 40
Total hydrocarbons (C7 - C36)	mg/kg dry wt	< 80	< 80	< 80	< 80	< 80

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request. Unless otherwise indicated, analyses were performed at Hill Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Individual Tests			
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	2, 4, 10-11, 14
Total of Reported PAHs in Soil	Sonication extraction, GC-MS/MS analysis. In-house based on US EPA 8270.	0.03 mg/kg dry wt	2, 4, 10-11, 14
Dry Matter	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	2, 4, 10-11, 14

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	BaP Potency Equivalence calculated from; Benzo(a)anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(j)fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Benzo(a)pyrene x 1.0 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Fluoranthene x 0.01 + Indeno(1,2,3-c,d)pyrene x 0.1. Ministry for the Environment. 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment.	0.024 mg/kg dry wt	2, 4, 10-11, 14
Benzo[a]pyrene Toxic Equivalence (TEF)*	Benzo[a]pyrene Toxic Equivalence (TEF) calculated from; Benzo[a]pyrene x 1.0 + Benzo(a)anthracene x 0.1 + Benzo(b) fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Indeno(1,2,3-c,d)pyrene x 0.1. Guidelines for assessing and managing contaminated gasworks sites in New Zealand (GMG) (MfE, 1997).	0.024 mg/kg dry wt	2, 4, 10-11, 14
TPH Oil Industry Profile + PAHscreen	Sonication extraction, GC-FID and GC-MS/MS analysis. Tested on as received sample. In-house based on US EPA 8015 and US EPA 8270.	0.010 - 70 mg/kg dry wt	2, 4, 10-11, 14
Heavy Metals with Mercury, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required. US EPA 200.2 (modified), APHA 3125 B: Online Edition.	0.10 - 4 mg/kg dry wt	2, 4, 10-11, 14
Semivolatile Organic Compounds Screening in Soil by GC-MS	Sonication extraction, GC-MS analysis. Tested on as received sample. In-house based on US EPA 8270.	0.024 - 30 mg/kg dry wt	2, 4, 10-11, 14
Total Petroleum Hydrocarbons in Soil			
C7 - C9	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	2, 4, 10-11, 14
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	2, 4, 10-11, 14
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	2, 4, 10-11, 14
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	2, 4, 10-11, 14

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 31-Jan-2026 and 04-Feb-2026. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

This certificate of analysis must not be reproduced, except in full, without the written consent of the signatory.



Ara Heron BSc (Tech)
Client Services Manager - Environmental

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Quality Assurance Report

Client:	WSP New Zealand Limited	**Lab No:**	4084844	QCPv1
Contact:	Henry McIntyre C/- WSP New Zealand Limited PO Box 5848 Auckland 1141	**Date Received:**	28-Jan-2026	
		Date Reported:	05-Feb-2026	
		Quote No:	82748	
		Order No:	1-C2466.16	
		Client Reference:	1-C2466.16	
		Submitted By:	Megan Baddiley	

Sample Specific QCs

Polycyclic Aromatic Hydrocarbons Screening in Soil

		4084844.2	Control Limits	Outside Limit (Yes/No)
1-methylnaphthalene-d10	%	97	65 – 130	No
Benzo[a]pyrene-d12	%	97	70 – 140	No
Fluoranthene-d10	%	97	66 – 130	No

SMC Compounds in SVOC Soil Samples by GC-MS

		4084844.2	Control Limits	Outside Limit (Yes/No)
2-fluorobiphenyl	%	88	40 – 120	No
2-fluorophenol	%	103	40 – 120	No
Nitrobenzene-d5	%	91	40 – 120	No
Phenol-d5	%	88	40 – 120	No
Terphenyl-d14	%	86	40 – 120	No
2,4,6-Tribromophenol	%	70	40 – 120	No

Polycyclic Aromatic Hydrocarbons Screening in Soil

		4084844.4	Control Limits	Outside Limit (Yes/No)
1-methylnaphthalene-d10	%	96	65 – 130	No
Benzo[a]pyrene-d12	%	98	70 – 140	No
Fluoranthene-d10	%	97	66 – 130	No

SMC Compounds in SVOC Soil Samples by GC-MS

		4084844.4	Control Limits	Outside Limit (Yes/No)
2-fluorobiphenyl	%	83	40 – 120	No
2-fluorophenol	%	96	40 – 120	No
Nitrobenzene-d5	%	86	40 – 120	No
Phenol-d5	%	81	40 – 120	No
Terphenyl-d14	%	87	40 – 120	No
2,4,6-Tribromophenol	%	62	40 – 120	No

Polycyclic Aromatic Hydrocarbons Screening in Soil

		4084844.10	Control Limits	Outside Limit (Yes/No)
1-methylnaphthalene-d10	%	91	65 – 130	No
Benzo[a]pyrene-d12	%	92	70 – 140	No
Fluoranthene-d10	%	92	66 – 130	No

SMC Compounds in SVOC Soil Samples by GC-MS

		4084844.10	Control Limits	Outside Limit (Yes/No)
2-fluorobiphenyl	%	77	40 – 120	No
2-fluorophenol	%	91	40 – 120	No

SMC Compounds in SVOC Soil Samples by GC-MS				
		4084844.10	Control Limits	Outside Limit (Yes/No)
Nitrobenzene-d5	%	82	40 – 120	No
Phenol-d5	%	76	40 – 120	No
Terphenyl-d14	%	77	40 – 120	No
2,4,6-Tribromophenol	%	58	40 – 120	No

Polycyclic Aromatic Hydrocarbons Screening in Soil				
		4084844.11	Control Limits	Outside Limit (Yes/No)
1-methylnaphthalene-d10	%	88	65 – 130	No
Benzo[a]pyrene-d12	%	88	70 – 140	No
Fluoranthene-d10	%	89	66 – 130	No

SMC Compounds in SVOC Soil Samples by GC-MS				
		4084844.11	Control Limits	Outside Limit (Yes/No)
2-fluorobiphenyl	%	85	40 – 120	No
2-fluorophenol	%	98	40 – 120	No
Nitrobenzene-d5	%	89	40 – 120	No
Phenol-d5	%	84	40 – 120	No
Terphenyl-d14	%	89	40 – 120	No
2,4,6-Tribromophenol	%	64	40 – 120	No

Polycyclic Aromatic Hydrocarbons Screening in Soil				
		4084844.14	Control Limits	Outside Limit (Yes/No)
1-methylnaphthalene-d10	%	90	65 – 130	No
Benzo[a]pyrene-d12	%	90	70 – 140	No
Fluoranthene-d10	%	91	66 – 130	No

SMC Compounds in SVOC Soil Samples by GC-MS				
		4084844.14	Control Limits	Outside Limit (Yes/No)
2-fluorobiphenyl	%	74	40 – 120	No
2-fluorophenol	%	91	40 – 120	No
Nitrobenzene-d5	%	79	40 – 120	No
Phenol-d5	%	76	40 – 120	No
Terphenyl-d14	%	83	40 – 120	No
2,4,6-Tribromophenol	%	64	40 – 120	No

Blank QCs

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13338.13				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13338.35				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.065	-0.100 – 0.100	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13338.35				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Mercury	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Blank 1 PrepWS xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 17798.1				
		Results	Control Limits	Outside Limit (Yes/No)
1-Methylnaphthalene	mg/kg dry wt	< 0.010 ± 0.032	0.0 – 0.0100	No
2-Methylnaphthalene	mg/kg dry wt	< 0.010 ± 0.032	0.0 – 0.0100	No
Acenaphthylene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Acenaphthene	mg/kg dry wt	< 0.010 ± 0.0060	0.0 – 0.0100	No
Anthracene	mg/kg dry wt	< 0.010 ± 0.0061	0.0 – 0.0100	No
Benzo[a]anthracene	mg/kg dry wt	< 0.010 ± 0.0062	0.0 – 0.0100	No
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.010 ± 0.0064	0.0 – 0.0100	No
Benzo[e]pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.010 ± 0.0064	0.0 – 0.0100	No
Benzo[k]fluoranthene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Chrysene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Fluoranthene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Fluorene	mg/kg dry wt	< 0.010 ± 0.0067	0.0 – 0.0100	No
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Naphthalene	mg/kg dry wt	< 0.05 ± 0.031	0.0 – 0.050	No
Phenanthrene	mg/kg dry wt	< 0.010 ± 0.0067	0.0 – 0.0100	No
Perylene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No

QC Spike QCs

LCS TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 15537.3				
		Results	Control Limits	Outside Limit (Yes/No)
Total hydrocarbons (C7 - C36)	%	81 ± 42	74 – 108	No

LCS OC/PAH xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 17798.2				
		Results	Control Limits	Outside Limit (Yes/No)
1-Methylnaphthalene	%	101 ± 25	78 – 122	No
2-Methylnaphthalene	%	93 ± 23	72 – 117	No
Acenaphthylene	%	99.0 ± 9.0	75 – 118	No
Acenaphthene	%	105 ± 30	84 – 119	No
Anthracene	%	98 ± 30	79 – 121	No
Benzo[a]anthracene	%	102 ± 27	81 – 123	No
Benzo[a]pyrene (BAP)	%	109.0 ± 8.3	76 – 123	No
Benzo[b]fluoranthene + Benzo[j]fluoranthene	%	104 ± 22	80 – 121	No
Benzo[e]pyrene	%	95.0 ± 7.3	78 – 110	No
Benzo[g,h,i]perylene	%	103 ± 18	80 – 124	No

LCS OC/PAH xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 17798.2				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Benzo[k]fluoranthene	%	108 ± 14	79 – 121	No
Chrysene	%	104 ± 16	83 – 121	No
Dibenzo[a,h]anthracene	%	109 ± 14	78 – 124	No
Fluoranthene	%	103 ± 11	81 – 122	No
Fluorene	%	106 ± 13	86 – 122	No
Indeno(1,2,3-c,d)pyrene	%	105.0 ± 9.7	83 – 123	No
Naphthalene	%	106 ± 26	84 – 118	No
Phenanthrene	%	105 ± 15	84 – 120	No
Perylene	%	98.0 ± 7.5	60 – 107	No
Pyrene	%	107 ± 14	79 – 123	No

Sample Spike QCs

Matrix Spike TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 15537.14				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total hydrocarbons (C7 - C36)	%	86 ± 43	71 – 104	No

Reference Material QCs

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13338.14				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total Recoverable Arsenic	mg/kg dry wt	11.4 ± 2.2	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.91 ± 0.17	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	28.2 ± 4.0	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	13.8 ± 2.6	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	34.6 ± 6.5	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.387 ± 0.082	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	14.6 ± 2.3	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	200 ± 30	166 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 13338.49				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total Recoverable Arsenic	mg/kg dry wt	11.1 ± 2.2	9.1 – 12.7	No
Total Recoverable Cadmium	mg/kg dry wt	0.90 ± 0.17	0.70 – 0.98	No
Total Recoverable Chromium	mg/kg dry wt	27.2 ± 3.8	21 – 30	No
Total Recoverable Copper	mg/kg dry wt	13.4 ± 2.5	11.0 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	33.0 ± 6.2	28 – 38	No
Total Recoverable Mercury	mg/kg dry wt	0.343 ± 0.079	0.24 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	14.4 ± 2.3	11.7 – 16.3	No
Total Recoverable Zinc	mg/kg dry wt	200 ± 30	166 – 230	No

Hill Labs

ANALYSIS REQUEST

R J Hill Laboratories Limited
Ground Floor, 28 Heather Street
Parnell
Auckland 1052, New Zealand

Job No: **411 3692**

Date Recv: 27-Feb-26 08:04

0508 HILL LAB (44 555 22)
[redacted]
mail@hill-labs.co.nz
www.hill-labs.co.nz

Received by: Henry Shum

Quote No

Primary Contac [redacted]

Submitted By

Client Name WSP

Address 100 Beaumont Street Auckland

Postcode 1010

Phone *Mobile* [redacted]

Email

Charge To

Client Reference 1-C2466.16

Order No

Results To *Reports will be emailed to Primary Contact by default. Additional Reports will be sent as specified below.*

☑ *Email Primary Contact* ☐ *Email Submitter* ☐ *Email Client*

☐ *Email Other* [redacted]

☐ *Other*

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories

Date & Time: 27/2/26 08:00

Name: Henry Mcintyre

Signature: [signature]

☑ *Tick if you require COC to be emailed back*

Samples will be processed at a Hill Labs site with the appropriate testing capability and capacity. Please inform the lab if you wish samples to be retained and analysed at the site of receipt.

Received at Hill Laboratories

Date & Time:

Name:

Signature:

ADDITIONAL INFORMATION

Priority ☐ Low ☑ Normal ☐ High

☑ **Urgent** (ASAP, extra charge applies, please contact lab first)

Requested Reporting Date:

*Please ensure all asbestos samples are **individually double bagged** upon submission to the laboratory.*

No.	Sample Name	Sample Type	Sample Location	Sample Date/ Time	Tests Required (if not as per Quote)
1	BH2B_1160	water		26/2 11:10	hold
2	BH2B_2149			14:00	
3	BH2B_2147			16:50	
4	QAQC01				
5	QAQC02	Clean water		14:36	
6					
7					
8					
9					
10					
11					
12					
13					

Temperature On Arrival
8.0 °C
Temperature was measured on one or more arbitrarily chosen samples in this batch.

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

0508 HILL LAB (44 555 22)
[redacted]
mail@hill-labs.co.nz
www.**hill-labs**.co.nz

Job Information Summary

Client:	WSP New Zealand Limited	**Lab No:**	4113692
Contact:	Megan Baddiley	**Date Registered:**	28-Feb-2026 11:23 am
	C/- WSP New Zealand Limited	**Priority:**	Urgent
	PO Box 5848	**Quote No:**	82748
	Auckland 1141	**Order No:**	1-C2466.16
		Client Reference:	1-C2466.16
		Add. Client Ref:	
		Submitted By:	Henry McIntyre
		Charge To:	WSP New Zealand Limited
		Target Date:	04-Mar-2026 4:30 pm

Samples

No	Sample Name	Sample Type	Containers	Tests Requested
1	BH2B_1160 26-Feb-2026 11:10 am	Ground Water	Org500, TPH250, N100, UPte100	VOC 40 Pour Off, Heavy metals, dissolved, trace As,Cd,Cr,Cu,Ni,Pb,Zn, Heavy metals, totals, trace As,Cd,Cr,Cu,Ni,Pb,Zn, Polycyclic Aromatic Hydrocarbons Screening in Water, By Liq/Liq, Dissolved Mercury, Total Mercury, Mono Aromatic Hydrocarbons Trace in Water by Headspace GCMS, Total Petroleum Hydrocarbons in Water
2	BH2B_2149 26-Feb-2026 2:00 pm	Ground Water	Org500, TPH250, N100, UPte100	VOC 40 Pour Off, Dissolved Mercury, Total Mercury, Heavy metals, dissolved, trace As,Cd,Cr,Cu,Ni,Pb,Zn, Heavy metals, totals, trace As,Cd,Cr,Cu,Ni,Pb,Zn, Mono Aromatic Hydrocarbons Trace in Water by Headspace GCMS, Polycyclic Aromatic Hydrocarbons Screening in Water, By Liq/Liq, Total Petroleum Hydrocarbons in Water
3	BH2B_2147 26-Feb-2026 4:50 pm	Ground Water	Org500, TPH250, N100, UPte100	VOC 40 Pour Off, Dissolved Mercury, Total Mercury, Heavy metals, dissolved, trace As,Cd,Cr,Cu,Ni,Pb,Zn, Heavy metals, totals, trace As,Cd,Cr,Cu,Ni,Pb,Zn, Mono Aromatic Hydrocarbons Trace in Water by Headspace GCMS, Polycyclic Aromatic Hydrocarbons Screening in Water, By Liq/Liq, Total Petroleum Hydrocarbons in Water
4	QAQC01 26-Feb-2026	Ground Water	Org500, TPH250, N100, UPte100	VOC 40 Pour Off, Dissolved Mercury, Total Mercury, Heavy metals, dissolved, trace As,Cd,Cr,Cu,Ni,Pb,Zn, Heavy metals, totals, trace As,Cd,Cr,Cu,Ni,Pb,Zn, Mono Aromatic Hydrocarbons Trace in Water by Headspace GCMS, Polycyclic Aromatic Hydrocarbons Screening in Water, By Liq/Liq, Total Petroleum Hydrocarbons in Water
5	QAQC02 26-Feb-2026 2:36 pm	Ground Water	Org500, TPH250, N100, UPte100	VOC 40 Pour Off, Dissolved Mercury, Total Mercury, Heavy metals, dissolved, trace As,Cd,Cr,Cu,Ni,Pb,Zn, Heavy metals, totals, trace As,Cd,Cr,Cu,Ni,Pb,Zn, Mono Aromatic Hydrocarbons Trace in Water by Headspace GCMS, Polycyclic Aromatic Hydrocarbons Screening in Water, By Liq/Liq, Total Petroleum Hydrocarbons in Water

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request.
Unless otherwise indicated, analyses were performed at Hill Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Aqueous

Test	Method Description	Default Detection Limit	Sample No
Individual Tests			
Total Digestion	Nitric acid digestion. APHA 3030 E (modified) : Online Edition.	-	1-5
Total Digestion with HCl	Nitric/hydrochloric acid digestion. APHA 3030 E (modified) : Online Edition.	-	1-5
Filtration for dissolved metals analysis	Sample filtration through 0.45µm membrane filter and preservation with nitric acid. APHA 3030 B : Online Edition.	-	1-5

Sample Type: Aqueous			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Filtration for dissolved metals analysis - HCl	Sample filtration through 0.45µm membrane filter and preservation with nitric and hydrochloric acid. APHA 3030 B : Online Edition.	-	1-5
Dissolved Mercury	Filtered sample, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.00010 g/m^3	1-5
Total Mercury	Acid digestion, ICP-MS, screen level. APHA 3125 B : Online Edition.	0.00011 g/m^3	1-5
Heavy metals, dissolved, trace As,Cd,Cr,Cu,Ni,Pb,Zn	0.45µm Filtration, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.00005 - 0.0010 g/m^3	1-5
Heavy metals, totals, trace As,Cd,Cr,Cu,Ni,Pb,Zn	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.000053 - 0.0011 g/m^3	1-5
Mono Aromatic Hydrocarbons Trace in Water by Headspace GCMS	Headspace GC-MS analysis. In-house based on US EPA 8260 and 5021.	0.0003 - 0.0005 g/m^3	1-5
Polycyclic Aromatic Hydrocarbons Screening in Water, By Liq/Liq	Liquid / liquid extraction, GC-MS/MS analysis. In-house based on US EPA 8270.	0.00010 - 0.0005 g/m^3	1-5
Total Petroleum Hydrocarbons in Water			
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	0.10 g/m^3	1-5
C10 - C14	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	0.2 g/m^3	1-5
C15 - C36	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	0.4 g/m^3	1-5
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	0.7 g/m^3	1-5

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

0508 HILL LAB (44 555 22)
[redacted]
mail@hill-labs.co.nz
www.**hill-labs**.co.nz

Certificate of Analysis

Client:	WSP New Zealand Limited	**Lab No:**	4113692	SPv3
Contact:	Megan Baddiley	**Date Received:**	27-Feb-2026	
	C/- WSP New Zealand Limited	**Date Reported:**	06-Mar-2026	
	PO Box 5848	**Quote No:**	82748	
	Auckland 1141	**Order No:**	1-C2466.16	
		Client Reference:	1-C2466.16	
		Submitted By:	Henry McIntyre	

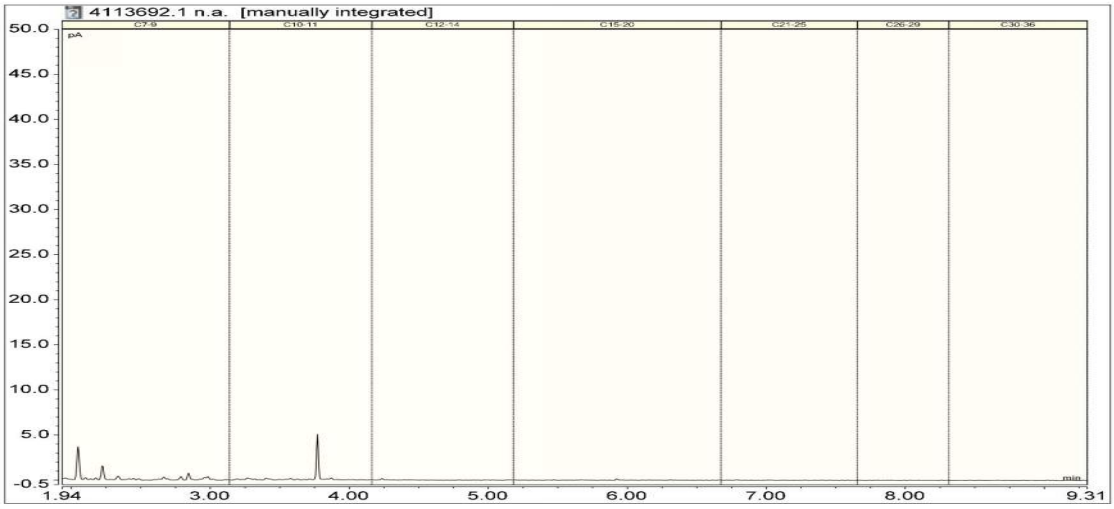
Sample Type: Aqueous

Sample Name:		BH2B_1160 26-Feb-2026 11:10 am	BH2B_2149 26-Feb-2026 2:00 pm	BH2B_2147 26-Feb-2026 4:50 pm	QAQC01 26-Feb-2026	QAQC02 26-Feb-2026 2:36 pm
Lab Number:		4113692.1	4113692.2	4113692.3	4113692.4	4113692.5
Individual Tests						
Dissolved Mercury	g/m³	< 0.00010	< 0.00010	-	< 0.00010	< 0.00010
Total Mercury	g/m³	< 0.00011	< 0.00011	< 0.0010	< 0.00011	< 0.00011
Heavy metals, dissolved, trace As,Cd,Cr,Cu,Ni,Pb,Zn						
Dissolved Arsenic	g/m³	< 0.0010	0.0055	-	< 0.0010	< 0.0010
Dissolved Cadmium	g/m³	< 0.00005	< 0.00005	-	< 0.00005	< 0.00005
Dissolved Chromium	g/m³	< 0.0005	< 0.0005	-	< 0.0005	< 0.0005
Dissolved Copper	g/m³	< 0.0005	< 0.0005	-	< 0.0005	< 0.0005
Dissolved Lead	g/m³	< 0.00010	< 0.00010	-	< 0.00010	< 0.00010
Dissolved Nickel	g/m³	< 0.0005	< 0.0005	-	< 0.0005	< 0.0005
Dissolved Zinc	g/m³	< 0.0010	0.0012	-	< 0.0010	< 0.0010
Heavy metals, totals, trace As,Cd,Cr,Cu,Ni,Pb,Zn						
Total Arsenic	g/m³	0.0040	0.0085	0.030	0.0040	< 0.0011
Total Cadmium	g/m³	0.000068	< 0.000053	< 0.00053	0.000068	< 0.000053
Total Chromium	g/m³	0.0044	0.0027	0.122	0.0041	< 0.00053
Total Copper	g/m³	0.0049	0.0052	0.54	0.0054	< 0.00053
Total Lead	g/m³	0.0027	0.00148	0.080	0.0028	< 0.00011
Total Nickel	g/m³	0.0071	0.0043	0.183	0.0074	< 0.00053
Total Zinc	g/m³	0.027	0.0177	0.61	0.027	< 0.0011
Polycyclic Aromatic Hydrocarbons Screening in Water, By Liq/Liq						
Acenaphthene	g/m³	< 0.00010	< 0.00010	< 0.0005	< 0.00010	< 0.00010
Acenaphthylene	g/m³	< 0.00010	< 0.00010	< 0.0005	< 0.00010	< 0.00010
Anthracene	g/m³	< 0.00010	< 0.00010	< 0.0005	< 0.00010	< 0.00010
Benzo[a]anthracene	g/m³	< 0.00010	< 0.00010	< 0.0005	< 0.00010	< 0.00010
Benzo[a]pyrene (BAP)	g/m³	< 0.00010	< 0.00010	< 0.0005	< 0.00010	< 0.00010
Benzo[b]fluoranthene + Benzo[j] fluoranthene	g/m³	< 0.00010	< 0.00010	< 0.0005	< 0.00010	< 0.00010
Benzo[g,h,i]perylene	g/m³	< 0.00010	< 0.00010	< 0.0005	< 0.00010	< 0.00010
Benzo[k]fluoranthene	g/m³	< 0.00010	< 0.00010	< 0.0005	< 0.00010	< 0.00010
Chrysene	g/m³	< 0.00010	< 0.00010	< 0.0005	< 0.00010	< 0.00010
Dibenzo[a,h]anthracene	g/m³	< 0.00010	< 0.00010	< 0.0005	< 0.00010	< 0.00010
Fluoranthene	g/m³	< 0.00010	< 0.00010	< 0.0005	< 0.00010	< 0.00010
Fluorene	g/m³	< 0.0002	< 0.0002	< 0.0005	< 0.0002	< 0.0002
Indeno(1,2,3-c,d)pyrene	g/m³	< 0.00010	< 0.00010	< 0.0005	< 0.00010	< 0.00010
Naphthalene	g/m³	< 0.0005	< 0.0005	< 0.003	< 0.0005	< 0.0005
Phenanthrene	g/m³	< 0.0004	< 0.0004	< 0.0005	< 0.0004	< 0.0004
Pyrene	g/m³	< 0.0002	< 0.0002	< 0.0005	< 0.0002	< 0.0002

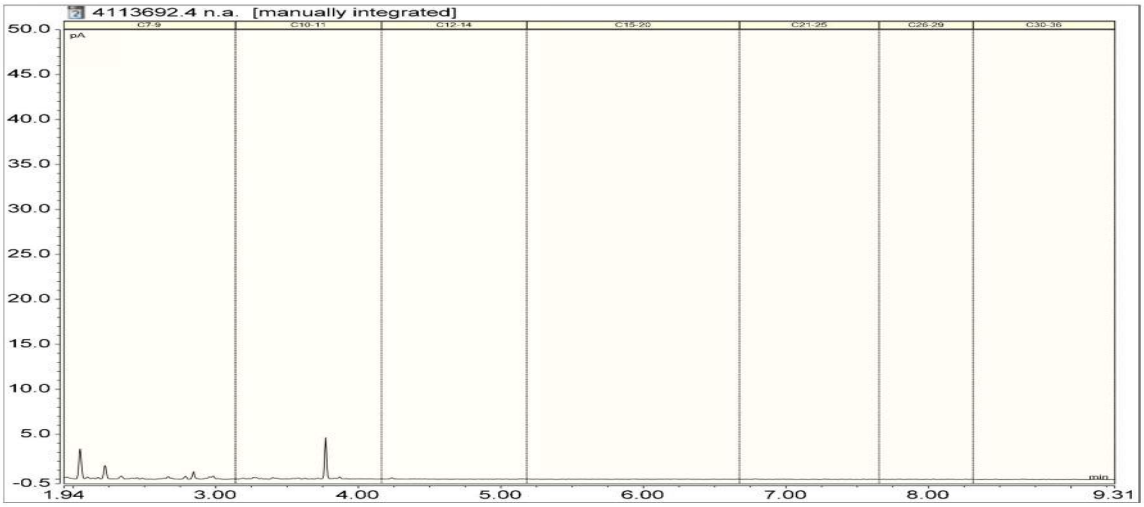
This Laboratory is accredited by International Accreditation New Zealand (IANZ), which represents New Zealand in the International Laboratory Accreditation Cooperation (ILAC). Through the ILAC Mutual Recognition Arrangement (ILAC-MRA) this accreditation is internationally recognised.
The tests reported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

Sample Type: Aqueous						
Sample Name:		BH2B_1160 26-Feb-2026 11:10 am	BH2B_2149 26-Feb-2026 2:00 pm	BH2B_2147 26-Feb-2026 4:50 pm	QAQC01 26-Feb-2026	QAQC02 26-Feb-2026 2:36 pm
Lab Number:		4113692.1	4113692.2	4113692.3	4113692.4	4113692.5
Total Petroleum Hydrocarbons in Water						
C7 - C9	g/m³	0.16	< 0.10	< 0.10	0.12	< 0.10
C10 - C14	g/m³	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
C15 - C36	g/m³	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
Total hydrocarbons (C7 - C36)	g/m³	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7
BTEX in VOC Water by Headspace GC-MS						
Benzene	g/m³	0.0022	0.0005	0.0004	0.0023	< 0.0003
Ethylbenzene	g/m³	0.0032	0.0007	0.0008	0.0032	< 0.0005
Toluene	g/m³	0.022	0.0031	0.0022	0.022	< 0.0003
m&p-Xylene	g/m³	0.0072	0.0013	0.0016	0.0061	< 0.0005
o-Xylene	g/m³	0.0026	0.0006	0.0009	0.0026	0.0003
Monoaromatic Hydrocarbons in VOC Water by Headspace GC-MS						
n-Butylbenzene	g/m³	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
tert-Butylbenzene	g/m³	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003
4-Isopropyltoluene (p-Cymene)	g/m³	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Isopropylbenzene (Cumene)	g/m³	0.0005	< 0.0003	< 0.0003	0.0005	< 0.0003
n-Propylbenzene	g/m³	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
sec-Butylbenzene	g/m³	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003
Styrene	g/m³	0.0012	0.0010	0.0008	0.0012	0.0013
1,2,4-Trimethylbenzene	g/m³	0.0009	0.0005	0.0005	0.0007	< 0.0003
1,3,5-Trimethylbenzene	g/m³	0.0006	< 0.0003	0.0003	0.0006	< 0.0003

4113692.1
BH2B_1160 26-Feb-2026 11:10 am
Client Chromatogram for TPH by FID



4113692.4
QAQC01 26-Feb-2026
Client Chromatogram for TPH by FID



Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request. Unless otherwise indicated, analyses were performed at Hill Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Aqueous

Test	Method Description	Default Detection Limit	Sample No
Individual Tests			
Total Digestion	Nitric acid digestion. APHA 3030 E (modified) : Online Edition.	-	1-5
Total Digestion with HCl	Nitric/hydrochloric acid digestion. APHA 3030 E (modified) : Online Edition.	-	1-5
Filtration for dissolved metals analysis	Sample filtration through 0.45µm membrane filter and preservation with nitric acid. APHA 3030 B : Online Edition.	-	1-2, 4-5
Filtration for dissolved metals analysis - HCl	Sample filtration through 0.45µm membrane filter and preservation with nitric and hydrochloric acid. APHA 3030 B : Online Edition.	-	1-2, 4-5
Dissolved Mercury	Filtered sample, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.00010 g/m^3	1-2, 4-5
Total Mercury	Acid digestion, ICP-MS, screen level. APHA 3125 B : Online Edition.	0.00011 g/m^3	1-5
Heavy metals, dissolved, trace As,Cd,Cr,Cu,Ni,Pb,Zn	0.45µm Filtration, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.00005 - 0.0010 g/m^3	1-2, 4-5
Heavy metals, totals, trace As,Cd,Cr,Cu,Ni,Pb,Zn	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.000053 - 0.0011 g/m^3	1-5
Mono Aromatic Hydrocarbons Trace in Water by Headspace GCMS	Headspace GC-MS analysis. In-house based on US EPA 8260 and 5021.	0.0003 - 0.0005 g/m^3	1-5
Polycyclic Aromatic Hydrocarbons Screening in Water, By Liq/Liq	Liquid / liquid extraction, GC-MS/MS analysis. In-house based on US EPA 8270.	0.00010 - 0.0005 g/m^3	1-5
Total Petroleum Hydrocarbons in Water			
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	0.10 g/m^3	1-5
C10 - C14	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	0.2 g/m^3	1-5
C15 - C36	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	0.4 g/m^3	1-5
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	0.7 g/m^3	1-5

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 02-Mar-2026 and 06-Mar-2026. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

This certificate of analysis must not be reproduced, except in full, without the written consent of the signatory.



Ara Heron BSc (Tech)
Client Services Manager - Environmental

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

0508 HILL LAB (44 555 22)
[redacted]
mail@hill-labs.co.nz
www.hill-labs.co.nz

Quality Assurance Report

Client:	WSP New Zealand Limited	**Lab No:**	4113692	QCPv1
Contact:	Megan Baddiley	**Date Received:**	27-Feb-2026	
	C/- WSP New Zealand Limited	**Date Reported:**	06-Mar-2026	
	PO Box 5848	**Quote No:**	82748	
	Auckland 1141	**Order No:**	1-C2466.16	
		Client Reference:	1-C2466.16	
		Submitted By:	Henry McIntyre	

Sample Specific QCs

Polycyclic Aromatic Hydrocarbons Screening in Water, By Liq/Liq

		4113692.1	Control Limits	Outside Limit (Yes/No)
1-methylnaphthalene-d10	%	108	40 – 130	No
Benzo[a]pyrene-d12	%	122	40 – 130	No
Fluoranthene-d10	%	110	40 – 130	No

System monitoring Compounds for VOC - % Recovery

		4113692.1	Control Limits	Outside Limit (Yes/No)
4-Bromofluorobenzene	%	93	80 – 120	No
Dibromofluoromethane	%	98	80 – 120	No
Toluene-d8	%	96	80 – 120	No

Polycyclic Aromatic Hydrocarbons Screening in Water, By Liq/Liq

		4113692.2	Control Limits	Outside Limit (Yes/No)
1-methylnaphthalene-d10	%	108	40 – 130	No
Benzo[a]pyrene-d12	%	122	40 – 130	No
Fluoranthene-d10	%	108	40 – 130	No

System monitoring Compounds for VOC - % Recovery

		4113692.2	Control Limits	Outside Limit (Yes/No)
4-Bromofluorobenzene	%	92	80 – 120	No
Dibromofluoromethane	%	100	80 – 120	No
Toluene-d8	%	96	80 – 120	No

Polycyclic Aromatic Hydrocarbons Screening in Water, By Liq/Liq

		4113692.3	Control Limits	Outside Limit (Yes/No)
1-methylnaphthalene-d10	%	108	40 – 130	No
Benzo[a]pyrene-d12	%	119	40 – 130	No
Fluoranthene-d10	%	113	40 – 130	No

System monitoring Compounds for VOC - % Recovery

		4113692.3	Control Limits	Outside Limit (Yes/No)
4-Bromofluorobenzene	%	90	80 – 120	No
Dibromofluoromethane	%	116	80 – 120	No
Toluene-d8	%	95	80 – 120	No

Polycyclic Aromatic Hydrocarbons Screening in Water, By Liq/Liq

		4113692.4	Control Limits	Outside Limit (Yes/No)
1-methylnaphthalene-d10	%	109	40 – 130	No
Benzo[a]pyrene-d12	%	122	40 – 130	No
Fluoranthene-d10	%	111	40 – 130	No

System monitoring Compounds for VOC - % Recovery				
		4113692.4	Control Limits	Outside Limit (Yes/No)
4-Bromofluorobenzene	%	92	80 – 120	No
Dibromofluoromethane	%	98	80 – 120	No
Toluene-d8	%	96	80 – 120	No

Polycyclic Aromatic Hydrocarbons Screening in Water, By Liq/Liq				
		4113692.5	Control Limits	Outside Limit (Yes/No)
1-methylnaphthalene-d10	%	108	40 – 130	No
Benzo[a]pyrene-d12	%	123	40 – 130	No
Fluoranthene-d10	%	108	40 – 130	No

System monitoring Compounds for VOC - % Recovery				
		4113692.5	Control Limits	Outside Limit (Yes/No)
4-Bromofluorobenzene	%	91	80 – 120	No
Dibromofluoromethane	%	108	80 – 120	No
Toluene-d8	%	96	80 – 120	No

Blank QCs

Blank 1 PrepWS TDigHCl - WS: Env. Waters with HCl Matrix: 296.14				
		Results	Control Limits	Outside Limit (Yes/No)
Total Mercury	g/m³	< 0.00011 ± 0.000072	-0.000106 – 0.000106	No

Blank 2 PrepWS TDigHCl - WS: Env. Waters with HCl Matrix: 296.15				
		Results	Control Limits	Outside Limit (Yes/No)
Total Mercury	g/m³	< 0.00011 ± 0.000071	-0.000106 – 0.000106	No

20x Dilution PrepWS TDigHCl - WS: Env. Waters with HCl Matrix: 296.16				
		Results	Control Limits	Outside Limit (Yes/No)
Total Mercury	g/m³	< 0.002 ± 0.000076	-0.0021 – 0.0021	No

20x Dilution PrepWS TDigHCl - WS: Env. Waters with HCl Matrix: 296.17				
		Results	Control Limits	Outside Limit (Yes/No)
Total Mercury	g/m³	< 0.002 ± 0.000074	-0.0021 – 0.0021	No

10x Prep Dilution, 2x Inst Diln TDigHCl - WS: Env. Waters with HCl Matrix: 296.18				
		Results	Control Limits	Outside Limit (Yes/No)
Total Mercury	g/m³	< 0.002 ± 0.000074	-0.0021 – 0.0021	No

10x Prep Dilution, 2x Inst Diln TDigHCl - WS: Env. Waters with HCl Matrix: 296.20				
		Results	Control Limits	Outside Limit (Yes/No)
Total Mercury	g/m³	< 0.002 ± 0.000072	-0.0021 – 0.0021	No

FBlank PrepWS DissPrep 1 - WS: Environmental Waters by ICP-MS (EW): 23185.16				
		Results	Control Limits	Outside Limit (Yes/No)
Dissolved Arsenic	g/m³	< 0.0010 ± 0.00067	-0.00100 – 0.00100	No
Dissolved Cadmium	g/m³	< 0.00005 ± 0.000033	-0.000050 – 0.000050	No
Dissolved Chromium	g/m³	< 0.0005 ± 0.00034	-0.00050 – 0.00050	No
Dissolved Copper	g/m³	< 0.0005 ± 0.00034	-0.00050 – 0.00050	No
Dissolved Lead	g/m³	< 0.00010 ± 0.000067	-0.000100 – 0.000100	No
Dissolved Nickel	g/m³	< 0.0005 ± 0.00034	-0.00050 – 0.00050	No
Dissolved Zinc	g/m³	< 0.0010 ± 0.00067	-0.00100 – 0.00100	No

20x Dilution FBlank PrepWS DissPrep - WS: Environmental Waters by ICP-MS (EW): 23185.17				
		Results	Control Limits	Outside Limit (Yes/No)
Dissolved Arsenic	g/m³	< 0.02 ± 0.00067	-0.020 – 0.020	No
Dissolved Cadmium	g/m³	< 0.0010 ± 0.000033	-0.00100 – 0.00100	No
Dissolved Chromium	g/m³	< 0.010 ± 0.00034	-0.0100 – 0.0100	No

20x Dilution FBlank PrepWS DissPrep - WS: Environmental Waters by ICP-MS (EW): 23185.17				
		Results	Control Limits	Outside Limit (Yes/No)
Dissolved Copper	g/m³	< 0.010 ± 0.00034	-0.0100 – 0.0100	No
Dissolved Lead	g/m³	< 0.002 ± 0.000067	-0.0020 – 0.0020	No
Dissolved Nickel	g/m³	< 0.010 ± 0.00034	-0.0100 – 0.0100	No
Dissolved Zinc	g/m³	< 0.02 ± 0.00067	-0.020 – 0.020	No

FBlank PrepWS DissPrep 2 - WS: Environmental Waters by ICP-MS (EW): 23185.18				
		Results	Control Limits	Outside Limit (Yes/No)
Dissolved Arsenic	g/m³	< 0.0010 ± 0.00067	-0.00100 – 0.00100	No
Dissolved Cadmium	g/m³	< 0.00005 ± 0.000033	-0.000050 – 0.000050	No
Dissolved Chromium	g/m³	< 0.0005 ± 0.00034	-0.00050 – 0.00050	No
Dissolved Copper	g/m³	< 0.0005 ± 0.00034	-0.00050 – 0.00050	No
Dissolved Lead	g/m³	< 0.00010 ± 0.000067	-0.000100 – 0.000100	No
Dissolved Nickel	g/m³	< 0.0005 ± 0.00034	-0.00050 – 0.00050	No
Dissolved Zinc	g/m³	< 0.0010 ± 0.00067	-0.00100 – 0.00100	No

5x Dilution FBlank PrepWS DissPrep - WS: Environmental Waters by ICP-MS (EW): 23185.19				
		Results	Control Limits	Outside Limit (Yes/No)
Dissolved Arsenic	g/m³	< 0.005 ± 0.00067	-0.0050 – 0.0050	No
Dissolved Cadmium	g/m³	< 0.0003 ± 0.000033	-0.00025 – 0.00025	No
Dissolved Chromium	g/m³	< 0.003 ± 0.00034	-0.0025 – 0.0025	No
Dissolved Copper	g/m³	< 0.003 ± 0.00034	-0.0025 – 0.0025	No
Dissolved Lead	g/m³	< 0.0005 ± 0.000067	-0.00050 – 0.00050	No
Dissolved Nickel	g/m³	< 0.003 ± 0.00034	-0.0025 – 0.0025	No
Dissolved Zinc	g/m³	< 0.005 ± 0.00067	-0.0050 – 0.0050	No

ARBlank PrepWS DissPrep 1 - WS: Environmental Waters by ICP-MS (EW): 23185.20				
		Results	Control Limits	Outside Limit (Yes/No)
Dissolved Arsenic	g/m³	< 0.0010 ± 0.00067	-0.00100 – 0.00100	No
Dissolved Cadmium	g/m³	< 0.00005 ± 0.000033	-0.000050 – 0.000050	No
Dissolved Chromium	g/m³	< 0.0005 ± 0.00034	-0.00050 – 0.00050	No
Dissolved Copper	g/m³	< 0.0005 ± 0.00034	-0.00050 – 0.00050	No
Dissolved Lead	g/m³	< 0.00010 ± 0.000067	-0.000100 – 0.000100	No
Dissolved Nickel	g/m³	< 0.0005 ± 0.00034	-0.00050 – 0.00050	No
Dissolved Zinc	g/m³	< 0.0010 ± 0.00067	-0.00100 – 0.00100	No

ARBlank PrepWS DissPrep 2 - WS: Environmental Waters by ICP-MS (EW): 23185.21				
		Results	Control Limits	Outside Limit (Yes/No)
Dissolved Arsenic	g/m³	< 0.0010 ± 0.00067	-0.00100 – 0.00100	No
Dissolved Cadmium	g/m³	< 0.00005 ± 0.000033	-0.000050 – 0.000050	No
Dissolved Chromium	g/m³	< 0.0005 ± 0.00034	-0.00050 – 0.00050	No
Dissolved Copper	g/m³	< 0.0005 ± 0.00034	-0.00050 – 0.00050	No
Dissolved Lead	g/m³	< 0.00010 ± 0.000067	-0.000100 – 0.000100	No
Dissolved Nickel	g/m³	< 0.0005 ± 0.00034	-0.00050 – 0.00050	No
Dissolved Zinc	g/m³	< 0.0010 ± 0.00067	-0.00100 – 0.00100	No

Blank PrepWS xwTPH - WS: Total Petroleum Hydrocarbons Water Analysis: 9459.2				
		Results	Control Limits	Outside Limit (Yes/No)
C7 - C9	g/m³	< 0.10 ± 0.061	0.0 – 0.075	No
C10 - C11	g/m³	< 0.10 ± 0.060	0.0 – 0.100	No
C12 - C14	g/m³	< 0.10 ± 0.060	0.0 – 0.100	No

Blank PrepWS xwTPH - WS: Total Petroleum Hydrocarbons Water Analysis: 9459.2				
		Results	Control Limits	Outside Limit (Yes/No)
C15 - C20	g/m³	< 0.10 ± 0.060	0.0 – 0.100	No
C21 - C25	g/m³	< 0.10 ± 0.060	0.0 – 0.100	No
C26 - C29	g/m³	< 0.10 ± 0.060	0.0 – 0.100	No
C30 - C36	g/m³	< 0.10	0.0 – 0.100	No

Blank 2 PrepWS xwTPH - WS: Total Petroleum Hydrocarbons Water Analysis: 9459.20				
		Results	Control Limits	Outside Limit (Yes/No)
C7 - C9	g/m³	< 0.10 ± 0.062	0.0 – 0.075	No
C10 - C11	g/m³	< 0.10 ± 0.060	0.0 – 0.100	No
C12 - C14	g/m³	< 0.10 ± 0.060	0.0 – 0.100	No
C15 - C20	g/m³	< 0.10 ± 0.060	0.0 – 0.100	No
C21 - C25	g/m³	< 0.10 ± 0.060	0.0 – 0.100	No
C26 - C29	g/m³	< 0.10 ± 0.060	0.0 – 0.100	No
C30 - C36	g/m³	< 0.10	0.0 – 0.100	No

FBlank PrepWS DissPrepHCl 1 - WS: Env. Waters with HCl Matrix: 298.14				
		Results	Control Limits	Outside Limit (Yes/No)
Dissolved Mercury	g/m³	< 0.00010 ± 0.000065	-0.000100 – 0.000100	No

FBlank PrepWS DissPrepHCl 2 - WS: Env. Waters with HCl Matrix: 298.15				
		Results	Control Limits	Outside Limit (Yes/No)
Dissolved Mercury	g/m³	< 0.00010 ± 0.000065	-0.000100 – 0.000100	No

Blank 1 PrepWS TDig - WS: Env. Waters Totals by ICP-MS (EWT): 24165.13				
		Results	Control Limits	Outside Limit (Yes/No)
Total Arsenic	g/m³	< 0.0011 ± 0.00074	-0.00105 – 0.00105	No
Total Cadmium	g/m³	< 0.00006 ± 0.000036	-0.000052 – 0.000052	No
Total Chromium	g/m³	< 0.0006 ± 0.00036	-0.00052 – 0.00052	No
Total Copper	g/m³	< 0.0006 ± 0.00035	-0.00052 – 0.00052	No
Total Lead	g/m³	< 0.00011 ± 0.000074	-0.000105 – 0.000105	No
Total Nickel	g/m³	< 0.0006 ± 0.00035	-0.00052 – 0.00052	No
Total Zinc	g/m³	< 0.0011 ± 0.00073	-0.00105 – 0.00105	No

2x Dilution PrepWS TDig - WS: Env. Waters Totals by ICP-MS (EWT): 24165.14				
		Results	Control Limits	Outside Limit (Yes/No)
Total Arsenic	g/m³	< 0.003 ± 0.00074	-0.0021 – 0.0021	No
Total Cadmium	g/m³	< 0.00011 ± 0.000036	-0.000105 – 0.000105	No
Total Chromium	g/m³	< 0.0011 ± 0.00036	-0.00105 – 0.00105	No
Total Copper	g/m³	< 0.0011 ± 0.00035	-0.00105 – 0.00105	No
Total Lead	g/m³	< 0.0003 ± 0.000074	-0.00021 – 0.00021	No
Total Nickel	g/m³	< 0.0011 ± 0.00035	-0.00105 – 0.00105	No
Total Zinc	g/m³	< 0.003 ± 0.00073	-0.0021 – 0.0021	No

Blank 2 PrepWS TDig - WS: Env. Waters Totals by ICP-MS (EWT): 24165.15				
		Results	Control Limits	Outside Limit (Yes/No)
Total Arsenic	g/m³	< 0.0011 ± 0.00074	-0.00105 – 0.00105	No
Total Cadmium	g/m³	< 0.00006 ± 0.000036	-0.000052 – 0.000052	No
Total Chromium	g/m³	< 0.0006 ± 0.00036	-0.00052 – 0.00052	No
Total Copper	g/m³	< 0.0006 ± 0.00035	-0.00052 – 0.00052	No
Total Lead	g/m³	< 0.00011 ± 0.000074	-0.000105 – 0.000105	No
Total Nickel	g/m³	< 0.0006 ± 0.00035	-0.00052 – 0.00052	No

Blank 2 PrepWS TDig - WS: Env. Waters Totals by ICP-MS (EWT): 24165.15				
		Results	Control Limits	Outside Limit (Yes/No)
Total Zinc	g/m³	< 0.0011 ± 0.00073	-0.00105 – 0.00105	No

Blank 3 PrepWS TDig - WS: Env. Waters Totals by ICP-MS (EWT): 24165.16				
		Results	Control Limits	Outside Limit (Yes/No)
Total Arsenic	g/m³	< 0.0011 ± 0.00074	-0.00105 – 0.00105	No
Total Cadmium	g/m³	< 0.00006 ± 0.000036	-0.000052 – 0.000052	No
Total Chromium	g/m³	< 0.0006 ± 0.00036	-0.00052 – 0.00052	No
Total Copper	g/m³	< 0.0006 ± 0.00035	-0.00052 – 0.00052	No
Total Lead	g/m³	< 0.00011 ± 0.000074	-0.000105 – 0.000105	No
Total Nickel	g/m³	< 0.0006 ± 0.00035	-0.00052 – 0.00052	No
Total Zinc	g/m³	< 0.0011 ± 0.00073	-0.00105 – 0.00105	No

10x Vol. Dilution Digest Blank PrepWS TDig - WS: Env. Waters Totals by ICP-MS (EWT): 24165.17				
		Results	Control Limits	Outside Limit (Yes/No)
Total Arsenic	g/m³	< 0.011 ± 0.00074	-0.0105 – 0.0105	No
Total Cadmium	g/m³	< 0.0006 ± 0.000036	-0.00052 – 0.00052	No
Total Chromium	g/m³	< 0.006 ± 0.00036	-0.0052 – 0.0052	No
Total Copper	g/m³	< 0.006 ± 0.00035	-0.0052 – 0.0052	No
Total Lead	g/m³	< 0.0011 ± 0.000074	-0.00105 – 0.00105	No
Total Nickel	g/m³	< 0.006 ± 0.00035	-0.0052 – 0.0052	No
Total Zinc	g/m³	< 0.011 ± 0.00074	-0.0105 – 0.0105	No

10x Prep Dilution, 2x Inst Diln TDig - WS: Env. Waters Totals by ICP-MS (EWT): 24165.18				
		Results	Control Limits	Outside Limit (Yes/No)
Total Arsenic	g/m³	< 0.021 ± 0.00074	-0.021 – 0.021	No
Total Cadmium	g/m³	< 0.0011 ± 0.000036	-0.00105 – 0.00105	No
Total Chromium	g/m³	< 0.011 ± 0.00036	-0.0105 – 0.0105	No
Total Copper	g/m³	< 0.011 ± 0.00036	-0.0105 – 0.0105	No
Total Lead	g/m³	< 0.0021 ± 0.000074	-0.0021 – 0.0021	No
Total Nickel	g/m³	< 0.011 ± 0.00035	-0.0105 – 0.0105	No
Total Zinc	g/m³	< 0.021 ± 0.00074	-0.021 – 0.021	No

10x Dilution Digest Blank PrepWS TDig - WS: Env. Waters Totals by ICP-MS (EWT): 24165.19				
		Results	Control Limits	Outside Limit (Yes/No)
Total Arsenic	g/m³	< 0.011 ± 0.00074	-0.0105 – 0.0105	No
Total Cadmium	g/m³	< 0.0006 ± 0.000036	-0.00052 – 0.00052	No
Total Chromium	g/m³	< 0.006 ± 0.00036	-0.0052 – 0.0052	No
Total Copper	g/m³	< 0.006 ± 0.00036	-0.0052 – 0.0052	No
Total Lead	g/m³	< 0.0011 ± 0.000074	-0.00105 – 0.00105	No
Total Nickel	g/m³	< 0.006 ± 0.00035	-0.0052 – 0.0052	No
Total Zinc	g/m³	< 0.011 ± 0.00073	-0.0105 – 0.0105	No

10x Prep Dilution, 2x Inst Diln TDig - WS: Env. Waters Totals by ICP-MS (EWT): 24165.20				
		Results	Control Limits	Outside Limit (Yes/No)
Total Arsenic	g/m³	< 0.021 ± 0.00074	-0.021 – 0.021	No
Total Cadmium	g/m³	< 0.0011 ± 0.000037	-0.00105 – 0.00105	No
Total Chromium	g/m³	< 0.011 ± 0.00037	-0.0105 – 0.0105	No
Total Copper	g/m³	< 0.011 ± 0.00036	-0.0105 – 0.0105	No
Total Lead	g/m³	< 0.0021 ± 0.000074	-0.0021 – 0.0021	No
Total Nickel	g/m³	< 0.011 ± 0.00035	-0.0105 – 0.0105	No

10x Prep Dilution, 2x Inst Diln TDig - WS: Env. Waters Totals by ICP-MS (EWT): 24165.20				
		Results	Control Limits	Outside Limit (Yes/No)
Total Zinc	g/m³	< 0.021 ± 0.00074	-0.021 – 0.021	No

water blank PrepWS apHSVOCw - VOC Headspace Water Analysis: 2424.4				
		Results	Control Limits	Outside Limit (Yes/No)
Benzene	g/m³	< 0.0003 ± 0.00031	0.0 – 0.00025	No
n-Butylbenzene	g/m³	< 0.0005 ± 0.00030	0.0 – 0.00025	No
tert-Butylbenzene	g/m³	< 0.0003 ± 0.00030	0.0 – 0.00025	No
4-Isopropyltoluene (p-Cymene)	g/m³	< 0.0005 ± 0.00030	0.0 – 0.00025	No
Ethylbenzene	g/m³	< 0.0005 ± 0.00030	0.0 – 0.00025	No
Isopropylbenzene (Cumene)	g/m³	< 0.0003 ± 0.00030	0.0 – 0.00025	No
n-Propylbenzene	g/m³	< 0.0005 ± 0.00028	0.0 – 0.00025	No
sec-Butylbenzene	g/m³	< 0.0003 ± 0.00029	0.0 – 0.00025	No
Styrene	g/m³	< 0.0005 ± 0.00030	0.0 – 0.00025	No
Toluene	g/m³	< 0.0003 ± 0.00059	0.0 – 0.00025	No
1,2,4-Trimethylbenzene	g/m³	< 0.0003 ± 0.00029	0.0 – 0.00025	No
1,3,5-Trimethylbenzene	g/m³	< 0.0003 ± 0.00030	0.0 – 0.00025	No
m&p-Xylene	g/m³	< 0.0005 ± 0.00030	0.0 – 0.00050	No
o-Xylene	g/m³	< 0.0003 ± 0.00030	0.0 – 0.00025	No

QC Spike QCs

LCS PrepWS xwTPH - WS: Total Petroleum Hydrocarbons Water Analysis: 9459.3				
		Results	Control Limits	Outside Limit (Yes/No)
Total hydrocarbons (C7 - C36)	%	100 ± 31	80 – 137	No

LCS PAH PrepWS xwIPAHsc - Polycyclic Aromatic Hydrocarbon Water Analysis: 6150.2				
		Results	Control Limits	Outside Limit (Yes/No)
Acenaphthene	%	109 ± 55	70 – 130	No
Acenaphthylene	%	96 ± 52	70 – 130	No
Anthracene	%	105 ± 38	70 – 130	No
Benzo[a]anthracene	%	111 ± 36	70 – 130	No
Benzo[a]pyrene (BAP)	%	126 ± 61	70 – 130	No
Benzo[b]fluoranthene + Benzo[j]fluoranthene	%	125 ± 61	70 – 130	No
Benzo[g,h,i]perylene	%	110 ± 58	70 – 130	No
Benzo[k]fluoranthene	%	130 ± 58	70 – 130	No
Chrysene	%	117 ± 43	70 – 130	No
Dibenzo[a,h]anthracene	%	113 ± 59	70 – 130	No
Fluoranthene	%	111 ± 29	70 – 130	No
Fluorene	%	115 ± 51	70 – 130	No
Indeno(1,2,3-c,d)pyrene	%	111 ± 58	70 – 130	No
Naphthalene	%	111 ± 74	70 – 130	No
Phenanthrene	%	119 ± 36	70 – 130	No
Pyrene	%	129 ± 52	70 – 130	No

water LCS PrepWS apHSVOCw - VOC Headspace Water Analysis: 2424.3				
		Results	Control Limits	Outside Limit (Yes/No)
Benzene	%	95 ± 24	70 – 130	No
n-Butylbenzene	%	94 ± 29	70 – 130	No
tert-Butylbenzene	%	97 ± 29	70 – 130	No
4-Isopropyltoluene (p-Cymene)	%	96 ± 31	70 – 130	No

water LCS PrepWS apHSVOCw - VOC Headspace Water Analysis: 2424.3				
		Results	Control Limits	Outside Limit (Yes/No)
Ethylbenzene	%	96 ± 30	70 – 130	No
Isopropylbenzene (Cumene)	%	94 ± 30	70 – 130	No
n-Propylbenzene	%	90 ± 34	70 – 130	No
sec-Butylbenzene	%	97 ± 33	70 – 130	No
Styrene	%	95 ± 31	70 – 130	No
Toluene	%	96 ± 31	70 – 130	No
1,2,4-Trimethylbenzene	%	92 ± 31	70 – 130	No
1,3,5-Trimethylbenzene	%	92 ± 30	70 – 130	No
m&p-Xylene	%	96 ± 31	70 – 130	No
o-Xylene	%	94 ± 28	70 – 130	No

Sample Spike QCs

sample spike PrepWS xwTPH - WS: Total Petroleum Hydrocarbons Water Analysis: 9459.19				
		Results	Control Limits	Outside Limit (Yes/No)
Total hydrocarbons (C7 - C36)	%	95 ± 29	83 – 140	No

Sample Spike PAH PrepWS xwIPAHsc - Polycyclic Aromatic Hydrocarbon Water Analysis: 6150.11				
		Results	Control Limits	Outside Limit (Yes/No)
Acenaphthene	%	120 ± 61	70 – 130	No
Acenaphthylene	%	104 ± 57	70 – 130	No
Anthracene	%	111 ± 40	70 – 130	No
Benzo[a]anthracene	%	118 ± 38	70 – 130	No
Benzo[a]pyrene (BAP)	%	131 ± 63	70 – 130	**Yes** #1
Benzo[b]fluoranthene + Benzo[j]fluoranthene	%	133 ± 64	70 – 130	**Yes** #1
Benzo[g,h,i]perylene	%	116 ± 61	70 – 130	No
Benzo[k]fluoranthene	%	139 ± 62	70 – 130	**Yes** #1
Chrysene	%	124 ± 45	70 – 130	No
Dibenzo[a,h]anthracene	%	119 ± 62	70 – 130	No
Fluoranthene	%	117 ± 31	70 – 130	No
Fluorene	%	123 ± 55	70 – 130	No
Indeno(1,2,3-c,d)pyrene	%	116 ± 61	70 – 130	No
Naphthalene	%	129 ± 86	70 – 130	No
Phenanthrene	%	126 ± 38	70 – 130	No
Pyrene	%	137 ± 55	70 – 130	**Yes** #1

Spike PrepWS TDig - WS: Env. Waters Totals by ICP-MS (EWT): 24165.48				
		Results	Control Limits	Outside Limit (Yes/No)
Total Arsenic	%	102.0 ± 6.2	80 – 120	No
Total Cadmium	%	91.0 ± 7.3	80 – 120	No
Total Chromium	%	95.0 ± 7.7	80 – 120	No
Total Copper	%	94.0 ± 9.5	80 – 120	No
Total Lead	%	91.0 ± 5.5	80 – 120	No
Total Nickel	%	96 ± 12	80 – 120	No
Total Zinc	%	93.0 ± 7.5	80 – 120	No

Reference Material QCs

1% 50ppb TRDig and TDig ME QC PrepWS TDig - WS: Env. Waters Totals by ICP-MS (EWT): 24165.21				
		Results	**Control Limits**	**Outside Limit (Yes/No)**
Total Arsenic	g/m^3	0.0508 ± 0.0032	0.045 – 0.055	No
Total Cadmium	g/m^3	0.0465 ± 0.0038	0.045 – 0.055	No
Total Chromium	g/m^3	0.0492 ± 0.0040	0.045 – 0.055	No
Total Copper	g/m^3	0.0474 ± 0.0048	0.045 – 0.055	No
Total Lead	g/m^3	0.0469 ± 0.0029	0.045 – 0.055	No
Total Nickel	g/m^3	0.0478 ± 0.0058	0.045 – 0.055	No
Total Zinc	g/m^3	0.483 ± 0.039	0.45 – 0.55	No

Analyst's Comments

#1 The sample spike recovery was elevated and above the acceptable recovery range. The corresponding sample results were accepted as there were no related positives detected in the sample.

Appendix E
Groundwater Monitoring Sheets

GROUNDWATER SAMPLING RECORD FORM
LOW FLOW PURGING and SAMPLING (incl. low yield wells)

Project Information	
Project Number	1-C2466.16
Client	NZTA
Location	NC
Sampled By	HM MB
Date	26/02/2026
Time	10:10 am
Well Information	
Well ID	BH2B_1160
Casing diameter (50/40/25 mm)	50
TOC height above/below ground level (m)	0.5
Depth to top of filter pack from log (mbgl)	8.9
Top of screen from log (mbgl)	9
Bottom of screen from log (mbgl)	12
Depth of well from log (mbgl)	12
Depth to bottom of filter pack from log (mbgl)	12
Gauging Information (Pre Sampling)	
Interface Probe Used? Yes/No	Yes
Initial Depth to Water (mbRP)	2.933
Depth to Product (mbRP)	-
Thickness of Product (m)	N/A
Bailed Product Thickness (m)	-
Measured Depth to Bottom of Well (mbRP)	12.321
Low Flow Sampling	
Depth of pump intake (mbRP)	10.5
Diameter of hose (inches)	0.375
Length of hose (m)	12.0
Volume in hose (L)	0.84
Volume in casing (L)	2.00
Meters of Saturated Screen	3.0
Minimum Target Purge vol. (L)	**6.8**
Depth to water after placement of pump (mbRP)	2.86
Depth to water at end of purging (mbRP)	4.401
Depth to water after collection of samples (mbRP)	4.664
Controller Settings & WQM Information	
Controller - CPM/Refill/Discharge	N/A
Controller Throttle - Pressure (PSI)	N/A
WQM Model	YSI Pro DSS
WQM serial number	16E102905
WQM cal date and certificate	
No Purge Sampling	
Bailer? (Y/N)	N/A
Manual Waterra (Y/N)	N/A
Low-Flow no purge (Y/N)	N/A

Time	Cum. Vol Purged (L)	Flow Rate (L/min)	Depth to GW (mbRP)	Drawdown (m)	Temp. (°C) ±0.5	DO (mg/L) ±10%	Cond (µS/cm) ±5%	pH ±0.1	Redox (mV) ±10	Colour, Turbidity, Odour, Sheen	Sampling info row Y/N?
10:10:00 AM	0	0.00	3.025	-0.092	17	1.4	1324	7.45	-78.8		
10:15:00 AM	1.00	0.20	3.275	-0.342	17	0.33	1293	7.46	-112.9	Medium turbidty, organic odour, greyish	
10:20:00 AM	1.60	0.12	3.38	-0.447	17.3	0.27	1289	7.45	-125.3	As above	
10:25:00 AM	2.20	0.12	3.51	-0.577	17.3	0.21	1264	7.45	-145.8		
10:30:00 AM	2.70	0.10	3.57	-0.637	17.7	0.24	1263	7.45	-147.7		
10:35:00 AM	3.95	0.25								purge	
10:40:00 AM	5.20	0.25	3.97	-1.037	16.6	0.08	1182	7.44	-185.6		
10:45:00 AM	5.70	0.10	4.132	-1.199	17	0.08	1184	7.42	-193.6		
10:50:00 AM	6.20	0.10	4.171	-1.238	17.1	0.11	1137	7.42	-198.6		
10:55:00 AM	6.70	0.10	4.269	-1.336	17.2	0.11	1155	7.41	-197.4		
11:00:00 AM	7.20	0.10	4.331	-1.398	17.2	0.11	1159	7.4	-197		
11:05:00 AM	7.70	0.10	4.401	-1.468	17.3	0.1	1158	7.4	-199.3	Medium turbidty, organic odour, greyish	Y
				Parameters Stabilised?	YES	YES	YES	YES	YES		

Samples Collected		
Sample ID	BH2B_1160	
Primary Dup. ID	QAQC01	
Secondary Dup. ID		
Rinsate ID		
Trip Blank ID		
Field Blank ID		

Trip & DI Batch Numbers	
Trip Blank Batch no.	
Volatiles rinsate	
Semi- volatiles rinsate	
Inorganics/metals/PFAS rinsate	

Sample Containers		Filter	Preser	No.
Analyte	**Bottles**			
VOCs(Including MAHs)	Pink/Purple - Vials		P	
Speciated nitrogen	Purple - plastic		P	
Cations/Anions/TDS/Alk./WQ)	Green - plastic		UP	
TOC	Purple - glass		P	
Metals	Red - plastic		P	4
Ferrous Iron	Mauve - plastic	F	P	
COD	Mauve - glass		P	
BOD	Green - plastic		UP	
SVOC	Orange - glass		UP	
TPH	Amber - Glass		P	2
PAHs	Amber - Glass		UP	2

Maintenance needed? Describe:

Notes	Peripump		
	pid 0.4	purge start at 10:35 flow at 0.25	increased to 0.3.

GROUNDWATER SAMPLING RECORD FORM
LOW FLOW PURGING and SAMPLING (incl. low yield wells)

Project Information	
Project Number	1-C2466.16
Client	NZTA
Location	NC
Sampled By	HM MB
Date	27/02/2026
Time	12:30:00 PM
Well Information	
Well ID	BH2B_2101
Casing diameter (50/40/25 mm)	50
TOC height above/below ground level (m)	0.5
Depth to top of filter pack from log (mbgl)	20.5
Top of screen from log (mbgl)	21
Bottom of screen from log (mbgl)	27
Depth of well from log (mbgl)	27
Depth to bottom of filter pack from log (mbgl)	27
Gauging Information (Pre Sampling)	
Interface Probe Used? Yes/No	Yes
Initial Depth to Water (mbRP)	3
Depth to Product (mbRP)	-
Thickness of Product (m)	N/A
Bailed Product Thickness (m)	-
Measured Depth to Bottom of Well (mbRP)	27.46
Low Flow Sampling	
Depth of pump intake (mbRP)	24.0
Diameter of hose (inches)	0.375
Length of hose (m)	25.0
Volume in hose (L)	1.75
Volume in casing (L)	2.00
Meters of Saturated Screen	6.0
Minimum Target Purge vol. (L)	**13.8**
Depth to water after placement of pump (mbRP)	2.009
Depth to water at end of purging (mbRP)	7.462
Depth to water after collection of samples (mbRP)	NA
Controller Settings & WQM Information	
Controller - CPM/Refill/Discharge	N/A
Controller Throttle - Pressure (PSI)	N/A
WQM Model	YSI Pro DSS
WQM serial number	16E102905
WQM cal date and certificate	
No Purge Sampling	
Bailer? (Y/N)	N/A
Manual Waterra (Y/N)	N/A
Low-Flow no purge (Y/N)	N/A

Time	Cum. Vol Purged (L)	Flow Rate (L/min)	Depth to GW (mbRP)	Drawdown (m)	Temp. (°C) ±0.5	DO (mg/L) ±10%	Cond (µS/cm) ±5%	pH ±0.1	Redox (mV) ±10	Colour, Turbidity, Odour, Sheen	Sampling info row Y/N?
12:30:00 PM	0		2.172	-0.163	19.4	1.81	1645	8.78	-21.8		
12:35:00 PM	1.30	0.26	2.63	-0.621	18.4	3.29	1646	8.79	-40.5	Medium turbidity, grey, organic odour	
12:40:00 PM	2.60	0.26	3.145	-1.136	18.1	1.39	1644	8.74	-54.4	As above	
12:45:00 PM	3.90	0.26	3.597	-1.588	18.1	2.85	1647	8.73	-38.6		
12:50:00 PM	5.20	0.26	4.008	-1.999	17.9	3.71	1647	8.73	-28.7		
12:55:00 PM	6.50	0.26	4.482	-2.473	17.8	5.92	1652	8.72	-17.2		
1:00:00 PM	7.80	0.26			17.5	7.09	1652	8.72	-5.5		
1:05:00 PM	9.10	0.26	5.283	-3.274	17.4	7.73	1653	8.71	0.4		
1:10:00 PM	10.40	0.26	5.642	-3.633	17.6	8.71	1656	8.71	5.9		
1:15:00 PM	11.70	0.26	6.038	-4.029	17.6	9.97	1661	8.7	13.6		
1:20:00 PM	13.00	0.26	6.4	-4.391	17.4	10.45	1662	8.7	19.2		
1:25:00 PM	14.30	0.26	6.39	-4.381	17.8	10.66	1670	8.69	26.8	Pump stopped, battery changed	
1:30:00 PM	15.60	0.26	6.82	-4.811	17.4	10.41	1660	8.69	24.6		
1:35:00 PM	16.90	0.26	7.2	-5.191	17.5	11.5	1666	8.68	30.6		
1:40:00 PM	18.20	0.26	7.462	-5.453	17.5	12	1671	8.68	33.9	Medium turbidity, grey, organic odour	y
				Parameters Stabilised?	YES	YES	YES	YES	YES		

Samples Collected		
Sample ID	BH2B_2101	
Primary Dup. ID		
Secondary Dup. ID		
Rinsate ID		
Trip Blank ID		
Field Blank ID		

Trip & DI Batch Numbers	
Trip Blank Batch no.	
Volatiles rinsate	
Semi- volatiles rinsate	
Inorganics/metals/PFAS rinsate	

Sample Containers		Filter	Preser	No.
Analyte	**Bottles**			
VOCs(Including MAHs)	Pink/Purple - Vials		P	
Speciated nitrogen	Purple - plastic		P	
Cations/Anions/TDS/Alk./WQ)	Green - plastic		UP	
TOC	Purple - glass		P	
Metals	Red - plastic		P	1
Ferrous Iron	Mauve - plastic	F	P	
COD	Mauve - glass		P	
BOD	Green - plastic		UP	
SVOC	Orange - glass		UP	
TPH	Amber - Glass		P	1
PAHs	Amber - Glass		UP	1

Maintenance needed? Describe:

Notes Bladder pump, PID 0

GROUNDWATER SAMPLING RECORD FORM
LOW FLOW PURGING and SAMPLING (incl. low yield wells)

Project Information	
Project Number	1-C2466.16
Client	NZTA
Location	NC
Sampled By	HM MB
Date	26/02/2026
Time	3:33:00 PM
Well Information	
Well ID	BH2B_2147
Casing diameter (50/40/25 mm)	50
TOC height above/below ground level (m)	-0.23
Depth to top of filter pack from log (mbgl)	20.5
Top of screen from log (mbgl)	31
Bottom of screen from log (mbgl)	37
Depth of well from log (mbgl)	37
Depth to bottom of filter pack from log (mbgl)	37
Gauging Information (Pre Sampling)	
Interface Probe Used? Yes/No	Yes
Initial Depth to Water (mbRP)	0.98
Depth to Product (mbRP)	-
Thickness of Product (m)	N/A
Bailed Product Thickness (m)	-
Measured Depth to Bottom of Well (mbRP)	NA
Low Flow Sampling	
Depth of pump intake (mbRP)	34.0
Diameter of hose (inches)	0.375
Length of hose (m)	34.5
Volume in hose (L)	2.42
Volume in casing (L)	2.00
Meters of Saturated Screen	6.0
Minimum Target Purge vol. (L)	**14.4**
Depth to water after placement of pump (mbRP)	0.28
Depth to water at end of purging (mbRP)	3.44
Depth to water after collection of samples (mbRP)	NA
Controller Settings & WQM Information	
Controller - CPM/Refill/Discharge	N/A
Controller Throttle - Pressure (PSI)	N/A
WQM Model	YSI Pro DSS
WQM serial number	16E102905
WQM cal date and certificate	
No Purge Sampling	
Bailer? (Y/N)	N/A
Manual Waterra (Y/N)	N/A
Low-Flow no purge (Y/N)	N/A

Time	Cum. Vol Purged (L)	Flow Rate (L/min)	Depth to GW (mbRP)	Drawdown (m)	Temp. (°C) ±0.5	DO (mg/L) ±10%	Cond (µS/cm) ±5%	pH ±0.1	Redox (mV) ±10	Colour, Turbidity, Odour, Sheen	Sampling info row Y/N?
3:33:00 PM	0		0.54	-0.26	20	31.4	1281	8.21	9.8	Greyish, medium turbidity, organic odour	
3:38:00 PM	1.00	0.20	0.9	-0.62	18.4	3.11	1246	8.33	-11.1	High turbidity	
3:43:00 PM	2.00	0.20	1.205	-0.925	18.3	2.63	1284	8.45	-8.1		
3:48:00 PM	3.00	0.20	1.365	-1.085	17.2	0.72	1329	8.29	-69.7		
3:53:00 PM	4.00	0.20	1.61	-1.33	17.1	2.09	1314	8.36	-40.9		
3:58:00 PM	4.90	0.18	1.919	-1.639	16.9	1.65	1285	8.36	-23.3		
4:03:00 PM	5.80	0.18	2.065	-1.785	17	2.93	1274	8.34	-22.1		
4:08:00 PM	7.10	0.26	2.252	-1.972	16.6	1.34	1266	8.31	-18.9		
4:13:00 PM	8.40	0.26	2.473	-2.193	16.7	0.33	1251	8.24	-56.8		
4:18:00 PM	9.70	0.26	2.689	-2.409	16.7	0.19	1252	8.23	-70		
4:23:00 PM	11.00	0.26	2.95	-2.67	16.5	0.14	1248	8.21	-81.5		
4:28:00 PM	12.30	0.26	3.165	-2.885	16.4	0.13	1246	8.21	-87.4		
4:33:00 PM	13.60	0.26	3.295	-3.015	16.4	0.12	1245	8.2	-88.9		
4:38:00 PM	14.90	0.26	3.44	-3.16	16.3	0.11	1245	8.2	-92.5		
				Parameters Stabilised?	YES	YES	YES	YES	YES		

Samples Collected		
Sample ID	BH2B_2147	
Primary Dup. ID		
Secondary Dup. ID		
Rinsate ID		
Trip Blank ID		
Field Blank ID		

Trip & DI Batch Numbers	
Trip Blank Batch no.	
Volatiles rinsate	
Semi- volatiles rinsate	
Inorganics/metals/PFAS rinsate	

Sample Containers		Filter	Preser	No.
Analyte	**Bottles**			
VOCs(Including MAHs)	Pink/Purple - Vials		P	
Speciated nitrogen	Purple - plastic		P	
Cations/Anions/TDS/Alk./WQ)	Green - plastic		UP	
TOC	Purple - glass		P	
Metals	Red - plastic		P	2
Ferrous Iron	Mauve - plastic	F	P	
COD	Mauve - glass		P	
BOD	Green - plastic		UP	
SVOC	Orange - glass		UP	
TPH	Amber Glass		P	1
PAHs	Amber - glass		UP	1

Maintenance needed? Describe:

Notes	PID 2.1
	ip too short for base measurement, rinsate on bladder

GROUNDWATER SAMPLING RECORD FORM
LOW FLOW PURGING and SAMPLING (incl. low yield wells)

Project Information	
Project Number	1-C2466.16
Client	NZTA
Location	NC
Sampled By	HM MB
Date	27/02/2026
Time	10:23 am
Well Information	
Well ID	BH2B_2148
Casing diameter (50/40/25 mm)	50
TOC height above/below ground level (m)	0.5
Depth to top of filter pack from log (mbgl)	9
Top of screen from log (mbgl)	9
Bottom of screen from log (mbgl)	16
Depth of well from log (mbgl)	16
Depth to bottom of filter pack from log (mbgl)	16
Gauging Information (Pre Sampling)	
Interface Probe Used? Yes/No	Yes
Initial Depth to Water (mbRP)	3.424
Depth to Product (mbRP)	-
Thickness of Product (m)	N/A
Bailed Product Thickness (m)	-
Measured Depth to Bottom of Well (mbRP)	15.372
Low Flow Sampling	
Depth of pump intake (mbRP)	12.0
Diameter of hose (inches)	0.375
Length of hose (m)	12.5
Volume in hose (L)	0.88
Volume in casing (L)	2.00
Meters of Saturated Screen	7.0
Minimum Target Purge vol. (L)	**14.9**
Depth to water after placement of pump (mbRP)	2.94
Depth to water at end of purging (mbRP)	8.909
Depth to water after collection of samples (mbRP)	NA
Controller Settings & WQM Information	
Controller - CPM/Refill/Discharge	N/A
Controller Throttle - Pressure (PSI)	N/A
WQM Model	YSI Pro DSS
WQM serial number	16E102905
WQM cal date and certificate	
No Purge Sampling	
Bailer? (Y/N)	N/A
Manual Waterra (Y/N)	N/A
Low-Flow no purge (Y/N)	N/A

Time	Cum. Vol Purged (L)	Flow Rate (L/min)	Depth to GW (mbRP)	Drawdown (m)	Temp. (°C) ±0.5	DO (mg/L) ±10%	Cond (µS/cm) ±5%	pH ±0.1	Redox (mV) ±10	Colour, Turbidity, Odour, Sheen	Sampling info row Y/N?
10:23:00 AM	0		3.552	-0.612	17.4	1.81	1403	7.62	-144.7		
10:28:00 AM	1.50	0.30	3.98	-1.04	16.8	0.27	1396	7.61	-174.4	Greyish, high turbidity, organic odour	
10:33:00 AM	3.00	0.30	4.51	-1.57	16.6	0.17	1398	7.6	-178.8	As above	
10:38:00 AM	4.50	0.30			16.6	0.17	1398	7.6	-178.8	reading missed	
10:43:00 AM	6.00	0.30	6.35	-3.41	16.4	0.21	1396	7.62	-183.3		
10:48:00 AM	7.50	0.30	6.69	-3.75	16.6	0.14	1395	7.61	-184.5		
10:53:00 AM	9.00	0.30	7.379	-4.439	16.4	0.15	1399	7.59	-181.9		
10:58:00 AM	10.50	0.30	7.869	-4.929	16.4	0.12	1400	7.59	-180.5	Medium Turbidity	
11:03:00 AM	12.00	0.30	8.2	-5.26	16.5	0.11	1403	7.59	-178.5	As above	
11:08:00 AM	13.50	0.30	8.572	-5.632	16.6	0.11	1404	7.58	-177.8		
11:13:00 AM	15.00	0.30	8.909	-5.969	16.6	0.11	1407	7.59	-174.3	Med turbidity, greyish organic odour	Y
Parameters Stabilised?					YES	YES	YES	YES	YES		

Samples Collected		
Sample ID	BH2B_2148	
Primary Dup. ID		
Secondary Dup. ID		
Rinsate ID		
Trip Blank ID		
Field Blank ID		

Trip & DI Batch Numbers	
Trip Blank Batch no.	
Volatiles rinsate	
Semi- volatiles rinsate	
Inorganics/metals/PFAS rinsate	

Sample Containers		Filter	Preser	No.
Analyte	**Bottles**			
VOCs(Including MAHs)	Pink/Purple - Vials		P	
Speciated nitrogen	Purple - plastic		P	
Cations/Anions/TDS/Alk./WQ)	Green - plastic		UP	
TOC	Purple - glass		P	
Metals	Red - plastic		P	2
Ferrous Iron	Mauve - plastic	F	P	
COD	Mauve - glass		P	
BOD	Green - plastic		UP	
SVOC	Orange - glass		UP	
TPH	Amber - Glass		P	1
PAH	Amber - Glass		UP	1

Maintenance needed? Describe:

Notes PID: 0, no tight seal due to monitoring equipment in well

GROUNDWATER SAMPLING RECORD FORM
LOW FLOW PURGING and SAMPLING (incl. low yield wells)

Project Information	
Project Number	1-C2466.16
Client	NZTA
Location	NC
Sampled By	HM MB
Date	26/02/2026
Time	12:15 pm
Well Information	
Well ID	BH2B_2149
Casing diameter (50/40/25 mm)	50
TOC height above/below ground level (m)	-0.2
Depth to top of filter pack from log (mbgl)	8.5
Top of screen from log (mbgl)	10
Bottom of screen from log (mbgl)	16
Depth of well from log (mbgl)	16
Depth to bottom of filter pack from log (mbgl)	16.5
Gauging Information (Pre Sampling)	
Interface Probe Used? Yes/No	Yes
Initial Depth to Water (mbRP)	0.819
Depth to Product (mbRP)	-
Thickness of Product (m)	N/A
Bailed Product Thickness (m)	-
Measured Depth to Bottom of Well (mbRP)	15.66
Low Flow Sampling	
Depth of pump intake (mbRP)	13.0
Diameter of hose (inches)	0.375
Length of hose (m)	14.0
Volume in hose (L)	0.98
Volume in casing (L)	2.00
Meters of Saturated Screen	6.0
Minimum Target Purge vol. (L)	**13.0**
Depth to water after placement of pump (mbRP)	0.681
Depth to water at end of purging (mbRP)	3.393
Depth to water after collection of samples (mbRP)	3.652
Controller Settings & WQM Information	
Controller - CPM/Refill/Discharge	N/A
Controller Throttle - Pressure (PSI)	N/A
WQM Model	YSI Pro DSS
WQM serial number	16E102905
WQM cal date and certificate	
No Purge Sampling	
Bailer? (Y/N)	N/A
Manual Waterra (Y/N)	N/A
Low-Flow no purge (Y/N)	Y

Time	Cum. Vol Purged (L)	Flow Rate (L/min)	Depth to GW (mbRP)	Drawdown (m)	Temp. (°C) ±0.5	DO (mg/L) ±10%	Cond (µS/cm) ±5%	pH ±0.1	Redox (mV) ±10	Colour, Turbidity, Odour, Sheen	Sampling info row Y/N?
12:33:00 PM	0	0.15	0.681	0							
12:37:00 PM	0.60	0.15	0.823	-0.142	20.6	1.92	1569	7.46	-56.8		
12:41:00 PM	1.20	0.15	1.135	-0.454	19.6	0.26	1645	7.38	-86.1	No odour, medium turbid, milky white	
12:45:00 PM	1.80	0.15	1.441	-0.76	19.5	0.18	1635	7.39	-90.8		
12:49:00 PM	2.40	0.15	1.534	-0.853	19.6	0.16	1624	7.39	-93.5		
12:54:00 PM	3.15	0.15	1.58	-0.899	20.1	0.16	1611	7.39	-98.5	Blockage in tubing	
12:56:00 PM	4.15	0.50								purge 5min @0.5lt/min	
1:01:00 PM	6.65	0.50	2.402	-1.721	18.2	0.04	1595	7.41	-24.3		
1:06:00 PM	7.40	0.15	2.505	-1.824	19.7	0.12	1603	7.39	-101.7		
1:11:00 PM	8.15	0.15	2.669	-1.988	19.9	0.16	1597	7.41	-104.7		
1:16:00 PM	8.90	0.15	2.759	-2.078	19.9	0.15	1583	7.41	-105.5		
1:21:00 PM	9.65	0.15	2.867	-2.186	20	0.15	1582	7.41	-106		
1:26:00 PM	10.40	0.15	2.965	-2.284	20	0.14	1580	7.41	-107.7		
1:31:00 PM	11.15	0.15	3.108	-2.427	20	0.14	1576	7.41	-107		
1:36:00 PM	11.90	0.15	3.225	-2.544	19.9	0.13	1560	7.41	-106.9		
1:41:00 PM	12.65	0.15	3.289	-2.608	19.9	0.13	1562	7.41	-107		
1:46:00 PM	13.40	0.15	3.393	-2.712	19.9	0.13	1568	7.41	-107.3		
										sampled at 1347 after 13.4lt purged	
				Parameters Stabilised?	YES	YES	YES	YES	YES		

Samples Collected		
Sample ID	BH2B_2149	
Primary Dup. ID		
Secondary Dup. ID		
Rinsate ID		
Trip Blank ID		
Field Blank ID		

Trip & DI Batch Numbers	
Trip Blank Batch no.	
Volatiles rinsate	
Semi- volatiles rinsate	
Inorganics/metals/PFAS rinsate	

Sample Containers		Filter	Preser	No.
Analyte	**Bottles**			
VOCs(Including MAHs)	Pink/Purple - Vials		P	
Speciated nitrogen	Purple - plastic		P	
Cations/Anions/TDS/Alk./WQ)	Green - plastic		UP	
TOC	Purple - glass		P	
Metals	Red - plastic		P	2
Ferrous Iron	Mauve - plastic	F	P	
COD	Mauve - glass		P	
BOD	Green - plastic		UP	
SVOC	Orange - glass		UP	
TPH				1
PAH				1

Maintenance needed? Describe:

Notes

Appendix F
Analytical Results Tables

							Heavy Metals								Sample Quality Parameters	Total Petroleum Hydrocarbons			
							Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	Sulphur (as S)	TRH C15 - C36 Fraction	TRH C7 - C36 Fraction	TRH C7 - C9 Fraction	TRH C10 - C14 Fraction
							mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	g/100g dry wt	mg/kg	mg/kg	mg/kg	mg/kg
EQL							2 - 4	0.1 - 0.2	0.2 - 2	0.2 - 2	0.2 - 2	0.1 - 0.2	0.2 - 2	0.2 - 4		40	80	20	20
SCS(health) - Commercial / industrial outdoor worker (unpaved)							70	1300		10000	3300	730							
MfE (2011) Tier 1 Commercial / industrial, SILTY CLAY																			
>=1m, <4m																		20,000	8,900
>=4m																			
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil							3,000	900	3,600	240,000	1,500	730	6,000	400,000					
ANZECC 2000 Sediment ISQC-High							70	10	370	270	220	1	52	410					
ANZECC 2000 Sediment ISQC-Low							20	1.5	80	65	50	0.15	21	200					
Lab Name	**Location Code**	**Field ID**	**Date**	**Lab Report Number**	**Sample Code**	**Depth (mbgl)**													
Potential Sheep Dip Site (Mayflower Farm)	2B_SS01	2B_SS01 0.1	14-10-2025	4008719	4008719_2	0.1	30	0.19	32	57	11.5	<0.10	17	97					
	2B_SS02	2B_SS02 0.1	14-10-2025	4008719	4008719_3	0.1	8	0.22	15	39	9.0	<0.10	15	120					
	2B_SS03	2B_SS03 0.1	14-10-2025	4008719	4008719_4	0.1	8	0.24	13	44	15.0	<0.10	18	120					
	2B_SS04	2B_SS04 0.1	14-10-2025	4008719	4008719_5	0.1	8	0.33	15	43	55	<0.10	18	194					
	2B_SS05	2B_SS05 0.1	14-10-2025	4008719	4008719_6	0.1	6	0.28	13	35	13.8	<0.10	13	123					
	BH2B_1149	BH2B_1149 0.1	14-10-2025	4008719	4008719_1	0.1	6	0.18	14	36	15.1	<0.10	20	83					
Plant Nursery Site (The Waipu Land Company)	BH2B_1104	BH2B_1104 0.1	14-10-2025	4008719	4008719_13	0.1	4	<0.10	8	8	13.7	0.15	3	25					
		BH2B_1104 0.4	14-10-2025	4008719	4008719_14	0.4	3	<0.10	7	4	8.1	0.17	2	16					
		BH2B_1104 1.0	14-10-2025	4008719	4008719_15	1	3	<0.10	12	6	11.5	0.13	2	17					
	BH2B_1105	BH2B_1105 0.1	14-10-2025	4008719	4008719_10	0.1	4	0.44	9	8	13.0	0.13	3	32					
		BH2B_1105 0.4	14-10-2025	4008719	4008719_11	0.4	4	<0.10	10	5	18.7	0.14	4	37					
		BH2B_1105 0.6	14-10-2025	4008719	4008719_12	0.6	4	<0.10	11	6	19.0	<0.10	5	47					
	BH2B_1140	BH2B_1140 0.1	14-10-2025	4008719	4008719_7	0.1	3	<0.10	8	6	13.6	0.11	2	27					
		BH2B_1140 0.5	14-10-2025	4008719	4008719_8	0.5	4	<0.10	9	8	15.7	<0.10	3	33					
		BH2B_1140 1.0	14-10-2025	4008719	4008719_9	1	<2	<0.10	7	4	14.0	0.18	<2	16					
Accidental Discovery Site	BH2B_1160	BH2B_1160 1.40m	10-10-2025	4006009	4006009_1	1.4	25	0.17	17	590	142	<0.10	5	210		<40	<80	<20	<20
		BH2B_1160 10.70m	10-10-2025	4006009	4006009_2	10.7										83	159	49	27
		BH2B_1160 16.00m	10-10-2025	4006009	4006009_3	16										42	125	56	27
		BH2B_1160 23m	13-10-2025	4009250	4009250_1	23	6	0.19	6	14	9.7	<0.10	19	67		51	173	34	88
		BH2B_1160 28m	13-10-2025	4009250	4009250_2	28	7	0.18	7	13	8.9	<0.10	17	65		67	199	52	81
	BH2B_2101	BH2B_2101 7.3	13-01-2026	4073451	4073451_5	7.3	3	<0.10	7	55	7.8	<0.10	23	55	0.060	<40	<80	<20	<20
		BH2B_2101 16	13-01-2026	4073451	4073451_12	16	7	0.75	5	87	17.4	<0.10	26	220	0.150	<40	<80	<20	<20
		BH2B_2101 20.0	14-01-2026	4076439	4076439_3	20	<2	<0.10	7	54	6.4	<0.10	18	18	0.060	<40	<80	<20	<20
		BH2B_2101 21.4	14-01-2026	4076439	4076439_4	21.4	8	<0.10	8	68	13.3	<0.10	37	82	0.090	<40	<80	<20	<20
		BH2B_2101 24.0	14-01-2026	4076439	4076439_6	24	<2	<0.10	10	32	7.2	<0.10	22	26	<0.010	<40	<80	<20	<20
		BH2B_2101 45.0	16-01-2026	4076439	4076439_20	45	3	0.17	8	29	8.6	<0.10	18	63	0.53	<40	<80	<20	<20
		BH2B_2101 49.7	16-01-2026	4076439	4076439_23	49.7	4	0.12	5	31	8.1	<0.10	18	58	0.040	<40	<80	<20	<20
	BH2B_2147	BH2B_2147 4.95	30-01-2026	4086908	4086908_4	4.95	<4	<0.2	8	65	7.7	<0.2	21	39		<40	<80	<20	<20
		BH2B_2147 16.95	02-02-2026	4091264	4091264_3	16.95	5	<0.2	8	33	6.9	<0.2	24	33		<40	<80	<20	<20
		BH2B_2147 32.90	04-02-2026	4091264	4091264_12	32.9	3	<0.10	6	34	6.2	<0.10	19	50		<40	<80	<20	<20
		BH2B_2147_34.80	04-02-2026	4091264	4091264_13	34.8	<2	<0.10	13	17	4.5	<0.10	14	45		<40	<80	<20	<20
	BH2B_2148	2B_2148 1.5	16-12-2025	4059456	4059456_20	1.5	7	0.30	10	35	21	<0.10	15	64		<40	<80	<20	<20
		2B_2148 4.6	15-12-2025	4059456	4059456_1	4.6	7	0.17	7	14	10.0	<0.10	20	69		<40	<80	<20	<20
		2B_2148 6.0	15-12-2025	4059456	4059456_3	6	7	0.20	10	13	7.9	<0.10	20	66	1.00	<40	<80	<20	<20
		2B_2148 9.5	15-12-2025	4059456	4059456_7	9.5	7	0.26	12	14	8.7	<0.10	22	73	1.00	<40	<80	<20	<20
		2B_2148 13.4	15-12-2025	4059456	4059456_11	13.4	7	0.22	9	13	8.3	<0.10	18	78	0.98	<40	<80	<20	<20
		2B_2148 15.5	16-12-2025	4059456	4059456_13	15.5	8	0.20	14	14	9.2	<0.10	20	77	0.94	169	191	<20	<20
		2B_2148 20.5	16-12-2025	4059456	4059456_18	20.5	8	0.17	8	13	8.6	<0.10	18	65	1.00	<40	<80	<20	<20
		BH2B_2148/24.0	17-12-2025	4061277	4061277_23	24	5	0.20	8	12	8.2	<0.10	17	67	1.00	<40	<80	<20	<20
		BH2B_2148/41.0	17-12-2025	4061277	4061277_13	41	5	0.27	9	15	7.7	<0.10	19	83	0.98	<40	<80	<20	<20
		BH2B_2148/45.5	17-12-2025	4061277	4061277_17	45.5	5	0.21	10	14	7.8	<0.10	18	79	0.31	<40	<80	<20	<20
	BH2B_2149	BH2B_2149_3.65	22-01-2026	4081709	4081709_2	3.65	7	0.86	8	12	8.3	<0.10	36	86		<40	<90	<30	<20
		BH2B_2149_15.75	23-01-2026	4081709	4081709_10	15.75	7	0.22	8	12	7.9	<0.10	18	62		<40	<80	<20	<20
		BH2B_2149_22.10	27-01-2026	4084844	4084844_2	22.1	6	0.24	8	17	8.5	<0.10	18	80		<40	<80	<20	<20
		BH2B_2149_26.45	27-01-2026	4084844	4084844_4	26.45	7	0.31	8	18	8.5	<0.10	20	86		<40	<80	<20	<20
		BH2B_2149_35.85	28-01-2026	4084844	4084844_10	35.85	7	0.17	8	13	9.4	<0.10	20	72		<40	<80	<20	<20
		BH2B_2149_37.00	28-01-2026	4084844	4084844_11	37	8	0.18	8	14	9.0	<0.10	21	78		<40	<80	<20	<20
Statistics																			
Minimum Concentration							2	<0.1	5	4	3.4	<0.1	2	16	<0.01	<40	<80	<20	<20
Maximum Concentration							30	0.86	32	590	142	<0.2	37	220	1	169	199	56	88
Average Concentration *							6	0.19	9.7	37	14	0.066	16	69	0.54	32	59	14	15
Standard Deviation *							5.1	0.16	4.3	84	20	0.035	8.1	45	0.45	29	47	12	18
95% UCL (Student's-t) *							7.515	0.231	10.94	58.88	19.68	0.076	18.25	82.68	0.746	38.56	75.01	18.77	21.28

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards
Ministry for the Environment, 2011, SCS(health) - Commercial / industrial outdoor worker (unpaved)
2013, NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil

							Polycyclic aromatic hydrocarbons																									
							Benzo(a)pyrene Toxic Equivalency Factor (PEF) NES	Benzo(a)pyrene Toxic Equivalence (TEF)	Benzo(b)fluoranthene + Benzo(j)fluoranthene	Acenaphthene	Acenaphthylene	Anthracene	Benz[a]anthracene	Benzo[a]pyrene	Benzo[b]&[j]fluoranthene	Benzo[g,h,i]perylene	Benzo[k]fluoranthene	Chrysene	Dibenz[a,h]anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Phenanthrene	Perylene	Pyrene	PAH (Sum of Common 16 PAHs)	1-Methylnaphthalene	2-Methylnaphthalene	Benzo[e]pyrene	Chloronaphthalenes (1-+ 2-)
							mg/kg TEQ	mg/kg	mg/kg dry wt	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EOL							0.0049	0.0049	0.015	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.05 - 9	0.002	0.002	0.002	0.5
SCS(health) - Commercial / industrial outdoor worker (unpaved)							300	3																						
MfE (2011) Tier 1 Commercial / industrial, SILTY CLAY																														
>=1m, <4m																														
>=4m																														
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil																										4,000				
ANZECC 2000 Sediment ISQC-High										0.5	0.64	1.1	1.6	1.6				2.8	0.26	5.1	0.54		1.5		2.6	45				
ANZECC 2000 Sediment ISQC-Low										0.016	0.044	0.085	0.261	0.43				0.384	0.063	0.6	0.019		0.24		0.665	4				
Lab Name	**Location Code**	**Field ID**	**Date**	**Lab Report Number**	**Sample Code**	**Depth (mbgl)**																								
Potential Sheep Dip Site (Mayflower Farm)	2B_SS01	2B_SS01 0.1	14-10-2025	4008719	4008719_2	0.1																								
	2B_SS02	2B_SS02 0.1	14-10-2025	4008719	4008719_3	0.1																								
	2B_SS03	2B_SS03 0.1	14-10-2025	4008719	4008719_4	0.1																								
	2B_SS04	2B_SS04 0.1	14-10-2025	4008719	4008719_5	0.1																								
	2B_SS05	2B_SS05 0.1	14-10-2025	4008719	4008719_6	0.1																								
	BH2B_1149	BH2B_1149 0.1	14-10-2025	4008719	4008719_1	0.1																								
Plant Nursery Site (The Waipu Land Company)	BH2B_1104	BH2B_1104 0.1	14-10-2025	4008719	4008719_13	0.1																								
		BH2B_1104 0.4	14-10-2025	4008719	4008719_14	0.4																								
		BH2B_1104 1.0	14-10-2025	4008719	4008719_15	1																								
	BH2B_1105	BH2B_1105 0.1	14-10-2025	4008719	4008719_10	0.1																								
		BH2B_1105 0.4	14-10-2025	4008719	4008719_11	0.4																								
		BH2B_1105 0.6	14-10-2025	4008719	4008719_12	0.6																								
	BH2B_1140	BH2B_1140 0.1	14-10-2025	4008719	4008719_7	0.1																								
		BH2B_1140 0.5	14-10-2025	4008719	4008719_8	0.5																								
		BH2B_1140 1.0	14-10-2025	4008719	4008719_9	1																								
Accidental Discovery Site	BH2B_1160	BH2B_1160 1.40m	10-10-2025	4006009	4006009_1	1.4	<0.034	<0.034	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014		<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.4	<0.014	<0.014	<0.014	<0.014	
		BH2B_1160 10.70m	10-10-2025	4006009	4006009_2	10.7	<0.030	<0.030	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013		<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	0.020	<0.013	<0.3	0.022	0.025	<0.013		
		BH2B_1160 16.00m	10-10-2025	4006009	4006009_3	16	<0.032	<0.032	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013		<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	0.018	<0.013	<0.4	0.028	0.028	<0.013		
		BH2B_1160 23m	13-10-2025	4009250	4009250_1	23	<0.029	<0.029	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012		<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.3	0.022	0.024	<0.012		
		BH2B_1160 28m	13-10-2025	4009250	4009250_2	28	<0.033	<0.033	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014		<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.4	0.022	0.022	<0.014		
	BH2B_2101	BH2B_2101 7.3	13-01-2026	4073451	4073451_5	7.3	<1.3	<1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5			<0.5		<0.5
		BH2B_2101 16	13-01-2026	4073451	4073451_12	16	<1.3	<1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5			<0.5		<0.5
		BH2B_2101 20.0	14-01-2026	4076439	4076439_3	20	<1.3	<1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5			<0.5		<0.5
		BH2B_2101 21.4	14-01-2026	4076439	4076439_4	21.4	<1.3	<1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5			<0.5		<0.5
		BH2B_2101 24.0	14-01-2026	4076439	4076439_6	24	<1.3	<1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5			<0.5		<0.5
		BH2B_2101 45.0	16-01-2026	4076439	4076439_20	45	<1.3	<1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5			<0.5		<0.5
		BH2B_2101 49.7	16-01-2026	4076439	4076439_23	49.7	<1.3	<1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5			<0.5		<0.5
	BH2B_2147	BH2B_2147 4.95	30-01-2026	4086908	4086908_4	4.95	<1.3	<1.3	<0.5	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<9	<0.002	<0.002	<0.002	<0.002	<0.5
		BH2B_2147 16.95	02-02-2026	4091264	4091264_3	16.95	<1.3	<1.3	<0.5	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<9	<0.002	<0.002	<0.002	<0.002	<0.5
		BH2B_2147 32.90	04-02-2026	4091264	4091264_12	32.9	<0.0049	<0.0049	<0.5	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.05	<0.002	<0.002	<0.002	<0.002	<0.5
		BH2B_2147_34.80	04-02-2026	4091264	4091264_13	34.8	<0.0049	<0.0049	<0.5	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.05	<0.002	<0.002	<0.002	<0.002	<0.5
	BH2B_2148	2B_2148 1.5	16-12-2025	4059456	4059456_20	1.5																								
		2B_2148 4.6	15-12-2025	4059456	4059456_1	4.6																								
		2B_2148 6.0	15-12-2025	4059456	4059456_3	6	<1.3	<1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5			<0.5		<0.5
		2B_2148 9.5	15-12-2025	4059456	4059456_7	9.5	<1.3	<1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5			<0.5		<0.5
		2B_2148 13.4	15-12-2025	4059456	4059456_11	13.4	<1.3	<1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5			<0.5		<0.5
		2B_2148 15.5	16-12-2025	4059456	4059456_13	15.5	<1.3	<1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5			<0.5		<0.5
		2B_2148 20.5	16-12-2025	4059456	4059456_18	20.5	<1.3	<1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5			<0.5		<0.5
		BH2B_2148/24.0	17-12-2025	4061277	4061277_23	24	<1.3	<1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5			<0.5		<0.5
		BH2B_2148/41.0	17-12-2025	4061277	4061277_13	41	<1.3	<1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5			<0.5		<0.5
		BH2B_2148/45.5	17-12-2025	4061277	4061277_17	45.5	<1.3	<1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5			<0.5		<0.5
	BH2B_2149	BH2B_2149_3.65	22-01-2026	4081709	4081709_2	3.65	<0.035	<0.035	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015		<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	0.019	<0.4	<0.015	<0.015	<0.015	<0.015	<0.5
		BH2B_2149_15.75	23-01-2026	4081709	4081709_10	15.75	<0.029	<0.029	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012		<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	0.023	<0.3	<0.012	<0.012	<0.012	<0.012	<0.5
		BH2B_2149_22.10	27-01-2026	4084844	4084844_2	22.1	<0.031	<0.031	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013		<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.4	<0.013	<0.013	<0.013	<0.013	<0.5
		BH2B_2149_26.45	27-01-2026	4084844	4084844_4	26.45	<0.028	<0.028	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012		<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.3	<0.012	<0.012	<0.012	<0.012	<0.5
		BH2B_2149_35.85	28-01-2026	4084844	4084844_10	35.85	<0.031	<0.031	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013		<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.4	0.019	0.015	<0.013	<0.013	<0.5
		BH2B_2149_37.00	28-01-2026	4084844	4084844_11	37	<0.029	<0.029	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012		<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.3	0.019	0.013	<0.012	<0.012	<0.5
Statistics																														
Minimum Concentration							<0.0049	<0.0049	<0.012	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.05	<0.002	<0.002	<0.002	<0.5	
Maximum Concentration							<1.3	<1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.002	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.02	<0.5	<9	0.028	<0.5	<0.015	<0.5	
Average Concentration *							0.4	0.4	0.17	0.12	0.12	0.12	0.12	0.12	0.001	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.0058	0.12	1.4	0.0096	0.13	0.0044	0.25	
Standard Deviation *							0.32	0.32	0.12	0.12	0.12	0.12	0.12	0.12	0	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.0055	0.12	2	0.0095	0.12	0.0028	0	
95% UCL (Student's-t) *							0.474	0.474	0.198	0.166	0.166	0.166	0.166	0.166	0.001	0.166	0.166	0.166	0.166	0.166	0.166	0.166	0.00924	0.173	1.429	0.0156	0.174	0.00619	0.25	

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards
Ministry for the Environment, 2011, SCS(health) - Commercial / industrial outdoor worker (unpaved)
2013, NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil

							Monocyclic Aromatic Hydrocarbons									BTEXN					
							1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	Isopropylbenzene	n-Butylbenzene	n-Propylbenzene	p-Isopropyltoluene	sec-Butylbenzene	Styrene	tert-Butylbenzene	Naphthalene	Benzene	Toluene	Ethylbenzene	Xylenes (m & p)	Xylene (o)
							mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL																0.01					
MfE (2011) Tier 1 Commercial / industrial, SILTY CLAY																					
>=1m, <4m																1,100	20	3,100	2,600		
>=4m																3,500	54	10,000	9,100		
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil																					
ANZECC 2000 Sediment ISQC-High																7.1					
ANZECC 2000 Sediment ISQC-Low																0.16					
Lab Name	**Location Code**	**Field ID**	**Date**	**Lab Report Number**	**Sample Code**	**Depth (mbgl)**															
Potential Sheep Dip Site (Mayflower Farm)	2B_SS01	2B_SS01 0.1	14-10-2025	4008719	4008719_2	0.1															
	2B_SS02	2B_SS02 0.1	14-10-2025	4008719	4008719_3	0.1															
	2B_SS03	2B_SS03 0.1	14-10-2025	4008719	4008719_4	0.1															
	2B_SS04	2B_SS04 0.1	14-10-2025	4008719	4008719_5	0.1															
	2B_SS05	2B_SS05 0.1	14-10-2025	4008719	4008719_6	0.1															
	BH2B_1149	BH2B_1149 0.1	14-10-2025	4008719	4008719_1	0.1															
Plant Nursery Site (The Waipu Land Company)	BH2B_1104	BH2B_1104 0.1	14-10-2025	4008719	4008719_13	0.1															
		BH2B_1104 0.4	14-10-2025	4008719	4008719_14	0.4															
		BH2B_1104 1.0	14-10-2025	4008719	4008719_15	1															
	BH2B_1105	BH2B_1105 0.1	14-10-2025	4008719	4008719_10	0.1															
		BH2B_1105 0.4	14-10-2025	4008719	4008719_11	0.4															
		BH2B_1105 0.6	14-10-2025	4008719	4008719_12	0.6															
	BH2B_1140	BH2B_1140 0.1	14-10-2025	4008719	4008719_7	0.1															
		BH2B_1140 0.5	14-10-2025	4008719	4008719_8	0.5															
		BH2B_1140 1.0	14-10-2025	4008719	4008719_9	1															
Accidental Discovery Site	BH2B_1160	BH2B_1160 1.40m	10-10-2025	4006009	4006009_1	1.4	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.05	<0.03	<0.03	<0.03	<0.05	<0.03
		BH2B_1160 10.70m	10-10-2025	4006009	4006009_2	10.7	1.0	0.6	0.39	0.17	0.5	0.20	0.14	0.04	<0.03	0.06	0.03	0.47	1.1	2.9	0.7
							1.12	0.70	0.4	<0.2	0.55	0.3	<0.2	<0.2		<0.07	<0.2	0.5	1.16	3.5	0.76
		BH2B_1160 16.00m	10-10-2025	4006009	4006009_3	16	0.5	0.33	0.21	0.07	0.27	0.09	0.07	0.04	<0.03	<0.05	0.05	1.0	0.9	2.4	0.7
							0.54	0.4	0.3	<0.1	0.3	<0.1	<0.1	<0.1		<0.1	<0.1		1.04	3.0	
		BH2B_1160 23m	13-10-2025	4009250	4009250_1	23	1.48	0.86	0.47	0.25	0.68	0.28	0.19	0.05	<0.03	<0.06	0.111	3.4	2.4	6.3	1.68
																0.12					
		BH2B_1160 28m	13-10-2025	4009250	4009250_2	28	1.41	0.83	0.46	0.26	0.66	0.27	0.18	0.06	<0.03	<0.07	0.14	3.0	2.1	5.6	1.54
																0.11					
	BH2B_2101	BH2B_2101 7.3	13-01-2026	4073451	4073451_5	7.3										<0.5					
		BH2B_2101 16	13-01-2026	4073451	4073451_12	16										<0.5					
		BH2B_2101 20.0	14-01-2026	4076439	4076439_3	20										<0.5					
		BH2B_2101 21.4	14-01-2026	4076439	4076439_4	21.4										<0.5					
		BH2B_2101 24.0	14-01-2026	4076439	4076439_6	24										<0.5					
		BH2B_2101 45.0	16-01-2026	4076439	4076439_20	45										<0.5					
		BH2B_2101 49.7	16-01-2026	4076439	4076439_23	49.7										<0.5					
	BH2B_2147	BH2B_2147 4.95	30-01-2026	4086908	4086908_4	4.95										<0.01					
		BH2B_2147 16.95	02-02-2026	4091264	4091264_3	16.95										<0.010					
		BH2B_2147 32.90	04-02-2026	4091264	4091264_12	32.9										<0.010					
		BH2B_2147_34.80	04-02-2026	4091264	4091264_13	34.8										<0.010					
	BH2B_2148	2B_2148 1.5	16-12-2025	4059456	4059456_20	1.5															
		2B_2148 4.6	15-12-2025	4059456	4059456_1	4.6															
		2B_2148 6.0	15-12-2025	4059456	4059456_3	6										<0.5					
		2B_2148 9.5	15-12-2025	4059456	4059456_7	9.5										<0.5					
		2B_2148 13.4	15-12-2025	4059456	4059456_11	13.4										<0.5					
		2B_2148 15.5	16-12-2025	4059456	4059456_13	15.5										<0.5					
		2B_2148 20.5	16-12-2025	4059456	4059456_18	20.5										<0.5					
		BH2B_2148/24.0	17-12-2025	4061277	4061277_23	24										<0.5					
		BH2B_2148/41.0	17-12-2025	4061277	4061277_13	41										<0.5					
		BH2B_2148/45.5	17-12-2025	4061277	4061277_17	45.5										<0.5					
	BH2B_2149	BH2B_2149_3.65	22-01-2026	4081709	4081709_2	3.65										<0.08					
		BH2B_2149_15.75	23-01-2026	4081709	4081709_10	15.75										<0.06					
		BH2B_2149_22.10	27-01-2026	4084844	4084844_2	22.1										<0.07					
		BH2B_2149_26.45	27-01-2026	4084844	4084844_4	26.45										<0.06					
		BH2B_2149_35.85	28-01-2026	4084844	4084844_10	35.85										<0.07					
		BH2B_2149_37.00	28-01-2026	4084844	4084844_11	37										<0.06					
Statistics																					
Minimum Concentration							<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.01	0.03	<0.03	<0.03	<0.05	<0.03
Maximum Concentration							1.48	0.86	0.47	<0.3	0.68	0.3	<0.3	<0.3	<0.03	<0.5	<0.3	3.4	2.4	6.3	1.68
Average Concentration *							0.87	0.53	0.32	0.15	0.42	0.19	0.13	0.072	0.015	0.12	0.085	1.4	1.2	3.4	0.9
Standard Deviation *							0.54	0.3	0.16	0.089	0.24	0.11	0.063	0.055	0	0.11	0.054	1.4	0.79	2.1	0.62
95% UCL (Student's-t) *							1.26	0.757	0.44	0.217	0.602	0.265	0.174	0.112	0.015	0.166	0.125	2.579	1.827	4.92	1.406

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards
Ministry for the Environment, 2011, SCS(health) - Commercial / industrial outdoor worker (unpaved)
2013, NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil

							Volatile Organic Compounds																	
							1,1,1,2-Tetrachloroethane	1,1,2,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2-Trichloroethane	1,2,3-Trichloropropane	1,2-Dibromo-3-chloropropane	1,2-Dibromoethane	1,1-Dichloroethene	1,2-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-dichloroethene	1,2-Dichloropropane	1,3-Dichloropropane	1,1-Dichloropropene	cis-1,3-Dichloropropene	trans-1,3-dichloropropane	Bromodichloromethane	Bromoform	Bromomethane	Carbon disulfide
							mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL																											
SCS(health) - Commercial / industrial outdoor worker (unpaved)																											
MfE (2011) Tier 1 Commercial / industrial, SILTY CLAY																											
>=1m, <4m																											
>=4m																											
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil																											
ANZECC 2000 Sediment ISQC-High																											
ANZECC 2000 Sediment ISQC-Low																											
Lab Name	**Location Code**	**Field ID**	**Date**	**Lab Report Number**	**Sample Code**	**Depth (mbgl)**																					
Potential Sheep Dip Site (Mayflower Farm)	2B_SS01	2B_SS01 0.1	14-10-2025	4008719	4008719_2	0.1																					
	2B_SS02	2B_SS02 0.1	14-10-2025	4008719	4008719_3	0.1																					
	2B_SS03	2B_SS03 0.1	14-10-2025	4008719	4008719_4	0.1																					
	2B_SS04	2B_SS04 0.1	14-10-2025	4008719	4008719_5	0.1																					
	2B_SS05	2B_SS05 0.1	14-10-2025	4008719	4008719_6	0.1																					
	BH2B_1149	BH2B_1149 0.1	14-10-2025	4008719	4008719_1	0.1																					
Plant Nursery Site (The Waipu Land Company)	BH2B_1104	BH2B_1104 0.1	14-10-2025	4008719	4008719_13	0.1																					
		BH2B_1104 0.4	14-10-2025	4008719	4008719_14	0.4																					
		BH2B_1104 1.0	14-10-2025	4008719	4008719_15	1																					
	BH2B_1105	BH2B_1105 0.1	14-10-2025	4008719	4008719_10	0.1																					
		BH2B_1105 0.4	14-10-2025	4008719	4008719_11	0.4																					
		BH2B_1105 0.6	14-10-2025	4008719	4008719_12	0.6																					
	BH2B_1140	BH2B_1140 0.1	14-10-2025	4008719	4008719_7	0.1																					
		BH2B_1140 0.5	14-10-2025	4008719	4008719_8	0.5																					
		BH2B_1140 1.0	14-10-2025	4008719	4008719_9	1																					
Accidental Discovery Site	BH2B_1160	BH2B_1160 1.40m	10-10-2025	4006009	4006009_1	1.4	<0.03	<0.03	<0.03	<0.03	<0.05	<0.05	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.05	<0.03	<0.05
		BH2B_1160 10.70m	10-10-2025	4006009	4006009_2	10.7	<0.03	<0.03	<0.03	<0.03	<0.05	<0.05	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.05	<0.03	<0.05
		BH2B_1160 16.00m	10-10-2025	4006009	4006009_3	16	<0.03	<0.03	<0.03	<0.03	<0.05	<0.05	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.05	<0.03	<0.05
		BH2B_1160 23m	13-10-2025	4009250	4009250_1	23	<0.03	<0.03	<0.03	<0.03	<0.05	<0.05	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.05	<0.03	<0.05
		BH2B_1160 28m	13-10-2025	4009250	4009250_2	28	<0.03	<0.03	<0.03	<0.03	<0.05	<0.05	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.05	<0.03	<0.05
	BH2B_2101	BH2B_2101 7.3	13-01-2026	4073451	4073451_5	7.3																					
		BH2B_2101 16	13-01-2026	4073451	4073451_12	16																					
		BH2B_2101 20.0	14-01-2026	4076439	4076439_3	20																					
		BH2B_2101 21.4	14-01-2026	4076439	4076439_4	21.4																					
		BH2B_2101 24.0	14-01-2026	4076439	4076439_6	24																					
		BH2B_2101 45.0	16-01-2026	4076439	4076439_20	45																					
		BH2B_2101 49.7	16-01-2026	4076439	4076439_23	49.7																					
	BH2B_2147	BH2B_2147 4.95	30-01-2026	4086908	4086908_4	4.95																					
		BH2B_2147 16.95	02-02-2026	4091264	4091264_3	16.95																					
		BH2B_2147 32.90	04-02-2026	4091264	4091264_12	32.9																					
		BH2B_2147_34.80	04-02-2026	4091264	4091264_13	34.8																					
	BH2B_2148	2B_2148 1.5	16-12-2025	4059456	4059456_20	1.5																					
		2B_2148 4.6	15-12-2025	4059456	4059456_1	4.6																					
		2B_2148 6.0	15-12-2025	4059456	4059456_3	6																					
		2B_2148 9.5	15-12-2025	4059456	4059456_7	9.5																					
		2B_2148 13.4	15-12-2025	4059456	4059456_11	13.4																					
		2B_2148 15.5	16-12-2025	4059456	4059456_13	15.5																					
		2B_2148 20.5	16-12-2025	4059456	4059456_18	20.5																					
		BH2B_2148/24.0	17-12-2025	4061277	4061277_23	24																					
		BH2B_2148/41.0	17-12-2025	4061277	4061277_13	41																					
		BH2B_2148/45.5	17-12-2025	4061277	4061277_17	45.5																					
	BH2B_2149	BH2B_2149_3.65	22-01-2026	4081709	4081709_2	3.65																					
		BH2B_2149_15.75	23-01-2026	4081709	4081709_10	15.75																					
		BH2B_2149 22.10	27-01-2026	4084844	4084844_2	22.1																					
		BH2B_2149 26.45	27-01-2026	4084844	4084844_4	26.45																					
		BH2B_2149_35.85	28-01-2026	4084844	4084844_10	35.85																					
		BH2B_2149_37.00	28-01-2026	4084844	4084844_11	37																					
Statistics																											
Minimum Concentration							<0.03	<0.03	<0.03	<0.03	<0.05	<0.05	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.05	<0.03	<0.05
Maximum Concentration							<0.03	<0.03	<0.03	<0.03	<0.05	<0.05	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.05	<0.03	<0.05
Average Concentration *							0.015	0.015	0.015	0.015	0.025	0.025	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.025	0.015	0.025
Standard Deviation *							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
95% UCL (Student's-t) *							0.015	0.015	0.015	0.015	0.025	0.025	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.025	0.015	0.025

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards
Ministry for the Environment, 2011, SCS(health) - Commercial / industrial outdoor worker (unpaved)
2013, NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil

											Volatile Organic Compounds													SVOCs							
											Carbon tetrachloride	Chlorodibromomethane	Chloroethane	Chloroform	Chloromethane	Dibromomethane	Dichlorodifluoromethane	Dichloromethane	Hexachlorobutadiene	Hexachloroethane	Trichloroethene	Tetrachloroethene	Trichlorofluoromethane	Vinyl chloride	Freon 113	4-Bromophenyl phenyl ether	4-Chlorophenyl phenyl ether	Benzyl alcohol	Bis(2-chloroethoxy) methane	Bis(2-chloroethyl) ether	Bis(2-chloroisopropyl) ether	Di(2-ethylhexyl) adipate	Dibenzofuran
											mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL																			0.8	0.8						0.4 - 0.5	0.5	10	0.5	0.5	0.5	1	0.5
SCS(health) - Commercial / industrial outdoor worker (unpaved)																																
MfE (2011) Tier 1 Commercial / industrial, SILTY CLAY																																
>=1m, <4m																																
>=4m																																
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil																																
NZTG (NZ) Sediment ISQG-High																																
ANZECC 2000 Sediment ISQG-Low																																
Lab Name	**Location Code**	**Field ID**	**Date**	**Lab Report Number**	**Sample Code**	**Depth (mbgl)**																										
Potential Sheep Dip Site (Mayflower Farm)	2B_SS01	2B_SS01 0.1	14-10-2025	4008719	4008719_2	0.1																										
	2B_SS02	2B_SS02 0.1	14-10-2025	4008719	4008719_3	0.1																										
	2B_SS03	2B_SS03 0.1	14-10-2025	4008719	4008719_4	0.1																										
	2B_SS04	2B_SS04 0.1	14-10-2025	4008719	4008719_5	0.1																										
	2B_SS05	2B_SS05 0.1	14-10-2025	4008719	4008719_6	0.1																										
	BH2B_1149	BH2B_1149 0.1	14-10-2025	4008719	4008719_1	0.1																										
Plant Nursery Site (The Waipu Land Company)	BH2B_1104	BH2B_1104 0.1	14-10-2025	4008719	4008719_13	0.1																										
		BH2B_1104 0.4	14-10-2025	4008719	4008719_14	0.4																										
		BH2B_1104 1.0	14-10-2025	4008719	4008719_15	1																										
	BH2B_1105	BH2B_1105 0.1	14-10-2025	4008719	4008719_10	0.1																										
		BH2B_1105 0.4	14-10-2025	4008719	4008719_11	0.4																										
		BH2B_1105 0.6	14-10-2025	4008719	4008719_12	0.6																										
	BH2B_1140	BH2B_1140 0.1	14-10-2025	4008719	4008719_7	0.1																										
		BH2B_1140 0.5	14-10-2025	4008719	4008719_8	0.5																										
		BH2B_1140 1.0	14-10-2025	4008719	4008719_9	1																										
Accidental Discovery Site	BH2B_1160	BH2B_1160 1.40m	10-10-2025	4006009	4006009_1	1.4	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.05	<0.5	<0.03		<0.03	<0.03	<0.03	<0.03	<0.03											
		BH2B_1160 10.70m	10-10-2025	4006009	4006009_2	10.7	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.05	<0.4	<0.03		<0.03	<0.03	<0.03	<0.03	<0.03											
		BH2B_1160 16.00m	10-10-2025	4006009	4006009_3	16	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.05	<0.5	<0.03		<0.03	<0.03	<0.03	<0.03	<0.03											
		BH2B_1160 23m	13-10-2025	4009250	4009250_1	23	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.05	<0.4	<0.03		<0.03	<0.03	<0.03	<0.03	<0.03											
		BH2B_1160 28m	13-10-2025	4009250	4009250_2	28	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.05	<0.5	<0.03		<0.03	<0.03	<0.03	<0.03	<0.03											
	BH2B_2101	BH2B_2101 7.3	13-01-2026	4073451	4073451_5	7.3									<0.7	<0.7									<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
		BH2B_2101 16	13-01-2026	4073451	4073451_12	16									<0.7	<0.7									<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
		BH2B_2101 20.0	14-01-2026	4076439	4076439_3	20									<0.7	<0.7									<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
		BH2B_2101 21.4	14-01-2026	4076439	4076439_4	21.4									<0.8	<0.8									<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
		BH2B_2101 24.0	14-01-2026	4076439	4076439_6	24									<0.8	<0.8									<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
		BH2B_2101 45.0	16-01-2026	4076439	4076439_20	45									<0.8	<0.8									<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
		BH2B_2101 49.7	16-01-2026	4076439	4076439_23	49.7									<0.8	<0.8									<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
	BH2B_2147	BH2B_2147 4.95	30-01-2026	4086908	4086908_4	4.95									<0.8	<0.8									<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1	<0.5
		BH2B_2147 16.95	02-02-2026	4091264	4091264_3	16.95									<0.8	<0.8									<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
		BH2B_2147 32.90	04-02-2026	4091264	4091264_12	32.9									<0.8	<0.8									<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
		BH2B_2147_34.80	04-02-2026	4091264	4091264_13	34.8									<0.8	<0.8									<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
	BH2B_2148	2B_2148 1.5	16-12-2025	4059456	4059456_20	1.5																										
		2B_2148 4.6	15-12-2025	4059456	4059456_1	4.6																										
		2B_2148 6.0	15-12-2025	4059456	4059456_3	6									<0.7	<0.7									<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
		2B_2148 9.5	15-12-2025	4059456	4059456_7	9.5									<0.8	<0.8									<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
		2B_2148 13.4	15-12-2025	4059456	4059456_11	13.4									<0.7	<0.7									<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
		2B_2148 15.5	16-12-2025	4059456	4059456_13	15.5									<0.8	<0.8									<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
		2B_2148 20.5	16-12-2025	4059456	4059456_18	20.5									<0.7	<0.7									<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
		BH2B_2148/24.0	17-12-2025	4061277	4061277_23	24									<0.7	<0.7									<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
		BH2B_2148/41.0	17-12-2025	4061277	4061277_13	41									<0.7	<0.7									<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
		BH2B_2148/45.5	17-12-2025	4061277	4061277_17	45.5									<0.7	<0.7									<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
	BH2B_2149	BH2B_2149_3.65	22-01-2026	4081709	4081709_2	3.65									<0.9	<0.9									<0.5	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
		BH2B_2149_15.75	23-01-2026	4081709	4081709_10	15.75									<0.8	<0.8									<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
		BH2B_2149_22.10	27-01-2026	4084844	4084844_2	22.1									<0.8	<0.8									<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
		BH2B_2149_26.45	27-01-2026	4084844	4084844_4	26.45									<0.7	<0.7									<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
		BH2B_2149_35.85	28-01-2026	4084844	4084844_10	35.85									<0.8	<0.8									<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
		BH2B_2149_37.00	28-01-2026	4084844	4084844_11	37									<0.8	<0.8									<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
Statistics																																
Minimum Concentration							<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.05	<0.4	<0.03	<0.5	<0.03	<0.03	<0.03	<0.03	<0.03	<0.4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5
Maximum Concentration							<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.05	<0.5	<0.9	<0.9	<0.03	<0.03	<0.03	<0.03	<0.03	<0.5	<0.5	<10	<0.5	<0.5	<0.5	<0.5	<1	<0.5
Average Concentration *							0.015	0.015	0.015	0.015	0.015	0.015	0.025	0.23	0.31	0.37	0.015	0.015	0.015	0.015	0.015	0.2	0.25	4.5	0.25	0.25	0.25	0.25	0.47	0.25
Standard Deviation *							0	0	0	0	0	0	0	0.027	0.14	0.049	0	0	0	0	0	0.0094	0	1.5	0	0	0	0.079	0	
95% UCL (Student's-t) *							0.015	0.015	0.015	0.015	0.015	0.015	0.025	0.256	0.365	0.392	0.015	0.015	0.015	0.015	0.015	0.205	0.25	5	0.25	0.25	0.25	0.5	0.25	

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards
Ministry for the Environment, 2011, SCS(health) - Commercial / industrial outdoor worker (unpaved)
2013, NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil

									Phthalates						Herbicides																	
									Bis(2-ethylhexyl) phthalate	Butylbenzyl phthalate	Diethyl phthalate	Dimethyl phthalate	Di-n-butyl phthalate	Di-n-octyl phthalate	Atrazine-desethyl	Atrazine-desisopropyl	Fluazifop-butyl (ISO)	Acetochlor	Atrazine	Bromacil	Butachlor	Chlorotoluron	Cyanazine	Diuron	Fluometuron	Haloxyfop-methyl	Hexazinone	Linuron	Metachlor	Metolachlor	Metribuzin
									mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL									5	1	1	1	1	1	0.08	0.16	0.08	0.08	0.08	0.08	0.08	0.16	0.08	0.08	0.08	0.08	0.04	0.08	0.05	0.05	0.08
SCS(health) - Commercial / industrial outdoor worker (unpaved)																																
MfE (2011) Tier 1 Commercial / industrial, SILTY CLAY																																
>=1m, <4m																																
>=4m																																
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil																			2,500													
ANZECC 2000 Sediment ISQC-High																																
ANZECC 2000 Sediment ISQC-Low																																
Lab Name	**Location Code**	**Field ID**	**Date**	**Lab Report Number**	**Sample Code**	**Depth (mbgl)**																										
Potential Sheep Dip Site (Mayflower Farm)	2B_SS01	2B_SS01 0.1	14-10-2025	4008719	4008719_2	0.1									<0.08	<0.16	<0.08	<0.08	<0.08	<0.08	<0.08	<0.16	<0.08	<0.08	<0.08	<0.08	<0.04	<0.08	<0.05	<0.05	<0.08
	2B_SS02	2B_SS02 0.1	14-10-2025	4008719	4008719_3	0.1																										
	2B_SS03	2B_SS03 0.1	14-10-2025	4008719	4008719_4	0.1																										
	2B_SS04	2B_SS04 0.1	14-10-2025	4008719	4008719_5	0.1																										
	2B_SS05	2B_SS05 0.1	14-10-2025	4008719	4008719_6	0.1									<0.10	<0.2	<0.10	<0.10	<0.10	<0.10	<0.10	<0.2	<0.10	<0.10	<0.10	<0.10	<0.05	<0.10	<0.05	<0.05	<0.10
	BH2B_1149	BH2B_1149 0.1	14-10-2025	4008719	4008719_1	0.1																										
Plant Nursery Site (The Waipu Land Company)	BH2B_1104	BH2B_1104 0.1	14-10-2025	4008719	4008719_13	0.1									<0.08	<0.15	<0.08	<0.08	<0.08	<0.08	<0.08	<0.15	<0.08	<0.08	<0.08	<0.08	<0.04	<0.08	<0.05	<0.05	<0.08
		BH2B_1104 0.4	14-10-2025	4008719	4008719_14	0.4									<0.08	<0.15	<0.08	<0.08	<0.08	<0.08	<0.08	<0.15	<0.08	<0.08	<0.08	<0.08	<0.04	<0.08	<0.05	<0.05	<0.08
		BH2B_1104 1.0	14-10-2025	4008719	4008719_15	1									<0.08	<0.15	<0.08	<0.08	<0.08	<0.08	<0.08	<0.15	<0.08	<0.08	<0.08	<0.08	<0.04	<0.08	<0.05	<0.05	<0.08
	BH2B_1105	BH2B_1105 0.1	14-10-2025	4008719	4008719_10	0.1									<0.11	<0.3	<0.11	<0.11	<0.11	<0.11	<0.11	<0.3	<0.11	<0.11	<0.11	<0.11	<0.06	<0.11	<0.06	<0.06	<0.11
		BH2B_1105 0.4	14-10-2025	4008719	4008719_11	0.4									<0.08	<0.16	<0.08	<0.08	<0.08	<0.08	<0.08	<0.16	<0.08	<0.08	<0.08	<0.08	<0.04	<0.08	<0.05	<0.05	<0.08
		BH2B_1105 0.6	14-10-2025	4008719	4008719_12	0.6									<0.08	<0.16	<0.08	<0.08	<0.08	<0.08	<0.08	<0.16	<0.08	<0.08	<0.08	<0.08	<0.04	<0.08	<0.05	<0.05	<0.08
	BH2B_1140	BH2B_1140 0.1	14-10-2025	4008719	4008719_7	0.1									<0.08	<0.15	<0.08	<0.08	<0.08	<0.08	<0.08	<0.15	<0.08	<0.08	<0.08	<0.08	<0.04	<0.08	<0.05	<0.05	<0.08
		BH2B_1140 0.5	14-10-2025	4008719	4008719_8	0.5									<0.08	<0.15	<0.08	<0.08	<0.08	<0.08	<0.08	<0.15	<0.08	<0.08	<0.08	<0.08	<0.04	<0.08	<0.05	<0.05	<0.08
		BH2B_1140 1.0	14-10-2025	4008719	4008719_9	1									<0.08	<0.15	<0.08	<0.08	<0.08	<0.08	<0.08	<0.15	<0.08	<0.08	<0.08	<0.08	<0.04	<0.08	<0.05	<0.05	<0.08
Accidental Discovery Site	BH2B_1160	BH2B_1160 1.40m	10-10-2025	4006009	4006009_1	1.4																										
		BH2B_1160 10.70m	10-10-2025	4006009	4006009_2	10.7																										
		BH2B_1160 16.00m	10-10-2025	4006009	4006009_3	16																										
		BH2B_1160 23m	13-10-2025	4009250	4009250_1	23																										
		BH2B_1160 28m	13-10-2025	4009250	4009250_2	28																										
	BH2B_2101	BH2B_2101 7.3	13-01-2026	4073451	4073451_5	7.3	<5	<1.0	<1.0	<1.0	<1.0	<1.0																				
		BH2B_2101 16	13-01-2026	4073451	4073451_12	16	<5	<1.0	<1.0	<1.0	<1.0	<1.0																				
		BH2B_2101 20.0	14-01-2026	4076439	4076439_3	20	<5	<1.0	<1.0	<1.0	<1.0	<1.0																				
		BH2B_2101 21.4	14-01-2026	4076439	4076439_4	21.4	<5	<1.0	<1.0	<1.0	<1.0	<1.0																				
		BH2B_2101 24.0	14-01-2026	4076439	4076439_6	24	<5	<1.0	<1.0	<1.0	<1.0	<1.0																				
		BH2B_2101 45.0	16-01-2026	4076439	4076439_20	45	<5	<1.0	<1.0	<1.0	<1.0	<1.0																				
		BH2B_2101 49.7	16-01-2026	4076439	4076439_23	49.7	<5	<1.0	<1.0	<1.0	<1.0	<1.0																				
	BH2B_2147	BH2B_2147 4.95	30-01-2026	4086908	4086908_4	4.95	<5	<1	<1	<1	<1	<1																				
		BH2B_2147 16.95	02-02-2026	4091264	4091264_3	16.95	<5	<1.0	<1.0	<1.0	<1.0	<1.0																				
		BH2B_2147 32.90	04-02-2026	4091264	4091264_12	32.9	<5	<1.0	<1.0	<1.0	<1.0	<1.0																				
		BH2B_2147_34.80	04-02-2026	4091264	4091264_13	34.8	<5	<1.0	<1.0	<1.0	<1.0	<1.0																				
	BH2B_2148	2B_2148 1.5	16-12-2025	4059456	4059456_20	1.5																										
		2B_2148 4.6	15-12-2025	4059456	4059456_1	4.6																										
		2B_2148 6.0	15-12-2025	4059456	4059456_3	6	<5	<1.0	<1.0	<1.0	<1.0	<1.0																				
		2B_2148 9.5	15-12-2025	4059456	4059456_7	9.5	<5	<1.0	<1.0	<1.0	<1.0	<1.0																				
		2B_2148 13.4	15-12-2025	4059456	4059456_11	13.4	<5	<1.0	<1.0	<1.0	<1.0	<1.0																				
		2B_2148 15.5	16-12-2025	4059456	4059456_13	15.5	<5	<1.0	<1.0	<1.0	<1.0	<1.0																				
		2B_2148 20.5	16-12-2025	4059456	4059456_18	20.5	<5	<1.0	<1.0	<1.0	<1.0	<1.0																				
		BH2B_2148/24.0	17-12-2025	4061277	4061277_23	24	<5	<1.0	<1.0	<1.0	<1.0	<1.0																				
		BH2B_2148/41.0	17-12-2025	4061277	4061277_13	41	<5	<1.0	<1.0	<1.0	<1.0	<1.0																				
		BH2B_2148/45.5	17-12-2025	4061277	4061277_17	45.5	<5	<1.0	<1.0	<1.0	<1.0	<1.0																				
	BH2B_2149	BH2B_2149_3.65	22-01-2026	4081709	4081709_2	3.65	<5	<1.0	<1.0	<1.0	<1.0	<1.0																				
		BH2B_2149_15.75	23-01-2026	4081709	4081709_10	15.75	<5	<1.0	<1.0	<1.0	<1.0	<1.0																				
		BH2B_2149 22.10	27-01-2026	4084844	4084844_2	22.1	<5	<1.0	<1.0	<1.0	<1.0	<1.0																				
		BH2B_2149 26.45	27-01-2026	4084844	4084844_4	26.45	<5	<1.0	<1.0	<1.0	<1.0	<1.0																				
		BH2B_2149_35.85	28-01-2026	4084844	4084844_10	35.85	<5	<1.0	<1.0	<1.0	<1.0	<1.0																				
		BH2B_2149_37.00	28-01-2026	4084844	4084844_11	37	<5	<1.0	<1.0	<1.0	<1.0	<1.0																				
Statistics																																
Minimum Concentration									<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.08	<0.15	<0.08	<0.08	<0.08	<0.08	<0.08	<0.15	<0.08	<0.08	<0.08	<0.08	<0.04	<0.08	<0.05	<0.05	<0.08
Maximum Concentration									<5	<1	<1	<1	<1	<1	<0.11	<0.3	<0.11	<0.11	<0.11	<0.11	<0.11	<0.3	<0.11	<0.11	<0.11	<0.11	<0.06	<0.11	<0.06	<0.06	<0.11
Average Concentration *									2.3	0.47	0.47	0.47	0.47	0.47	0.042	0.085	0.042	0.042	0.042	0.042	0.042	0.085	0.042	0.042	0.042	0.042	0.021	0.042	0.025	0.025	0.042
Standard Deviation *									0.71	0.079	0.079	0.079	0.079	0.079	0.0052	0.023	0.0052	0.0052	0.0052	0.0052	0.0052	0.023	0.0052	0.0052	0.0052	0.0052	0.0032	0.0052	0.0015	0.0015	0.0052
95% UCL (Student's-t) *									2.5	0.5	0.5	0.5	0.5	0.5	0.0451	0.0978	0.0451	0.0451	0.0451	0.0451	0.0451	0.0978	0.0451	0.0451	0.0451	0.0451	0.0231	0.0451	0.0263	0.0263	0.0451

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards
Ministry for the Environment, 2011, SCS(health) - Commercial / industrial outdoor worker (unpaved)
2013, NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil

									Herbicides										
						Molinate	Norflurazon	Oxadiazon	Oxyfluorfen	Pendimethalin	Prometryn	Propachlor	Propanil	Propazine	Simazine	Simetryn	Terbacil	Terbutryn	Thiobencarb	Trifluralin
						mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL						0.16	0.16	0.08	0.04	0.08	0.04	0.08	0.2	0.04	0.08	0.08	0.08	0.08	0.08	0.08
SCS(health) - Commercial / industrial outdoor worker (unpaved)																			
MfE (2011) Tier 1 Commercial / Industrial, SILTY CLAY																			
>=1m, <4m																			
>=4m																			
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil																			
ANZECC 2000 Sediment ISQC-High																			
ANZECC 2000 Sediment ISQC-Low																			
Lab Name	**Location Code**	**Field ID**	**Date**	**Lab Report Number**	**Sample Code**	**Depth (mbgl)**														
Potential Sheep Dip Site (Mayflower Farm)	2B_SS01	2B_SS01 0.1	14-10-2025	4008719	4008719_2	0.1	<0.16	<0.16	<0.08	<0.04	<0.08	<0.04	<0.08	<0.2	<0.04	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
	2B_SS02	2B_SS02 0.1	14-10-2025	4008719	4008719_3	0.1															
	2B_SS03	2B_SS03 0.1	14-10-2025	4008719	4008719_4	0.1															
	2B_SS04	2B_SS04 0.1	14-10-2025	4008719	4008719_5	0.1															
	2B_SS05	2B_SS05 0.1	14-10-2025	4008719	4008719_6	0.1	<0.2	<0.2	<0.10	<0.05	<0.10	<0.05	<0.10	<0.2	<0.05	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
	BH2B_1149	BH2B_1149 0.1	14-10-2025	4008719	4008719_1	0.1															
Plant Nursery Site (The Waipu Land Company)	BH2B_1104	BH2B_1104 0.1	14-10-2025	4008719	4008719_13	0.1	<0.15	<0.15	<0.08	<0.04	<0.08	<0.04	<0.08	<0.2	<0.04	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
		BH2B_1104 0.4	14-10-2025	4008719	4008719_14	0.4	<0.15	<0.15	<0.08	<0.04	<0.08	<0.04	<0.08	<0.2	<0.04	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
		BH2B_1104 1.0	14-10-2025	4008719	4008719_15	1	<0.15	<0.15	<0.08	<0.04	<0.08	<0.04	<0.08	<0.2	<0.04	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
	BH2B_1105	BH2B_1105 0.1	14-10-2025	4008719	4008719_10	0.1	<0.3	<0.3	<0.11	<0.06	<0.11	<0.06	<0.11	<0.3	<0.06	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11
		BH2B_1105 0.4	14-10-2025	4008719	4008719_11	0.4	<0.16	<0.16	<0.08	<0.04	<0.08	<0.04	<0.08	<0.2	<0.04	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
		BH2B_1105 0.6	14-10-2025	4008719	4008719_12	0.6	<0.16	<0.16	<0.08	<0.04	<0.08	<0.04	<0.08	<0.2	<0.04	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
	BH2B_1140	BH2B_1140 0.1	14-10-2025	4008719	4008719_7	0.1	<0.15	<0.15	<0.08	<0.04	<0.08	<0.04	<0.08	<0.2	<0.04	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
		BH2B_1140_0.5	14-10-2025	4008719	4008719_8	0.5	<0.15	<0.15	<0.08	<0.04	<0.08	<0.04	<0.08	<0.2	<0.04	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
		BH2B_1140 1.0	14-10-2025	4008719	4008719_9	1	<0.15	<0.15	<0.08	<0.04	<0.08	<0.04	<0.08	<0.2	<0.04	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Accidental Discovery Site	BH2B_1160	BH2B_1160 1.40m	10-10-2025	4006009	4006009_1	1.4															
		BH2B_1160 10.70m	10-10-2025	4006009	4006009_2	10.7															
		BH2B_1160 16.00m	10-10-2025	4006009	4006009_3	16															
		BH2B_1160 23m	13-10-2025	4009250	4009250_1	23															
		BH2B_1160 28m	13-10-2025	4009250	4009250_2	28															
	BH2B_2101	BH2B_2101 7.3	13-01-2026	4073451	4073451_5	7.3															
		BH2B_2101_16	13-01-2026	4073451	4073451_12	16															
		BH2B_2101 20.0	14-01-2026	4076439	4076439_3	20															
		BH2B_2101 21.4	14-01-2026	4076439	4076439_4	21.4															
		BH2B_2101 24.0	14-01-2026	4076439	4076439_6	24															
		BH2B_2101 45.0	16-01-2026	4076439	4076439_20	45															
		BH2B_2101 49.7	16-01-2026	4076439	4076439_23	49.7															
	BH2B_2147	BH2B_2147 4.95	30-01-2026	4086908	4086908_4	4.95															
		BH2B_2147 16.95	02-02-2026	4091264	4091264_3	16.95															
		BH2B_2147 32.90	04-02-2026	4091264	4091264_12	32.9															
		BH2B_2147_34.80	04-02-2026	4091264	4091264_13	34.8															
	BH2B_2148	2B_2148_1.5	16-12-2025	4059456	4059456_20	1.5															
		2B_2148_4.6	15-12-2025	4059456	4059456_1	4.6															
		2B_2148_6.0	15-12-2025	4059456	4059456_3	6															
		2B_2148_9.5	15-12-2025	4059456	4059456_7	9.5															
		2B_2148_13.4	15-12-2025	4059456	4059456_11	13.4															
		2B_2148_15.5	16-12-2025	4059456	4059456_13	15.5															
		2B_2148_20.5	16-12-2025	4059456	4059456_18	20.5															
		BH2B_2148/24.0	17-12-2025	4061277	4061277_23	24															
		BH2B_2148/41.0	17-12-2025	4061277	4061277_13	41															
		BH2B_2148/45.5	17-12-2025	4061277	4061277_17	45.5															
	BH2B_2149	BH2B_2149_3.65	22-01-2026	4081709	4081709_2	3.65															
		BH2B_2149_15.75	23-01-2026	4081709	4081709_10	15.75															
		BH2B_2149_22.10	27-01-2026	4084844	4084844_2	22.1															
		BH2B_2149_26.45	27-01-2026	4084844	4084844_4	26.45															
		BH2B_2149_35.85	28-01-2026	4084844	4084844_10	35.85															
		BH2B_2149_37.00	28-01-2026	4084844	4084844_11	37															
Statistics																				
Minimum Concentration							<0.15	<0.15	<0.08	<0.04	<0.08	<0.04	<0.08	<0.2	<0.04	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Maximum Concentration							<0.3	<0.3	<0.11	<0.06	<0.11	<0.06	<0.11	<0.3	<0.06	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11
Average Concentration *							0.085	0.085	0.042	0.021	0.042	0.021	0.042	0.1	0.021	0.042	0.042	0.042	0.042	0.042	0.042
Standard Deviation *							0.023	0.023	0.0052	0.0032	0.0052	0.0032	0.0052	0.015	0.0032	0.0052	0.0052	0.0052	0.0052	0.0052	0.0052
95% UCL (Student's-t) *							0.0978	0.0978	0.0451	0.0231	0.0451	0.0231	0.0451	0.113	0.0231	0.0451	0.0451	0.0451	0.0451	0.0451	0.0451

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards
Ministry for the Environment, 2011, SCS(health) - Commercial / industrial outdoor worker (unpaved)
2013, NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil

												Organochlorine Pesticides															
												Pecynimidone	o,p-DDE	2,4-DDT	a-BHC	Aldrin	b-BHC	cis-Chlordane	trans-Chlordane	d-BHC	DDD	DDT	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC	Heptachlor	Heptachlor epoxide	Methoxychlor	o,p-DDD	o,p-DDE
												mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EOL												0.08	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014
SCS(health) - Commercial / industrial outdoor worker (unpaved)																						3,600													
MfE (2011) Tier 1 Commercial / industrial, SILTY CLAY																																			
>=1m, <4m																																			
>=4m																																			
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil																						3,600	3,600					100				50		2,500	
ANZECC 2000 Sediment ISQC-High																						0.02	0.016	0.008				0.08				0.001			
ANZECC 2000 Sediment ISQC-Low																						0.002	0.0016	0.00002				0.00002				0.00032			
Lab Name	**Location Code**	**Field ID**	**Date**	**Lab Report Number**	**Sample Code**	**Depth (mbgl)**																													
Potential Sheep Dip Site (Mayflower Farm)	2B_SS01	2B_SS01 0.1	14-10-2025	4008719	4008719_2	0.1	<0.08	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
	2B_SS02	2B_SS02 0.1	14-10-2025	4008719	4008719_3	0.1																													
	2B_SS03	2B_SS03 0.1	14-10-2025	4008719	4008719_4	0.1																													
	2B_SS04	2B_SS04 0.1	14-10-2025	4008719	4008719_5	0.1																													
	2B_SS05	2B_SS05 0.1	14-10-2025	4008719	4008719_6	0.1	<0.10	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018
	BH2B_1149	BH2B_1149 0.1	14-10-2025	4008719	4008719_1	0.1																													
Plant Nursery Site (The Waipu Land Company)	BH2B_1104	BH2B_1104 0.1	14-10-2025	4008719	4008719_13	0.1	<0.08	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
		BH2B_1104 0.4	14-10-2025	4008719	4008719_14	0.4	<0.08	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013
		BH2B_1104 1.0	14-10-2025	4008719	4008719_15	1	<0.08	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
	BH2B_1105	BH2B_1105 0.1	14-10-2025	4008719	4008719_10	0.1	<0.11	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019
		BH2B_1105 0.4	14-10-2025	4008719	4008719_11	0.4	<0.08	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
		BH2B_1105 0.6	14-10-2025	4008719	4008719_12	0.6	<0.08	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
	BH2B_1140	BH2B_1140 0.1	14-10-2025	4008719	4008719_7	0.1	<0.08	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
		BH2B_1140 0.5	14-10-2025	4008719	4008719_8	0.5	<0.08	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
		BH2B_1140 1.0	14-10-2025	4008719	4008719_9	1	<0.08	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
Accidental Discovery Site	BH2B_1160	BH2B_1160 1.40m	10-10-2025	4006009	4006009_1	1.4																													
		BH2B_1160 10.70m	10-10-2025	4006009	4006009_2	10.7																													
		BH2B_1160 16.00m	10-10-2025	4006009	4006009_3	16																													
		BH2B_1160 23m	13-10-2025	4009250	4009250_1	23																													
		BH2B_1160 28m	13-10-2025	4009250	4009250_2	28																													
	BH2B_2101	BH2B_2101 7.3	13-01-2026	4073451	4073451_5	7.3		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.7		<1.0	<0.5	<0.5	<0.5								
		BH2B_2101 16	13-01-2026	4073451	4073451_12	16		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.7		<1.0	<0.5	<0.5	<0.5								
		BH2B_2101 20.0	14-01-2026	4076439	4076439_3	20		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.7		<1.0	<0.5	<0.5	<0.5								
		BH2B_2101 21.4	14-01-2026	4076439	4076439_4	21.4		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.8		<1.0	<0.5	<0.5	<0.5								
		BH2B_2101 24.0	14-01-2026	4076439	4076439_6	24		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.8		<1.0	<0.5	<0.5	<0.5								
		BH2B_2101 45.0	16-01-2026	4076439	4076439_20	45		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.8		<1.0	<0.5	<0.5	<0.5								
		BH2B_2101 49.7	16-01-2026	4076439	4076439_23	49.7		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.8		<1.0	<0.5	<0.5	<0.5								
	BH2B_2147	BH2B_2147 4.95	30-01-2026	4086908	4086908_4	4.95		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1	<0.5	<1	<2	<1	<0.8		<1	<0.5	<0.5	<0.5								
		BH2B_2147 16.95	02-02-2026	4091264	4091264_3	16.95		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.8		<1.0	<0.5	<0.5	<0.5								
		BH2B_2147 32.90	04-02-2026	4091264	4091264_12	32.9		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.8		<1.0	<0.5	<0.5	<0.5								
		BH2B_2147_34.80	04-02-2026	4091264	4091264_13	34.8		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.8		<1.0	<0.5	<0.5	<0.5								
	BH2B_2148	2B_2148 1.5	16-12-2025	4059456	4059456_20	1.5																													
		2B_2148 4.6	15-12-2025	4059456	4059456_1	4.6																													
		2B_2148 6.0	15-12-2025	4059456	4059456_3	6		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.7		<1.0	<0.5	<0.5	<0.5								
		2B_2148 9.5	15-12-2025	4059456	4059456_7	9.5		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.8		<1.0	<0.5	<0.5	<0.5								
		2B_2148 13.4	15-12-2025	4059456	4059456_11	13.4		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.7		<1.0	<0.5	<0.5	<0.5								
		2B_2148 15.5	16-12-2025	4059456	4059456_13	15.5		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.8		<1.0	<0.5	<0.5	<0.5								
		2B_2148 20.5	16-12-2025	4059456	4059456_18	20.5		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.7		<1.0	<0.5	<0.5	<0.5								
		BH2B_2148/24.0	17-12-2025	4061277	4061277_23	24		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.7		<1.0	<0.5	<0.5	<0.5								
		BH2B_2148/41.0	17-12-2025	4061277	4061277_13	41		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.7		<1.0	<0.5	<0.5	<0.5								
		BH2B_2148/45.5	17-12-2025	4061277	4061277_17	45.5		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.7		<1.0	<0.5	<0.5	<0.5								
	BH2B_2149	BH2B_2149_3.65	22-01-2026	4081709	4081709_2	3.65		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.7		<1.0	<0.5	<0.5	<0.5								
		BH2B_2149_15.75	23-01-2026	4081709	4081709_10	15.75		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.8		<1.0	<0.5	<0.5	<0.5								
		BH2B_2149 22.10	27-01-2026	4084844	4084844_2	22.1		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.8		<1.0	<0.5	<0.5	<0.5								
		BH2B_2149 26.45	27-01-2026	4084844	4084844_4	26.45		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.7		<1.0	<0.5	<0.5	<0.5								
		BH2B_2149_35.85	28-01-2026	4084844	4084844_10	35.85		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.7		<1.0	<0.5	<0.5	<0.5								
		BH2B_2149_37.00	28-01-2026	4084844	4084844_11	37		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.8		<1.0	<0.5	<0.5	<0.5								
Statistics																																			
Minimum Concentration							<0.08	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013
Maximum Concentration							<0.11	<0.5	<0.019	<0.5	<0.5	<0.5	<0.019	<0.019	<0.5	<0.5	<1	<0.5	<1	<2	<1	<0.9	<0.019	<1	<0.5	<0.5	<0.5	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019
Average Concentration *							0.042	0.18	0.0074	0.18	0.18	0.18	0.0074	0.0074	0.18	0.18	0.34	0.18	0.34	0.67	0.34	0.27	0.0074	0.34	0.18	0.18	0.18	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074
Standard Deviation *							0.0052	0.11	0.00094	0.11	0.11	0.11	0.00094	0.00094	0.11	0.11	0.22	0.11	0.22	0.45	0.22	0.17	0.00094	0.22	0.11	0.11	0.11	0.00094	0.00094	0.00094	0.00094	0.00094	0.00094	0.00094
95% UCL (Student's-t) *							0.0451	0.208	0.00792	0.208	0.208	0.208	0.00792	0.00792	0.208	0.208	0.414	0.208	0.414	0.827	0.414	0.317	0.00792	0.414	0.208	0.208	0.208	0.00792	0.00792	0.00792	0.00792	0.00792	0.00792	0.00792

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards
Ministry for the Environment, 2011, SCS(health) - Commercial / industrial outdoor worker (unpaved)
2013, NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil

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					Organophosphate Pesticides										Particulates		Pesticides								
					Azinphos-methyl	Chlorpyriphos	Chlorpyriphos-methyl	Diazinon	Dichlorvos	Dimethoate	Malathion	Methamidophos	Parathion-methyl	Naled (Dibrom)	Parathion	Ash	Dry Matter	Deltamethrin & Tralomethrin	Carbaryl	Carbazole	Carbofuran	Cyhalothrin/lorate	Cypermethrins (total)	Permethrin	Pirimicarb	Pirimiphos-methyl
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	g/100g dry wt	g/100g as rcvd	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					0.16	0.08	0.08	0.04	0.08	0.16	0.08	0.4	0.08	0.4	0.08			0.08	0.08	0.5	0.08	0.08	0.19	0.03	0.08	0.08
SCS(health) - Commercial / industrial outdoor worker (unpaved)																										
MfE (2011) Tier 1 Commercial / Industrial, SILTY CLAY																										
>=1m, <4m																										
>=4m																										
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil						2,000																				
ANZECC 2000 Sediment ISQC-High																										
ANZECC 2000 Sediment ISQC-Low																										

Lab Name	Location Code	Field ID	Date	Lab Report Number	Sample Code	Depth (mbgl)																				
Potential Sheep Dip Site (Mayflower Farm)	2B_SS01	2B_SS01 0.1	14-10-2025	4008719	4008719_2	0.1	<0.16	<0.08	<0.08	<0.04	<0.09	<0.16	<0.08	<0.4	<0.08	<0.4	<0.08		72	<0.08	<0.08		<0.08	<0.08	<0.19	<0.03	<0.08	<0.08
	2B_SS02	2B_SS02 0.1	14-10-2025	4008719	4008719_3	0.1																				
	2B_SS03	2B_SS03 0.1	14-10-2025	4008719	4008719_4	0.1																				
	2B_SS04	2B_SS04 0.1	14-10-2025	4008719	4008719_5	0.1																				
	2B_SS05	2B_SS05 0.1	14-10-2025	4008719	4008719_6	0.1	<0.2	<0.10	<0.10	<0.05	<0.10	<0.2	<0.10	<0.5	<0.10	<0.5	<0.10		56	<0.10	<0.10		<0.10	<0.10	<0.3	<0.03	<0.10	<0.10
	BH2B_1149	BH2B_1149 0.1	14-10-2025	4008719	4008719_1	0.1																				
Plant Nursery Site (The Waipu Land Company)	BH2B_1104	BH2B_1104 0.1	14-10-2025	4008719	4008719_13	0.1	<0.15	<0.08	<0.08	<0.04	<0.09	<0.15	<0.08	<0.4	<0.08	<0.4	<0.08		74	<0.08	<0.08		<0.08	<0.08	<0.18	<0.03	<0.08	<0.08
		BH2B_1104 0.4	14-10-2025	4008719	4008719_14	0.4	<0.15	<0.08	<0.08	<0.04	<0.09	<0.15	<0.08	<0.4	<0.08	<0.4	<0.08		77	<0.08	<0.08		<0.08	<0.08	<0.18	<0.03	<0.08	<0.08
		BH2B_1104 1.0	14-10-2025	4008719	4008719_15	1	<0.15	<0.08	<0.08	<0.04	<0.09	<0.15	<0.08	<0.4	<0.08	<0.4	<0.08		74	<0.08	<0.08		<0.08	<0.08	<0.18	<0.03	<0.08	<0.08
	BH2B_1105	BH2B_1105 0.1	14-10-2025	4008719	4008719_10	0.1	<0.3	<0.11	<0.11	<0.06	<0.11	<0.3	<0.11	<0.6	<0.11	<0.6	<0.11		52	<0.11	<0.11		<0.11	<0.11	<0.3	<0.03	<0.11	<0.11
		BH2B_1105 0.4	14-10-2025	4008719	4008719_11	0.4	<0.16	<0.08	<0.08	<0.04	<0.09	<0.16	<0.08	<0.4	<0.08	<0.4	<0.08		71	<0.08	<0.08		<0.08	<0.08	<0.19	<0.03	<0.08	<0.08
		BH2B_1105 0.6	14-10-2025	4008719	4008719_12	0.6	<0.16	<0.08	<0.08	<0.04	<0.09	<0.16	<0.08	<0.4	<0.08	<0.4	<0.08		68	<0.08	<0.08		<0.08	<0.08	<0.2	<0.03	<0.08	<0.08
	BH2B_1140	BH2B_1140 0.1	14-10-2025	4008719	4008719_7	0.1	<0.15	<0.08	<0.08	<0.04	<0.09	<0.15	<0.08	<0.4	<0.08	<0.4	<0.08		74	<0.08	<0.08		<0.08	<0.08	<0.18	<0.03	<0.08	<0.08
		BH2B_1140 0.5	14-10-2025	4008719	4008719_8	0.5	<0.15	<0.08	<0.08	<0.04	<0.09	<0.15	<0.08	<0.4	<0.08	<0.4	<0.08		74	<0.08	<0.08		<0.08	<0.08	<0.18	<0.03	<0.08	<0.08
		BH2B_1140 1.0	14-10-2025	4008719	4008719_9	1	<0.15	<0.08	<0.08	<0.04	<0.09	<0.15	<0.08	<0.4	<0.08	<0.4	<0.08		73	<0.08	<0.08		<0.08	<0.08	<0.18	<0.03	<0.08	<0.08
Accidental Discovery Site	BH2B_1160	BH2B_1160 1.40m	10-10-2025	4006009	4006009_1	1.4													69								
		BH2B_1160 10.70m	10-10-2025	4006009	4006009_2	10.7													79								
		BH2B_1160 16.00m	10-10-2025	4006009	4006009_3	16													76								
		BH2B_1160 23m	13-10-2025	4009250	4009250_1	23												96	82								
		BH2B_1160 28m	13-10-2025	4009250	4009250_2	28												96	74								
	BH2B_2101	BH2B_2101 7.3	13-01-2026	4073451	4073451_5	7.3												97	87		<0.5						
		BH2B_2101 16	13-01-2026	4073451	4073451_12	16												98	88		<0.5						
		BH2B_2101 20.0	14-01-2026	4076439	4076439_3	20												97	84		<0.5						
		BH2B_2101 21.4	14-01-2026	4076439	4076439_4	21.4												98	80		<0.5						
		BH2B_2101 24.0	14-01-2026	4076439	4076439_6	24												98	85		<0.5						
		BH2B_2101 45.0	16-01-2026	4076439	4076439_20	45												97	83		<0.5						
		BH2B_2101 49.7	16-01-2026	4076439	4076439_23	49.7												97	84		<0.5						
	BH2B_2147	BH2B_2147 4.95	30-01-2026	4086908	4086908_4	4.95													80		<0.5						
		BH2B_2147 16.95	02-02-2026	4091264	4091264_3	16.95													78		<0.5						
		BH2B_2147 32.90	04-02-2026	4091264	4091264_12	32.9													85		<0.5						
		BH2B_2147 34.80	04-02-2026	4091264	4091264_13	34.8													82		<0.5						
	BH2B_2148	2B_2148 1.5	16-12-2025	4059456	4059456_20	1.5													80								
		2B_2148 4.6	15-12-2025	4059456	4059456_1	4.6													83								
		2B_2148 6.0	15-12-2025	4059456	4059456_3	6												95	84		<0.5						
		2B_2148 9.5	15-12-2025	4059456	4059456_7	9.5												96	82		<0.5						
		2B_2148 13.4	15-12-2025	4059456	4059456_11	13.4												95	85		<0.5						
		2B_2148 15.5	16-12-2025	4059456	4059456_13	15.5												95	82		<0.5						
		2B_2148 20.5	16-12-2025	4059456	4059456_18	20.5												95	86		<0.5						
		BH2B_2148/24.0	17-12-2025	4061277	4061277_23	24												96	85		<0.5						
		BH2B_2148/41.0	17-12-2025	4061277	4061277_13	41												96	87		<0.5						
		BH2B_2148/45.5	17-12-2025	4061277	4061277_17	45.5												96	87		<0.5						
	BH2B_2149	BH2B_2149_3.65	22-01-2026	4081709	4081709_2	3.65													68		<0.5						
		BH2B_2149_15.75	23-01-2026	4081709	4081709_10	15.75													80		<0.5						
		BH2B_2149 22.10	27-01-2026	4084844	4084844_2	22.1													76		<0.5						
		BH2B_2149 26.45	27-01-2026	4084844	4084844_4	26.45													85		<0.5						
		BH2B_2149_35.85	28-01-2026	4084844	4084844_10	35.85													79		<0.5						
		BH2B_2149_37.00	28-01-2026	4084844	4084844_11	37													83		<0.5						

Statistics																								
Minimum Concentration	<0.15	<0.08	<0.08	<0.04	<0.09	<0.15	<0.08	<0.4	<0.08	<0.4	<0.08	95	52	<0.08	<0.08	<0.5	<0.08	<0.08	<0.18	<0.03	<0.08	<0.08
Maximum Concentration	<0.3	<0.11	<0.11	<0.06	<0.11	<0.3	<0.11	<0.6	<0.11	<0.6	<0.11	98	89	<0.11	<0.11	<0.5	<0.11	<0.11	<0.3	<0.03	<0.11	<0.11
Average Concentration *	0.085	0.042	0.042	0.021	0.046	0.085	0.042	0.21	0.042	0.21	0.042	96	79	0.042	0.042	0.25	0.042	0.042	0.1	0.015	0.042	0.042
Standard Deviation *	0.023	0.0052	0.0052	0.0032	0.0032	0.023	0.0052	0.032	0.0052	0.032	0.0052	1.1	7.8	0.0052	0.0052	0	0.0052	0.0052	0.024	0	0.0052	0.0052
95% UCL (Student's-t) *	0.0978	0.0451	0.0451	0.0231	0.0481	0.0978	0.0451	0.231	0.0451	0.231	0.0451	96.8	80.44	0.0451	0.0451	0.25	0.0451	0.0451	0.116	0.015	0.0451	0.0451

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards
Ministry for the Environment, 2011, SCS(health) - Commercial / industrial outdoor worker (unpaved)
2013, NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil

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									Unassigned									E-Nitrobenzenes	Explosives		Physicochemical parameters	Solvents				
									Tau-fluvalinate	[(OMTB)2S-(bis(cyclohexylmethyltin) benzotriazole)Butanol]	Terbumeton	Terbuthylazine-desethyl	Thiabendazole	Tralfluanid	Total DDT Isomers	Asure	Baythroid	Paclobutrazol	Pyriproxyfen	Tebuconazole	Terbutylazine	Triazophos	Nitrobenzene	2,4-Dinitrotoluene	2,6-Dinitrotoluene	Organic Matter	Methyl Ethyl Ketone	Methyl iso-butyl ketone	Acetone	Isophorone	Methyl-t-butyl ether
									mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg dry wt	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	g/100g dry wt	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EOL									0.06	0.16	0.08	0.08	0.4	0.04	0.09	0.08	0.1	0.08	0.08	0.08	0.04	0.08	0.5	1	1					0.5	
SCS(health) - Commercial / industrial outdoor worker (unpaved)																															
MfE (2011) Tier 1 Commercial / industrial, SILTY CLAY																															
>=1m, <4m																															
>=4m																															
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil																															
ANZECC 2000 Sediment ISQC-High																															
ANZECC 2000 Sediment ISQC-Low																															
Lab Name	**Location Code**	**Field ID**	**Date**	**Lab Report Number**	**Sample Code**	**Depth (mbgl)**																									
Potential Sheep Dip Site (Mayflower Farm)	2B_SS01	2B_SS01 0.1	14-10-2025	4008719	4008719_2	0.1	<0.06	<0.16	<0.08	<0.08	<0.4	<0.04	<0.09	<0.08	<0.10	<0.08	<0.08	<0.08	<0.04	<0.08										
	2B_SS02	2B_SS02 0.1	14-10-2025	4008719	4008719_3	0.1																									
	2B_SS03	2B_SS03 0.1	14-10-2025	4008719	4008719_4	0.1																									
	2B_SS04	2B_SS04 0.1	14-10-2025	4008719	4008719_5	0.1																									
	2B_SS05	2B_SS05 0.1	14-10-2025	4008719	4008719_6	0.1	<0.07	<0.2	<0.10	<0.10	<0.5	<0.05	<0.11	<0.10	<0.12	<0.10	<0.10	<0.10	<0.09	<0.10										
	BH2B_1149	BH2B_1149 0.1	14-10-2025	4008719	4008719_1	0.1																									
Plant Nursery Site (The Waipu Land Company)	BH2B_1104	BH2B_1104 0.1	14-10-2025	4008719	4008719_13	0.1	<0.06	<0.15	<0.08	<0.08	<0.4	<0.04	<0.08	<0.08	<0.09	<0.08	<0.08	<0.08	<0.04	<0.08										
		BH2B_1104 0.4	14-10-2025	4008719	4008719_14	0.4	<0.05	<0.15	<0.08	<0.08	<0.4	<0.04	<0.08	<0.08	<0.09	<0.08	<0.08	<0.08	<0.04	<0.08										
		BH2B_1104 1.0	14-10-2025	4008719	4008719_15	1	<0.06	<0.15	<0.08	<0.08	<0.4	<0.04	<0.09	<0.08	<0.09	<0.08	<0.08	<0.08	<0.04	<0.08										
	BH2B_1105	BH2B_1105 0.1	14-10-2025	4008719	4008719_10	0.1	<0.08	<0.3	<0.11	<0.11	<0.6	<0.06	<0.12	<0.11	<0.13	<0.11	<0.11	<0.11	<0.06	<0.11										
		BH2B_1105 0.4	14-10-2025	4008719	4008719_11	0.4	<0.06	<0.16	<0.08	<0.08	<0.4	<0.04	<0.09	<0.08	<0.10	<0.08	<0.08	<0.08	<0.04	<0.08										
		BH2B_1105 0.6	14-10-2025	4008719	4008719_12	0.6	<0.06	<0.16	<0.08	<0.08	<0.4	<0.04	<0.09	<0.08	<0.10	<0.08	<0.08	<0.08	<0.04	<0.08										
	BH2B_1140	BH2B_1140 0.1	14-10-2025	4008719	4008719_7	0.1	<0.06	<0.15	<0.08	<0.08	<0.4	<0.04	<0.08	<0.08	<0.09	<0.08	<0.08	<0.08	<0.04	<0.08										
		BH2B_1140 0.5	14-10-2025	4008719	4008719_8	0.5	<0.06	<0.15	<0.08	<0.08	<0.4	<0.04	<0.08	<0.08	<0.09	<0.08	<0.08	<0.08	<0.04	<0.08										
		BH2B_1140 1.0	14-10-2025	4008719	4008719_9	1	<0.06	<0.15	<0.08	<0.08	<0.4	<0.04	<0.08	<0.08	<0.09	<0.08	<0.08	<0.08	<0.04	<0.08										
Accidental Discovery Site	BH2B_1160	BH2B_1160 1.40m	10-10-2025	4006009	4006009_1	1.4																					<5	<1.0	<5		<0.03
		BH2B_1160 10.70m	10-10-2025	4006009	4006009_2	10.7																					<4	<0.8	<4		<0.03
		BH2B_1160 16.00m	10-10-2025	4006009	4006009_3	16																					<5	<0.9	<5		<0.03
		BH2B_1160 23m	13-10-2025	4009250	4009250_1	23																				4.4	<4	<0.8	<4		<0.03
		BH2B_1160 28m	13-10-2025	4009250	4009250_2	28																				3.8	<5	<0.9	<5		<0.03
	BH2B_2101	BH2B_2101 7.3	13-01-2026	4073451	4073451_5	7.3															<0.5	<1.0	<1.0	2.5					<0.5	
		BH2B_2101 16	13-01-2026	4073451	4073451_12	16															<0.5	<1.0	<1.0	1.89					<0.5	
		BH2B_2101 20.0	14-01-2026	4076439	4076439_3	20															<0.5	<1.0	<1.0	2.8					<0.5	
		BH2B_2101 21.4	14-01-2026	4076439	4076439_4	21.4															<0.5	<1.0	<1.0	2.4					<0.5	
		BH2B_2101 24.0	14-01-2026	4076439	4076439_6	24															<0.5	<1.0	<1.0	2.5					<0.5	
		BH2B_2101 45.0	16-01-2026	4076439	4076439_20	45															<0.5	<1.0	<1.0	3.1					<0.5	
		BH2B_2101 49.7	16-01-2026	4076439	4076439_23	49.7															<0.5	<1.0	<1.0	2.5					<0.5	
	BH2B_2147	BH2B_2147 4.95	30-01-2026	4086908	4086908_4	4.95															<0.5	<1	<1						<0.5	
		BH2B_2147 16.95	02-02-2026	4091264	4091264_3	16.95															<0.5	<1.0	<1.0						<0.5	
		BH2B_2147 32.90	04-02-2026	4091264	4091264_12	32.9															<0.5	<1.0	<1.0						<0.5	
		BH2B_2147_34.80	04-02-2026	4091264	4091264_13	34.8															<0.5	<1.0	<1.0						<0.5	
	BH2B_2148	2B_2148 1.5	16-12-2025	4059456	4059456_20	1.5																									
		2B_2148 4.6	15-12-2025	4059456	4059456_1	4.6																									
		2B_2148 6.0	15-12-2025	4059456	4059456_3	6															<0.5	<1.0	<1.0	4.8					<0.5	
		2B_2148 9.5	15-12-2025	4059456	4059456_7	9.5															<0.5	<1.0	<1.0	4.3					<0.5	
		2B_2148 13.4	15-12-2025	4059456	4059456_11	13.4															<0.5	<1.0	<1.0	4.6					<0.5	
		2B_2148 15.5	16-12-2025	4059456	4059456_13	15.5															<0.5	<1.0	<1.0	4.5					<0.5	
		2B_2148 20.5	16-12-2025	4059456	4059456_18	20.5															<0.5	<1.0	<1.0	4.8					<0.5	
		BH2B_2148/24.0	17-12-2025	4061277	4061277_23	24															<0.5	<1.0	<1.0	4.1					<0.5	
		BH2B_2148/41.0	17-12-2025	4061277	4061277_13	41															<0.5	<1.0	<1.0	4.1					<0.5	
		BH2B_2148/45.5	17-12-2025	4061277	4061277_17	45.5															<0.5	<1.0	<1.0	4.3					<0.5	
	BH2B_2149	BH2B_2149_3.65	22-01-2026	4081709	4081709_2	3.65															<0.5	<1.0	<1.0						<0.5	
		BH2B_2149_15.75	23-01-2026	4081709	4081709_10	15.75															<0.5	<1.0	<1.0						<0.5	
		BH2B_2149_22.10	27-01-2026	4084844	4084844_2	22.1															<0.5	<1.0	<1.0						<0.5	
		BH2B_2149_26.45	27-01-2026	4084844	4084844_4	26.45															<0.5	<1.0	<1.0						<0.5	
		BH2B_2149_35.85	28-01-2026	4084844	4084844_10	35.85															<0.5	<1.0	<1.0						<0.5	
		BH2B_2149_37.00	28-01-2026	4084844	4084844_11	37															<0.5	<1.0	<1.0						<0.5	
Statistics																															
Minimum Concentration							<0.05	<0.15	<0.08	<0.08	<0.4	<0.04	<0.08	<0.08	<0.09	<0.08	<0.08	<0.08	<0.04	<0.08	<0.5	<0.5	<0.5	1.89	<4	<0.8	<4	<0.5	<0.03		
Maximum Concentration							<0.08	<0.3	<0.11	<0.11	<0.6	<0.06	<0.12	<0.11	<0.13	<0.11	<0.11	<0.11	<0.06	<0.11	<0.5	<1	<1	4.8	<5	<1	<5	<0.5	<0.03		
Average Concentration *							0.031	0.085	0.042	0.042	0.21	0.021	0.045	0.042	0.05	0.042	0.042	0.042	0.021	0.042	0.25	0.47	0.47	3.6	2.3	0.44	2.3	0.25	0.015		
Standard Deviation *							0.0038	0.023	0.0052	0.0052	0.032	0.0032	0.0067	0.0052	0.0069	0.0052	0.0052	0.0052	0.0032	0.0052	0	0.079	0.079	0.99	0.27	0.042	0.27	0	0		
95% UCL (Student's-t) *							0.033	0.0978	0.0451	0.0451	0.231	0.0231	0.0487	0.0451	0.0533	0.0451	0.0451	0.0451	0.0231	0.0451	0.25	0.5	0.5	4.031	2.561	0.48	2.561	0.25	0.015		

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards
Ministry for the Environment, 2011, SCS(health) - Commercial / industrial outdoor worker (unpaved)
2013, NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil

	Heavy Metals								Sample Quality Parameters	Total Petroleum Hydrocarbons			
	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	Sulphur (as S)	TPH C15 - C36 fraction	TPH C7 - C36 fraction	TPH C7 - C9 fraction	TPH C10 - C14 fraction
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	g/100g dry wt	mg/kg	mg/kg	mg/kg	mg/kg
EQL	2 - 4	0.1 - 0.2	0.2 - 2	0.2 - 2	0.2 - 2	0.1 - 0.2	0.2 - 2	0.2 - 4		40	80	20	20
Landcare (2023) Predicted Background (ID 8715) - Recent Soil - Upper Range (Mayflower)	50	0.2	765	22.0	11.4		590	62.0					
Landcare (2023) Predicted Background (ID 26517) - Recent Soil - Upper Range (Plant Nursery BH1140, BH1104)	50	0.2	15.5	15.7	11.4		9.5	47.5					
Landcare (2023) Predicted Background (ID 27516) - Recent Soil - Upper Range (Plant Nursery BH1102)	50	0.2	15.5	15.7	11.4		9.5	47.5					
Landcare (2023) Predicted Background (ID 23536) - Recent Soil - Upper Range (Accidental Discovery Site)	8	0.2	765	23.5	11.4		590	47.5					
WasteMINZ (2022) Class 5 Clean Fill Organic WAC												110	58
WasteMINZ (2022) Class 4 Controlled Fill WAC	17	0.8	150	220	160	0.7	35	190				110	58
WasteMINZ (2022) Class 3 Managed Fill WAC	140	10	150	280	460	3	320	1,200				200	600
MfE Class A Waste Acceptance Criteria (WAC)	100	20		100	100	4	200	200					
MfE Class B Waste Acceptance Criteria (WAC)	10	2		10	10	0.4	20	20					

Lab Name	Location Code	Field ID	Date	Lab Report Number	Sample Code	Depth (mbgl)												
Potential Sheep Dip Site (Mayflower Farms)	2B_SS01	2B_SS01 0.1	14-10-2025	4008719	4008719_2	0.1	30	0.19	32	57	11.50	<0.10	17	97					
	2B_SS02	2B_SS02 0.1	14-10-2025	4008719	4008719_3	0.1	8	0.72	15	32	9.0	<0.10	15	170					
	2B_SS03	2B_SS03 0.1	14-10-2025	4008719	4008719_4	0.1	8	0.52	13	44	10.50	<0.10	18	170					
	2B_SS04	2B_SS04 0.1	14-10-2025	4008719	4008719_5	0.1	8	0.33	15	48	55	<0.10	18	194					
"	2B_SS05	2B_SS05 0.1	14-10-2025	4008719	4008719_6	0.1	6	0.43	13	35	11.8	<0.10	13	123					
	BH2B_1149	BH2B_1149 0.1	14-10-2025	4008719	4008719_1	0.1	6	0.18	14	37	13.1	<0.10	20	71					
Plant Nursery Site (The Waipu Land Company)	BH2B_1104	BH2B_1104 0.1	14-10-2025	4008719	4008719_13	0.1	4	<0.10	8	8	11.7	0.15	3	25					
		BH2B_1104 0.4	14-10-2025	4008719	4008719_14	0.4	3	<0.10	7	4	8.1	0.17	2	16					
		BH2B_1104 1.0	14-10-2025	4008719	4008719_15	1	3	<0.10	12	6	11.5	0.13	2	17					
	BH2B_1105	BH2B_1105 0.1	14-10-2025	4008719	4008719_10	0.1	4	0.44	9	8	17.0	0.13	3	32					
		BH2B_1105 0.4	14-10-2025	4008719	4008719_11	0.4	4	<0.10	10	5	15.7	0.14	4	37					
		BH2B_1105 0.6	14-10-2025	4008719	4008719_12	0.6	4	<0.10	11	6	19.0	<0.10	5	47					
	BH2B_1140	BH2B_1140 0.1	14-10-2025	4008719	4008719_7	0.1	3	<0.10	8	6	15.6	0.11	2	27					
		BH2B_1140 0.5	14-10-2025	4008719	4008719_8	0.5	4	<0.10	9	8	15.7	<0.10	3	33					
		BH2B_1140 1.0	14-10-2025	4008719	4008719_9	1	28	<0.10	7	4	7.10	0.18	<2	16					
Accidental Discovery Site	BH2B_1160	BH2B_1160 1.40m	10-10-2025	4006009	4006009_1	1.4	25	0.17	17	590	142	<0.10	5	210		<40	<80	<20	<20
		BH2B_1160 10.70m	10-10-2025	4006009	4006009_2	10.7										83	159	49	27
		BH2B_1160 16.00m	10-10-2025	4006009	4006009_3	16										42	125	56	27
		BH2B_1160 23m	13-10-2025	4009250	4009250_1	23	6	0.19	6	14	9.7	<0.10	19	97		51	173	34	48
		BH2B_1160 28m	13-10-2025	4009250	4009250_2	28	7	0.18	7	13	8.9	<0.10	17	95		67	199	52	81
	BH2B_2101	BH2B_2101 7.3	13-01-2026	4073451	4073451_5	7.3	3	<0.10	7	15	7.8	<0.10	23	55	0.060	<40	<80	<20	<20
		BH2B_2101 16	13-01-2026	4073451	4073451_12	16	7	0.25	5	17	10.10	<0.10	26	270	0.150	<40	<80	<20	<20
		BH2B_2101 20.0	14-01-2026	4076439	4076439_3	20	<2	<0.10	7	24	6.4	<0.10	18	18	0.060	<40	<80	<20	<20
		BH2B_2101 21.4	14-01-2026	4076439	4076439_4	21.4	4	<0.10	8	68	11.3	<0.10	37	85	0.090	<40	<80	<20	<20
		BH2B_2101 24.0	14-01-2026	4076439	4076439_6	24	<2	<0.10	10	32	7.2	<0.10	22	26	<0.010	<40	<80	<20	<20
		BH2B_2101 45.0	16-01-2026	4076439	4076439_20	45	3	0.17	8	20	8.6	<0.10	18	63	0.53	<40	<80	<20	<20
		BH2B_2101 49.7	16-01-2026	4076439	4076439_23	49.7	4	0.12	5	31	8.1	<0.10	18	94	0.040	<40	<80	<20	<20
	BH2B_2147	BH2B_2147 4.95	30-01-2026	4086908	4086908_4	4.95	<2	<0.2	8	65	7.7	<0.2	21	39		<40	<80	<20	<20
		BH2B_2147 16.95	02-02-2026	4091264	4091264_3	16.95	5	<0.2	8	73	6.9	<0.2	24	33		<40	<80	<20	<20
		BH2B_2147 32.90	04-02-2026	4091264	4091264_12	32.9	3	<0.10	6	34	6.2	<0.10	19	50		<40	<80	<20	<20
		BH2B_2147 34.80	04-02-2026	4091264	4091264_13	34.8	<2	<0.10	13	17	4.5	<0.10	14	45		<40	<80	<20	<20
	BH2B_2148	2B_2148 1.5	16-12-2025	4059456	4059456_20	1.5	7	0.30	10	14	9.8	<0.10	15	68		<40	<80	<20	<20
		2B_2148 4.6	15-12-2025	4059456	4059456_1	4.6	7	0.17	7	14	10.0	<0.10	20	62		<40	<80	<20	<20
		2B_2148 6.0	15-12-2025	4059456	4059456_3	6	7	0.20	10	13	7.9	<0.10	20	66	1.00	<40	<80	<20	<20
		2B_2148 9.5	15-12-2025	4059456	4059456_7	9.5	7	0.25	12	14	8.7	<0.10	22	78	1.00	<40	<80	<20	<20
		2B_2148 13.4	15-12-2025	4059456	4059456_11	13.4	7	0.22	9	13	8.3	<0.10	18	73	0.98	<40	<80	<20	<20
		2B_2148 15.5	16-12-2025	4059456	4059456_13	15.5	8	0.20	14	14	9.2	<0.10	20	77	0.94	169	191	<20	<20
		2B_2148 20.5	16-12-2025	4059456	4059456_18	20.5	8	0.17	8	13	8.6	<0.10	18	65	1.00	<40	<80	<20	<20
		BH2B_2148/24.0	17-12-2025	4061277	4061277_23	24	5	0.20	8	12	8.2	<0.10	17	67	1.00	<40	<80	<20	<20
		BH2B_2148/41.0	17-12-2025	4061277	4061277_13	41	5	0.27	9	15	7.7	<0.10	19	83	0.98	<40	<80	<20	<20
		BH2B_2148/45.5	17-12-2025	4061277	4061277_17	45.5	5	0.31	10	14	7.8	<0.10	18	78	0.31	<40	<80	<20	<20
	BH2B_2149	BH2B_2149_3.65	22-01-2026	4081709	4081709_2	3.65	7	0.86	8	12	8.3	<0.10	35	85		<40	<80	<20	<20
		BH2B_2149_15.75	23-01-2026	4081709	4081709_10	15.75	7	0.22	8	12	7.9	<0.10	18	69		<40	<80	<20	<20
		BH2B_2149_22.10	27-01-2026	4084844	4084844_2	22.1	6	0.24	8	17	8.5	<0.10	18	70		<40	<80	<20	<20
		BH2B_2149_26.45	27-01-2026	4084844	4084844_4	26.45	7	0.21	8	18	8.5	<0.10	20	85		<40	<80	<20	<20
		BH2B_2149_35.85	28-01-2026	4084844	4084844_10	35.85	7	0.17	8	13	9.4	<0.10	20	72		<40	<80	<20	<20
		BH2B_2149_37.00	28-01-2026	4084844	4084844_11	37	3	0.18	8	14	9.0	<0.10	21	78		<40	<80	<20	<20

Statistics													
Minimum Concentration	2	<0.1	5	4	3.4	<0.1	2	16	<0.01	<40	<80	<20	<20
Maximum Concentration	30	0.86	32	590	142	<0.2	37	220	1	169	199	56	88
Average Concentration *	6	0.19	9.7	37	14	0.066	16	69	0.54	32	59	14	15
Standard Deviation *	5.1	0.16	4.3	84	20	0.035	8.1	45	0.45	29	47	12	18
95% UCL (Student's-t) *	7.515	0.231	10.94	58.88	19.68	0.076	18.25	82.68	0.746	38.56	75.01	18.77	21.28

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards

Landcare Research, 2023, Landcare (2023) Predicted Background (ID 8715, 26517, 27156, 23536) - Recent Soil - Upper Range
Ministry for the Environment, 2004, MfE Class A Waste Acceptance Criteria (WAC)
Ministry for the Environment, 2004, MfE Class B Waste Acceptance Criteria (WAC)

						Polycyclic aromatic hydrocarbons																						
						Benzo(a)pyrene (BaP) toxicity equivalency factor (TEF) NES	Benzo(a)pyrene Toxic equivalence (TEF)	Benzo(b)fluoranthen e + Benzo(j)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthrazen e	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Perylene	Phenanthrene	Pyrene	PAH (Sum of Common 16 PAHs)	1-Methylnaphthalene	2-Methylnaphthalene	Benzo(e)pyrene	Dibenzanthalenes (1 + 2)
						mg/kg TEQ	mg/kg	mg/kg dry w	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL						0.0049	0.0049	0.015	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.05 - 9	0.002	0.002	0.002	0.5
Landcare (2023) Predicted Background (ID 8715) - Recent Soil - Upper Range (Mayflower)																												
Landcare (2023) Predicted Background (ID 26517) - Recent Soil - Upper Range (Plant Nursery BH1140, BH1104)																												
Landcare (2023) Predicted Background (ID 27156) - Recent Soil - Upper Range (Plant Nursery BH1102)																												
Landcare (2023) Predicted Background (ID 23536) - Recent Soil - Upper Range (Accidental Discovery Site)																												
WasteMINZ (2022) Class 5 Clean Fill Organic WAC												2																
WasteMINZ (2022) Class 4 Controlled Fill WAC												2.8																
WasteMINZ (2022) Class 3 Managed Fill WAC												125																
MfE Class A Waste Acceptance Criteria (WAC)																												
MfE Class B Waste Acceptance Criteria (WAC)																												
Lab Name	**Location Code**	**Field ID**	**Date**	**Lab Report Number**	**Sample Code**	**Depth (mbgl)**																						
Potential Sheep Dip Site (Mayflower Farms)	2B_SS01	2B_SS01 0.1	14-10-2025	4008719	4008719_2	0.1																						
	2B_SS02	2B_SS02 0.1	14-10-2025	4008719	4008719_3	0.1																						
	2B_SS03	2B_SS03 0.1	14-10-2025	4008719	4008719_4	0.1																						
	2B_SS04	2B_SS04 0.1	14-10-2025	4008719	4008719_5	0.1																						
"	2B_SS05	2B_SS05 0.1	14-10-2025	4008719	4008719_6	0.1																						
	BH2B_1149	BH2B_1149 0.1	14-10-2025	4008719	4008719_1	0.1																						
Plant Nursery Site (The Waipu Land Company)	BH2B_1104	BH2B_1104 0.1	14-10-2025	4008719	4008719_13	0.1																						
		BH2B_1104 0.4	14-10-2025	4008719	4008719_14	0.4																						
		BH2B_1104 1.0	14-10-2025	4008719	4008719_15	1																						
	BH2B_1105	BH2B_1105 0.1	14-10-2025	4008719	4008719_10	0.1																						
		BH2B_1105 0.4	14-10-2025	4008719	4008719_11	0.4																						
		BH2B_1105 0.6	14-10-2025	4008719	4008719_12	0.6																						
	BH2B_1140	BH2B_1140 0.1	14-10-2025	4008719	4008719_7	0.1																						
		BH2B_1140 0.5	14-10-2025	4008719	4008719_8	0.5																						
		BH2B_1140 1.0	14-10-2025	4008719	4008719_9	1																						
Accidental Discovery Site	BH2B_1160	BH2B_1160 1.40m	10-10-2025	4006009	4006009_1	1.4	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014		<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.4	<0.014	<0.014	<0.014	
		BH2B_1160 10.70m	10-10-2025	4006009	4006009_2	10.7	<0.030	<0.030	<0.031	<0.031	<0.031	<0.031	<0.031	<0.031		<0.031	<0.031	<0.031	<0.031	<0.031	<0.031	<0.031	0.020	<0.031	<0.3	0.022	0.025	<0.031	
		BH2B_1160 16.00m	10-10-2025	4006009	4006009_3	16	<0.032	<0.032	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033		<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	0.018	<0.033	<0.4	0.028	0.028	<0.033	
		BH2B_1160 23m	13-10-2025	4009250	4009250_1	23	<0.029	<0.029	<0.032	<0.032	<0.032	<0.032	<0.032	<0.032		<0.032	<0.032	<0.032	<0.032	<0.032	<0.032	<0.032	<0.032	<0.032	<0.3	0.022	0.024	<0.032	
		BH2B_1160 28m	13-10-2025	4009250	4009250_2	28	<0.031	<0.031	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014		<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.4	0.022	0.022	<0.014	
	BH2B_2101	BH2B_2101 7.3	13-01-2026	4073451	4073451_5	7.3	<1.3	<1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			<0.5		<0.5
		BH2B_2101 16	13-01-2026	4073451	4073451_12	16	<1.3	<1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			<0.5		<0.5
		BH2B_2101 20.0	14-01-2026	4076439	4076439_3	20	<1.3	<1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			<0.5		<0.5
		BH2B_2101 21.4	14-01-2026	4076439	4076439_4	21.4	<1.3	<1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			<0.5		<0.5
		BH2B_2101 24.0	14-01-2026	4076439	4076439_6	24	<1.3	<1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			<0.5		<0.5
		BH2B_2101 45.0	16-01-2026	4076439	4076439_20	45	<1.3	<1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			<0.5		<0.5
		BH2B_2101 49.7	16-01-2026	4076439	4076439_23	49.7	<1.3	<1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			<0.5		<0.5
	BH2B_2147	BH2B_2147 4.95	30-01-2026	4086908	4086908_4	4.95	<1.3	<1.3	<0.5	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<9	<0.002	<0.002	<0.002	<0.5
		BH2B_2147 16.95	02-02-2026	4091264	4091264_1	16.95	<1.3	<1.3	<0.5	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<9	<0.002	<0.002	<0.002	<0.5
		BH2B_2147 32.90	04-02-2026	4091264	4091264_12	32.9	<0.0049	<0.0049	<0.5	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.05	<0.002	<0.002	<0.002	<0.5
		BH2B_2147 34.80	04-02-2026	4091264	4091264_13	34.8	<0.0049	<0.0049	<0.5	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.05	<0.002	<0.002	<0.002	<0.5
	BH2B_2148	2B_2148 1.5	16-12-2025	4059456	4059456_20	1.5																							
		2B_2148 4.6	15-12-2025	4059456	4059456_1	4.6																							
		2B_2148 6.0	15-12-2025	4059456	4059456_3	6	<1.3	<1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			<0.5		<0.5
		2B_2148 9.5	15-12-2025	4059456	4059456_7	9.5	<1.3	<1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			<0.5		<0.5
		2B_2148 13.4	15-12-2025	4059456	4059456_11	13.4	<1.3	<1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			<0.5		<0.5
		2B_2148 15.5	16-12-2025	4059456	4059456_13	15.5	<1.3	<1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			<0.5		<0.5
		2B_2148 20.5	16-12-2025	4059456	4059456_18	20.5	<1.3	<1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			<0.5		<0.5
		BH2B_2148/24.0	17-12-2025	4061277	4061277_23	24	<1.3	<1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			<0.5		<0.5
		BH2B_2148/41.0	17-12-2025	4061277	4061277_13	41	<1.3	<1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			<0.5		<0.5
		BH2B_2148/45.5	17-12-2025	4061277	4061277_17	45.5	<1.3	<1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			<0.5		<0.5
	BH2B_2149	BH2B_2149_3.65	22-01-2026	4081709	4081709_2	3.65	<0.035	<0.035	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015		<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	0.019	<0.4	<0.015	<0.015	<0.015	<0.5
		BH2B_2149_15.75	23-01-2026	4081709	4081709_10	15.75	<0.029	<0.029	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012		<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	0.023 <0.5	<0.3	<0.012	<0.012	<0.012	<0.5
		BH2B_2149_22.10	27-01-2026	4084844	4084844_2	22.1	<0.031	<0.031	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013		<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.4	<0.013	<0.013	<0.013	<0.5
		BH2B_2149_26.45	27-01-2026	4084844	4084844_4	26.45	<0.028	<0.028	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012		<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.3	<0.012	<0.012	<0.012	<0.5
		BH2B_2149_35.85	28-01-2026	4084844	4084844_10	35.85	<0.031	<0.031	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013		<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.4	0.019	0.015	<0.013	<0.5
		BH2B_2149_37.00	28-01-2026	4084844	4084844_11	37	<0.029	<0.029	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012		<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.3	0.019	0.013 <0.5	<0.012	<0.5
Statistics																												
Minimum Concentration						<0.0049	<0.0049	<0.012	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.05	<0.002	<0.002	<0.002	<0.5
Maximum Concentration						<1.3	<1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.002	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.02	<0.5	<9	0.028	<0.5	<0.015	<0.5
Average Concentration *						0.4	0.4	0.17	0.12	0.12	0.12	0.12	0.12	0.001	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.0058	0.12	1.4	0.0096	0.13	0.0044	0.25
Standard Deviation *						0.32	0.32	0.12	0.12	0.12	0.12	0.12	0.12	0	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.0055	0.12	2	0.0095	0.12	0.0028	0
95% UCL (Student's-t) *						0.474	0.474	0.198	0.166	0.166	0.166	0.166	0.166	0.001	0.166	0.166	0.166	0.166	0.166	0.166	0.166	0.166	0.00924	0.173	1.429	0.0156	0.174	0.00619	0.25

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards
Landcare Research, 2023, Landcare (2023) Predicted Background (ID 8715, 26517, 27156, 23536) - Recent Soil - Upper Range
Ministry for the Environment, 2004, MfE Class A Waste Acceptance Criteria (WAC)
Ministry for the Environment, 2004, MfE Class B Waste Acceptance Criteria (WAC)

						Monocyclic Aromatic Hydrocarbons									BTEXN					
						1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Isopropylbenzene	n-Butylbenzene	n-Propylbenzene	p-Isopropyltoluene	sec-Butylbenzene	Styrene	tert-Butylbenzene	Naphthalene	Benzene	Toluene	Ethylbenzene	Xylenes (m & p)	Xylenes (o)
						mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL															0.01					
Landcare (2023) Predicted Background (ID 8715) - Recent Soil - Upper Range (Mayflower)																				
Landcare (2023) Predicted Background (ID 26517) - Recent Soil - Upper Range (Plant Nursery BH1140, BH1104)																				
Landcare (2023) Predicted Background (ID 27516) - Recent Soil - Upper Range (Plant Nursery BH1102)																				
Landcare (2023) Predicted Background (ID 23536) - Recent Soil - Upper Range (Accidental Discovery Site)																				
WasteMINZ (2022) Class 5 Clean Fill Organic WAC																0.0054	1	1.1		
WasteMINZ (2022) Class 4 Controlled Fill WAC																0.11	19	10		
WasteMINZ (2022) Class 3 Managed Fill WAC																0.11	19	10		
MfE Class A Waste Acceptance Criteria (WAC)														120	260	10	2,000	1,000		
MfE Class B Waste Acceptance Criteria (WAC)														12	20	1	200	100		
Lab Name	**Location Code**	**Field ID**	**Date**	**Lab Report Number**	**Sample Code**	**Depth (mbgl)**														
Potential Sheep Dip Site (Mayflower Farms)	2B_SS01	2B_SS01_0.1	14-10-2025	4008719	4008719_2	0.1														
	2B_SS02	2B_SS02_0.1	14-10-2025	4008719	4008719_3	0.1														
	2B_SS03	2B_SS03_0.1	14-10-2025	4008719	4008719_4	0.1														
	2B_SS04	2B_SS04_0.1	14-10-2025	4008719	4008719_5	0.1														
	2B_SS05	2B_SS05_0.1	14-10-2025	4008719	4008719_6	0.1														
"	BH2B_1149	BH2B_1149_0.1	14-10-2025	4008719	4008719_1	0.1														
Plant Nursery Site (The Waipu Land Company)	BH2B_1104	BH2B_1104_0.1	14-10-2025	4008719	4008719_13	0.1														
		BH2B_1104_0.4	14-10-2025	4008719	4008719_14	0.4														
		BH2B_1104_1.0	14-10-2025	4008719	4008719_15	1														
	BH2B_1105	BH2B_1105_0.1	14-10-2025	4008719	4008719_10	0.1														
		BH2B_1105_0.4	14-10-2025	4008719	4008719_11	0.4														
		BH2B_1105_0.6	14-10-2025	4008719	4008719_12	0.6														
	BH2B_1140	BH2B_1140_0.1	14-10-2025	4008719	4008719_7	0.1														
		BH2B_1140_0.5	14-10-2025	4008719	4008719_8	0.5														
		BH2B_1140_1.0	14-10-2025	4008719	4008719_9	1														
Accidental Discovery Site	BH2B_1160	BH2B_1160 1.40m	10-10-2025	4006009	4006009_1	1.4	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.05	<0.03	<0.03	<0.03	<0.05	<0.03
		BH2B_1160 10.70m	10-10-2025	4006009	4006009_2	10.7	1.0	0.6	0.39	0.17	0.5	0.20	0.14	0.04	<0.03	0.06	0.03	0.47	1.1	2.9	0.7
							1.12	0.70	0.4	<0.3	0.55	0.3	<0.3	<0.3		<0.07	<0.2	0.5	1.16	3.5	0.76
		BH2B_1160 16.00m	10-10-2025	4006009	4006009_3	16	0.5	0.33	0.21	0.07	0.27	0.09	0.07	0.04	<0.03	<0.05	0.03	70	0.9	2.4	0.7
							0.54	0.4	0.3	<0.3	0.3	<0.3	<0.3	<0.3			<0.3		1.04	3.0	
		BH2B_1160 23m	13-10-2025	4009250	4009250_1	23	1.48	0.86	0.47	0.25	0.68	0.28	0.19	0.05	<0.03	<0.05	0.111	3.4	2.4	6.3	1.68
																0.12					
		BH2B_1160 28m	13-10-2025	4009250	4009250_2	28	1.41	0.83	0.46	0.26	0.66	0.27	0.18	0.06	<0.03	<0.07	0.14	3.0	2.1	5.6	1.54
																0.11					
	BH2B_2101	BH2B_2101_7.3	13-01-2026	4073451	4073451_5	7.3										<0.5					
		BH2B_2101_16	13-01-2026	4073451	4073451_12	16										<0.5					
		BH2B_2101_20.0	14-01-2026	4076439	4076439_3	20										<0.5					
		BH2B_2101_21.4	14-01-2026	4076439	4076439_4	21.4										<0.5					
		BH2B_2101_24.0	14-01-2026	4076439	4076439_6	24										<0.5					
		BH2B_2101_45.0	16-01-2026	4076439	4076439_20	45										<0.5					
		BH2B_2101_49.7	16-01-2026	4076439	4076439_23	49.7										<0.5					
	BH2B_2147	BH2B_2147_4.95	30-01-2026	4086908	4086908_4	4.95										<0.01					
		BH2B_2147_16.95	02-02-2026	4091264	4091264_3	16.95										<0.010					
		BH2B_2147_32.90	04-02-2026	4091264	4091264_12	32.9										<0.010					
		BH2B_2147_34.80	04-02-2026	4091264	4091264_13	34.8										<0.010					
	BH2B_2148	2B_2148_1.5	16-12-2025	4059456	4059456_20	1.5															
		2B_2148_4.6	15-12-2025	4059456	4059456_1	4.6															
		2B_2148_6.0	15-12-2025	4059456	4059456_3	6										<0.5					
		2B_2148_9.5	15-12-2025	4059456	4059456_7	9.5										<0.5					
		2B_2148_13.4	15-12-2025	4059456	4059456_11	13.4										<0.5					
		2B_2148_15.5	16-12-2025	4059456	4059456_13	15.5										<0.5					
		2B_2148_20.5	16-12-2025	4059456	4059456_18	20.5										<0.5					
		BH2B_2148/24.0	17-12-2025	4061277	4061277_23	24										<0.5					
		BH2B_2148/41.0	17-12-2025	4061277	4061277_13	41										<0.5					
		BH2B_2148/45.5	17-12-2025	4061277	4061277_17	45.5										<0.5					
	BH2B_2149	BH2B_2149_3.65	22-01-2026	4081709	4081709_2	3.65										<0.08					
		BH2B_2149_15.75	23-01-2026	4081709	4081709_10	15.75										<0.08					
		BH2B_2149_22.10	27-01-2026	4084844	4084844_2	22.1										<0.07					
		BH2B_2149_26.45	27-01-2026	4084844	4084844_4	26.45										<0.06					
		BH2B_2149_35.85	28-01-2026	4084844	4084844_10	35.85										<0.07					
		BH2B_2149_37.00	28-01-2026	4084844	4084844_11	37										<0.06					
Statistics																				
Minimum Concentration							<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.01	0.03	<0.03	<0.03	<0.05	<0.03
Maximum Concentration							1.48	0.86	0.47	<0.3	0.68	0.3	<0.3	<0.3	<0.03	<0.5	<0.3	3.4	2.4	6.3	1.68
Average Concentration *							0.87	0.53	0.32	0.15	0.42	0.19	0.13	0.072	0.015	0.12	0.085	1.4	1.2	3.4	0.9
Standard Deviation *							0.54	0.3	0.16	0.089	0.24	0.11	0.063	0.055	0	0.11	0.054	1.4	0.79	2.1	0.62
95% UCL (Student's-t) *							1.26	0.757	0.44	0.217	0.602	0.265	0.174	0.112	0.015	0.166	0.125	2.579	1.827	4.92	1.406

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards

Landcare Research, 2023, Landcare (2023) Predicted Background (ID 8715, 26517, 27156, 23536) - Recent Soil - Upper Range
Ministry for the Environment, 2004, MfE Class A Waste Acceptance Criteria (WAC)
Ministry for the Environment, 2004, MfE Class B Waste Acceptance Criteria (WAC)

					Volatile Organic Compounds																					
					1,1,1,2-Tetrachloroethane	1,1,2,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2-Trichloroethane	1,2,3-Trichloropropane	1,2-Dibromo-3-chloropropane	1,2-Dibromoethane	1,2-Dichloroethane	1,2-Dichloroethene	1,2-Dichloropropane	1,3-Dichloropropene	1,3-Dichloropropene	1,4-Dichlorobenzene	2,2-Dichloropropane	2-Chlorotoluene	4-Chlorotoluene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	Carbon disulfide
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL																										
Landcare (2023) Predicted Background (ID 8715) - Recent Soil - Upper Range (Mayflower)																										
Landcare (2023) Predicted Background (ID 26517) - Recent Soil - Upper Range (Plant Nursery BH1140, BH1104)																										
Landcare (2023) Predicted Background (ID 27156) - Recent Soil - Upper Range (Plant Nursery BH1102)																										
Landcare (2023) Predicted Background (ID 23536) - Recent Soil - Upper Range (Accidental Discovery Site)																										
WasteMINZ (2022) Class 5 Clean Fill Organic WAC																										
WasteMINZ (2022) Class 4 Controlled Fill WAC																										
WasteMINZ (2022) Class 3 Managed Fill WAC																										
MfE Class A Waste Acceptance Criteria (WAC)						1,000	4,000	10,000		60								20					20	200		60
MfE Class B Waste Acceptance Criteria (WAC)						100	400	1,000		0.4								2					0.2	20		6
Lab Name	**Location Code**	**Field ID**	**Date**	**Lab Report Number**	**Sample Code**	**Depth (mbgl)**																				
Potential Sheep Dip Site (Mayflower Farms)	2B_SS01	2B_SS01_0.1	14-10-2025	4008719	4008719_2	0.1																				
	2B_SS02	2B_SS02_0.1	14-10-2025	4008719	4008719_3	0.1																				
	2B_SS03	2B_SS03_0.1	14-10-2025	4008719	4008719_4	0.1																				
	2B_SS04	2B_SS04_0.1	14-10-2025	4008719	4008719_5	0.1																				
	2B_SS05	2B_SS05_0.1	14-10-2025	4008719	4008719_6	0.1																				
"	BH2B_1149	BH2B_1149_0.1	14-10-2025	4008719	4008719_1	0.1																				
Plant Nursery Site (The Waipu Land Company)	BH2B_1104	BH2B_1104_0.1	14-10-2025	4008719	4008719_13	0.1																				
		BH2B_1104_0.4	14-10-2025	4008719	4008719_14	0.4																				
		BH2B_1104_1.0	14-10-2025	4008719	4008719_15	1																				
	BH2B_1105	BH2B_1105_0.1	14-10-2025	4008719	4008719_10	0.1																				
		BH2B_1105_0.4	14-10-2025	4008719	4008719_11	0.4																				
		BH2B_1105_0.6	14-10-2025	4008719	4008719_12	0.6																				
	BH2B_1140	BH2B_1140_0.1	14-10-2025	4008719	4008719_7	0.1																				
		BH2B_1140_0.5	14-10-2025	4008719	4008719_8	0.5																				
		BH2B_1140_1.0	14-10-2025	4008719	4008719_9	1																				
Accidental Discovery Site	BH2B_1160	BH2B_1160 1.40m	10-10-2025	4006009	4006009_1	1.4	<0.03	<0.03	<0.03	<0.03	<0.05	<0.05	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.05	<0.05	<0.05
		BH2B_1160 10.70m	10-10-2025	4006009	4006009_2	10.7	<0.03	<0.03	<0.03	<0.03	<0.05	<0.05	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.05	<0.05	<0.05
		BH2B_1160 16.00m	10-10-2025	4006009	4006009_3	16	<0.03	<0.03	<0.03	<0.03	<0.05	<0.05	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.05	<0.05	<0.05
		BH2B_1160 23m	13-10-2025	4009250	4009250_1	23	<0.03	<0.03	<0.03	<0.03	<0.05	<0.05	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.05	<0.05	<0.05
		BH2B_1160 28m	13-10-2025	4009250	4009250_2	28	<0.03	<0.03	<0.03	<0.03	<0.05	<0.05	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.05	<0.05	<0.05
	BH2B_2101	BH2B_2101_7.3	13-01-2026	4073451	4073451_5	7.3																				
		BH2B_2101_16	13-01-2026	4073451	4073451_12	16																				
		BH2B_2101_20.0	14-01-2026	4076439	4076439_3	20																				
		BH2B_2101_21.4	14-01-2026	4076439	4076439_4	21.4																				
		BH2B_2101_24.0	14-01-2026	4076439	4076439_6	24																				
		BH2B_2101_45.0	16-01-2026	4076439	4076439_20	45																				
		BH2B_2101_49.7	16-01-2026	4076439	4076439_23	49.7																				
	BH2B_2147	BH2B_2147_4.95	30-01-2026	4086908	4086908_4	4.95																				
		BH2B_2147_16.95	02-02-2026	4091264	4091264_3	16.95																				
		BH2B_2147_32.90	04-02-2026	4091264	4091264_12	32.9																				
		BH2B_2147_34.80	04-02-2026	4091264	4091264_13	34.8																				
	BH2B_2148	2B_2148_1.5	16-12-2025	4059456	4059456_20	1.5																				
		2B_2148_4.6	15-12-2025	4059456	4059456_1	4.6																				
		2B_2148_6.0	15-12-2025	4059456	4059456_3	6																				
		2B_2148_9.5	15-12-2025	4059456	4059456_7	9.5																				
		2B_2148_13.4	15-12-2025	4059456	4059456_11	13.4																				
		2B_2148_15.5	16-12-2025	4059456	4059456_13	15.5																				
		2B_2148_20.5	16-12-2025	4059456	4059456_18	20.5																				
		BH2B_2148/24.0	17-12-2025	4061277	4061277_23	24																				
		BH2B_2148/41.0	17-12-2025	4061277	4061277_13	41																				
		BH2B_2148/45.5	17-12-2025	4061277	4061277_17	45.5																				
	BH2B_2149	BH2B_2149_3.65	22-01-2026	4081709	4081709_2	3.65																				
		BH2B_2149_15.75	23-01-2026	4081709	4081709_10	15.75																				
		BH2B_2149_22.10	27-01-2026	4084844	4084844_2	22.1																				
		BH2B_2149_26.45	27-01-2026	4084844	4084844_4	26.45																				
		BH2B_2149_35.85	28-01-2026	4084844	4084844_10	35.85																				
		BH2B_2149_37.00	28-01-2026	4084844	4084844_11	37																				
Statistics																										
Minimum Concentration							<0.03	<0.03	<0.03	<0.03	<0.05	<0.05	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.05	<0.03	<0.05
Maximum Concentration							<0.03	<0.03	<0.03	<0.03	<0.05	<0.05	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.05	<0.03	<0.05
Average Concentration *							0.015	0.015	0.015	0.015	0.025	0.025	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.025	0.015	0.025
Standard Deviation *							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
95% UCL (Student's-t) *							0.015	0.015	0.015	0.015	0.025	0.025	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.025	0.015	0.025

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards

Landcare Research, 2023, Landcare (2023) Predicted Background (ID 8715, 26517, 27156, 23536) - Recent Soil - Upper Range
Ministry for the Environment, 2004, MfE Class A Waste Acceptance Criteria (WAC)
Ministry for the Environment, 2004, MfE Class B Waste Acceptance Criteria (WAC)

				Volatile Organic Compounds															SVOCs								
				carbon tetrachloride	chlorodibromomethane	chloroethane	chloroform	chloromethane	dichlorodifluoromethane	dichloromethane	hexachlorobutadiene	hexachloroethane	trichloroethene	tetrachloroethene	trichlorofluoromethane	vinyl chloride	freon 113	a - Bromophenyl phenyl ether	1 - Chlorophenyl phenyl ether	benzyl alcohol	bis(2 - chloroethoxy) methane	bis(2 - chloroethyl) ether	bis(2 - chloroisopropyl) ether	bis(2 - ethylhexyl) phthalate	dibenzofuran
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL											0.8	0.8						0.4 - 0.5	0.5	10	0.5	0.5	0.5	1	0.5
Landcare (2023) Predicted Background (ID 8715) - Recent Soil - Upper Range (Mayflower)																										
Landcare (2023) Predicted Background (ID 26517) - Recent Soil - Upper Range (Plant Nursery BH1140, BH1104)																										
Landcare (2023) Predicted Background (ID 27156) - Recent Soil - Upper Range (Plant Nursery BH1102)																										
Landcare (2023) Predicted Background (ID 23536) - Recent Soil - Upper Range (Accidental Discovery Site)																										
WasteMINZ (2022) Class 5 Clean Fill Organic WAC																										
WasteMINZ (2022) Class 4 Controlled Fill WAC																										
WasteMINZ (2022) Class 3 Managed Fill WAC																										
MfE Class A Waste Acceptance Criteria (WAC)					200					40							7									
MfE Class B Waste Acceptance Criteria (WAC)					20					4							0.4									
Lab Name	**Location Code**	**Field ID**	**Date**	**Lab Report Number**	**Sample Code**	**Depth (mbgl)**																				
Potential Sheep Dip Site (Mayflower Farms)	2B_SS01	2B_SS01 0.1	14-10-2025	4008719	4008719_2	0.1																				
	2B_SS02	2B_SS02 0.1	14-10-2025	4008719	4008719_3	0.1																				
	2B_SS03	2B_SS03 0.1	14-10-2025	4008719	4008719_4	0.1																				
	2B_SS04	2B_SS04 0.1	14-10-2025	4008719	4008719_5	0.1																				
"	2B_SS05	2B_SS05 0.1	14-10-2025	4008719	4008719_6	0.1																				
	BH2B_1149	BH2B_1149 0.1	14-10-2025	4008719	4008719_1	0.1																				
Plant Nursery Site (The Waipu Land Company)	BH2B_1104	BH2B_1104 0.1	14-10-2025	4008719	4008719_13	0.1																				
		BH2B_1104 0.4	14-10-2025	4008719	4008719_14	0.4																				
		BH2B_1104 1.0	14-10-2025	4008719	4008719_15	1																				
	BH2B_1105	BH2B_1105 0.1	14-10-2025	4008719	4008719_10	0.1																				
		BH2B_1105 0.4	14-10-2025	4008719	4008719_11	0.4																				
		BH2B_1105 0.6	14-10-2025	4008719	4008719_12	0.6																				
	BH2B_1140	BH2B_1140 0.1	14-10-2025	4008719	4008719_7	0.1																				
		BH2B_1140 0.5	14-10-2025	4008719	4008719_8	0.5																				
		BH2B_1140 1.0	14-10-2025	4008719	4008719_9	1																				
Accidental Discovery Site	BH2B_1160	BH2B_1160 1.40m	10-10-2025	4006009	4006009_1	1.4	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.05	<0.5	<0.03		<0.03	<0.03	<0.03	<0.03	<0.03								
		BH2B_1160 10.70m	10-10-2025	4006009	4006009_2	10.7	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.05	<0.4	<0.03		<0.03	<0.03	<0.03	<0.03	<0.03								
		BH2B_1160 16.00m	10-10-2025	4006009	4006009_3	16	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.05	<0.5	<0.03		<0.03	<0.03	<0.03	<0.03	<0.03								
		BH2B_1160 23m	13-10-2025	4009250	4009250_1	23	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.05	<0.4	<0.03		<0.03	<0.03	<0.03	<0.03	<0.03								
		BH2B_1160 28m	13-10-2025	4009250	4009250_2	28	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.05	<0.5	<0.03		<0.03	<0.03	<0.03	<0.03	<0.03								
	BH2B_2101	BH2B_2101 7.3	13-01-2026	4073451	4073451_5	7.3									<0.7	<0.7					<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
		BH2B_2101 16	13-01-2026	4073451	4073451_12	16									<0.7	<0.7					<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
		BH2B_2101 20.0	14-01-2026	4076439	4076439_3	20									<0.7	<0.7					<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
		BH2B_2101 21.4	14-01-2026	4076439	4076439_4	21.4									<0.8	<0.8					<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
		BH2B_2101 24.0	14-01-2026	4076439	4076439_6	24									<0.8	<0.8					<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
		BH2B_2101 45.0	16-01-2026	4076439	4076439_20	45									<0.8	<0.8					<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
		BH2B_2101 49.7	16-01-2026	4076439	4076439_23	49.7									<0.8	<0.8					<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
	BH2B_2147	BH2B_2147 4.95	30-01-2026	4086908	4086908_4	4.95									<0.8	<0.8					<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1	<0.5
		BH2B_2147 16.95	02-02-2026	4091264	4091264_3	16.95									<0.8	<0.8					<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
		BH2B_2147 32.90	04-02-2026	4091264	4091264_12	32.9									<0.8	<0.8					<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
		BH2B_2147 34.80	04-02-2026	4091264	4091264_13	34.8									<0.8	<0.8					<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
	BH2B_2148	2B_2148 1.5	16-12-2025	4059456	4059456_20	1.5																				
		2B_2148 4.6	15-12-2025	4059456	4059456_1	4.6																				
		2B_2148 6.0	15-12-2025	4059456	4059456_3	6									<0.7	<0.7					<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
		2B_2148 9.5	15-12-2025	4059456	4059456_7	9.5									<0.8	<0.8					<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
		2B_2148 13.4	15-12-2025	4059456	4059456_11	13.4									<0.7	<0.7					<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
		2B_2148 15.5	16-12-2025	4059456	4059456_13	15.5									<0.8	<0.8					<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
		2B_2148 20.5	16-12-2025	4059456	4059456_18	20.5									<0.7	<0.7					<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
		BH2B_2148/24.0	17-12-2025	4061277	4061277_23	24									<0.7	<0.7					<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
		BH2B_2148/41.0	17-12-2025	4061277	4061277_13	41									<0.7	<0.7					<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
		BH2B_2148/45.5	17-12-2025	4061277	4061277_17	45.5									<0.7	<0.7					<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
	BH2B_2149	BH2B_2149_3.65	22-01-2026	4081709	4081709_2	3.65									<0.9	<0.9					<0.5	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
		BH2B_2149_15.75	23-01-2026	4081709	4081709_10	15.75									<0.8	<0.8					<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
		BH2B_2149_22.10	27-01-2026	4084844	4084844_2	22.1									<0.8	<0.8					<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
		BH2B_2149_26.45	27-01-2026	4084844	4084844_4	26.45									<0.7	<0.7					<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
		BH2B_2149_35.85	28-01-2026	4084844	4084844_10	35.85									<0.8	<0.8					<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
		BH2B_2149_37.00	28-01-2026	4084844	4084844_11	37									<0.9	<0.9					<0.4	<0.5	<10	<0.5	<0.5	<0.5	<1.0	<0.5
Statistics																										
Minimum Concentration							<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.05	<0.4	<0.03	<0.5	<0.03	<0.03	<0.03	<0.03	<0.03	<0.4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Maximum Concentration							<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.05	<0.5	<0.9	<0.9	<0.03	<0.03	<0.03	<0.03	<0.03	<0.5	<0.5	<10	<0.5	<0.5	<0.5	<1	<0.5
Average Concentration *							0.015	0.015	0.015	0.015	0.015	0.015	0.025	0.23	0.31	0.37	0.015	0.015	0.015	0.015	0.015	0.2	0.25	4.5	0.25	0.25	0.25	0.47	0.25
Standard Deviation *							0	0	0	0	0	0	0	0.027	0.14	0.049	0	0	0	0	0	0.0094	0	1.5	0	0	0	0.079	0
95% UCL (Student's-t) *							0.015	0.015	0.015	0.015	0.015	0.015	0.025	0.256	0.365	0.392	0.015	0.015	0.015	0.015	0.015	0.205	0.25	5	0.25	0.25	0.25	0.5	0.25

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards

Landcare Research, 2023, Landcare (2023) Predicted Background (ID 8715, 26517, 27156, 23536) - Recent Soil - Upper Range
Ministry for the Environment, 2004, MfE Class A Waste Acceptance Criteria (WAC)
Ministry for the Environment, 2004, MfE Class B Waste Acceptance Criteria (WAC)

				Phthalates						Herbicides																		
				Bis(2-ethylhexyl) phthalate	Butylbenzyl phthalate	Diethyl phthalate	Dimethyl phthalate	Di-n-butyl phthalate	Di-n-octyl phthalate	Atrazine-desethyl	Atrazine-desisopropyl	Bisulfinpbutyl (60)	Acetochlor	Atrazine	Bromacil	Butachlor	Chlorotoluron	Cyanazine	Diuron	Fluometuron	Isoxaflutole	Linuron	Metachlor	Metolachlor	Metribuzin
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL				5	1	1	1	1	1	0.08	0.16	0.08	0.08	0.08	0.08	0.08	0.16	0.08	0.08	0.08	0.08	0.04	0.08	0.05	0.05	0.08
Landcare (2023) Predicted Background (ID 8715) - Recent Soil - Upper Range (Mayflower)																												
Landcare (2023) Predicted Background (ID 26517) - Recent Soil - Upper Range (Plant Nursery BH1140, BH1104)																												
Landcare (2023) Predicted Background (ID 27156) - Recent Soil - Upper Range (Plant Nursery BH1102)																												
Landcare (2023) Predicted Background (ID 23536) - Recent Soil - Upper Range (Accidental Discovery Site)																												
WasteMINZ (2022) Class 5 Clean Fill Organic WAC																												
WasteMINZ (2022) Class 4 Controlled Fill WAC																												
WasteMINZ (2022) Class 3 Managed Fill WAC																												
MfE Class A Waste Acceptance Criteria (WAC)						2,000	8,000	6,000																				
MfE Class B Waste Acceptance Criteria (WAC)						200	800	600																				
Lab Name	**Location Code**	**Field ID**	**Date**	**Lab Report Number**	**Sample Code**	**Depth (mbgl)**																						
Potential Sheep Dip Site (Mayflower Farms)	2B_SS01	2B_SS01_0.1	14-10-2025	4008719	4008719_2	0.1							<0.08	<0.16	<0.08	<0.08	<0.08	<0.08	<0.08	<0.16	<0.08	<0.08	<0.08	<0.08	<0.04	<0.08	<0.05	<0.05	<0.08
	2B_SS02	2B_SS02_0.1	14-10-2025	4008719	4008719_3	0.1																							
	2B_SS03	2B_SS03_0.1	14-10-2025	4008719	4008719_4	0.1																							
	2B_SS04	2B_SS04_0.1	14-10-2025	4008719	4008719_5	0.1																							
	2B_SS05	2B_SS05_0.1	14-10-2025	4008719	4008719_6	0.1							<0.10	<0.2	<0.10	<0.10	<0.10	<0.10	<0.10	<0.2	<0.10	<0.10	<0.10	<0.10	<0.05	<0.10	<0.05	<0.05	<0.10
"	BH2B_1149	BH2B_1149_0.1	14-10-2025	4008719	4008719_1	0.1																							
Plant Nursery Site (The Waipu Land Company)	BH2B_1104	BH2B_1104_0.1	14-10-2025	4008719	4008719_13	0.1							<0.08	<0.15	<0.08	<0.08	<0.08	<0.08	<0.08	<0.15	<0.08	<0.08	<0.08	<0.08	<0.04	<0.08	<0.05	<0.05	<0.08
		BH2B_1104_0.4	14-10-2025	4008719	4008719_14	0.4							<0.08	<0.15	<0.08	<0.08	<0.08	<0.08	<0.08	<0.15	<0.08	<0.08	<0.08	<0.08	<0.04	<0.08	<0.05	<0.05	<0.08
		BH2B_1104_1.0	14-10-2025	4008719	4008719_15	1							<0.08	<0.15	<0.08	<0.08	<0.08	<0.08	<0.08	<0.15	<0.08	<0.08	<0.08	<0.08	<0.04	<0.08	<0.05	<0.05	<0.08
	BH2B_1105	BH2B_1105_0.1	14-10-2025	4008719	4008719_10	0.1							<0.11	<0.3	<0.11	<0.11	<0.11	<0.11	<0.11	<0.3	<0.11	<0.11	<0.11	<0.11	<0.06	<0.11	<0.06	<0.06	<0.11
		BH2B_1105_0.4	14-10-2025	4008719	4008719_11	0.4							<0.08	<0.16	<0.08	<0.08	<0.08	<0.08	<0.08	<0.16	<0.08	<0.08	<0.08	<0.08	<0.04	<0.08	<0.05	<0.05	<0.08
		BH2B_1105_0.6	14-10-2025	4008719	4008719_12	0.6							<0.08	<0.15	<0.08	<0.08	<0.08	<0.08	<0.08	<0.15	<0.08	<0.08	<0.08	<0.08	<0.04	<0.08	<0.05	<0.05	<0.08
	BH2B_1140	BH2B_1140_0.1	14-10-2025	4008719	4008719_7	0.1							<0.08	<0.15	<0.08	<0.08	<0.08	<0.08	<0.08	<0.15	<0.08	<0.08	<0.08	<0.08	<0.04	<0.08	<0.05	<0.05	<0.08
		BH2B_1140_0.5	14-10-2025	4008719	4008719_8	0.5							<0.08	<0.15	<0.08	<0.08	<0.08	<0.08	<0.08	<0.15	<0.08	<0.08	<0.08	<0.08	<0.04	<0.08	<0.05	<0.05	<0.08
		BH2B_1140_1.0	14-10-2025	4008719	4008719_9	1							<0.08	<0.15	<0.08	<0.08	<0.08	<0.08	<0.08	<0.15	<0.08	<0.08	<0.08	<0.08	<0.04	<0.08	<0.05	<0.05	<0.08
Accidental Discovery Site	BH2B_1160	BH2B_1160 1.40m	10-10-2025	4006009	4006009_1	1.4																							
		BH2B_1160 10.70m	10-10-2025	4006009	4006009_2	10.7																							
		BH2B_1160 16.00m	10-10-2025	4006009	4006009_3	16																							
		BH2B_1160 23m	13-10-2025	4009250	4009250_1	23																							
		BH2B_1160 28m	13-10-2025	4009250	4009250_2	28																							
	BH2B_2101	BH2B_2101_7.3	13-01-2026	4073451	4073451_5	7.3	<5	<1.0	<1.0	<1.0	<1.0	<1.0																	
		BH2B_2101_16	13-01-2026	4073451	4073451_12	16	<5	<1.0	<1.0	<1.0	<1.0	<1.0																	
		BH2B_2101_20.0	14-01-2026	4076439	4076439_3	20	<5	<1.0	<1.0	<1.0	<1.0	<1.0																	
		BH2B_2101_21.4	14-01-2026	4076439	4076439_4	21.4	<5	<1.0	<1.0	<1.0	<1.0	<1.0																	
		BH2B_2101_24.0	14-01-2026	4076439	4076439_6	24	<5	<1.0	<1.0	<1.0	<1.0	<1.0																	
		BH2B_2101_45.0	16-01-2026	4076439	4076439_20	45	<5	<1.0	<1.0	<1.0	<1.0	<1.0																	
		BH2B_2101_49.7	16-01-2026	4076439	4076439_23	49.7	<5	<1.0	<1.0	<1.0	<1.0	<1.0																	
	BH2B_2147	BH2B_2147_4.95	30-01-2026	4086908	4086908_4	4.95	<5	<1	<1	<1	<1	<1																	
		BH2B_2147_16.95	02-02-2026	4091264	4091264_3	16.95	<5	<1.0	<1.0	<1.0	<1.0	<1.0																	
		BH2B_2147_32.90	04-02-2026	4091264	4091264_12	32.9	<5	<1.0	<1.0	<1.0	<1.0	<1.0																	
		BH2B_2147_34.80	04-02-2026	4091264	4091264_13	34.8	<5	<1.0	<1.0	<1.0	<1.0	<1.0																	
	BH2B_2148	2B_2148_1.5	16-12-2025	4059456	4059456_20	1.5																							
		2B_2148_4.6	15-12-2025	4059456	4059456_1	4.6																							
		2B_2148_6.0	15-12-2025	4059456	4059456_3	6	<5	<1.0	<1.0	<1.0	<1.0	<1.0																	
		2B_2148_9.5	15-12-2025	4059456	4059456_7	9.5	<5	<1.0	<1.0	<1.0	<1.0	<1.0																	
		2B_2148_13.4	15-12-2025	4059456	4059456_11	13.4	<5	<1.0	<1.0	<1.0	<1.0	<1.0																	
		2B_2148_15.5	16-12-2025	4059456	4059456_13	15.5	<5	<1.0	<1.0	<1.0	<1.0	<1.0																	
		2B_2148_20.5	16-12-2025	4059456	4059456_18	20.5	<5	<1.0	<1.0	<1.0	<1.0	<1.0																	
		BH2B_2148/24.0	17-12-2025	4061277	4061277_23	24	<5	<1.0	<1.0	<1.0	<1.0	<1.0																	
		BH2B_2148/41.0	17-12-2025	4061277	4061277_13	41	<5	<1.0	<1.0	<1.0	<1.0	<1.0																	
		BH2B_2148/45.5	17-12-2025	4061277	4061277_17	45.5	<5	<1.0	<1.0	<1.0	<1.0	<1.0																	
	BH2B_2149	BH2B_2149_3.65	22-01-2026	4081709	4081709_2	3.65	<5	<1.0	<1.0	<1.0	<1.0	<1.0																	
		BH2B_2149_15.75	23-01-2026	4081709	4081709_10	15.75	<5	<1.0	<1.0	<1.0	<1.0	<1.0																	
		BH2B_2149_22.10	27-01-2026	4084844	4084844_2	22.1	<5	<1.0	<1.0	<1.0	<1.0	<1.0																	
		BH2B_2149_26.45	27-01-2026	4084844	4084844_4	26.45	<5	<1.0	<1.0	<1.0	<1.0	<1.0																	
		BH2B_2149_35.85	28-01-2026	4084844	4084844_10	35.85	<5	<1.0	<1.0	<1.0	<1.0	<1.0																	
		BH2B_2149_37.00	28-01-2026	4084844	4084844_11	37	<5	<1.0	<1.0	<1.0	<1.0	<1.0																	
Statistics																												
Minimum Concentration							<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.08	<0.15	<0.08	<0.08	<0.08	<0.08	<0.08	<0.15	<0.08	<0.08	<0.08	<0.08	<0.04	<0.08	<0.05	<0.05	<0.08
Maximum Concentration							<5	<1	<1	<1	<1	<1	<0.11	<0.3	<0.11	<0.11	<0.11	<0.11	<0.11	<0.3	<0.11	<0.11	<0.11	<0.11	<0.06	<0.11	<0.06	<0.06	<0.11
Average Concentration *							2.3	0.47	0.47	0.47	0.47	0.47	0.042	0.085	0.042	0.042	0.042	0.042	0.042	0.085	0.042	0.042	0.042	0.042	0.021	0.042	0.025	0.025	0.042
Standard Deviation *							0.71	0.079	0.079	0.079	0.079	0.079	0.0052	0.023	0.0052	0.0052	0.0052	0.0052	0.0052	0.023	0.0052	0.0052	0.0052	0.0052	0.0032	0.0052	0.0015	0.0015	0.0052
95% UCL (Student's-t) *							2.5	0.5	0.5	0.5	0.5	0.5	0.0451	0.0978	0.0451	0.0451	0.0451	0.0451	0.0451	0.0978	0.0451	0.0451	0.0451	0.0451	0.0231	0.0451	0.0263	0.0263	0.0451

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards

Landcare Research, 2023, Landcare (2023) Predicted Background (ID 8715, 26517, 27156, 23536) - Recent Soil - Upper Range
Ministry for the Environment, 2004, MfE Class A Waste Acceptance Criteria (WAC)
Ministry for the Environment, 2004, MfE Class B Waste Acceptance Criteria (WAC)

					Herbicides														
					Malloate	Isoxaflutazole	Isoxaben	Oxyfluorfen	Pendimethalin	Simazine	Propachlor	Propazine	Propiconazole	Quinalphos	Quinmerac	Terbuthylazine	Terbutryn	Thiobencarb	Trifluralin
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					0.16	0.16	0.08	0.04	0.08	0.04	0.08	0.2	0.04	0.08	0.08	0.08	0.08	0.08	0.08
Landcare (2023) Predicted Background (ID 8715) - Recent Soil - Upper Range (Mayflower)																			
Landcare (2023) Predicted Background (ID 26517) - Recent Soil - Upper Range (Plant Nursery BH1140, BH1104)																			
Landcare (2023) Predicted Background (ID 27156) - Recent Soil - Upper Range (Plant Nursery BH1102)																			
Landcare (2023) Predicted Background (ID 23536) - Recent Soil - Upper Range (Accidental Discovery Site)																			
WasteMINZ (2022) Class 5 Clean Fill Organic WAC																			
WasteMINZ (2022) Class 4 Controlled Fill WAC																			
WasteMINZ (2022) Class 3 Managed Fill WAC																			
MfE Class A Waste Acceptance Criteria (WAC)																			
MfE Class B Waste Acceptance Criteria (WAC)																			
Lab Name	**Location Code**	**Field ID**	**Date**	**Lab Report Number**	**Sample Code**	**Depth (mbgl)**													
Potential Sheep Dip Site (Mayflower Farms)	2B_SS01	2B_SS01_0.1	14-10-2025	4008719	4008719_2	0.1	<0.16	<0.16	<0.08	<0.04	<0.08	<0.04	<0.08	<0.2	<0.04	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
	2B_SS02	2B_SS02_0.1	14-10-2025	4008719	4008719_3	0.1															
	2B_SS03	2B_SS03_0.1	14-10-2025	4008719	4008719_4	0.1															
	2B_SS04	2B_SS04_0.1	14-10-2025	4008719	4008719_5	0.1															
"	2B_SS05	2B_SS05_0.1	14-10-2025	4008719	4008719_6	0.1	<0.2	<0.2	<0.10	<0.05	<0.10	<0.05	<0.10	<0.2	<0.05	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
	BH2B_1149	BH2B_1149_0.1	14-10-2025	4008719	4008719_1	0.1															
Plant Nursery Site (The Waipu Land Company)	BH2B_1104	BH2B_1104_0.1	14-10-2025	4008719	4008719_13	0.1	<0.15	<0.15	<0.08	<0.04	<0.08	<0.04	<0.08	<0.2	<0.04	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
		BH2B_1104_0.4	14-10-2025	4008719	4008719_14	0.4	<0.15	<0.15	<0.08	<0.04	<0.08	<0.04	<0.08	<0.2	<0.04	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
		BH2B_1104_1.0	14-10-2025	4008719	4008719_15	1	<0.15	<0.15	<0.08	<0.04	<0.08	<0.04	<0.08	<0.2	<0.04	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
	BH2B_1105	BH2B_1105_0.1	14-10-2025	4008719	4008719_10	0.1	<0.3	<0.3	<0.11	<0.06	<0.11	<0.06	<0.11	<0.3	<0.06	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11
		BH2B_1105_0.4	14-10-2025	4008719	4008719_11	0.4	<0.16	<0.16	<0.08	<0.04	<0.08	<0.04	<0.08	<0.2	<0.04	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
		BH2B_1105_0.6	14-10-2025	4008719	4008719_12	0.6	<0.15	<0.15	<0.08	<0.04	<0.08	<0.04	<0.08	<0.2	<0.04	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
	BH2B_1140	BH2B_1140_0.1	14-10-2025	4008719	4008719_7	0.1	<0.15	<0.15	<0.08	<0.04	<0.08	<0.04	<0.08	<0.2	<0.04	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
		BH2B_1140_0.5	14-10-2025	4008719	4008719_8	0.5	<0.15	<0.15	<0.08	<0.04	<0.08	<0.04	<0.08	<0.2	<0.04	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
		BH2B_1140_1.0	14-10-2025	4008719	4008719_9	1	<0.15	<0.15	<0.08	<0.04	<0.08	<0.04	<0.08	<0.2	<0.04	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Accidental Discovery Site	BH2B_1160	BH2B_1160 1.40m	10-10-2025	4006009	4006009_1	1.4															
		BH2B_1160 10.70m	10-10-2025	4006009	4006009_2	10.7															
		BH2B_1160 16.00m	10-10-2025	4006009	4006009_3	16															
		BH2B_1160 23m	13-10-2025	4009250	4009250_1	23															
		BH2B_1160 28m	13-10-2025	4009250	4009250_2	28															
	BH2B_2101	BH2B_2101_7.3	13-01-2026	4073451	4073451_5	7.3															
		BH2B_2101_16	13-01-2026	4073451	4073451_12	16															
		BH2B_2101_20.0	14-01-2026	4076439	4076439_3	20															
		BH2B_2101_21.4	14-01-2026	4076439	4076439_4	21.4															
		BH2B_2101_24.0	14-01-2026	4076439	4076439_6	24															
		BH2B_2101_45.0	16-01-2026	4076439	4076439_20	45															
		BH2B_2101_49.7	16-01-2026	4076439	4076439_23	49.7															
	BH2B_2147	BH2B_2147_4.95	30-01-2026	4086908	4086908_4	4.95															
		BH2B_2147_16.95	02-02-2026	4091264	4091264_3	16.95															
		BH2B_2147_32.90	04-02-2026	4091264	4091264_12	32.9															
		BH2B_2147_34.80	04-02-2026	4091264	4091264_13	34.8															
	BH2B_2148	2B_2148_1.5	16-12-2025	4059456	4059456_20	1.5															
		2B_2148_4.6	15-12-2025	4059456	4059456_1	4.6															
		2B_2148_6.0	15-12-2025	4059456	4059456_3	6															
		2B_2148_9.5	15-12-2025	4059456	4059456_7	9.5															
		2B_2148_13.4	15-12-2025	4059456	4059456_11	13.4															
		2B_2148_15.5	16-12-2025	4059456	4059456_13	15.5															
		2B_2148_20.5	16-12-2025	4059456	4059456_18	20.5															
		BH2B_2148/24.0	17-12-2025	4061277	4061277_23	24															
		BH2B_2148/41.0	17-12-2025	4061277	4061277_13	41															
		BH2B_2148/45.5	17-12-2025	4061277	4061277_17	45.5															
	BH2B_2149	BH2B_2149_3.65	22-01-2026	4081709	4081709_2	3.65															
		BH2B_2149_15.75	23-01-2026	4081709	4081709_10	15.75															
		BH2B_2149_22.10	27-01-2026	4084844	4084844_2	22.1															
		BH2B_2149_26.45	27-01-2026	4084844	4084844_4	26.45															
		BH2B_2149_35.85	28-01-2026	4084844	4084844_10	35.85															
		BH2B_2149_37.00	28-01-2026	4084844	4084844_11	37															
Statistics																			
Minimum Concentration							<0.15	<0.15	<0.08	<0.04	<0.08	<0.04	<0.08	<0.2	<0.04	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Maximum Concentration							<0.3	<0.3	<0.11	<0.06	<0.11	<0.06	<0.11	<0.3	<0.06	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11
Average Concentration *							0.085	0.085	0.042	0.021	0.042	0.021	0.042	0.1	0.021	0.042	0.042	0.042	0.042	0.042	0.042
Standard Deviation *							0.023	0.023	0.0052	0.0032	0.0052	0.0032	0.0052	0.015	0.0032	0.0052	0.0052	0.0052	0.0052	0.0052	0.0052
95% UCL (Student's-t) *							0.0978	0.0978	0.0451	0.0231	0.0451	0.0231	0.0451	0.113	0.0231	0.0451	0.0451	0.0451	0.0451	0.0451	0.0451

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards

Landcare Research, 2023, Landcare (2023) Predicted Background (ID 8715, 26517, 27156, 23536) - Recent Soil - Upper Range
Ministry for the Environment, 2004, MfE Class A Waste Acceptance Criteria (WAC)
Ministry for the Environment, 2004, MfE Class B Waste Acceptance Criteria (WAC)

							Organochlorine Pesticides																								
							Aldrin-dieldrin	4,4-DDE	4,4-DDT	a-BHC	Aldrin	b-BHC	cis-Chlordane	trans-Chlordane	d-BHC	DDD	DDT	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC	Heptachlor	Heptachlor epoxide	Methoxychlor	p-DDD	p-DDE
							mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL							0.08	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014
Landcare (2023) Predicted Background (ID 8715) - Recent Soil - Upper Range (Mayflower)																														
Landcare (2023) Predicted Background (ID 26517) - Recent Soil - Upper Range (Plant Nursery BH1140, BH1104)																														
Landcare (2023) Predicted Background (ID 27156) - Recent Soil - Upper Range (Plant Nursery BH1102)																														
Landcare (2023) Predicted Background (ID 23536) - Recent Soil - Upper Range (Accidental Discovery Site)																														
WasteMINZ (2022) Class 5 Clean Fill Organic WAC																														
WasteMINZ (2022) Class 4 Controlled Fill WAC																		0.1												
WasteMINZ (2022) Class 3 Managed Fill WAC																		0.1												
MfE Class A Waste Acceptance Criteria (WAC)																		6												
MfE Class B Waste Acceptance Criteria (WAC)							0.000016											0.8												
Lab Name	**Location Code**	**Field ID**	**Date**	**Lab Report Number**	**Sample Code**	**Depth (mbgl)**																								
Potential Sheep Dip Site (Mayflower Farms)	2B_SS01	2B_SS01_0.1	14-10-2025	4008719	4008719_2	0.1	<0.08	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
	2B_SS02	2B_SS02_0.1	14-10-2025	4008719	4008719_3	0.1																								
	2B_SS03	2B_SS03_0.1	14-10-2025	4008719	4008719_4	0.1																								
	2B_SS04	2B_SS04_0.1	14-10-2025	4008719	4008719_5	0.1																								
"	2B_SS05	2B_SS05_0.1	14-10-2025	4008719	4008719_6	0.1	<0.10	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018
	BH2B_1149	BH2B_1149_0.1	14-10-2025	4008719	4008719_1	0.1																								
Plant Nursery Site (The Waipu Land Company)	BH2B_1104	BH2B_1104_0.1	14-10-2025	4008719	4008719_13	0.1	<0.08	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
		BH2B_1104_0.4	14-10-2025	4008719	4008719_14	0.4	<0.08	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013
		BH2B_1104_1.0	14-10-2025	4008719	4008719_15	1	<0.09	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
	BH2B_1105	BH2B_1105_0.1	14-10-2025	4008719	4008719_10	0.1	<0.11	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019
		BH2B_1105_0.4	14-10-2025	4008719	4008719_11	0.4	<0.08	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
		BH2B_1105_0.6	14-10-2025	4008719	4008719_12	0.6	<0.08	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
	BH2B_1140	BH2B_1140_0.1	14-10-2025	4008719	4008719_7	0.1	<0.08	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
		BH2B_1140_0.5	14-10-2025	4008719	4008719_8	0.5	<0.08	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
		BH2B_1140_1.0	14-10-2025	4008719	4008719_9	1	<0.08	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
Accidental Discovery Site	BH2B_1160	BH2B_1160 1.40m	10-10-2025	4006009	4006009_1	1.4																								
		BH2B_1160 10.70m	10-10-2025	4006009	4006009_2	10.7																								
		BH2B_1160 16.00m	10-10-2025	4006009	4006009_3	16																								
		BH2B_1160 23m	13-10-2025	4009250	4009250_1	23																								
		BH2B_1160 28m	13-10-2025	4009250	4009250_2	28																								
	BH2B_2101	BH2B_2101_7.3	13-01-2026	4073451	4073451_5	7.3		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.7		<1.0	<0.5	<0.5	<0.5			
		BH2B_2101_16	13-01-2026	4073451	4073451_12	16		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.7		<1.0	<0.5	<0.5	<0.5			
		BH2B_2101_20.0	14-01-2026	4076439	4076439_3	20		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.7		<1.0	<0.5	<0.5	<0.5			
		BH2B_2101_21.4	14-01-2026	4076439	4076439_4	21.4		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.8		<1.0	<0.5	<0.5	<0.5			
		BH2B_2101_24.0	14-01-2026	4076439	4076439_6	24		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.8		<1.0	<0.5	<0.5	<0.5			
		BH2B_2101_45.0	16-01-2026	4076439	4076439_20	45		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.8		<1.0	<0.5	<0.5	<0.5			
		BH2B_2101_49.7	16-01-2026	4076439	4076439_23	49.7		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.8		<1.0	<0.5	<0.5	<0.5			
	BH2B_2147	BH2B_2147_4.95	30-01-2026	4086908	4086908_4	4.95		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1	<0.5	<1	<2	<1	<0.8		<1	<0.5	<0.5	<0.5			
		BH2B_2147_16.95	02-02-2026	4091264	4091264_3	16.95		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.8		<1.0	<0.5	<0.5	<0.5			
		BH2B_2147_32.90	04-02-2026	4091264	4091264_12	32.9		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.8		<1.0	<0.5	<0.5	<0.5			
		BH2B_2147_34.80	04-02-2026	4091264	4091264_13	34.8		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.8		<1.0	<0.5	<0.5	<0.5			
	BH2B_2148	2B_2148_1.5	16-12-2025	4059456	4059456_20	1.5																								
		2B_2148_4.6	15-12-2025	4059456	4059456_1	4.6																								
		2B_2148_6.0	15-12-2025	4059456	4059456_3	6		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.7		<1.0	<0.5	<0.5	<0.5			
		2B_2148_9.5	15-12-2025	4059456	4059456_7	9.5		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.8		<1.0	<0.5	<0.5	<0.5			
		2B_2148_13.4	15-12-2025	4059456	4059456_11	13.4		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.7		<1.0	<0.5	<0.5	<0.5			
		2B_2148_15.5	16-12-2025	4059456	4059456_13	15.5		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.8		<1.0	<0.5	<0.5	<0.5			
		2B_2148_20.5	16-12-2025	4059456	4059456_18	20.5		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.7		<1.0	<0.5	<0.5	<0.5			
		BH2B_2148/24.0	17-12-2025	4061277	4061277_23	24		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.7		<1.0	<0.5	<0.5	<0.5			
		BH2B_2148/41.0	17-12-2025	4061277	4061277_13	41		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.7		<1.0	<0.5	<0.5	<0.5			
		BH2B_2148/45.5	17-12-2025	4061277	4061277_17	45.5		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.7		<1.0	<0.5	<0.5	<0.5			
	BH2B_2149	BH2B_2149_3.65	22-01-2026	4081709	4081709_2	3.65		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.8		<1.0	<0.5	<0.5	<0.5			
		BH2B_2149_15.75	23-01-2026	4081709	4081709_10	15.75		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.8		<1.0	<0.5	<0.5	<0.5			
		BH2B_2149_22.10	27-01-2026	4084844	4084844_2	22.1		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.8		<1.0	<0.5	<0.5	<0.5			
		BH2B_2149_26.45	27-01-2026	4084844	4084844_4	26.45		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.7		<1.0	<0.5	<0.5	<0.5			
		BH2B_2149_35.85	28-01-2026	4084844	4084844_10	35.85		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.8		<1.0	<0.5	<0.5	<0.5			
		BH2B_2149_37.00	28-01-2026	4084844	4084844_11	37		<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<1.0	<0.5	<1.0	<2	<1.0	<0.8		<1.0	<0.5	<0.5	<0.5			
Statistics																														
Minimum Concentration							<0.08	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013
Maximum Concentration							<0.11	<0.5	<0.019	<0.5	<0.5	<0.5	<0.019	<0.019	<0.5	<0.5	<1	<0.5	<1	<2	<1	<0.9	<0.019	<1	<0.5	<0.5	<0.5	<0.019	<0.019	<0.019
Average Concentration *							0.042	0.18	0.0074	0.18	0.18	0.18	0.0074	0.0074	0.18	0.18	0.34	0.18	0.34	0.67	0.34	0.27	0.0074	0.34	0.18	0.18	0.18	0.0074	0.0074	0.0074
Standard Deviation *							0.0052	0.11	0.00094	0.11	0.11	0.11	0.00094	0.00094	0.11	0.11	0.22	0.11	0.22	0.45	0.22	0.17	0.00094	0.22	0.11	0.11	0.11	0.00094	0.00094	0.00094
95% UCL (Student's-t) *							0.0451	0.208	0.00792	0.208	0.208	0.208	0.00792	0.00792	0.208	0.208	0.414	0.208	0.414	0.827	0.414	0.317	0.00792	0.414	0.208	0.208	0.208	0.00792	0.00792	0.00792

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards
Landcare Research, 2023, Landcare (2023) Predicted Background (ID 8715, 26517, 27156, 23536) - Recent Soil - Upper Range
Ministry for the Environment, 2004, MfE Class A Waste Acceptance Criteria (WAC)
Ministry for the Environment, 2004, MfE Class B Waste Acceptance Criteria (WAC)

												Halogenated Benzenes										Fungicides									
												1,2,3-Trichlorobenzene	1,2,4-Trichlorobenzene	1,2-Dichlorobenzene	1,3,5-Trichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	2-Chlorotoluene	4-Chlorotoluene	Bromobenzene	Chlorobenzene	Hexachlorobenzene	Chlorothalonil	Captan	Chlorothalonil	Difenoconazole	Metalaxyl	Oxadixyl (Sandofan)	Penconazole	Propiconazole	Tebuconazole	Triadimefon
												mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL													0.5	0.8 - 0.9		0.8 - 0.9	0.8 - 0.9					0.014	0.16	0.16	0.08	0.11	0.08	0.08	0.4	0.06	0.08	0.08
Landcare (2023) Predicted Background (ID 8715) - Recent Soil - Upper Range (Mayflower)																															
Landcare (2023) Predicted Background (ID 26517) - Recent Soil - Upper Range (Plant Nursery BH1140, BH1104)																															
Landcare (2023) Predicted Background (ID 27156) - Recent Soil - Upper Range (Plant Nursery BH1102)																															
Landcare (2023) Predicted Background (ID 23536) - Recent Soil - Upper Range (Accidental Discovery Site)																															
WasteMINZ (2022) Class 5 Clean Fill Organic WAC																															
WasteMINZ (2022) Class 4 Controlled Fill WAC																															
WasteMINZ (2022) Class 3 Managed Fill WAC																															
MfE Class A Waste Acceptance Criteria (WAC)												1,000	800	4		1,000															
MfE Class B Waste Acceptance Criteria (WAC)												100	80	0.4		100															
Lab Name	**Location Code**	**Field ID**	**Date**	**Lab Report Number**	**Sample Code**	**Depth (mbgl)**																									
Potential Sheep Dip Site (Mayflower Farms)	2B_SS01	2B_SS01_0.1	14-10-2025	4008719	4008719_2	0.1											<0.014	<0.16	<0.16	<0.08	<0.11	<0.08	<0.08	<0.4	<0.06	<0.08	<0.08
	2B_SS02	2B_SS02_0.1	14-10-2025	4008719	4008719_3	0.1																									
	2B_SS03	2B_SS03_0.1	14-10-2025	4008719	4008719_4	0.1																									
	2B_SS04	2B_SS04_0.1	14-10-2025	4008719	4008719_5	0.1																									
"	2B_SS05	2B_SS05_0.1	14-10-2025	4008719	4008719_6	0.1											<0.018	<0.2	<0.2	<0.10	<0.14	<0.10	<0.10	<0.5	<0.07	<0.10	<0.10
	BH2B_1149	BH2B_1149_0.1	14-10-2025	4008719	4008719_1	0.1																									
Plant Nursery Site (The Waipu Land Company)	BH2B_1104	BH2B_1104_0.1	14-10-2025	4008719	4008719_13	0.1											<0.014	<0.15	<0.15	<0.08	<0.11	<0.08	<0.08	<0.4	<0.06	<0.08	<0.08
		BH2B_1104_0.4	14-10-2025	4008719	4008719_14	0.4											<0.013	<0.15	<0.15	<0.08	<0.10	<0.08	<0.08	<0.4	<0.05	<0.08	<0.08
		BH2B_1104_1.0	14-10-2025	4008719	4008719_15	1											<0.014	<0.15	<0.15	<0.08	<0.11	<0.08	<0.08	<0.4	<0.06	<0.08	<0.08
	BH2B_1105	BH2B_1105_0.1	14-10-2025	4008719	4008719_10	0.1											<0.017	<0.2	<0.2	<0.11	<0.15	<0.11	<0.11	<0.6	<0.08	<0.11	<0.11
		BH2B_1105_0.4	14-10-2025	4008719	4008719_11	0.4											<0.014	<0.16	<0.16	<0.08	<0.11	<0.08	<0.08	<0.4	<0.06	<0.08	<0.08
		BH2B_1105_0.6	14-10-2025	4008719	4008719_12	0.6											<0.015	<0.16	<0.16	<0.08	<0.12	<0.08	<0.08	<0.4	<0.06	<0.08	<0.08
	BH2B_1140	BH2B_1140_0.1	14-10-2025	4008719	4008719_7	0.1											<0.013	<0.15	<0.15	<0.08	<0.11	<0.08	<0.08	<0.4	<0.06	<0.08	<0.08
		BH2B_1140_0.5	14-10-2025	4008719	4008719_8	0.5											<0.014	<0.15	<0.15	<0.08	<0.11	<0.08	<0.08	<0.4	<0.06	<0.08	<0.08
		BH2B_1140_1.0	14-10-2025	4008719	4008719_9	1											<0.014	<0.15	<0.15	<0.08	<0.11	<0.08	<0.08	<0.4	<0.06	<0.08	<0.08
Accidental Discovery Site	BH2B_1160	BH2B_1160 1.40m	10-10-2025	4006009	4006009_1	1.4	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03															
		BH2B_1160 10.70m	10-10-2025	4006009	4006009_2	10.7	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03															
		BH2B_1160 16.00m	10-10-2025	4006009	4006009_3	16	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03															
		BH2B_1160 23m	13-10-2025	4009250	4009250_1	23	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03															
		BH2B_1160 28m	13-10-2025	4009250	4009250_2	28	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03															
	BH2B_2101	BH2B_2101_7.3	13-01-2026	4073451	4073451_5	7.3		<0.5	<0.7		<0.7	<0.7					<0.5														
		BH2B_2101_16	13-01-2026	4073451	4073451_12	16		<0.5	<0.7		<0.7	<0.7					<0.5														
		BH2B_2101_20.0	14-01-2026	4076439	4076439_3	20		<0.5	<0.7		<0.7	<0.7					<0.5														
		BH2B_2101_21.4	14-01-2026	4076439	4076439_4	21.4		<0.5	<0.8		<0.8	<0.8					<0.5														
		BH2B_2101_24.0	14-01-2026	4076439	4076439_6	24		<0.5	<0.8		<0.8	<0.8					<0.5														
		BH2B_2101_45.0	16-01-2026	4076439	4076439_20	45		<0.5	<0.8		<0.8	<0.8					<0.5														
		BH2B_2101_49.7	16-01-2026	4076439	4076439_23	49.7		<0.5	<0.8		<0.8	<0.8					<0.5														
	BH2B_2147	BH2B_2147_4.95	30-01-2026	4086908	4086908_4	4.95		<0.5	<0.8		<0.8	<0.8					<0.5														
		BH2B_2147_16.95	02-02-2026	4091264	4091264_3	16.95		<0.5	<0.8		<0.8	<0.8					<0.5														
		BH2B_2147_32.90	04-02-2026	4091264	4091264_12	32.9		<0.5	<0.8		<0.8	<0.8					<0.5														
		BH2B_2147_34.80	04-02-2026	4091264	4091264_13	34.8		<0.5	<0.8		<0.8	<0.8					<0.5														
	BH2B_2148	2B_2148_1.5	16-12-2025	4059456	4059456_20	1.5																									
		2B_2148_4.6	15-12-2025	4059456	4059456_1	4.6																									
		2B_2148_6.0	15-12-2025	4059456	4059456_3	6		<0.5	<0.7		<0.7	<0.7					<0.5														
		2B_2148_9.5	15-12-2025	4059456	4059456_7	9.5		<0.5	<0.8		<0.8	<0.8					<0.5														
		2B_2148_13.4	15-12-2025	4059456	4059456_11	13.4		<0.5	<0.7		<0.7	<0.7					<0.5														
		2B_2148_15.5	16-12-2025	4059456	4059456_13	15.5		<0.5	<0.8		<0.8	<0.8					<0.5														
		2B_2148_20.5	16-12-2025	4059456	4059456_18	20.5		<0.5	<0.7		<0.7	<0.7					<0.5														
		BH2B_2148/24.0	17-12-2025	4061277	4061277_23	24		<0.5	<0.7		<0.7	<0.7					<0.5														
		BH2B_2148/41.0	17-12-2025	4061277	4061277_13	41		<0.5	<0.7		<0.7	<0.7					<0.5														
		BH2B_2148/45.5	17-12-2025	4061277	4061277_17	45.5		<0.5	<0.7		<0.7	<0.7					<0.5														
	BH2B_2149	BH2B_2149_3.65	22-01-2026	4081709	4081709_2	3.65		<0.5	<0.9		<0.9	<0.9					<0.5														
		BH2B_2149_15.75	23-01-2026	4081709	4081709_10	15.75		<0.5	<0.8		<0.8	<0.8					<0.5														
		BH2B_2149_22.10	27-01-2026	4084844	4084844_2	22.1		<0.5	<0.8		<0.8	<0.8					<0.5														
		BH2B_2149_26.45	27-01-2026	4084844	4084844_4	26.45		<0.5	<0.7		<0.7	<0.7					<0.5														
		BH2B_2149_35.85	28-01-2026	4084844	4084844_10	35.85		<0.5	<0.8		<0.8	<0.8					<0.5														
		BH2B_2149_37.00	28-01-2026	4084844	4084844_11	37		<0.5	<0.8		<0.8	<0.8					<0.5														
Statistics																															
Minimum Concentration							<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.013	<0.15	<0.15	<0.08	<0.1	<0.08	<0.08	<0.4	<0.05	<0.08	<0.08
Maximum Concentration							<0.03	<0.5	<0.9	<0.03	<0.9	<0.9	<0.03	<0.03	<0.03	<0.03	<0.5	<0.3	<0.3	<0.11	<0.15	<0.11	<0.11	<0.6	<0.08	<0.11	<0.11
Average Concentration *							0.015	0.21	0.31	0.015	0.31	0.31	0.015	0.015	0.015	0.015	0.18	0.085	0.085	0.042	0.058	0.042	0.042	0.21	0.031	0.042	0.042
Standard Deviation *							0	0.086	0.14	0	0.14	0.14	0	0	0	0	0.11	0.023	0.023	0.0052	0.0075	0.0052	0.0052	0.032	0.0038	0.0052	0.0052
95% UCL (Student's-t) *							0.015	0.238	0.365	0.015	0.365	0.365	0.015	0.015	0.015	0.015	0.208	0.0978	0.0978	0.0451	0.0623	0.0451	0.0451	0.231	0.033	0.0451	0.0451

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards

Landcare Research, 2023, Landcare (2023) Predicted Background (ID 8715, 26517, 27156, 23536) - Recent Soil - Upper Range
Ministry for the Environment, 2004, MfE Class A Waste Acceptance Criteria (WAC)
Ministry for the Environment, 2004, MfE Class B Waste Acceptance Criteria (WAC)

							Organophosphate Pesticides										Particulates		Pesticides									
							chlorpyrifos-methyl	chlorpyrifos	chlorpyrifos-methyl	diazinon	dichlorvos	dimethoate	malathion	Methamidophos	parathion-methyl	phorate (Thimet)	parathion			bifenthrin & Tralomethrin	carbaryl	carbofuran	carbofuran	cyhalothrin/Karate	gamma-BHC (lindane)	permethrin	trimiconb	trimiphos-methyl
							mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	g/100g dry wt	g/100g as rcd	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL							0.16	0.08	0.08	0.04	0.08	0.16	0.08	0.4	0.08	0.4	0.08			0.08	0.08	0.5	0.08	0.08	0.19	0.03	0.08	0.08
Landcare (2023) Predicted Background (ID 8715) - Recent Soil - Upper Range (Mayflower)																												
Landcare (2023) Predicted Background (ID 26517) - Recent Soil - Upper Range (Plant Nursery BH1140, BH1104)																												
Landcare (2023) Predicted Background (ID 27156) - Recent Soil - Upper Range (Plant Nursery BH1102)																												
Landcare (2023) Predicted Background (ID 23536) - Recent Soil - Upper Range (Accidental Discovery Site)																												
WasteMINZ (2022) Class 5 Clean Fill Organic WAC																												
WasteMINZ (2022) Class 4 Controlled Fill WAC																												
WasteMINZ (2022) Class 3 Managed Fill WAC																												
MfE Class A Waste Acceptance Criteria (WAC)																												
MfE Class B Waste Acceptance Criteria (WAC)																												
Lab Name	**Location Code**	**Field ID**	**Date**	**Lab Report Number**	**Sample Code**	**Depth (mbgl)**																						
Potential Sheep Dip Site (Mayflower Farms)	2B_SS01	2B_SS01_0.1	14-10-2025	4008719	4008719_2	0.1	<0.16	<0.08	<0.08	<0.04	<0.09	<0.16	<0.08	<0.4	<0.08	<0.4	<0.08		72	<0.08	<0.08		<0.08	<0.08	<0.19	<0.03	<0.08	<0.08
	2B_SS02	2B_SS02_0.1	14-10-2025	4008719	4008719_3	0.1																						
	2B_SS03	2B_SS03_0.1	14-10-2025	4008719	4008719_4	0.1																						
	2B_SS04	2B_SS04_0.1	14-10-2025	4008719	4008719_5	0.1																						
"	2B_SS05	2B_SS05_0.1	14-10-2025	4008719	4008719_6	0.1	<0.2	<0.10	<0.10	<0.05	<0.10	<0.2	<0.10	<0.5	<0.10	<0.5	<0.10		56	<0.10	<0.10		<0.10	<0.10	<0.3	<0.03	<0.10	<0.10
	BH2B_1149	BH2B_1149_0.1	14-10-2025	4008719	4008719_1	0.1																						
Plant Nursery Site (The Waipu Land Company)	BH2B_1104	BH2B_1104_0.1	14-10-2025	4008719	4008719_13	0.1	<0.15	<0.08	<0.08	<0.04	<0.09	<0.15	<0.08	<0.4	<0.08	<0.4	<0.08		74	<0.08	<0.08		<0.08	<0.08	<0.18	<0.03	<0.08	<0.08
		BH2B_1104_0.4	14-10-2025	4008719	4008719_14	0.4	<0.15	<0.08	<0.08	<0.04	<0.09	<0.15	<0.08	<0.4	<0.08	<0.4	<0.08		77	<0.08	<0.08		<0.08	<0.08	<0.18	<0.03	<0.08	<0.08
		BH2B_1104_1.0	14-10-2025	4008719	4008719_15	1	<0.15	<0.08	<0.08	<0.04	<0.09	<0.15	<0.08	<0.4	<0.08	<0.4	<0.08		74	<0.08	<0.08		<0.08	<0.08	<0.18	<0.03	<0.08	<0.08
	BH2B_1105	BH2B_1105_0.1	14-10-2025	4008719	4008719_10	0.1	<0.3	<0.11	<0.11	<0.06	<0.11	<0.3	<0.11	<0.6	<0.11	<0.6	<0.11		52	<0.11	<0.11		<0.11	<0.11	<0.3	<0.05	<0.11	<0.11
		BH2B_1105_0.4	14-10-2025	4008719	4008719_11	0.4	<0.16	<0.08	<0.08	<0.04	<0.09	<0.16	<0.08	<0.4	<0.08	<0.4	<0.08		71	<0.08	<0.08		<0.08	<0.08	<0.19	<0.03	<0.08	<0.08
		BH2B_1105_0.6	14-10-2025	4008719	4008719_12	0.6	<0.15	<0.08	<0.08	<0.04	<0.09	<0.15	<0.08	<0.4	<0.08	<0.4	<0.08		68	<0.08	<0.08		<0.08	<0.08	<0.2	<0.03	<0.08	<0.08
	BH2B_1140	BH2B_1140_0.1	14-10-2025	4008719	4008719_7	0.1	<0.15	<0.08	<0.08	<0.04	<0.09	<0.15	<0.08	<0.4	<0.08	<0.4	<0.08		74	<0.08	<0.08		<0.08	<0.08	<0.18	<0.03	<0.08	<0.08
		BH2B_1140_0.5	14-10-2025	4008719	4008719_8	0.5	<0.15	<0.08	<0.08	<0.04	<0.09	<0.15	<0.08	<0.4	<0.08	<0.4	<0.08		74	<0.08	<0.08		<0.08	<0.08	<0.18	<0.03	<0.08	<0.08
		BH2B_1140_1.0	14-10-2025	4008719	4008719_9	1	<0.15	<0.08	<0.08	<0.04	<0.09	<0.15	<0.08	<0.4	<0.08	<0.4	<0.08		73	<0.08	<0.08		<0.08	<0.08	<0.18	<0.03	<0.08	<0.08
Accidental Discovery Site	BH2B_1160	BH2B_1160 1.40m	10-10-2025	4006009	4006009_1	1.4													69									
		BH2B_1160 10.70m	10-10-2025	4006009	4006009_2	10.7													79									
		BH2B_1160 16.00m	10-10-2025	4006009	4006009_3	16													76									
		BH2B_1160 23m	13-10-2025	4009250	4009250_1	23												96	82									
		BH2B_1160 28m	13-10-2025	4009250	4009250_2	28												96	74									
	BH2B_2101	BH2B_2101_7.3	13-01-2026	4073451	4073451_5	7.3												97	87			<0.5						
		BH2B_2101_16	13-01-2026	4073451	4073451_12	16												98	88			<0.5						
		BH2B_2101_20.0	14-01-2026	4076439	4076439_1	20												97	84			<0.5						
		BH2B_2101_21.4	14-01-2026	4076439	4076439_4	21.4												98	80			<0.5						
		BH2B_2101_24.0	14-01-2026	4076439	4076439_6	24												98	85			<0.5						
		BH2B_2101_45.0	16-01-2026	4076439	4076439_20	45												97	83			<0.5						
		BH2B_2101_49.7	16-01-2026	4076439	4076439_23	49.7												97	84			<0.5						
	BH2B_2147	BH2B_2147_4.95	30-01-2026	4086908	4086908_4	4.95													80			<0.5						
		BH2B_2147_16.95	02-02-2026	4091264	4091264_3	16.95													78			<0.5						
		BH2B_2147_32.90	04-02-2026	4091264	4091264_12	32.9													85			<0.5						
		BH2B_2147_34.80	04-02-2026	4091264	4091264_13	34.8													82			<0.5						
	BH2B_2148	2B_2148_1.5	16-12-2025	4059456	4059456_20	1.5													80									
		2B_2148_4.6	15-12-2025	4059456	4059456_1	4.6													83									
		2B_2148_6.0	15-12-2025	4059456	4059456_3	6												95	84			<0.5						
		2B_2148_9.5	15-12-2025	4059456	4059456_7	9.5												96	82			<0.5						
		2B_2148_13.4	15-12-2025	4059456	4059456_11	13.4												95	85			<0.5						
		2B_2148_15.5	16-12-2025	4059456	4059456_13	15.5												95	82			<0.5						
		2B_2148_20.5	16-12-2025	4059456	4059456_18	20.5												95	86			<0.5						
		BH2B_2148/24.0	17-12-2025	4061277	4061277_23	24												96	85			<0.5						
		BH2B_2148/41.0	17-12-2025	4061277	4061277_13	41												96	87			<0.5						
		BH2B_2148/45.5	17-12-2025	4061277	4061277_17	45.5												96	87			<0.5						
	BH2B_2149	BH2B_2149_3.65	22-01-2026	4081709	4081709_2	3.65													68			<0.5						
		BH2B_2149_15.75	23-01-2026	4081709	4081709_10	15.75													80			<0.5						
		BH2B_2149_22.10	27-01-2026	4084844	4084844_2	22.1													76			<0.5						
		BH2B_2149_26.45	27-01-2026	4084844	4084844_4	26.45													85			<0.5						
		BH2B_2149_35.85	28-01-2026	4084844	4084844_10	35.85													79			<0.5						
		BH2B_2149_37.00	28-01-2026	4084844	4084844_11	37													83			<0.5						
Statistics																												
Minimum Concentration							<0.15	<0.08	<0.08	<0.04	<0.09	<0.15	<0.08	<0.4	<0.08	<0.4	<0.08	95	52	<0.08	<0.08	<0.5	<0.08	<0.08	<0.18	<0.03	<0.08	<0.08
Maximum Concentration							<0.3	<0.11	<0.11	<0.06	<0.11	<0.3	<0.11	<0.6	<0.11	<0.6	<0.11	98	89	<0.11	<0.11	<0.5	<0.11	<0.11	<0.3	<0.03	<0.11	<0.11
Average Concentration *							0.085	0.042	0.042	0.021	0.046	0.085	0.042	0.21	0.042	0.21	0.042	96	79	0.042	0.042	0.25	0.042	0.042	0.1	0.015	0.042	0.042
Standard Deviation *							0.023	0.0052	0.0052	0.0032	0.0032	0.023	0.0052	0.032	0.0052	0.032	0.0052	1.1	7.8	0.0052	0.0052	0	0.0052	0.0052	0.024	0	0.0052	0.0052
95% UCL (Student's-t) *							0.0978	0.0451	0.0451	0.0231	0.0481	0.0978	0.0451	0.231	0.0451	0.231	0.0451	96.8	80.44	0.0451	0.0451	0.25	0.0451	0.0451	0.116	0.015	0.0451	0.0451

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards

Landcare Research, 2023, Landcare (2023) Predicted Background (ID 8715, 26517, 27156, 23536) - Recent Soil - Upper Range
Ministry for the Environment, 2004, MfE Class A Waste Acceptance Criteria (WAC)
Ministry for the Environment, 2004, MfE Class B Waste Acceptance Criteria (WAC)

				Amino Aliphatics	Phenolics					Amino Aromatics		Phenolics-Halogenated						Unassigned											
				N-Nitrosodi-n-propylamine	2,4-Dimethylphenol	2-Methylphenol	2-Nitrophenol	3-, & 4- Methylphenol	Phenol	Diphenylamine	2'-Nitrosodiphenylamine & Diphenylamine	2,4,5-Trichlorophenol	2,4,6-Trichlorophenol	2,4-Dichlorophenol	2-Chlorophenol	4-Chloro-3-methylphenol	Pentachlorophenol	Azaconazole	Bendiocarb	Benomyl	Bromopropylate	Chlorfluazuron	Diclofop-methyl	Dicofol	Diuron	Fenpropidin	Fenpropimorph	Fluazinam	Hexaconazole	Imidacloprid	Iprodione
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL				0.8 - 0.9	3	1	5	3	1	0.16	0.8 - 0.9	1	1	1	1	5	30	0.04	0.04	0.08	0.08	0.08	0.2	0.08	0.04	0.08	0.4	0.04	0.4
Landcare (2023) Predicted Background (ID 8715) - Recent Soil - Upper Range (Mayflower)																													
Landcare (2023) Predicted Background (ID 26517) - Recent Soil - Upper Range (Plant Nursery BH1140, BH1104)																													
Landcare (2023) Predicted Background (ID 27516) - Recent Soil - Upper Range (Plant Nursery BH1102)																													
Landcare (2023) Predicted Background (ID 23536) - Recent Soil - Upper Range (Accidental Discovery Site)																													
WasteMINZ (2022) Class 5 Clean Fill Organic WAC																													
WasteMINZ (2022) Class 4 Controlled Fill WAC																													
WasteMINZ (2022) Class 3 Managed Fill WAC																													
MfE Class A Waste Acceptance Criteria (WAC)									800				2	0.1	0.1														
MfE Class B Waste Acceptance Criteria (WAC)									80				0.2	0.01	0.01														
Lab Name	**Location Code**	**Field ID**	**Date**	**Lab Report Number**	**Sample Code**	**Depth (mbgl)**																							
Potential Sheep Dip Site (Mayflower Farms)	2B_SS01	2B_SS01 0.1	14-10-2025	4008719	4008719_2	0.1						<0.16							<0.04	<0.04	<0.08	<0.08	<0.08	<0.2	<0.08	<0.04	<0.08	<0.4	<0.04	<0.4
	2B_SS02	2B_SS02 0.1	14-10-2025	4008719	4008719_3	0.1																								
	2B_SS03	2B_SS03 0.1	14-10-2025	4008719	4008719_4	0.1																								
	2B_SS04	2B_SS04 0.1	14-10-2025	4008719	4008719_5	0.1																								
"	2B_SS05	2B_SS05 0.1	14-10-2025	4008719	4008719_6	0.1						<0.2							<0.05	<0.05	<0.10	<0.10	<0.10	<0.3	<0.10	<0.05	<0.10	<0.5	<0.05	<0.5
	BH2B_1149	BH2B_1149 0.1	14-10-2025	4008719	4008719_1	0.1																								
Plant Nursery Site (The Waipu Land Company)	BH2B_1104	BH2B_1104 0.1	14-10-2025	4008719	4008719_13	0.1						<0.15							<0.04	<0.04	<0.08	<0.08	<0.08	<0.2	<0.08	<0.04	<0.08	<0.4	<0.04	<0.4
		BH2B_1104 0.4	14-10-2025	4008719	4008719_14	0.4						<0.15							<0.04	<0.04	<0.08	<0.08	<0.08	<0.2	<0.08	<0.04	<0.08	<0.4	<0.04	<0.4
		BH2B_1104 1.0	14-10-2025	4008719	4008719_15	1						<0.15							<0.04	<0.04	<0.08	<0.08	<0.08	<0.2	<0.08	<0.04	<0.08	<0.4	<0.04	<0.4
	BH2B_1105	BH2B_1105 0.1	14-10-2025	4008719	4008719_10	0.1						<0.2							<0.06	<0.06	<0.12	<0.12	<0.12	<0.2	<0.12	<0.06	<0.12	<0.6	<0.06	<0.6
		BH2B_1105 0.4	14-10-2025	4008719	4008719_11	0.4						<0.16							<0.04	<0.04	<0.08	<0.08	<0.08	<0.2	<0.08	<0.04	<0.08	<0.4	<0.04	<0.4
		BH2B_1105 0.6	14-10-2025	4008719	4008719_12	0.6						<0.16							<0.04	<0.04	<0.08	<0.08	<0.08	<0.2	<0.08	<0.04	<0.08	<0.4	<0.04	<0.4
	BH2B_1140	BH2B_1140 0.1	14-10-2025	4008719	4008719_7	0.1						<0.15							<0.04	<0.04	<0.08	<0.08	<0.08	<0.2	<0.08	<0.04	<0.08	<0.4	<0.04	<0.4
		BH2B_1140 0.5	14-10-2025	4008719	4008719_8	0.5						<0.15							<0.04	<0.04	<0.08	<0.08	<0.08	<0.2	<0.08	<0.04	<0.08	<0.4	<0.04	<0.4
		BH2B_1140 1.0	14-10-2025	4008719	4008719_9	1						<0.15							<0.04	<0.04	<0.08	<0.08	<0.08	<0.2	<0.08	<0.04	<0.08	<0.4	<0.04	<0.4
Accidental Discovery Site	BH2B_1160	BH2B_1160 1.40m	10-10-2025	4006009	4006009_1	1.4																								
		BH2B_1160 10.70m	10-10-2025	4006009	4006009_2	10.7																								
		BH2B_1160 16.00m	10-10-2025	4006009	4006009_3	16																								
		BH2B_1160 23m	13-10-2025	4009250	4009250_1	23																								
		BH2B_1160 28m	13-10-2025	4009250	4009250_2	28																								
	BH2B_2101	BH2B_2101 7.3	13-01-2026	4073451	4073451_5	7.3	<0.7	<3	<1.0	<5	<3	<1.0		<0.7	<1.0	<1.0	<1.0	<1.0	<5	<30										
		BH2B_2101_16	13-01-2026	4073451	4073451_12	16	<0.7	<3	<1.0	<5	<3	<1.0		<0.7	<1.0	<1.0	<1.0	<1.0	<5	<30										
		BH2B_2101_20.0	14-01-2026	4076439	4076439_3	20	<0.7	<3	<1.0	<5	<3	<1.0		<0.7	<1.0	<1.0	<1.0	<1.0	<5	<30										
		BH2B_2101_21.4	14-01-2026	4076439	4076439_4	21.4	<0.8	<3	<1.0	<5	<3	<1.0		<0.8	<1.0	<1.0	<1.0	<1.0	<5	<30										
		BH2B_2101_24.0	14-01-2026	4076439	4076439_6	24	<0.8	<3	<1.0	<5	<3	<1.0		<0.8	<1.0	<1.0	<1.0	<1.0	<5	<30										
		BH2B_2101_45.0	16-01-2026	4076439	4076439_20	45	<0.8	<3	<1.0	<5	<3	<1.0		<0.8	<1.0	<1.0	<1.0	<1.0	<5	<30										
		BH2B_2101_49.7	16-01-2026	4076439	4076439_23	49.7	<0.8	<3	<1.0	<5	<3	<1.0		<0.8	<1.0	<1.0	<1.0	<1.0	<5	<30										
	BH2B_2147	BH2B_2147_4.95	30-01-2026	4086908	4086908_4	4.95	<0.8	<3	<1	<5	<3	<1		<0.8	<1	<1	<1	<1	<5	<30										
		BH2B_2147_16.95	02-02-2026	4091264	4091264_3	16.95	<0.8	<3	<1.0	<5	<3	<1.0		<0.8	<1.0	<1.0	<1.0	<1.0	<5	<30										
		BH2B_2147_32.90	04-02-2026	4091264	4091264_12	32.9	<0.8	<3	<1.0	<5	<3	<1.0		<0.8	<1.0	<1.0	<1.0	<1.0	<5	<30										
		BH2B_2147_34.80	04-02-2026	4091264	4091264_13	34.8	<0.8	<3	<1.0	<5	<3	<1.0		<0.8	<1.0	<1.0	<1.0	<1.0	<5	<30										
	BH2B_2148	2B_2148_1.5	16-12-2025	4059456	4059456_20	1.5																								
		2B_2148_4.6	15-12-2025	4059456	4059456_1	4.6																								
		2B_2148_6.0	15-12-2025	4059456	4059456_3	6	<0.7	<3	<1.0	<5	<3	<1.0		<0.7	<1.0	<1.0	<1.0	<1.0	<5	<30										
		2B_2148_9.5	15-12-2025	4059456	4059456_7	9.5	<0.8	<3	<1.0	<5	<3	<1.0		<0.8	<1.0	<1.0	<1.0	<1.0	<5	<30										
		2B_2148_13.4	15-12-2025	4059456	4059456_11	13.4	<0.7	<3	<1.0	<5	<3	<1.0		<0.7	<1.0	<1.0	<1.0	<1.0	<5	<30										
		2B_2148_15.5	16-12-2025	4059456	4059456_13	15.5	<0.8	<3	<1.0	<5	<3	<1.0		<0.8	<1.0	<1.0	<1.0	<1.0	<5	<30										
		2B_2148_20.5	16-12-2025	4059456	4059456_18	20.5	<0.7	<3	<1.0	<5	<3	<1.0		<0.7	<1.0	<1.0	<1.0	<1.0	<5	<30										
		BH2B_2148/24.0	17-12-2025	4061277	4061277_23	24	<0.7	<3	<1.0	<5	<3	<1.0		<0.7	<1.0	<1.0	<1.0	<1.0	<5	<30										
		BH2B_2148/41.0	17-12-2025	4061277	4061277_13	41	<0.7	<3	<1.0	<5	<3	<1.0		<0.7	<1.0	<1.0	<1.0	<1.0	<5	<30										
		BH2B_2148/45.5	17-12-2025	4061277	4061277_17	45.5	<0.7	<3	<1.0	<5	<3	<1.0		<0.7	<1.0	<1.0	<1.0	<1.0	<5	<30										
	BH2B_2149	BH2B_2149_3.65	22-01-2026	4081709	4081709_2	3.65	<0.9	<3	<1.0	<5	<3	<1.0		<0.9	<1.0	<1.0	<1.0	<1.0	<5	<30										
		BH2B_2149_15.75	23-01-2026	4081709	4081709_10	15.75	<0.8	<3	<1.0	<5	<3	<1.0		<0.8	<1.0	<1.0	<1.0	<1.0	<5	<30										
		BH2B_2149_22.10	27-01-2026	4084844	4084844_2	22.1	<0.8	<3	<1.0	<5	<3	<1.0		<0.8	<1.0	<1.0	<1.0	<1.0	<5	<30										
		BH2B_2149_26.45	27-01-2026	4084844	4084844_4	26.45	<0.7	<3	<1.0	<5	<3	<1.0		<0.7	<1.0	<1.0	<1.0	<1.0	<5	<30										
		BH2B_2149_35.85	28-01-2026	4084844	4084844_10	35.85	<0.8	<3	<1.0	<5	<3	<1.0		<0.8	<1.0	<1.0	<1.0	<1.0	<5	<30										
		BH2B_2149_37.00	28-01-2026	4084844	4084844_11	37	<0.8	<3	<1.0	<5	<3	<1.0		<0.8	<1.0	<1.0	<1.0	<1.0	<5	<30										
Statistics																													
Minimum Concentration					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.15	<0.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.04	<0.04	<0.08	<0.08	<0.08	<0.2	<0.08	<0.04	<0.08	<0.4	<0.04	<0.4
Maximum Concentration					<0.9	<3	<1	<5	<3	<1	<0.3	<0.9	<1	<1	<1	<1	<5	<30	<0.06	<0.06	<0.11	<0.11	<0.11	<0.3	<0.11	<0.06	<0.11	<0.6	<0.06	<0.6
Average Concentration *					0.37	1.4	0.47	2.3	1.4	0.47	0.085	0.38	0.47	0.47	0.47	0.47	2.3	13	0.021	0.021	0.042	0.042	0.042	0.11	0.042	0.021	0.042	0.21	0.021	0.21
Standard Deviation *					0.049	0.39	0.079	0.71	0.39	0.079	0.023	0.029	0.079	0.079	0.079	0.079	0.71	4.6	0.0032	0.0032	0.0052	0.0052	0.0052	0.02	0.0052	0.0032	0.0052	0.032	0.0032	0.032
95% UCL (Student's-t) *					0.392	1.5	0.5	2.5	1.5	0.5	0.0978	0.392	0.5	0.5	0.5	0.5	2.5	15	0.0231	0.0231	0.0451	0.0451	0.0451	0.12	0.0451	0.0231	0.0451	0.231	0.0231	0.231

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards

Landcare Research, 2023, Landcare (2023) Predicted Background (ID 8715, 26517, 27156, 23536) - Recent Soil - Upper Range
Ministry for the Environment, 2004, MfE Class A Waste Acceptance Criteria (WAC)
Ministry for the Environment, 2004, MfE Class B Waste Acceptance Criteria (WAC)

					Unassigned														E-Nitrobenzenes	Explosives		Physicochemical parameters	Solvents				
					Fipronil sulfone	FCM19 (5-chloro-2-methylthio-benzothiazole,fluazinam)	Terbumeton	Terbuthylazine-desethyl	Thiabendazole	Tolylfluanid	Total DDT isomers	Triasulfuron	Tri-allate	Tribufos	Triclopyr ester	Triclosan	Tridemorph	Trifluralin	Nitrobenzene	2,4-Dinitrotoluene	2,6-Dinitrotoluene	Organic Matter	Methyl Ethyl Ketone	Methyl iso-butyl ketone	Acetone	Isophorone	Methyl-t-butyl ether
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg dry wt	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	g/100g dry wt	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					0.06	0.16	0.08	0.08	0.4	0.04	0.09	0.08	0.1	0.08	0.08	0.08	0.04	0.08	0.5	1	1					0.5	
Landcare (2023) Predicted Background (ID 8715) - Recent Soil - Upper Range (Mayflower)																											
Landcare (2023) Predicted Background (ID 26517) - Recent Soil - Upper Range (Plant Nursery BH1140, BH1104)																											
Landcare (2023) Predicted Background (ID 27156) - Recent Soil - Upper Range (Plant Nursery BH1102)																											
Landcare (2023) Predicted Background (ID 23536) - Recent Soil - Upper Range (Accidental Discovery Site)																											
WasteMINZ (2022) Class 5 Clean Fill Organic WAC																											
WasteMINZ (2022) Class 4 Controlled Fill WAC																											
WasteMINZ (2022) Class 3 Managed Fill WAC																											
MfE Class A Waste Acceptance Criteria (WAC)																											
MfE Class B Waste Acceptance Criteria (WAC)																											
Lab Name	**Location Code**	**Field ID**	**Date**	**Lab Report Number**	**Sample Code**	**Depth (mbgl)**																					
Potential Sheep Dip Site (Mayflower Farms)	2B_SS01	2B_SS01_0.1	14-10-2025	4008719	4008719_2	0.1	<0.06	<0.16	<0.08	<0.08	<0.4	<0.04	<0.09	<0.08	<0.10	<0.08	<0.08	<0.08	<0.04	<0.08									
	2B_SS02	2B_SS02_0.1	14-10-2025	4008719	4008719_3	0.1																							
	2B_SS03	2B_SS03_0.1	14-10-2025	4008719	4008719_4	0.1																							
	2B_SS04	2B_SS04_0.1	14-10-2025	4008719	4008719_5	0.1																							
"	2B_SS05	2B_SS05_0.1	14-10-2025	4008719	4008719_6	0.1	<0.07	<0.2	<0.10	<0.10	<0.5	<0.05	<0.11	<0.10	<0.12	<0.10	<0.10	<0.10	<0.05	<0.10									
	BH2B_1149	BH2B_1149_0.1	14-10-2025	4008719	4008719_1	0.1																							
Plant Nursery Site (The Waipu Land Company)	BH2B_1104	BH2B_1104_0.1	14-10-2025	4008719	4008719_13	0.1	<0.05	<0.15	<0.08	<0.08	<0.4	<0.04	<0.08	<0.08	<0.09	<0.08	<0.08	<0.08	<0.04	<0.08									
		BH2B_1104_0.4	14-10-2025	4008719	4008719_14	0.4	<0.05	<0.15	<0.08	<0.08	<0.4	<0.04	<0.08	<0.08	<0.09	<0.08	<0.08	<0.08	<0.04	<0.08									
		BH2B_1104_1.0	14-10-2025	4008719	4008719_15	1	<0.05	<0.15	<0.08	<0.08	<0.4	<0.04	<0.08	<0.08	<0.09	<0.08	<0.08	<0.08	<0.04	<0.08									
	BH2B_1105	BH2B_1105_0.1	14-10-2025	4008719	4008719_10	0.1	<0.08	<0.3	<0.11	<0.11	<0.6	<0.06	<0.12	<0.11	<0.13	<0.11	<0.11	<0.11	<0.06	<0.11									
		BH2B_1105_0.4	14-10-2025	4008719	4008719_11	0.4	<0.06	<0.16	<0.08	<0.08	<0.4	<0.04	<0.09	<0.08	<0.10	<0.08	<0.08	<0.08	<0.04	<0.08									
		BH2B_1105_0.6	14-10-2025	4008719	4008719_12	0.6	<0.05	<0.15	<0.08	<0.08	<0.4	<0.04	<0.09	<0.08	<0.10	<0.08	<0.08	<0.08	<0.04	<0.08									
	BH2B_1140	BH2B_1140_0.1	14-10-2025	4008719	4008719_7	0.1	<0.06	<0.15	<0.08	<0.08	<0.4	<0.04	<0.08	<0.08	<0.09	<0.08	<0.08	<0.08	<0.04	<0.08									
		BH2B_1140_0.5	14-10-2025	4008719	4008719_8	0.5	<0.06	<0.15	<0.08	<0.08	<0.4	<0.04	<0.08	<0.08	<0.09	<0.08	<0.08	<0.08	<0.04	<0.08									
		BH2B_1140_1.0	14-10-2025	4008719	4008719_9	1	<0.06	<0.15	<0.08	<0.08	<0.4	<0.04	<0.08	<0.08	<0.09	<0.08	<0.08	<0.08	<0.04	<0.08									
Accidental Discovery Site	BH2B_1160	BH2B_1160 1.40m	10-10-2025	4006009	4006009_1	1.4																	<5	<1.0	<5		<0.03
		BH2B_1160 10.70m	10-10-2025	4006009	4006009_2	10.7																	<4	<0.8	<4		<0.03
		BH2B_1160 16.00m	10-10-2025	4006009	4006009_3	16																	<5	<0.9	<5		<0.03
		BH2B_1160 23m	13-10-2025	4009250	4009250_1	23																4.4	<4	<0.9	<4		<0.03
		BH2B_1160 28m	13-10-2025	4009250	4009250_2	28																3.8	<5	<0.9	<5		<0.03
	BH2B_2101	BH2B_2101_7.3	13-01-2026	4073451	4073451_5	7.3													<0.5	<1.0	<1.0	2.5				<0.5	
		BH2B_2101_16	13-01-2026	4073451	4073451_12	16													<0.5	<1.0	<1.0	1.89				<0.5	
		BH2B_2101_20.0	14-01-2026	4076439	4076439_3	20													<0.5	<1.0	<1.0	2.8				<0.5	
		BH2B_2101_21.4	14-01-2026	4076439	4076439_4	21.4													<0.5	<1.0	<1.0	2.4				<0.5	
		BH2B_2101_24.0	14-01-2026	4076439	4076439_6	24													<0.5	<1.0	<1.0	2.5				<0.5	
		BH2B_2101_45.0	16-01-2026	4076439	4076439_20	45													<0.5	<1.0	<1.0	3.1				<0.5	
		BH2B_2101_49.7	16-01-2026	4076439	4076439_23	49.7													<0.5	<1.0	<1.0	2.5				<0.5	
	BH2B_2147	BH2B_2147_4.95	30-01-2026	4086908	4086908_4	4.95													<0.5	<1	<1					<0.5	
		BH2B_2147_16.95	02-02-2026	4091264	4091264_3	16.95													<0.5	<1.0	<1.0					<0.5	
		BH2B_2147_32.90	04-02-2026	4091264	4091264_12	32.9													<0.5	<1.0	<1.0					<0.5	
		BH2B_2147_34.80	04-02-2026	4091264	4091264_13	34.8													<0.5	<1.0	<1.0					<0.5	
	BH2B_2148	2B_2148_1.5	16-12-2025	4059456	4059456_20	1.5																					
		2B_2148_4.6	15-12-2025	4059456	4059456_1	4.6																					
		2B_2148_6.0	15-12-2025	4059456	4059456_3	6													<0.5	<1.0	<1.0	4.8				<0.5	
		2B_2148_9.5	15-12-2025	4059456	4059456_7	9.5													<0.5	<1.0	<1.0	4.3				<0.5	
		2B_2148_13.4	15-12-2025	4059456	4059456_11	13.4													<0.5	<1.0	<1.0	4.6				<0.5	
		2B_2148_15.5	16-12-2025	4059456	4059456_13	15.5													<0.5	<1.0	<1.0	4.5				<0.5	
		2B_2148_20.5	16-12-2025	4059456	4059456_18	20.5													<0.5	<1.0	<1.0	4.8				<0.5	
		BH2B_2148/24.0	17-12-2025	4061277	4061277_23	24													<0.5	<1.0	<1.0	4.1				<0.5	
		BH2B_2148/41.0	17-12-2025	4061277	4061277_13	41													<0.5	<1.0	<1.0	4.1				<0.5	
		BH2B_2148/45.5	17-12-2025	4061277	4061277_17	45.5													<0.5	<1.0	<1.0	4.3				<0.5	
	BH2B_2149	BH2B_2149_3.65	22-01-2026	4081709	4081709_2	3.65													<0.5	<1.0	<1.0					<0.5	
		BH2B_2149_15.75	23-01-2026	4081709	4081709_10	15.75													<0.5	<1.0	<1.0					<0.5	
		BH2B_2149_22.10	27-01-2026	4084844	4084844_2	22.1													<0.5	<1.0	<1.0					<0.5	
		BH2B_2149_26.45	27-01-2026	4084844	4084844_4	26.45													<0.5	<1.0	<1.0					<0.5	
		BH2B_2149_35.85	28-01-2026	4084844	4084844_10	35.85													<0.5	<1.0	<1.0					<0.5	
		BH2B_2149_37.00	28-01-2026	4084844	4084844_11	37													<0.5	<1.0	<1.0					<0.5	
Statistics																											
Minimum Concentration							<0.05	<0.15	<0.08	<0.08	<0.4	<0.04	<0.08	<0.08	<0.09	<0.08	<0.08	<0.08	<0.04	<0.08	<0.5	<0.5	<0.5	1.89	<4	<0.8	<4	<0.5	<0.03
Maximum Concentration							<0.08	<0.3	<0.11	<0.11	<0.6	<0.06	<0.12	<0.11	<0.13	<0.11	<0.11	<0.11	<0.06	<0.11	<0.5	<1	<1	4.8	<5	<1	<5	<0.5	<0.03
Average Concentration *							0.031	0.085	0.042	0.042	0.21	0.021	0.045	0.042	0.05	0.042	0.042	0.042	0.021	0.042	0.25	0.47	0.47	3.6	2.3	0.44	2.3	0.25	0.015
Standard Deviation *							0.0038	0.023	0.0052	0.0052	0.032	0.0032	0.0067	0.0052	0.0069	0.0052	0.0052	0.0052	0.0032	0.0052	0	0.079	0.079	0.99	0.27	0.042	0.27	0	0
95% UCL (Student's-t) *							0.033	0.0978	0.0451	0.0451	0.231	0.0231	0.0487	0.0451	0.0533	0.0451	0.0451	0.0451	0.0231	0.0451	0.25	0.5	0.5	4.031	2.561	0.48	2.561	0.25	0.015

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards

Landcare Research, 2023, Landcare (2023) Predicted Background (ID 8715, 26517, 27156, 23536) - Recent Soil - Upper Range
Ministry for the Environment, 2004, MfE Class A Waste Acceptance Criteria (WAC)
Ministry for the Environment, 2004, MfE Class B Waste Acceptance Criteria (WAC)

					Heavy Metals															
					Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chromium	Chromium (filtered)	Copper	Copper (filtered)	Lead	Lead (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	Zinc	Zinc (filtered)
					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL					0.001	0.001	0.00005	0.00005	0.0005	0.0005	0.0005	0.0005	0.0001	0.0001	0.0001	0.0001	0.0005	0.0005	0.001	0.001
ANZECC 2000 Freshwater 80%							0.0008	0.0008			0.0025	0.0025	0.0094	0.0094	0.0054	0.0054	0.017	0.017	0.031	0.031
ANZECC 2000 Freshwater 95%							0.0002	0.0002			0.0014	0.0014	0.0034	0.0034	0.0006	0.0006	0.011	0.011	0.008	0.008
Location Code	**Field ID**	**Date**	**Lab Report Number**	**Sample Code**																
BH2B_1160	BH2B_1160	26-02-2026	4113692	4113692_1	0.0040	<0.0010	0.000068	<0.00005	0.0044	<0.0005	0.0049	<0.0005	0.0027	<0.00010	<0.00011	<0.00010	0.0071	<0.0005	0.027	<0.0010
BH2B_2101	BH2B_2101	27-02-2026	4114639	4114639_2	0.0053	0.0044	<0.000053	<0.00005	0.0027	<0.0005	0.0066	<0.0005	0.00178	<0.00010	<0.00011	<0.00010	0.0039	<0.0005	0.0119	<0.0010
BH2B_2147	BH2B_2147	26-02-2026	4113692	4113692_3	0.030		<0.00053		0.122		0.54		0.080		<0.0010		0.183		0.61	
BH2B_2148	BH2B_2148	27-02-2026	4114639	4114639_1	0.0056	0.0040	<0.000053	<0.00005	0.00137	<0.0005	0.00199	<0.0005	0.00068	<0.00010	<0.00011	<0.00010	0.0048	0.0036	0.0179	0.0049
BH2B_2149	BH2B_2149	26-02-2026	4113692	4113692_2	0.0085	0.0055	<0.000053	<0.00005	0.0027	<0.0005	0.0052	<0.0005	0.00148	<0.00010	<0.00011	<0.00010	0.0043	<0.0005	0.0177	0.0012
Statistics																				
Number of Results					5	4	5	4	5	4	5	4	5	4	5	4	5	4	5	4
Number of Detects					5	3	1	0	5	0	5	0	5	0	0	0	5	1	5	2
Minimum Concentration					0.004	<0.001	<0.000053	<0.00005	0.00137	<0.0005	0.00199	<0.0005	0.00068	<0.0001	<0.00011	<0.0001	0.0039	<0.0005	0.0119	<0.001
Minimum Detect					0.004	0.004	0.000068	ND	0.00137	ND	0.00199	ND	0.00068	ND	ND	ND	0.0039	0.0036	0.0119	0.0012
Maximum Concentration					0.03	0.0055	<0.00053	<0.00005	0.122	<0.0005	0.54	<0.0005	0.08	<0.0001	<0.001	<0.0001	0.183	0.0036	0.61	0.0049
Maximum Detect					0.03	0.0055	0.000068	ND	0.122	ND	0.54	ND	0.08	ND	ND	ND	0.183	0.0036	0.61	0.0049
Average Concentration *					0.011	0.0036	0.000082	0.000025	0.027	0.00025	0.11	0.00025	0.017	0.00005	0.00014	0.00005	0.041	0.0011	0.14	0.0018
Geometric Average *					0.0079	0.0026	0.000051	0.000025	0.0056	0.00025	0.011	0.00025	0.0033	0.00005	0.000086	0.00005	0.01	0.00049	0.036	0.0011
Median Concentration *					0.0056	0.0042	0.0000265	0.000025	0.0027	0.00025	0.0052	0.00025	0.00178	0.00005	0.000055	0.00005	0.0048	0.00025	0.0179	0.00085
Standard Deviation *					0.011	0.0022	0.0001	0	0.053	0	0.24	0	0.035	0	0.0002	0	0.08	0.0017	0.26	0.0021
Geometric Standard Deviation *					2.2	3.1	2.7	1	5.9	1	9.1	1	6.4	1	2.7	1	5.1	3.8	5	2.9
95% UCL (Student's-t) *					0.0211	0.00614	0.00018126	0.000025	0.0775	0.00025	0.34	0.00025	0.0507	0.00005	0.00033373	0.00005	0.117	0.00306	0.389	0.00426
Number of Env Standard Exceedances					0	0	1	0	0	0	5	0	1	0	1	0	1	0	5	0
Number of Env Standard Exceedances (Detects Only)					0	0	0	0	0	0	5	0	1	0	0	0	1	0	5	0
% of Detects					100	75	20	0	100	0	100	0	100	0	0	0	100	25	100	50
% of Non-Detects					0	25	80	100	0	100	0	100	0	100	100	100	0	75	0	50
% of Detects at or above Env Standards					0	0	0	0	0	0	100	0	20	0	0	0	20	0	100	0
% of Results Below Env Standards or Non-Detect					100	100	100	100	100	100	0	100	80	100	100	100	80	100	0	100

* A Non Detect Multiplier of 0.5 has been applied.

					Total Petroleum Hydrocarbons				Polycyclic aromatic hydrocarbons														
					TRH C15 - C36 Fraction	TRH C7 - C36 Fraction	TRH C7 - C9 Fraction	TRH C10 - C14 Fraction	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(b)&(j)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Phenanthrene	Pyrene
					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL					0.4	0.7	0.1	0.2	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0001	0.0004	0.0002
ANZECC 2000 Freshwater 80%																							
ANZECC 2000 Freshwater 95%																							
Location Code	**Field ID**	**Date**	**Lab Report Number**	**Sample Code**																			
BH2B_1160	BH2B_1160	26-02-2026	4113692	4113692_1	<0.4	<0.7	0.16	<0.2	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.0002	<0.00010	<0.0004	<0.0002
BH2B_2101	BH2B_2101	27-02-2026	4114639	4114639_2	<0.4	<0.7	<0.10	0.5	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.0002	<0.00010	<0.0004	<0.0002
BH2B_2147	BH2B_2147	26-02-2026	4113692	4113692_3	<0.4	<0.7	<0.10	<0.2	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BH2B_2148	BH2B_2148	27-02-2026	4114639	4114639_1	<0.4	<0.7	<0.10	<0.2	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.0002	<0.00010	<0.0004	<0.0002
BH2B_2149	BH2B_2149	26-02-2026	4113692	4113692_2	<0.4	<0.7	<0.10	<0.2	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.0002	<0.00010	<0.0004	<0.0002
Statistics																							
Number of Results					5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Number of Detects					0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration					<0.4	<0.7	<0.1	<0.2	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	<0.0001	<0.0004	<0.0002
Minimum Detect					ND	ND	0.16	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration					<0.4	<0.7	0.16	0.5	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Maximum Detect					ND	ND	0.16	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration *					0.2	0.35	0.072	0.18	0.00009	0.00009	0.00009	0.00009	0.00009	0.00009	0.00009	0.00009	0.00009	0.00009	0.00009	0.00013	0.00009	0.00021	0.00013
Geometric Average *					0.2	0.35	0.063	0.14	0.000069	0.000069	0.000069	0.000069	0.000069	0.000069	0.000069	0.000069	0.000069	0.000069	0.000069	0.00012	0.000069	0.00021	0.00012
Median Concentration *					0.2	0.35	0.05	0.1	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.0001	0.00005	0.0002	0.0001
Standard Deviation *					0	0	0.049	0.18	0.000089	0.000089	0.000089	0.000089	0.000089	0.000089	0.000089	0.000089	0.000089	0.000089	0.000089	0.000067	0.000089	0.000022	0.000067
Geometric Standard Deviation *					1	1	1.7	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	1.5	2.1	1.1	1.5
95% UCL (Student's-t) *					0.2	0.35	0.119	0.351	0.00017527	0.00017527	0.00017527	0.00017527	0.00017527	0.00017527	0.00017527	0.00017527	0.00017527	0.00017527	0.00017527	0.00019396	0.00017527	0.00023132	0.00019396
Number of Env Standard Exceedances					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Env Standard Exceedances (Detects Only)					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Detects					0	0	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Non-Detects					100	100	80	80	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
% of Detects at or above Env Standards					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Results Below Env Standards or Non-Detect					100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

* A Non Detect Multiplier of 0.5 has been applied.

					Monocyclic Aromatic Hydrocarbons									BTEXN					
					1,2,4-trimethylbenzene	1,3,5-Trimethylbenzene	Isopropylbenzene	n-Butylbenzene	n-Propylbenzene	p-isopropyltoluene	sec-Butylbenzene	Styrene	tert-Butylbenzene	Naphthalene	Benzene	Toluene	Ethylbenzene	Xylenes (m & p)	Xylene (o)
					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL					0.0003	0.0003	0.0003	0.0005	0.0005	0.0005	0.0003	0.0003	0.0003	0.0005	0.0003	0.0003	0.0005	0.0005	0.0003
ANZECC 2000 Freshwater 80%														0.085	2				0.64
ANZECC 2000 Freshwater 95%														0.016	0.95				0.35
Location Code	**Field ID**	**Date**	**Lab Report Number**	**Sample Code**															
BH2B_1160	**BH2B_1160**	**26-02-2026**	**4113692**	**4113692_1**	0.0009	0.0006	0.0005	<0.0005	<0.0005	<0.0005	<0.0003	0.0012	<0.0003	<0.0005	0.0022	0.022	0.0032	0.0072	0.0026
BH2B_2101	**BH2B_2101**	**27-02-2026**	**4114639**	**4114639_2**	0.0004	0.0003	0.0003	<0.0005	<0.0005	<0.0005	<0.0003	0.0010	<0.0003	<0.0005	0.0047	0.035	0.0020	0.0039	0.0028
BH2B_2147	**BH2B_2147**	**26-02-2026**	**4113692**	**4113692_3**	0.0005	0.0003	<0.0003	<0.0005	<0.0005	<0.0005	<0.0003	0.0008	<0.0003	<0.003	0.0004	0.0022	0.0008	0.0016	0.0009
BH2B_2148	**BH2B_2148**	**27-02-2026**	**4114639**	**4114639_1**	0.0003	0.0003	<0.0003	<0.0005	<0.0005	<0.0005	<0.0003	0.0006	<0.0003	<0.0005	0.0046	0.0078	0.0008	0.0020	0.0013
BH2B_2149	**BH2B_2149**	**26-02-2026**	**4113692**	**4113692_2**	0.0005	<0.0003	<0.0003	<0.0005	<0.0005	<0.0005	<0.0003	0.0010	<0.0003	<0.0005	0.0005	0.0031	0.0007	0.0013	0.0006
Statistics																			
Number of Results					**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
Number of Detects					**5**	**4**	**2**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**5**	**5**	**5**	**5**	**5**
Minimum Concentration					**0.0003**	**0.0003**	**0.0003**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0003**	**0.0006**	**<0.0003**	**<0.0005**	**0.0004**	**0.0022**	**0.0007**	**0.0013**	**0.0006**
Minimum Detect					**0.0003**	**0.0003**	**0.0003**	**ND**	**ND**	**ND**	**ND**	**0.0006**	**ND**	**ND**	**0.0004**	**0.0022**	**0.0007**	**0.0013**	**0.0006**
Maximum Concentration					**0.0009**	**0.0006**	**0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0003**	**0.0012**	**<0.0003**	**<0.003**	**0.0047**	**0.035**	**0.0032**	**0.0072**	**0.0028**
Maximum Detect					**0.0009**	**0.0006**	**0.0005**	**ND**	**ND**	**ND**	**ND**	**0.0012**	**ND**	**ND**	**0.0047**	**0.035**	**0.0032**	**0.0072**	**0.0028**
Average Concentration *					**0.00052**	**0.00033**	**0.00025**	**0.00025**	**0.00025**	**0.00025**	**0.00015**	**0.00092**	**0.00015**	**0.0005**	**0.0025**	**0.014**	**0.0015**	**0.0032**	**0.0016**
Geometric Average *					**0.00049**	**0.0003**	**0.00022**	**0.00025**	**0.00025**	**0.00025**	**0.00015**	**0.0009**	**0.00015**	**0.00036**	**0.0016**	**0.0084**	**0.0012**	**0.0026**	**0.0014**
Median Concentration *					**0.0005**	**0.0003**	**0.00015**	**0.00025**	**0.00025**	**0.00025**	**0.00015**	**0.001**	**0.00015**	**0.00025**	**0.0022**	**0.0078**	**0.0008**	**0.002**	**0.0013**
Standard Deviation *					**0.00023**	**0.00016**	**0.00015**	**0**	**0**	**0**	**0**	**0.00023**	**0**	**0.00056**	**0.0021**	**0.014**	**0.0011**	**0.0025**	**0.001**
Geometric Standard Deviation *					**1.5**	**1.6**	**1.7**	**1**	**1**	**1**	**1**	**1.3**	**1**	**2.2**	**3.3**	**3.3**	**2**	**2**	**1.9**
95% UCL (Student's-t) *					**0.00073741**	**0.00048666**	**0.00039693**	**0.00025**	**0.00025**	**0.00025**	**0.00015**	**0.00114**	**0.00015**	**0.00103**	**0.00449**	**0.0275**	**0.00254**	**0.00554**	**0.00259**
Number of Env Standard Exceedances					**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Number of Env Standard Exceedances (Detects Only)					**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
% of Detects					**100**	**80**	**40**	**0**	**0**	**0**	**0**	**100**	**0**	**0**	**100**	**100**	**100**	**100**	**100**
% of Non-Detects					**0**	**20**	**60**	**100**	**100**	**100**	**100**	**0**	**100**	**100**	**0**	**0**	**0**	**0**	**0**
% of Detects at or above Env Standards					**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
% of Results Below Env Standards or Non-Detect					**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

* A Non Detect Multiplier of 0.5 has been applied.

								Heavy Metals								Polycyclic aromatic hydrocarbons				Polycyclic aromatic hydrocarbons
								Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	Benzo[a]pyrene Potency Equivalency Factor (PEF) NES	Benzo[a]pyrene Toxic Equivalence (TEF)	Benzo[b]fluoranthene + Benzo[j]fluoranthene	Benzo(a)pyrene	Pyrene
								mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg TEQ	mg/kg	mg/kg dry wt	mg/kg	mg/kg
EQL								2	0.1	2	2	2	0.1	2	4	0.0049	0.0049	0.013	0.002	0.002
Location Code	Field ID	Date	Lab Report Number	Sample Code	Depth	Sample Type														
BH2B_1105	BH2B_1105_0.4	14-10-2025	4008719	4008719_11	0.4	Normal		4	<0.10	10	5	18.7	0.14	4	37					
	QAQC01	14-10-2025	4008719	4008719_16	0.4	Field_D		4	<0.10	9	4	15.8	0.16	3	33					
RPD								0	0	11	22	17	13	29	11					
BH2B_2148	2B_2148_9.5	15-12-2025	4059456	4059456_7	9.5	Normal		7	0.26	12	14	8.7	<0.10	22	73	<1.3	<1.3	<0.5	<0.5	<0.5
	QAQC01	16-12-2025	4059456	4059456_22	9.5	Field_D		6	0.25	10	16	9.9	<0.10	23	73					
RPD								15	4	18	13	13	0	4	0					
BH2B_2148	BH2B_2148/45.5	17-12-2025	4061277	4061277_17	45.5	Normal		5	0.21	10	14	7.8	<0.10	18	79	<1.3	<1.3	<0.5	<0.5	<0.5
	QAQC02	17-12-2025	4061277	4061277_21	45.5	Field_D		5	0.22	9	15	7.6	<0.10	17	80	<0.027	<0.027	<0.012	<0.012	<0.012
RPD								0	5	11	7	3	0	6	1	0	0	0	0	0
BH2B_2101	BH2B_2101_16	13-01-2026	4073451	4073451_12	16	Normal		7	0.75	5	87	17.4	<0.10	26	220	<1.3	<1.3	<0.5	<0.5	<0.5
	BH2B_2101_QAQC1	13-01-2026	4073451	4073451_13	16	Field_D		7	0.23	5	95	16.4	<0.10	21	75	<1.3	<1.3	<0.5	<0.5	<0.5
RPD								0	106	0	9	6	0	21	98	0	0	0	0	0
BH2B_2101	BH2B_2101_20.0	14-01-2026	4076439	4076439_3	20	Normal		<2	<0.10	7	54	6.4	<0.10	18	18	<1.3	<1.3	<0.5	<0.5	<0.5
	BH2B_2101_QAQC02	16-01-2026	4076439	4076439_24	20	Field_D		<2	<0.10	6	58	6.6	<0.10	17	19	<1.3	<1.3	<0.5	<0.5	<0.5
RPD								0	0	15	7	3	0	6	5	0	0	0	0	0
BH2B_2149	BH2B_2149_15.75	23-01-2026	4081709	4081709_10	15.75	Normal		7	0.22	8	12	7.9	<0.10	18	62	<0.029	<0.029	<0.012	<0.012	0.023
	BH2B_2149_QAQC1	23-01-2026	4081709	4081709_12	15.75	Field_D		9	0.21	7	11	7.0	<0.10	17	51	<0.030	<0.030	<0.013	<0.013	0.024
RPD								25	5	13	9	12	0	6	19	0	0	0	0	4
BH2B_2149	BH2B_2149_15.75	23-01-2026	4081709	4081709_10	15.75	Normal		7	0.22	8	12	7.9	<0.10	18	62	<0.029	<0.029	<0.012	<0.012	0.023
	BH2B_2149_QAQC1	23-01-2026	4081709	4081709_12	15.75	Field_D														<0.5
RPD																				0
BH2B_2149	BH2B_2149_15.75	23-01-2026	4081709	4081709_10	15.75	Normal														<0.5
	BH2B_2149_QAQC1	23-01-2026	4081709	4081709_12	15.75	Field_D		9	0.21	7	11	7.0	<0.10	17	51	<0.030	<0.030	<0.013	<0.013	0.024
RPD																				0
BH2B_2149	BH2B_2149_15.75	23-01-2026	4081709	4081709_10	15.75	Normal														<0.5
	BH2B_2149_QAQC1	23-01-2026	4081709	4081709_12	15.75	Field_D														<0.5
RPD																				0
BH2B_2149	BH2B_2149_22.10	27-01-2026	4084844	4084844_2	22.1	Normal		6	0.24	8	17	8.5	<0.10	18	80	<0.031	<0.031	<0.013	<0.013	<0.013
	BH2B_2149_QAQC02	27-01-2026	4084844	4084844_14	22.1	Field_D		7	0.26	8	18	8.6	<0.10	19	90	<0.033	<0.032	<0.014	<0.014	<0.014
RPD								15	8	0	6	1	0	5	12	0	0	0	0	0
BH2B_2147	BH2B_2147_34.80	04-02-2026	4091264	4091264_13	34.8	Normal		<2	<0.10	13	17	4.5	<0.10	14	45	<0.0049	<0.0049	<0.5	<0.002	<0.002
	BH2B_2147_QAQC02	04-02-2026	4091264	4091264_18	34.8	Field_D		<2	<0.10	12	15	4.3	<0.10	15	46	<0.0049	<0.0049	<0.5	<0.002	<0.002
RPD								0	0	8	12	5	0	7	2	0	0	0	0	0

*RPDs have only been considered where a concentration is greater than 1 times the EQL.
**Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 100 (1 - 10 x EQL); 50 (10 - 20 x EQL); 30 (> 20 x EQL))
***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory

Key

Red highlight	Indicates a RPD value that falls outside acceptable range
mg/kg	milligrams per kilogram
EQL	Estimated Quatitation Limit

						Heavy Metals									Total Petroleum Hydrocarbons			
						Arsenic (filtered)	Cadmium (filtered)	Chromium (filtered)	Copper (filtered)	Lead (filtered)	Mercury	Mercury (filtered)	Nickel (filtered)	Zinc (filtered)	TRH C15 - C36 Fraction	TRH C7 - C36 Fraction	TRH C7 - C9 Fraction	TRH C10 - C14 Fraction
						mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL						0.001	0.00005	0.0005	0.0005	0.0001	0.0001	0.0001	0.0005	0.001	0.4	0.7	0.1	0.2
Location Code	**Field ID**	**Date**	**Lab Report Number**	**Sample Code**	**Sample Type**													
BH2B_1160	BH2B_1160	26-02-2026	4113692	4113692_1	Normal	<0.0010	<0.00005	<0.0005	<0.0005	<0.00010	<0.00011	<0.00010	<0.0005	<0.0010	<0.4	<0.7	0.16	<0.2
	QAQC01	26-02-2026	4113692	4113692_4	Field_D	<0.0010	<0.00005	<0.0005	<0.0005	<0.00010	<0.00011	<0.00010	<0.0005	<0.0010	<0.4	<0.7	0.12	<0.2
RPD						0	0	0	0	0	0	0	0	0	0	0	29	0

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 50 (1 - 10 x EQL); 50 (10 - 30 x EQL); 50 (> 30 x EQL))**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory**

Key

Red highlight	Indicates a RPD value that falls outside acceptable range
mg/kg	milligrams per litre
EQL	Estimated Quatitation Limit

						Polycyclic aromatic hydrocarbons														BTEXN
						Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(b)&(j)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Phenanthrene	Pyrene	Naphthalene
						mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL						0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0001	0.0004	0.0002	0.0005
Location Code	**Field ID**	**Date**	**Lab Report Number**	**Sample Code**	**Sample Type**																
BH2B_1160	BH2B_1160	26-02-2026	4113692	4113692_1	Normal	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.0002	<0.00010	<0.0004	<0.0002	<0.0005
	QAQC01	26-02-2026	4113692	4113692_4	Field_D	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.0002	<0.00010	<0.0004	<0.0002	<0.0005
RPD						0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 50 (1 - 10 x l**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row**

Key

Red highlight	Indicates a RPD value that falls outside acceptable range
mg/kg	milligrams per litre
EQL	Estimated Quatitation Limit

		Field ID	**QAQC02**
		Date	**26-02-2026**
		Lab Report Number	**4113692**
		Sample Code	**4113692_5**
		Sample Type	**Rinsate**
	Unit	EQL	
Heavy Metals			
Arsenic	**mg/L**	0.001	<0.0011
Arsenic (filtered)	**mg/L**	0.001	<0.0010
Cadmium	**mg/L**	0.00005	<0.000053
Cadmium (filtered)	**mg/L**	0.00005	<0.00005
Chromium	**mg/L**	0.0005	<0.00053
Chromium (filtered)	**mg/L**	0.0005	<0.0005
Copper	**mg/L**	0.0005	<0.00053
Copper (filtered)	**mg/L**	0.0005	<0.0005
Lead	**mg/L**	0.0001	<0.00011
Lead (filtered)	**mg/L**	0.0001	<0.00010
Mercury	**mg/L**	0.0001	<0.00011
Mercury (filtered)	**mg/L**	0.0001	<0.00010
Nickel	**mg/L**	0.0005	<0.00053
Nickel (filtered)	**mg/L**	0.0005	<0.0005
Zinc	**mg/L**	0.001	<0.0011
Zinc (filtered)	**mg/L**	0.001	<0.0010
Total Petroleum Hydrocarbons			
TRH C15 - C36 Fraction	**mg/L**	0.4	<0.4
TRH C7 - C36 Fraction	**mg/L**	0.7	<0.7
TRH C7 - C9 Fraction	**mg/L**	0.1	<0.10
TRH C10 - C14 Fraction	**mg/L**	0.2	<0.2
Polycyclic aromatic hydrocarbons			
Acenaphthene	**mg/L**	0.0001	<0.00010
Acenaphthylene	**mg/L**	0.0001	<0.00010
Anthracene	**mg/L**	0.0001	<0.00010
Benz(a)anthracene	**mg/L**	0.0001	<0.00010
Benzo(a)pyrene	**mg/L**	0.0001	<0.00010
Benzo(b)&(j)fluoranthene	**mg/L**	0.0001	<0.00010
Benzo(g,h,i)perylene	**mg/L**	0.0001	<0.00010
Benzo(k)fluoranthene	**mg/L**	0.0001	<0.00010
Chrysene	**mg/L**	0.0001	<0.00010
Dibenz(a,h)anthracene	**mg/L**	0.0001	<0.00010
Fluoranthene	**mg/L**	0.0001	<0.00010
Fluorene	**mg/L**	0.0002	<0.0002
Indeno(1,2,3-c,d)pyrene	**mg/L**	0.0001	<0.00010
Phenanthrene	**mg/L**	0.0004	<0.0004
Pyrene	**mg/L**	0.0002	<0.0002
Monocyclic Aromatic Hydrocarbons			
1,2,4-trimethylbenzene	**mg/L**	0.0003	<0.0003
1,3,5-Trimethylbenzene	**mg/L**	0.0003	<0.0003
Isopropylbenzene	**mg/L**	0.0003	<0.0003
n-Butylbenzene	**mg/L**	0.0005	<0.0005
n-Propylbenzene	**mg/L**	0.0005	<0.0005
p-Isopropyltoluene	**mg/L**	0.0005	<0.0005
sec-Butylbenzene	**mg/L**	0.0003	<0.0003
Styrene	**mg/L**	0.0003	0.0013
tert-Butylbenzene	**mg/L**	0.0003	<0.0003
BTEXN			
Naphthalene	**mg/L**	0.0005	<0.0005
Benzene	**mg/L**	0.0003	<0.0003
Toluene	**mg/L**	0.0003	<0.0003
Ethylbenzene	**mg/L**	0.0005	<0.0005
Xylenes (m & p)	**mg/L**	0.0005	<0.0005
Xylene (o)	**mg/L**	0.0003	0.0003

Appendix G
Quality control and assurance

Field and Laboratory Quality Programme

As part of the PSI, an assessment of the QA/QC program implemented during fieldwork and completed by the laboratories was undertaken to assess the appropriateness of the analytical data. This section presents the results of the QA/QC program.

The field work for this investigation was carried out in accordance with MfE (2011c) guidance, and WSP's Quality System which operates in accordance with AS/NZS ISO 9001:2015.

Sampling Procedures

Sampling procedures were undertaken in accordance with Contaminated Land Management Guidelines No.5 – Site investigation and analysis of soils (Revised 2021) throughout the soil sampling works to prevent cross contamination, preserve sample integrity and allow for collection of a suitable data set from which to make technically sound and justifiable decisions with data of satisfactory useability. All fieldwork was undertaken by an experienced field scientist with all samples transported under chain of custody procedures and signed chain of custody documents, included in Appendix D.

Quality Assurance / Quality Control

Hills provided a QA Report comparing sample specific QC and laboratory blanks/spike results to their control limits, providing a pass/fail status of replications. Of all blank/spike tests undertaken reported a 'pass' status; these reports are included in Appendix D.

Based on the field and laboratory results conducted, it is considered that Hills has provided acceptable QA/QC programs and data confirmation.

WSP considers that the analytical results provided by Hills is deemed reliable and complete based on:

- All samples were delivered to Hills and extracted within designated holding times.
- Hills laboratories holding IANZ certification for the analysis undertaken.
- The results of laboratory QC samples were within designated control limits or determined to be acceptable by the laboratory where not; and
- The laboratory detection limits are less than the assessment criteria.
- Consistent and repeatable sampling techniques and methods were utilised. The same samples and methodology were used for each sampling location and decontamination was undertaken in conjunction with WSP QA/QC protocols and standard industry procedures to prevent cross contamination, preserve sample integrity and allow for collection of a suitable data set from which to make technically sound and justifiable decisions.

WSP considers that the sample collection, documentation, handling, storage and transportation procedures utilised are of an acceptable standard therefore the data is considered fit for purpose. It is considered that the QA/QC procedures and results were acceptable and that the conclusions of the report have not been significantly affected by the sampling or analytical procedures