APPENDIX J: DETAILED SITE INVESTIGATION

PRELIMINARY AND DETAILED SITE INVESTIGATION

(part) 300 Springs Road, 374 Springs Road and 315 Marshs Road, Hornby, Christchurch

November 2025

Prepared for: Puna Property Holdings Ltd

Prepared by: KPES Ltd

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Prepared by: Klaus Prusas, Director, KPES Ltd

Signed: 

Date: 30 November 2025

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Executive Summary

KPES Ltd's environmental investigation findings indicated:

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(a) Soil Value Status

(i) *To determine within NES-CS terms the values that exist on the land parcel, and whether these are appropriate for an industrial / commercial use development.*

(ii) *The analytical results indicate that industrial/ commercial soil guideline values are well met on this land parcel.*

(iii) *Not only are industrial/ commercial guidelines met but also residential and recreational soil guidelines, and also for the greater part background values. Therefore within NES-CS terms it could be concluded that the development falls outside that legislative control.*

(iv) *No asbestos was detected in the soil samples. The work outlined in Section 9(d) of KPES Ltd September 2024 with respect to the northern area at 300 Springs Road has now been completed and confirms no asbestos was detected and no evidence of UST and results just above background values.*

(v) *During this soil sampling operation, the 'soil appearance' did not display any physical adverse condition. It provided the appearance of a good quality top soil with clean sandy silt beneath.*

(b) Asbestos

(i) *KPES recommends that an asbestos survey of the dwellings and buildings be undertaken at 315 Marshs Road, and if asbestos is found, it is deconstructed out of the dwelling, prior to demolition, by an approved operator, and the asbestos containing material disposed appropriately.*

An Asbestos Clearance Certificate should be provided to CCC, post successful and appropriate removal and disposal, and/or also if no asbestos is found.

(c) Soil Management and Disposal

(i) *Soil value land use suitability compliance exists, including the September 2024 potential areas issues around the remaining building platform areas on 300 Springs Road.*

No soil however needs to be removed from the site. However, if soil is to be removed, it can be considered:
- as clean fill
- other than the northern part of 300 Springs Road, for which, if removed a "lower cost disposal facility option also exists.

(ii) *Destinations disposal facilities exist for such material in Christchurch environs.*

(d) Site Management Plan (SMP)

KPES has prepared at SMP more from an operations perspective rather than a NES-CS perspective.

This report (PSI/DSI) has outlined the environmental land contamination concerns as they exist, to progress the development in the most appropriate way forward, is considered to be by way of a SMP to take into account the potential asbestos issues and the area around beneath the remaining concrete building platform at 300 Springs Road.

The below SMP has therefore been prepared.

SMP

This SMP shall be read in conjunction with this report. It is incumbent on all contractors undertaking the works and construction, to comply with the provisions of the SMP.

i. *The principal contractor shall undertake to ensure all contractors and their employees are familiar with the SMP, as it may impact on their work.*

ii. *All speed shall be made to complete the earthworks to the point where "clean" cover material covers the entire site. At that point the SMP will cease subject to no further subsurface work being undertaken (when it will recommence).*

iii. *Future volumes of potential "contaminated soil" to be removed (if any) is unknown at this time.*

iv. *Any soil material if removed off site, shall only be deposited at disposal facilities capable of receiving such soils.*

v. *No material shall be disposed at any destination without consultation and approval by an environmental consultant (SEQP) and the ADC.*

vi. *Should any unforeseen matter having an adverse impact / effect occur during the development operation a SQEP shall be immediately called for advice, with resolution as rapidly as practically possible. The CCC shall also be notified.*

vii. *The contractor shall keep a record of all soil materials (and loads) that leave the site with documentation that provides:*
- *the date of removal*
- *transport company*
- *disposal destination and date received*
- *weigh-bridge weight of each load*

viii. *The contractor will during the earthworks operations, ensure all practical measures are undertaken to prevent and control the emission of dust, including the tracking of soil off the site on the wheels of vehicles.*

***And concluded that at this subject site**:*

(a) The analytical results show that industrial / commercial development soil value guidelines will be met on this land parcel subject:

- to the clearance of any potential asbestos in the dwellings/ buildings, if present.

(b) Disposal facilities for soils (the bulk of which considered as clean fill) that require to be removed off site exist in the Canterbury area.

(c) All waste materials leaving the site as part of this development shall be disposed at approved facilities.

(d) The land in the context of contaminant is considered to be of low human health and environmental risk/significance, and as a result, the proposed development should be able to proceed, and all land use consents granted.

***Note** – KPES has prepared a separate,*

"Summary Document- NES-CS Matters, 300, 318, 320 and 374 Springs Road and 315 Marshs Road, November 2025,

…that collates this PSI/DSI and the September 2024 PDS/ DSI together, particularly from a legislative perspective. While two reports exist about two land parcels, there is nevertheless in essence only one development.

Puna Property Holdings Ltd
Detailed and Preliminary Site Investigation
Part 300, 374, Springs Road, 315 Marshs Road
Hornby/Halswell
Christchurch

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1.0 Introduction

Puna Property Holdings Ltd engaged KPES Ltd to carry out a Preliminary and Detailed Site Investigation assessment (PSI / DSI) of land at 300 Springs Road (northern boundary portion), 374 Springs Road and 315 Marshs Road (the subject site) Hornby / Halswell, Christchurch (Figure 1.0) within the terms of the Resource Management (National Environmental Standard for Assessing Contaminants in Soil to Protect Human Health) Regulations 2011, and consistent with the Ministry for the Environment Contaminated Land Guidelines.



Figure 1:0 - Site Location

The purpose of the PSI/DSI investigation assessment is to:

(i) assess and determine the suitability of the land for commercial/industrial development land use purposes.

(ii) And further potentially assist and progress any future plan change / land use resource consent and later building consent applications with Christchurch District Council (CCC) necessary for such a development.

This DSI PSI follows on from a KPES September 2024 - DSI / PSI) in relation to the land at 300 / 318 / 320 Springs Road. (Appendix A)

2.0 Background

2.1 Location

The proposed development site with regard this PSI / DSI relates to land in northern part of 300 Springs Road (Sec 4, SO562497) , 374 Springs Road and 315 Marshs Road (Sec 4650 & 550060).The subject site located in the south of Christchurch in an area known both as Hornby and Halswell.

The land is zoned under the Christchurch City Plan as Industrial Heavy and Rural Urban Fringe.

The subject site area involves an over 12.5 hectares coverage.

The land at 374 Springs Road is presently totally open space and utilised for a 'lush lawn growing' production / operation. Pinus radiata trees grow on the boundaries between 374 Springs Road and Marshs Road and also along the entire boundary with 305 Marshs Road., and also close to the 290 / 300 Springs Road boundary.

The land parcels are also noted as being within the Canterbury Water Management Strategy Zone – Chch West Melton.

315 Marshs Road operates as Textures Plants (a plant nursery and sales to the public) and a base for the Lush Lawns operation

2.2 Site History

Appendix B – Historical Aerials indicates the following.

	374 Springs Rd	**315 Marshs Rd**
1940 - 1945	Grazing	Grazing
1955 – 1984	Grazing	Grazing
1985 - 1989	Grazing / ploughing	A Building erected
1990 – 1994	Aerials not clear but appears similar to 1960 - 1990	Nursery operation
1994 – 1999	Grazing	" "
2000 - 2009	Grazing but start of lawn production	Nursery expands, new buildings
2010 - present	Lawn growing operation	Tunnel House expansion Car Parking Nursery operation along total 315 Marshs Rd frontage

No chemical bulk storage exists on the subject site.

An above ground diesel storage tank (est 1500L) is located on the north boundary 374 Springs and 315 Marshs Roads (mid site by administration building).

The history for 300 Springs Road is detailed in the September 2024 KPES Ltd PSI / DSI.

2.3 Geology and Groundwater

Research of Environment Canterbury (Ecan) information indicated that:

- The soil type that exists on the land is Kaiapoi *f* deep silt.
- One (1) borewell is noted to exist on land parcel 315 Marshs Road.

- M36/4471- noted as = Active (exists/present), depth 21m - irrigation use, mid part of site by Sales / Administration building.

3.0 Site Notations

The subject site land is registered on Environment Canterbury's Listed Land Use Register (LLUR), with a *A10 HAIL Classification – pesticide, bulk storage and use*, and can be viewed in the KPES September 2024 PSI/DSI report

300 Springs Road notations were reported in September 2024 PSI / DSI.

4.0 Guidelines

The guidelines applicable to this proposed development are:

- MfE Soil Contaminated Land Guideline Protocols (Guidelines 1 to 5)
- National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health Regulations 2011 (NES) (1 January 2012 and,
- The investigation carried out within terms of the NES-CS as a permitted activity

5.0 Sampling Locations and Methodology

The basis for the sampling locations and analytes were determined by the historical information available.

(i) Heavy metal and Organochlorine analysis were chosen given the historical agricultural growing activity and was applicable to the whole subject site.

(ii) Total Petroleum Hydrocarbons (TPH) and Polycyclic Aromatic Hydrocarbons analysis were added to the 300 Springs Road sampling because of the potential historical industrial / commercial activity (see September 2024 report)

(iii) TPH analysis was added at 315 Marshs Road because a Car Park and an Above Ground Diesel Tank Dispenser area existed, and further a potential (traffic) impact from earthworks during construction of the Marshs / Springs Road round-a-bout.

During the sampling at 315 Marshs Road observations appeared to indicate no asbestos containing materials existed.

Sampling was carried out in cooperation / liaison with Babbage Consulting Ltd (Geo technical investigation)

5.1 Sample Location Selections

A patterned approach was chosen. Soil samples were taken at surface and 0.5m depth and at a number of locations to 1.0m bgl.

This resulted in seventy-nine (79) discrete samples, from thirty-one locations in total being undertaken for analysis.

Figures 5.1 and 5.2 Sample Locations, detail the sample locations.

Table 5.1 provides the GPS co-ordinates for the sampling locations at 300 Springs Road. GPS Locations for sample locations at 374 springs Rd and 315 Marshs Roads are held by Babbage Consulting Ltd

Appendix D - Photographs, details the test pit excavation.

Samples	Time	Depth (m)	Latitude	Longitude	Comment
SP1 SP1/1	8.00 8.05	Surface 0.5	$43^0$33897	$172^0$315139	- Soil - Gravels at 0.3
SP2 SP2/1 SP2/2	8.20 8.25 8.30	Surface 0.5 1.0	$43^0$338980	$172^0$314916	- Top Soil - Silt / Soil - Sandy / Silt
SP3 SP3/1 SP3/2	8.40 8.45 8.50	Surface 0.5 1.0	$43^0$338918	$172^0$314803	- Top Soil - Sandy / Silt - Sandy / Silt
SP4 SP4/1	9.00 9.05	Surface 0.5	$43^0$338505	$172^0$314814	- Gravels - Gravels / Sandy / Silt

Table 5.1 – GPS Co-ordinates – 300 Springs Road

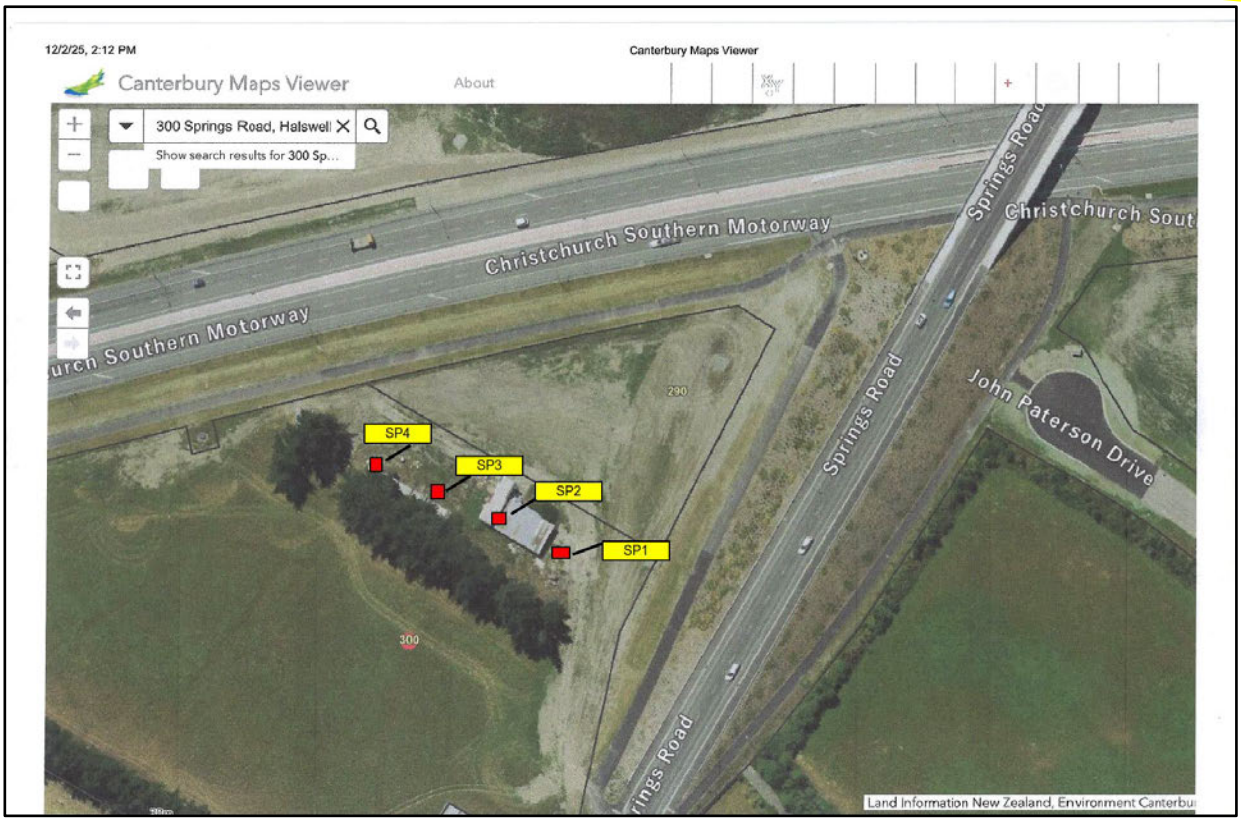


Figure 5.1 – Sampling Locations – 300 Springs Road



Figure 5.2 – Sampling Locations – 374 Springs Rd and Marshs Road.

5.2 Methodology

Sampling at each location was undertaken using two procedures

(i) in conjunction with Babbage
- use of hand augers to required depths (374 Springs Rd/some locations 315 Marshs Rd)
- soil removed from auger, wearing disposal gloves, transferred into glass jars and then placed into a chilly bin containing ice for transport to Hill Laboratories Ltd under chain of custody documentation.
- auger "decontaminated/cleaned" post each sample collection

(ii) via test pits, (300 Springs Road/some locations 315 Marshs Rd)
- excavated to the required depth by an excavator, with soils removed from the excavator bucket, wearing disposal gloves, transferred into glass jars and then placed into a chilly bin containing ice for transport to Hill Laboratories Ltd under chain of custody documentation.

6.0 Sample Results

Table 6.1 provides a summary of the laboratory results. The full Hill Laboratories Ltd analysis reports are detailed in Appendix D.

The soil value results indicate as follows-

(i) All Results Met Background Values (mg/kg), other than

300 Springs Road

SP2 – surface – Lead (81 / 40.96) – Zinc (210 / 93.94) PAH minor detection THP minor detection

SP2/1- 0.5m bgl – Zinc (113 / 93.94)

SP3- surface – Copper (29 / 20.3) – Zinc (169 / 93.94) – PAH minor detection

SP4/1- 0.5m bgl – Cadmium (0.66 / 0.19) – Copper (22 / 20.3) – Zinc (152 / 93.94)

315 Marshs Road

S25- surface – Cadmium (0.25 / 0.19) – Copper (45 / 20.3) – Zinc (145 / 93.94)

SD2 Surface – TPH detected

From a NES-CS perspective a conclusion could therefore be made that the bulk of the subject site falls outside NES-CS legislative control and the development becomes a permitted use.

The soil values bare this view out particularly that of 374 Springs Road, and 315 Marshs Road (where only two samples exceeded background

(ii) The visual observation of the test pits at 300 Springs Road were that natural ground was evident at about 0.4m bgl.

(iii) All samples clearly met commercial / industrial land guideline values appropriate for the proposed development land use.

(iv) For comparison purposes, all samples also well met residential and recreational guideline values.

(v) NO asbestos was detected at 300 Springs Road.

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Table 6.1 – Sampling Analysis – 300 Springs Road, Christchurch

Sample Ref	SP1	SP1/1	SP2	SP2/1	SP2/2	SP3	SP3/1	SP3/2	SP4	SP4/1						**Industrial Commercial Guidelines**	**Residential Guidelines (25%/10% Produce**	**Recreational Guidelines**	**Regional Recent Soil Background**
Sample Depth (m)	Surface	0.5	Surface	0.5	1.0	Surface	0.5	1.0	Surface	0.5									
Heavy Metals																			
Total Arsenic	12	4	5	8	8	13	3	5	5	5						70[1]	17/20[1]	80[1]	12.58[1]
Total Cadmium	0.11	<0.10	0.13	<0.10	<0.10	0.30	<0.10	<0.10	<0.10	0.66						1300[1]	0.8/3.0[1]	400[1]	0.19[1]
Total Chromium	20	13	15	15	17	21	10	16	12	15						>10000/6300[1]	>10000/460/290[1]	>10000/1500[1]	22.7[1]
Total Copper	17	6	15	12	10	29	4	7	8	22						>10000[1]	>10000[1]	>10000[1]	20.3[1]
Total Lead	24	13.5	81	32	22	104	10.3	18.3	15.5	38						3300[1]	160/210[1]	880[1]	40.96[1]
Total Nickel	16	10	9	10	13	11	10	13	10	12						1800[2]	130[2]	600[2]	20.7[2]
Total Zinc	77	81	210	113	150	169	32	63	52	152						35000[2]	7000[2]	14000[2]	93.94[2]
Organochlorine Screening in Soil **NO results below detection limits listed** **(See Hills laboratories Analysis Report**																			
Polycyclic Aromatic Hydrocarbons Screening in Soil **Results below above detection limits listed** **(See Hill Laboratories Analysis Report)**																			
PAHs in Soil			50	0.6		15.7			6.2	3.1									
1-Methylnaphthalene						0.012			0.011	0.013									
2-Methylnaphthalene			0.49																
Acenaphthylene			0.80			0.129			0.151	0.060									
Acenaphthene			0.32			0.018			0.022	0.013									
Anthracene			2.2			0.44			0.199	0.082									
Benzol[a]anthracene			3.6	0.041		1.10			0.42	0.22						2.1[2]			0.47
Benzo[a]pyrene (BAP)*			3.3	0.054		1.19			0.53	0.28						35[1]	6/10[1]	40[1]	0.595[4]
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES			4.9	0.079		1.79			0.82	0.40									
Benzo[a]pyrene Toxic Equivalency (TEF)			4.8	0.078		1.76			0.81	0.40									
Benzo[b]fluoranthene + Benzol[j] fluoranthene			3.4	0.062		1.36			0.58	0.29						2.1[2]			0.947[4]
Benzo[e]pyrene			1.72	0.034		0.71			0.30	0.156									
Benzo[g.h.i]perylene			1.57	0.033		0.83			0.40	0.159									0.459[4]
Benzo[k]fluoranthene						0.52			0.25	0.124									
Chrysene*			3.0	0.042		0.91			0.44	0.21						210[2]			0.539[4]
Dibenzo[a,h]anthracene			0.48			0.179			0.104	0.40									
Fluoranthene*			7.4	0.079		2.4			0.87	0.42						82000[2]			1.345[4]
Fluorene			1.63			0.089			0.068	0.048									
Indeno(1,2,3-c,d)pyrene*			1.74	0.036		0.85			0.39	0.158						2.1[2]			0.385[4]
Naphthalene			0.30																
Perylene			0.71	0.012		0.30			0.123	0.058									

Sample Ref	SP1	SP1/1	SP2	SP2/1	SP2/2	SP3	SP3/1	SP3/2	SP4	SP4/1						**Industrial Commercial Guidelines**	**Residential Guidelines (25%/10% Produce**	**Recreational Guidelines**	**Regional Recent Soil Background**
Sample Depth (m)	Surface	0.5	Surface	0.5	1.0	Surface	0.5	1.0	Surface	0.5									
Phenanthrene			9.0	0.033		2.3			0.55	0.32									0.703[4]
Pyrene	0.012		6.9	0.078		2.4			0.75	0.41						17000[2]			1.362[4]
Total Petroleum Hydrocarbons in Soil (See Hills Laboratories Analysis Report																			
C7 – C9	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20									
C10 – C14	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20									
C15 – C36	<40	<40	1,600	<40	<40	290	<40	<40	44	49									
Total Hydrocarbons C7 – C36	<80	<80	1,610	<80	<80	290	<80	<80	<80	<80									

Table Sampling Analysis – Asbestos – 300 Springs Road, Christchurch - 2025

Sample Ref	SP1	SP1/1	SP2	SP2/1	SP2/2	SP3	SP3/1	SP3/2	SP4	**SP4/1**
Sample Depth	Surface	0.5	Surface	0.5	1.0	Surface	0.5	1.0	Surface	**0.5**
Asbestos Presence / Absence	Asbestos NOT detected	Asbestos NOT detected	Asbestos NOT detected	Asbestos NOT detected	Asbestos NOT detected	Asbestos NOT detected	Asbestos NOT detected	Asbestos NOT detected	Asbestos NOT detected	Asbestos NOT detected
Description of Asbestos Form										
Asbestos in ACM as % of Total Sample % w/w	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample % w/w	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Asbestos as Fibrous Asbestos as % of Total Sample % w/w	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Asbestos as Asbestos Fines as % of Total Sample % w/w	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
As Received Weight g	621.4	693.7	813.2	695.6	659.1	754.6	810.0	710.2	1,017.5	687.8
Dry Weight g	563.4	634.1	782.3	609.9	551.3	686.8	752.1	597.6	1,002.7	612.6
Moisture %	9	9	4	12	16	9	7	16	1	11

Sample Fraction >10mm g dry wt	6.2	97.5	175.2	<0.1	<0.1	166.3	<0.1	<0.1	377.0	115.3
Sample Fraction<10mm to >2mm g dry wt	47.5	196.2	379.3	14.1	22.7	141.5	1.3	14.0	364.8	65.6
Sample Fraction <2mm g dry wt	508.2	339.8	226.6	594.3	526.9	377.9	750.5	582.6	260.1	430.7
<2mm Subsample Weight g dry wt	57.6	57.6	57.8	53.3	57.8	55.4	53.9	55.6	56.6	58.4
Weight of Asbestos in ACM (Non Friable) g dry wt	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Weight of Asbestos as Fibrous Asbestos (Friable) g dry wt	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Weight of Asbestos as Asbestos Fines (Friable) g dry wt	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

Table Sampling Analysis – 374 Springs Road, Christchurch - 2025

Sample Ref	S1	S1/1	S2	S2/1	S3	S3/1	S4	S4/1	S5	S5/1	S6	S6/1	S6/2	S7	S7/1	**Industrial Commercial Guidelines**	**Residential Guidelines (25%/10% Produce**	**Recreational Guidelines**	**Regional Recent Soil Background**
Sample Depth (m)	Surface	0.5	Surface	0.5	Surface	0.5	Surface	0.5	Surface	0.5	Surface	0.5	1.0	Surface	0.5				
Heavy Metals																			
Total Arsenic	5	3	4	4	4	5	5	4	6	5	6	3	5	8	3	70[1]	17/20[1]	80[1]	12.58[1]
Total Cadmium	0.14	<0.10	0.12	<0.10	0.14	<0.10	0.13	<0.10	0.13	<0.10	0.11	<0.10	<0.10	0.12	<0.10	1300[1]	0.8/3.0[1]	400[1]	0.19[1]
Total Chromium	17	13	14	13	16	18	16	18	16	17	15	14	16	16	14	>10000/6300[1]	>10000/460/290[1]	>10000/1500[1]	22.7[1]
Total Copper	8	6	6	5	7	6	6	5	7	6	7	5	10	8	5	>10000[1]	>10000[1]	>10000[1]	20.3[1]
Total Lead	21	12.5	15.4	1-0.7	18.7	17.1	19.1	13.1	18.1	16.9	18.1	12.2	16.9	19.6	13.9	3300[1]	160/210[1]	880[1]	40.96[1]
Total Nickel	12	10	11	11	12	14	12	14	11	14	12	11	12	13	11	1800[2]	130[2]	600[2]	20.7[2]
Total Zinc	65	41	56	38	66	52	62	46	62	46	62	38	49	73	40	35000[2]	7000[2]	14000[2]	93.94[2]

Organochlorine Screening in Soil
NO results below detection limits listed
(See Hills laboratories Analysis Report

Sample Ref	S8	S8/1	S9	S9/1	S9/2	S10	S10/1	S11	S11/1	S12	S12/1	S12/2	**Industrial Commercial Guidelines**	**Residential Guidelines (25%/10% Produce**	**Recreational Guidelines**	**Regional Recent Soil Background**
Sample Depth (m)	Surface	0.5	Surface	0.5	1.0	Surface	0.5	Surface	0.5	Surface	0.5	1.0				
Heavy Metals																
Total Arsenic	5	4	5	4	3	6	5	6	3	6	3	3	70[1]	17/20[1]	80[1]	12.58[1]
Total Cadmium	0.11	<0.10	0.12	<0.10	<0.10	0.13	<0.10	0.14	<0.10	0.11	<0.10	<0.10	1300[1]	0.8/3.0[1]	400[1]	0.19[1]
Total Chromium	18	14	17	13	10	17	14	16	13	17	16	13	>10000/6300[1]	>10000/460/290[1]	>10000/1500[1]	22.7[1]
Total Copper	8	5	8	5	4	8	7	7	4	7	5	6	>10000[1]	>10000[1]	>10000[1]	20.3[1]
Total Lead	20	11.8	19.5	10.9	9.2	19.7	13.4	19.3	10.7	18.4	11.5	11.9	3300[1]	160/210[1]	880[1]	40.96[1]
Total Nickel	14	12	13	11	9	13	12	13	11	12	12	11	1800[2]	130[2]	600[2]	20.7[2]
Total Zinc	70	43	69	39	30	64	43	65	38	68	43	39	35000[2]	7000[2]	14000[2]	93.94[2]

Organochlorine Screening in Soil
NO results below detection limits listed
(See Hills laboratories Analysis Report

Sample Ref	S13	S13/1	S14	S14/1	S14/2	S15	S15/1	S16	S16/1	S17	S17/1	S18	S18/1	S19	S19/1	**Industrial Commercial Guidelines**	**Residential Guidelines (25%/10% Produce**	**Recreational Guidelines**	**Regional Recent Soil Background**
Sample Depth (m)	Surface	0.5	Surface	0.5	1.0	Surface	0.5	Surface	0.5	Surface	0.5	Surface	0.5	Surface	0.5				
Heavy Metals																			
Total Arsenic	6	4	6	4	3	4	3	5	3	5	5	6	4	5	4	70[1]	17/20[1]	80[1]	12.58[1]
Total Cadmium	0.11	<0.10	0.12	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.13	<0.10	0.11	<0.10	1300[1]	0.8/3.0[1]	400[1]	0.19[1]
Total Chromium	16	14	15	14	12	16	13	15	14	16	15	16	14	16	15	>10000/6300[1]	>10000/460/290[1]	>10000/1500[1]	22.7[1]
Total Copper	7	7	7	6	6	7	5	6	5	7	6	7	5	7	5	>10000[1]	>10000[1]	>10000[1]	20.3[1]
Total Lead	17.6	13.8	16.9	11.8	9.9	16.6	10.3	15.2	12.1	16.7	15.3	18.0	11.8	17.9	12.8	3300[1]	160/210[1]	880[1]	40.96[1]
Total Nickel	12	12	12	11	10	12	10	11	11	12	12	11	12	12	12	1800[2]	130[2]	600[2]	20.7[2]
Total Zinc	59	44	60	41	35	61	36	55	38	60	47	63	46	61	49	35000[2]	7000[2]	14000[2]	93.94[2]

Organochlorine Screening in Soil
NO results below detection limits listed
(See Hills laboratories Analysis Report

Table Sampling Analysis – 315 Marshs Road, Christchurch – 2025

Sample Ref	S20	S20/1	S21	S21/1	S22	S22/1	S22/2	S23	S23/1	S23/2	S24	S24/2	S25	S25/1	S25/2	**Industrial Commercial Guidelines**	**Residential Guidelines (25%/10% Produce**	**Recreational Guidelines**	**Regional Recent Soil Background**
Sample Depth (m)	Surface	0.5	Surface	0.5	Surface	0.5	1.0	Surface	0.5	1.0	Surface	1.0	**Surface**	**0.5**	**1.0**				
				Heavy Metals															
Total Arsenic	5	5	4	4	6	5	4	7	3	4	4	4	8	4	4	70[1]	17/20[1]	80[1]	12.58[1]
Total Cadmium	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.15	<0.10	<0.10	<0.10	<0.10	0.25	<0.10	<0.10	1300[1]	0.8/3.0[1]	400[1]	0.19[1]
Total Chromium	15	16	13	16	16	15	11	14	14	13	13	14	15	15	14	>10000/6300[1]	>10000/460/290[1]	>10000/1500[1]	22.7[1]
Total Copper	6	8	10	6	12	8	5	12	4	8	7	4	45	5	5	>10000[1]	>10000[1]	>10000[1]	20.3[1]
Total Lead	16.6	16.8	19.3	16.9	19.9	15.7	10.7	17.7	11.7	12.6	14.6	14.1	23	14.1	12.8	3300[1]	160/210[1]	880[1]	40.96[1]
Total Nickel	11	12	11	12	11	12	10	11	11	10	10	12	9	12	13	1800[2]	130[2]	600[2]	20.7[2]
Total Zinc	56	46	62	56	93	47	35	66	47	42	67	47	145	53	43	35000[2]	7000[2]	14000[2]	93.94[2]

Organochlorine Screening in Soil
NO results below detection limits listed
(See Hills laboratories Analysis Report

Total Petroleum Hydrocarbons in Soil
(See Hills Laboratories Analysis Report

C7 – C9	<20	<20	<20	<20	<20	<20	<20												
C10 – C14	<20	<20	<20	<20	<20	<20	<20												
C15 – C36	<40	<40	47	<40	<40	<40	<40												
Total Hydrocarbons C7 – C36	<80	<80	<80	<80	<80	<80	<80												

Sample Reference	SD1	SD2	**Industrial Commercial Guidelines**	**Residential Guidelines (25%/10% Produce**	**Recreational Guidelines**	**Regional Recent Soil Background**
Total Arsenic			70[1]	17/20[1]	80[1]	12.58[1]
Total Cadmium			1300[1]	0.8/3.0[1]	400[1]	0.19[1]
Total Chromium			>10000/6300[1]	>10000/460/290[1]	>10000/1500[1]	22.7[1]
Total Copper			>10000[1]	>10000[1]	>10000[1]	20.3[1]
Total Lead			3300[1]	160/210[1]	880[1]	40.96[1]
Total Nickel			1800[2]	130[2]	600[2]	20.7[2]
Total Zinc			35000[2]	7000[2]	14000[2]	93.94[2]

Total Petroleum Hydrocarbons in Soil
(See Hills Laboratories Analysis Report

C7 – C9	<20	<20				
C10 – C14	<20	145				
C15 – C36	<40	1,810				
Total Hydrocarbons C7 – C36	<80	1,950				

Notes
1 -means NES-CS soil guidelines values
2 -means MFE soil value guidelines
_ - means above Ecan Background Value

7.0 Legislation

KPES reiterates the comments made in its September 2024 PSI / DSI, as they appear to apply to this subject site

"KPES could be convinced, other than for two potential matters of concern, namely

(i) probable asbestos in the dwellings / buildings, and

(ii) the "condition" of the area beneath and around the concrete building platforms at 300 Springs Road, where "Soil Disturbance" Reg 8 (3) (c), and 'Soil Removal' (potentially) Reg 8(3) (d) permitted volume criteria could be exceeded during the development.

that the analysis results suggest strongly the land parcel could be considered to fall outside the NES-CS legislative framework and therefore be treated as a permitted activity. The exceedances are very minor both in value and frequency given the number of samples analysed.

KPES however acknowledges that with regard to the two matters of concern mentioned above whilst these are precautionary concerns on balance cannot be dismissed.

Therefore, for pragmatic purposes and reasons, and it is accepted that a HAIL activity "may" have occurred on the land, and therefore the NES-CS legislation could apply to this development (Reg.5(7)."

Matter (ii) above has now been addressed by the sampling/ investigation carried out for the purposes of this PSI/DSI indicating no asbestos no underground tanks as far as can be ascertained and soil values while above background, well meet industrial/ commercial, residential and recreational guideline values.

No comment is made with regard Matter (i) above in this report, because this subject site does not include the land that Matter (i) relates to.

There is however a wider conversation to be had on NES-CS legislative applicability when considering the proposed development area as one (which KPES understand it is), rather than in two parts. At the moment two PSI/DSI exist for two parts of one development.

8.0 Conceptual Site Model (CSM)

Again KPES repeats its comments of its September 2024 PSI / DSI.

A CSM is provided below to represent potential source contaminants, their exposure pathways and receptors. The CSM is presented in two stages of the development

(i) initial desktop assessment phase prior to soil testing, and then

(ii) re-evaluation post sampling results.

The initial desktop review suggested the potential contaminants of concern, exposure pathways and potential receptors at the land parcel from this development based on the historical data were likely to be minor.

i) Initial Desktop

Source	*- Site history*
Contaminant of Concern	*- Potential Heavy Metals, Organochlorine Pesticides PAH, TPH*
Pathway	*- Inhalation of dust, Ingestion, Dermal Contact, Water*
Receptors	*- Contractors, Future occupants*

ii) Post Soil Sampling

Source	*- see Table 6.1 - Analysis Results and report discussion*
Contaminant of Concern	*- No analyte results were above recognised appropriate land use criteria.*
Pathway	*- Normal industry operational mitigation protocols apply*
Receptors	*- Contractors, Future occupants*

9.0 Discussion

This investigation's findings are as follows:

(a) Soil Value Status

(i) Determine within NES-CS terms the values that exist on the land parcel, and whether these are appropriate for an industrial / commercial use development.

(ii) The analytical results indicate that industrial/ commercial soil guideline values are well met on this land parcel.

(iii) Not only are industrial/ commercial guidelines met but also residential and recreational soil guidelines, and also for the greater part background values. Therefore within NES-CS terms it could be concluded that the development falls outside that legislative control.

(iv) No asbestos was detected in the soil samples. The work outlined in Section 9(d) of KPES Ltd September 2024 with respect to the northern area at 300 Springs Road has now been completed and confirms no asbestos was detected and no evidence of UST and results just above background values.

(v) During this soil sampling operation, the 'soil appearance' did not display any physical adverse condition. It provided the appearance of a good quality top soil with clean sandy silt beneath.

(b) Asbestos

(i) KPES recommends that an asbestos survey of the dwellings and buildings be undertaken at 315 Marshs Road, and if asbestos is found, it is deconstructed out of the dwelling, prior to demolition, by an approved operator, and the asbestos containing material disposed appropriately.

An Asbestos Clearance Certificate should be provided to CCC, post successful and appropriate removal and disposal, and/or also if no asbestos is found.

(c) Soil Management and Disposal

(i) Soil value land use suitability compliance exists, including the September 2024 potential areas issues around the remaining building platform areas on 300 Springs Road.

No soil however needs to be removed from the site.

However, if soil is to be removed, it can be considered:
- as clean fill
- other than the northern part of 300 Springs Road, for which, if removed a "lower cost disposal facility option exists.

(ii) Destinations disposal facilities exist for such material in Christchurch environs.

(d) Site Management Plan (SMP)

KPES has prepared at SMP more from an operations perspective rather than a NES-CS perspective.

This report (PSI/DSI) has outlined the environmental land contamination concerns as they exist, to progress the development in the most appropriate way forward, is considered to be by way of a SMP to take into account the potential asbestos issues and the area around beneath the remaining concrete building platform at 300 Springs Road.

The below SMP has therefore been prepared.

SMP

This SMP shall be read in conjunction with this report. It is incumbent on all contractors undertaking the works and construction, to comply with the provisions of the SMP.

(a) The principal contractor shall undertake to ensure all contractors and their employees are familiar with the SMP, as it may impact on their work.

(b) All speed shall be made to complete the earthworks to the point where "clean" cover material covers the entire site. At that point the SMP will cease subject to no further subsurface work being undertaken (when it will recommence).

(c) Future volumes of potential "contaminated soil" to be removed (if any) is unknown at this time.

(d) Any soil material if removed off site, shall only be deposited at disposal facilities capable of receiving such soils.

(e) No material shall be disposed at any destination without consultation and approval by an environmental consultant (SEQP) and the ADC.

(f) Should any unforeseen matter having an adverse impact / effect occur during the development operation a SQEP shall be immediately called for advice, with resolution as rapidly as practically possible. The CCC shall also be notified.

(g) The contractor shall keep a record of all soil materials (and loads) that leave the site with documentation that provides:
- the date of removal
- transport company
- disposal destination and date received
- weigh-bridge weight of each load

(h) The contractor will during the earthworks operations, ensure all practical measures are undertaken to prevent and control the emission of dust, including the tracking of soil off the site on the wheels of vehicles.

10.0 Conclusion

KPES concludes that the findings of **this subject site** investigation indicate:

(iii) The analytical results show that industrial / commercial development soil value guidelines will be met on this land parcel subject:
- to the clearance of any potential asbestos in the dwellings/ buildings, if present.

(ii) Disposal facilities for soils (the bulk of which considered as clean fill) that require to be removed off site exist in the Canterbury area,

(iii) All waste materials leaving the site as part of this development shall be disposed at approved facilities.

(iv) The land in the context of contaminant is considered to be of low human health and environmental risk, and as a result, the proposed development should be able to proceed, and all land use consents granted

.

Note – KPES has prepared a separate Summary Document that collates this PSI/DSI and the September 2024 PDS/ DSI together, particularly from a legislative perspective. While two reports exist about two land parcels, there is nevertheless in essence only one development, even if it is broken up later into stages.

11.0 Limitations

Puna Property Holdings Ltd agree to indemnify KPES Ltd (including payment of legal costs incurred in its defence) against any claims brought by a third party against KPES LTD arising out of the provision of the Services.

The Services are prepared for the benefit of the Puna Property Holdings Ltd and Christchurch City Council only. No third party may rely upon any advice or work done by KPES in relation to the Services.

In preparing the report, KPES has undertaken limited site sampling (as outlined in the report). KPES's findings are based on the results of the soil sampling at each specified location at the time of inspection KPES makes no representation or warranty, express or implied that the remaining area that has not been sampled is not without contamination.

It is acknowledged that the Site may contain contaminated material. Puna Property Holdings Ltd agree that KPES shall have no liability in respect of any contaminated ground or other area. All dealings with contaminated material and areas shall be the responsibility of Puna Property Holdings Ltd including any removal or disposal of such material. Further, any matter relating to contamination shall be treated as an event beyond the reasonable control of KPES.

Appendix A: KPES Ltd, PSI/DSI – 300 – 318 – 320 Springs Rd – September 2024

PRELIMINARY AND DETAILED SITE INVESTIGATION

300 – 318 – 320 Springs Road, Hornby, Christchurch

September 2024

Prepared for: Puna Property Holdings Ltd

Prepared by: KPES Ltd

KPES Ltd accepts no liability with regard to the use of this report other than by Puna Property Holdings Ltd; notwithstanding the report may be forwarded other persons for application, permission or approval for purposes of legal requirements. This report has been prepared for Puna Property Holdings Ltd.

Prepared by: Klaus Prusas, Director, KPES Ltd

Signed: 

Date: 16 September 2024

Klaus Prusas Environmental Services Ltd (KPES Ltd)
62 Clausen Avenue
LEESTON 7632

s 9(2)(a)

s 9(2)(a)

Executive Summary

KPES Ltd concludes that the findings of the environmental investigation indicate:

(i) The analytical results show that industrial / commercial development soil value guidelines will be met on this land parcel subject:
- to the clearance of any potential asbestos in the dwellings/ buildings, if present, and
-the potential findings of matters of concern when the building platforms are removed at 300 Springs Road.

- accomplished by way of the Site Management Plan in Section 9(d) of this report.

(ii) Disposal facilities for soils that require to be removed off site exist in the Canterbury area.

(iii) All waste materials leaving the site as part of this development shall be disposed at approved facilities.

(iv) The land in the context of contaminant is considered to be of low human health and environmental risk.

As a result, the proposed development should be able to proceed, and all land use consents granted.

Puna Property Holdings Ltd
Detailed and Preliminary Site Investigation
300, 318, 320 Springs Road
Hornby/Halswell
Christchurch

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1.0 Introduction

Puna Property Holdings Ltd engaged KPES Ltd to carry out a Preliminary and Detailed Site Investigation assessment (PSI / DSI) of land at 300, 318 and 320 Springs Road (318 and 320 indicated as 320 Springs Road), Hornby / Halswell, Christchurch (Figure 1.1) within the terms of the Resource Management (National Environmental Standard for Assessing Contaminants in Soil to Protect Human Health) Regulations 2011, and consistent with the Ministry for the Environment Contaminated Land Guidelines.

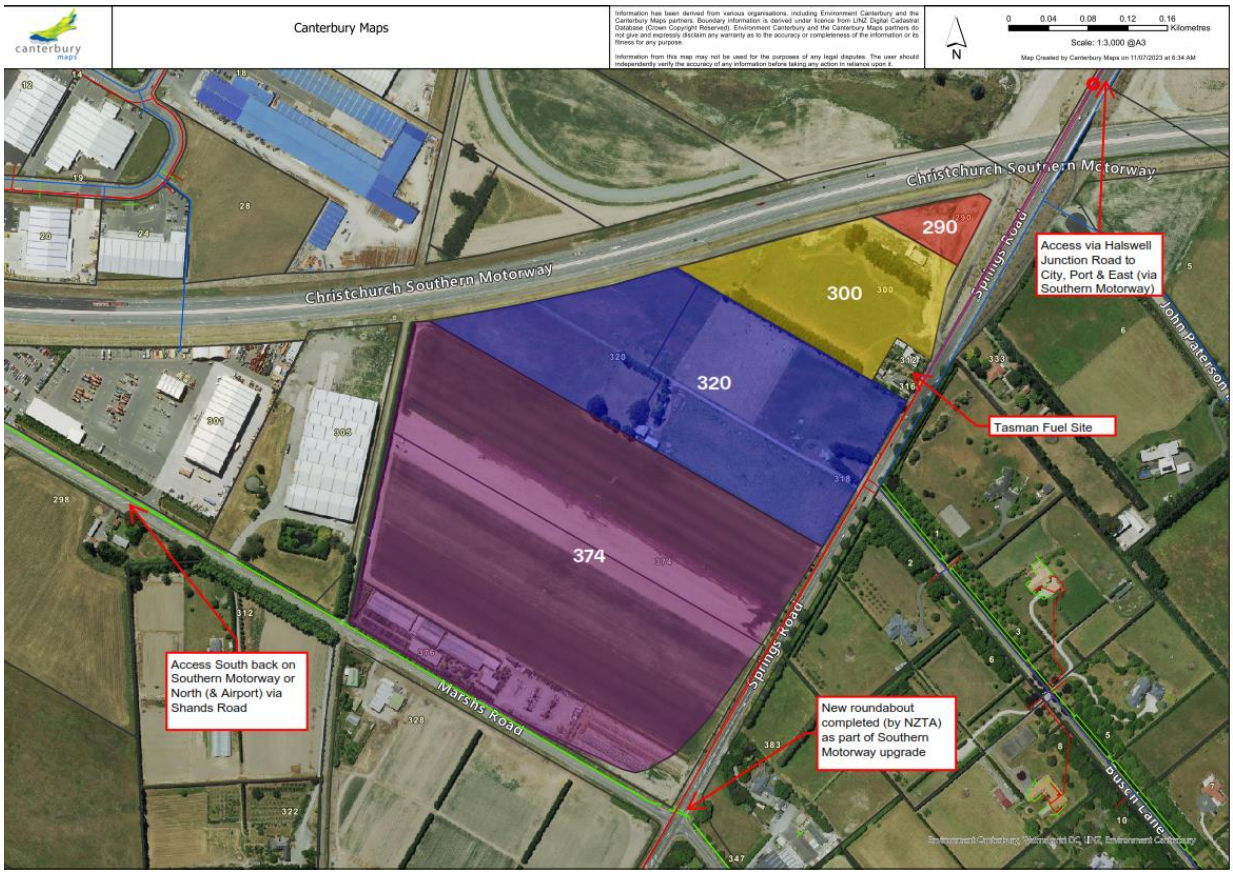


Figure 1:1 - Site Location

The purpose of the PSI/DSI investigation assessment is to:

(i) assess and determine the suitability of the land for commercial/industrial development land use purposes.

(ii) And further potentially assist and progress any future land use resource consent and later building consent applications with Christchurch District Council (CCC)necessary for such a development.

No concept design plans are understood yet to have been prepared. The 'development' is presently in its preliminary investigative stages. This PSI/DSI is part of that process.

2.0 Background

2.1 Location

The proposed development site (300 Springs Road Secs 1, 2, 3, 4, 6 SO497260 / 318 Springs Road – Lot 1 DP 82095 and 320 Springs Road – Section 7 50482614) is located in the south of Christchurch in an area known both as Hornby and Halswell.

The land is zoned under the Christchurch City Plan as follows

- 300 Springs Road – Industrial Heavy
- Springs Road – Rural Urban Fringe

The development land area involves over 9 hectares coverage

The land at 318/320 Springs Road is presently in paddocks, a two-storey house and large open storage shed is situated mid-point on the south boundary between it and 374 Springs Road. An old packing shed and remnants of a "farmers produce shop" are close to the Spring Road boundary. Pinus radiata trees grow on the boundary between 320 and 300 Springs Road, and also close to the 290 /300 Springs Road boundary.

The land parcels are also noted as being within the Canterbury Water Management Strategy Zone – Chch West Melton.

The two storeyed dwelling on 318 Springs Road is metal weatherboard clad, has a metal roof with possible asbestos containing material sheet cladding on parts of the external first floor. The dwelling is vacant and has been for some time. The open garage is metal clad including the roof. Both these structures appeared externally in "relatively good" condition.

The 'farmers shop' at the front of 320 Springs Road is in a dilapidated condition. A large metal storage container (presumably an ex cool store) sits beside the 'shop'. Asbestos containing material (ACM) may exist within the structure. It was securely closed as was the house.

Sheep grazed on 320 / 318 Springs Road. There was no evidence of a sheep / cattle dip.

2.2 Site History

Appendix A – Historical Aerials indicates the following.

	318 Springs Rd	**320 Springs Rd**	**300 Springs Rd**
1944 - 1944	Grazing / some ploughing	Grazing / some ploughing	Grazing with residential dwelling fronting Springs Road.
1955 – 1959	Grazing / some ploughing	Grazing / some ploughing	Grazing with residential dwelling fronting Springs Road but extra buildings appear
1960 – 1964	Grazing	Grazing	Grazing with residential dwelling fronting Springs Road but extra buildings appear
1965 - 1969	Aerials not clear but appears similar to 1960 - 1964		

1970 - 1974	Grazing	Grazing	Grazing
1975 - 1979	Grazing / ploughing	Grazing	Ploughing
1980 - 1984	Ploughing	Ploughing	Grazing
1985 – 1989	Ploughing	Ploughing	Grazing
1990 – 1994	2 Storeyed house and shop appear – balance ploughing	Ploughing	Grazing / some ploughing
1995 – 1999	Ploughing	Ploughing	Grazing
2000 – 2004	Ploughing	Grazing	Grazing
2010 – 2014	Grazing – shed appears	Grazing	Grazing – residential dwelling disappears
2015 – 2019	Grazing	Grazing	Grazing
Post 2019	Grazing	Grazing	Grazing Tasman Service Station at 213-316 Springs Road

Throughout the period from the 1940's onwards **300 Springs Road** appears to have been used for grazing purposes with some ploughing during the 1990-1994 period, indicating possible potential cropping. This appeared to coincide with the apparent vegetable cropping commencing at 318/320 Springs Road. However thereafter it appeared to revert back to grazing. Visually the dwelling, and buildings that had grown (1960-64) in number did not somehow appear to directly relate/ be associated with the activities of the balance of the site. With the dwelling being removed post 2014, together with the later demolition and removal of the other buildings, this left an extensive concrete building platforms ground level coverage. No underground fuel storage tanks appeared 'historically evident' but that is not to say they did not exist.

The **318 / 320 Springs Road** land use had been primarily grazing until the 1990's, then changed to vegetable growing, but then again reverting back to grazing from 2010 onwards.

2.3 Geology and Groundwater

Research of Environment Canterbury (Ecan) information indicated that:

- The soil type that exists on the land is Kaiapoi *f* deep silt.
- Three (3) borewells are noted to exist on the land parcels 300 and 318 Springs Road

300 Springs Road

- M36/2806- noted as = Active (exists/present), depth 13.1m - domestic supply use, rear of Tasman "fuel" Service Station.

318 Springs Road

- M36 / 2805- noted as = Active (/exist / present), no depth provided - Domestic Supply, 50m approx. from Springs Road and 10m from 376 Springs Rd boundary.
- M36 / 3325 – noted as = Active (exists / present), depth 17.2m- Domestic and Stock Supply

No borewells are noted as existing on 320 Spring Road

The four closest borewells to the subject site are:

- M36/3782 – 1 Busch Lane (across the road and directly opposite 318 Springs Road, noted as = Active (exists/present), depth 19.34m, Irrigation
- Bx23/0093- noted as= filled in, NZTA, depth 21m
- Bx23/0116- noted as= filled in, NZTA, depth 4m,
- Bx23/0117- noted as= filled in, NZTA, depth 4m

The three "Bx… "bore wells are located across the Christchurch Southern Motorway to the north of 300 and 320 Springs Road. These wells were drilled for geotechnical and geological purposes.

3.0 Site Notations

The 300 Springs Road land parcel is registered on Environment Canterbury's Listed Land Use Register (LLUR), with a G5 HAIL Classification – Waste Disposal to Land. The notification relates to a small area on the Southern Motorway and 300 Springs Road boundary, where during the Southern Motorway construction it was found to be a waste disposal area. This was investigated by Sephira Environmental resulting in subsequent remediation, and a site validation report. (See Appendix B)

318 and 320 Springs Road are not registered on Ecan's LLUR.

4.0 Guidelines

The guidelines applicable to this proposed development are:

- MfE Soil Contaminated Land Guideline Protocols (Guidelines 1 to 5)
- National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health Regulations 2011 (NES) (1 January 2012 and,
- The investigation carried out within terms of the NES-CS as a permitted activity

5.0 Sampling Locations and Methodology

The basis for the sampling locations and analytes was determined by the historical information available. Heavy metal and Organochlorine analysis were chosen given the historical 'vegetable and agricultural 'crop' growing. (particularly at 318 and 320 Springs Road).

Total Petroleum Hydrocarbons (TPH) and Polycyclic Aromatic Hydrocarbons analysis was added in the areas that bordered the Southern Motorway (particularly given the Sephira Environmental investigation findings on 300 Springs Road), and at the house on 318 Springs Road. The Sephira Environmental investigation resulted in the removal (of the waste) / remediation, and subsequently validated as compliant. (See Appendix C).

The following sections will discuss:

- the sampling undertaken,
- the results, and
- bring together in Section 9 – Discussion, those matters considered requiring remedial action, if any, and a conclusion (Section 10).

5.1 Sample Location Selections

A patterned approach was chosen. Soil samples were taken at surface and 0.5m depth in most locations but to 1.0m bgl for a number, particularly along the motorway frontage and the dwelling. TPH were also tested in these locations. This resulted in sixty-seven (67) discrete samples, from thirty locations in total being undertaken for analysis.

Figure 5.1 Sample Locations below details the sample locations.

Table 5.1 provides the GPS co-ordinates for the sampling locations.

Appendix E- Photographs, details the test pit excavation.

Site Location	Sample No	Depth (m)	Time	Latitude	Longitude	Comment
1	S1 S2	Surface 0.5	9.30 9.37	43.339095	172.313190	Soil to 0.3 Brown Silt
2	S3 S4 S5	Surface 0.5 1.0	9.40 9.42 9.45	43.339135	172.312897	Soil to 0.3 Brown Silt Silt/sand
3	S6 S7	Surface 0.5	10.00 10.02	43.339192	172.312579	Soil to 0.3 Brown Silt
4	S8 S9	Surface 0.5	10.05 10.05	Not Taken	Not taken	Soil to 0.3 Brown Silt
5	S10 S11	Surface 0.5	10.10 10.12	Not Taken	Not Taken	Soil to 0.3 Brown Silt
6	S12 S13	Surface 0.5	10.15 10.17	43.339267	172.313440	Soil to 0.3 Brown Silt
7	S14 S15 S16	Surface 0.5 1.0	12.25 10.27 10.30	43.339878	172.313845	Soil Brown Silt Sandy/Siltt
8	S17 S18	Surface 0.5	10.35 10.37	43.339651	172.313698	Soil Brown Silt
9	S19 S20	Surface 0.5	10.45 10.47	43.339734	172.314479	Soil Brown Silt
10	S21 S22	Surface 0.5	10.53 10.57	43.339055	172.314315	Soil Brown Silt
11	S23 S24	Surface 0.5	11.05 11.07	43.339314	172.312068	Soil Brown Silt
12	S25 S26	Surface 0.05	11.10 11.12	43.339494	172.312560	Soil Brown Silt
13	S27 S28 S29	Surface 0.5 1.0	11.20 11.22 11.25	43.339839	172.313013	Soil Brown Silt Sandy/Silt
14	S30 S31	Surface 0.5	11.30 11.32	43.3480115	172.313656	Soil Brown Silt
15	S32 S33 S34	Surface 0.5 1.0	11.55 11.57 12.00	43.340003	172.313827q	Soil Brown Silt Sandy/Siltt
16	S35 S36	Surface 0.5	12.05 12.07	43.340148	172.314203\2	Soil Brown Silt
17	S37 S38	Surface O.5	12.10 12.12	43.340348	172.314113	Soil Brown Silt
Locations 1 to 17 refer to Land Parcel 318 / 320 Springs Road (shown as 320 Springs Road)						

Site Location	Sample No	Depth (m)	Time	Latitude	Longitude	Comment
18	S39 S40	Surface 0.5	1.30 1.32	43.339121	172.314998	Soil Soil
19	S41 S42 S43	Surface 0.5 1.0	135 1.37 1.40	43.339280	172.314902	Soil Silt Sandy / Silt
20	S44 S45	Surface 0.5	1.45 1.47	43.339411	172.314470	Soil Silt
21	S46 S47	Surface 0.5	1.55 1.57	43.339150	172.314485	Soil Silt
22	S48 S49	Surface 0.5	2.00 2.02	43.339224	172.314605	Soil Silt
23	S50 S51	Surface 0.5	2.05 2.07	43.339032	172.314000	Soil Silt
24	S52 S53	Surface 0.5	2.10 2.12	43.339989	172.314614	Soil Silt
25	S54 S55	Surface 0.5	2.15 2.17	43.339099	172.314444	Soil Silt
26	S56 S57	Surface 0.5	2.20 2.22	43.339260	172.314286	Soil Silt
27	S58 S59	Surface 0.5	2.25 2.27	43.339083	`72.314153	Soil Silt
28	S60 S61	Surface 0.5	2.30 2.32	43.339055	172.314922	Soil Silt
29	S62 S63 S64	Surface 0.5 1.0	2.55 2.57 3.00	43.338857	172.314097	Soil Silt Sandy / Silt
30	S65 S66 S67	Surface 0.5 1.0	3.05 3.07 3.10	43.338770	172.314334	Soil Silt Sandy / Silt
Locations 18 – 30 refer to Land Parcel – 300 Springs Road						

Table 5.1 – GPS Co-ordinates

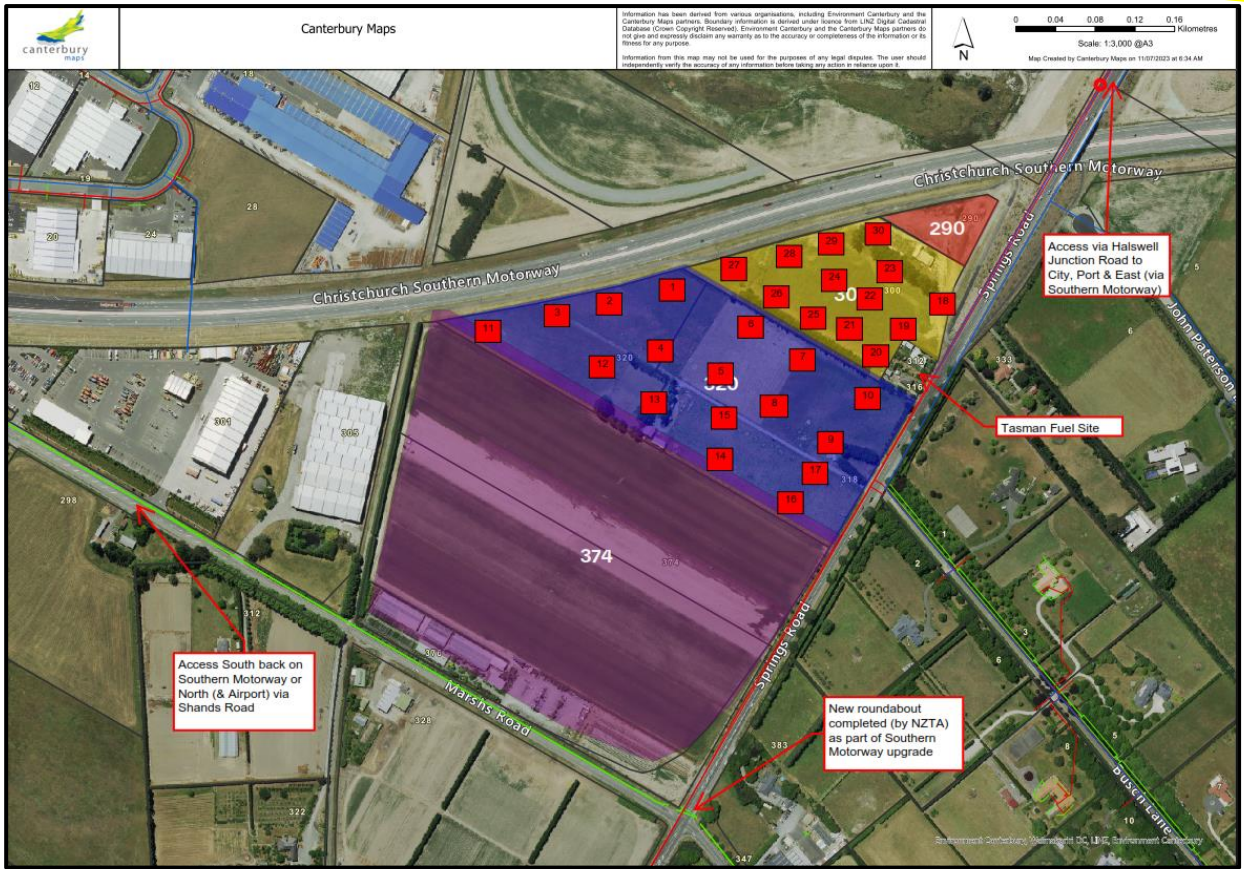


Figure 5.1 – Sampling Locations

5.2 Methodology

Sampling at each location was undertaken via test pits, excavated to the required depth by an excavator, with soils removed from the excavator bucket, wearing disposal gloves, transferred into glass jars and then placed into a chilly bin containing ice for transport to Hill Laboratories Ltd under chain of custody documentation.

6.0 Sample Results

Table 6.1 provides a summary of the laboratory results. The full RJ Hill Laboratories Ltd analysis reports are detailed in Appendix D.
The soil value results indicate as follows-

All results met background values(mg/kg) other than
Were only

18 -S39 (surface) - cadmium 0.20 (0.19) / zinc 95 (93.4
19 -S41 (surface) - cadmium 0.20 (0.19) / zinc 101 (93.4)
22 -S48 (surface) - cadmium 0.26 (0.19)
23 -S50 (surface) - cadmium 0.21 (0.19) / zinc 95 (93.4)
24 -S52 (surface) - zinc 101(93.4)
25 -S54 (surface) - cadmium 0.26 (0.19) / zinc 108(93.4)
26 -S56 (surface) - cadmium 0.20(0.19)
27 -S58 (surface) - cadmium 0.20(0.19)
30 -S65 (surface) - cadmium 0.20(0.19)

All the above locations are in 300 Springs Road and the majority close to either the motorway and /or Spring Road and the Service Station

Only two samples S39 and S52 (surface / in C15-36 band) registered a **TPH** detection level value result (42 and 75 mg/kg respectively)

PAH at detection levels (but at/below background values) were only indicated in surface samples

Location

11	-S23
18	-S39
23	-S50
24	-S52
28	-S60
29	-S62
30	-S65

Organochlorine values were all below levels of detection.

From a NES-CS perspective KPES concludes that it could be considered that the land parcels fall outside the NES-CS legislative control particularly 318 and 320 Springs Road.
And because the values in 300 Springs Road only very marginally exceed the background, it could also be considered to fall outside NES-CS control.

KPES is however, cautious and will discuss the matter of NES-CS applicability later in Section 7 – Legislation and Section 9 – Discussion of this report.

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Table 6.1 – Sampling Analysis – 300 Springs Road, Christchurch

Location	1	1	2	2	2	3	3	4	4	5	5	6	6	7	7				
Sample Ref	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15	**Industrial Commercial Guidelines**	**Residential Guidelines (25%/10% Produce**	**Recreational Guidelines**	**Regional Recent Soil Background**
Sample Depth (m)	Surface	0.5	Surface	0.5	1.0	Surface	0.5	Surface	0.5	Surface	0.5	Surface	0.5	Surface	0.5				
Heavy Metals																			
Total Arsenic	7	7	6	7	5	5	4	7	4	6	6	6	5	6	6	70[1]	17/20[1]	80[1]	12.58[1]
Total Cadmium	0.17	<0.10	0.18	<0.10	<0.10	0.12	<0.10	0.13	<0.10	0.15	<0.10	0.14	<0.10	0.15	<0.15	1300[1]	0.8/3.0[1]	400[1]	0.19[1]
Total Chromium	19	18	20	19	16	15	12	20	12	18	19	20	18	19	20	>10000/6300[1]	>10000/460/290[1]	>10000/1500[1]	22.7[1]
Total Copper	11	9	11	9	7	7	6	10	5	11	9	11	9	11	9	>10000[1]	>10000[1]	>10000[1]	20.3[1]
Total Lead	24	21	24	21	16.7	5.5	11.6	22	11.5	23	19.9	24	17.3	23	21	3300[1]	160/210[1]	880[1]	40.96[1]
Total Nickel	15	15	15	15	12	11	12	14	9	14	15	16	14	15	17	1800[2]	130[2]	600[2]	20.7[2]
Total Zinc	82	67	83	67	53	55	33	74	38	77	62	79	57	79	71	35000[2]	7000[2]	14000[2]	93.94[2]

Organochlorine Screening in Soil
NO results below detection limits listed
(See Hills laboratories Analysis Report

Polycyclic Aromatic Hydrocarbons Screening in Soil
NO results below detection limits listed
(See Hill Laboratories Analysis Report)

Benzol[a]anthracene			0.013													2.1[2]			0.47
Benzo[a]pyrene (BAP)*			0.019			0.013										35[1]	6/10[1]	40[1]	0.595[4]
Benzo[b]fluoranthene + Benzol[j] fluoranthene						0.17										2.1[2]			0.947[4]
Benzo[g.h.i]perylene	0.013																		0.459[4]
Chrysene*			0.015													210[2]			0.539[4]
Fluoranthene*	0.022		0.037			0.024										82000[2]			1.345[4]
Indeno(1,2,3-c,d)pyrene*			0.014													2.1[2]			0.385[4]
Phenanthrene			0.017																0.703[4]
Pyrene	0.024		0.039			0.024										17000[2]			1.362[4]

Total Petroleum Hydrocarbons in Soil
NO results below detection limits listed
(See Hills Laboratories Analysis Report)

Location	7	8	8	9	9	10	10	11	11	12	12	13	13	13	14				
Sample Ref	S16	S17	S18	S19	S20	S21	S22	S23	S24	S25	S26	S27	S28	S29	S30	**Industrial Commercial Guidelines**	**Residential Guidelines (25%/10% Produce**	**Recreational Guidelines**	**Regional Recent Soil Background**
Sample Depth (m)	1.0	Surface	0.5	Surface	0.5	Surface	0.55	Surface	0.5	Surface	0.5	Surface	0.5	1.0	Surface				

Heavy Metals

Total Arsenic	5	6	4	6	6	5	5	6	5	6	7	5	4	4	4	70[1]	17/20[1]	80[1]	12.58[1]
Total Cadmium	<0.10	0.17	<0.10	0.16	<0.10	0.14	<0.10	0.14	<0.10	0.16	<0.10	0.17	<0.10	<0.10	<0.10	1300[1]	0.8/3.0[1]	400[1]	0.19[1]
Total Chromium	15	18	12	17	19	15	15	17	16	19	19	14	13	13	13	>10000/6300[1]	>10000/460/290[1]	>10000/1500[1]	22.7[1]
Total Copper	8	11	4	9	9	8	7	8	7	11	11	8	5	6	7	>10000[1]	>10000[1]	>10000[1]	20.3[1]
Total Lead	16.6	25	12.1	22	19.6	22	14.9	19.7	16.4	22	21	16.8	10.2	11.9	14.9	3300[1]	160/210[1]	880[1]	40.96[1]
Total Nickel	13	13	9	13	14	12	13	13	13	14	14	10	11	11	10	1800[2]	130[2]	600[2]	20.7[2]
Total Zinc	54	82	42	70	70	80	58	71	54	78	64	70	37	36	58	35000[2]	7000[2]	14000[2]	93.94[2]

Organochlorine Screening in Soil
NO results below detection limits listed
(See Hills laboratories Analysis Report

Polycyclic Aromatic Hydrocarbons Screening in Soil
NO results below detection limits listed
(See Hill Laboratories Analysis Report)

Benzol[a]anthracene												0.013				2.1[2]			0.47
Benzo[a]pyrene (BAP)*								0.016				0.020							0.595[4]
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES																35[1]	6/10[1]	40[1]	
Benzo[a]pyrene Toxic Equivalence (TEF)																			
Benzo[b]fluoranthene + Benzol[j] fluoranthene								0.021				0.025				2.1[2]			0.947[4]
Benzo[e]pyrene												0.013							
Benzo[g.h.i]perylene								0.013				0.017							0.459[1]
Benzo[k]fluoranthene																21[2]			0.296[4]
Chrysene*								0.013				0.017				210[2]			0.539[4]
Fluoranthene*								0.031				0.038				82000[2]			1.345[4]
Indeno(1,2,3-c,d)pyrene*								0.013				0.017				2.1[2]			0.385[4]
Phenanthrene								0.016				0.018							0.703[4]
Pyrene								0.030				0.037				17000[2]			1.362[4]

Total Petroleum Hydrocarbons in Soil
NO results below detection limits listed
(See Hills Laboratories Analysis Report)

C15 – C36												39							

Location	14	15	15	15	16	16	17	17	18	18	19	19	19	20	20				
Sample Ref	S31	S22	S33	S34	S35	S36	S37	S38	S39	S40	S41	S42	S43	S44	S45	**Industrial Commercial Guidelines**	**Residential Guidelines (25%/10% Produce**	**Recreational Guidelines**	**Regional Recent Soil Background**
Sample Depth (m)	0.5	Surface	0.5	1.0	Surface	0.5	Surface	0.5	Surface	0.5	Surface	0.5	1.0	Surface	0.5				
Heavy Metals																			
Total Arsenic	4	5	4	5	6	3	5	4	6	6	7	6	7	7	7	70[1]	17/20[1]	80[1]	12.58[1]
Total Cadmium	<0.10	0.15	<0.10	<0.15	0.19	<0.10	0.17	<0.10	0.20	<0.10	0.20	<0.10	<0.10	0.16	<010	1300[1]	0.8/3.0[1]	400[1]	0.19[1]
Total Chromium	15	15	15	15	17	14	17	15	17	20	21	19	17	19	19	>10000/6300[1]	>10000/460/290[1]	>10000/1500[1]	22.7[1]
Total Copper	5	8	5	5	10	4	9	6	10	9	12	10	11	10	10	>10000[1]	>10000[1]	>10000[1]	20.3[1]
Total Lead	12.5	19.3	14.0	13.0	23	12.4	22	12.8	30	24	32	22	19.3	26	21	3300[1]	160/210[1]	880[1]	40.96[1]
Total Nickel	12	12	10	11	13	10	13	14	14	16	16	17	13	15	16	1800[2]	130[2]	600[2]	20.7[2]
Total Zinc	40	69	50	40	75	55	74	50	95	83	101	83	58	84	67	35000[2]	7000[2]	14000[2]	93.94[2]

Organochlorine Screening in Soil
NO results below detection limits listed
(See Hills laboratories Analysis Report

Polycyclic Aromatic Hydrocarbons Screening in Soil
NO results below detection limits listed
(See Hill Laboratories Analysis Report)

Benzol[a]anthracene									0.021							2.1[2]			0.47
Benzo[a]pyrene (BAP)*									0.029	0.018									0.595[4]
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES									0.043	0.029						35[1]	6/10[1]	40[1]	
Benzo[a]pyrene Toxic Equivalence (TEF)									0.043	0.045									
Benzo[b]fluoranthene + Benzol[j] fluoranthene									0.038	0.036						2.1[2]			0.947[4]
Benzo[e]pyrene									0.019	0.022									
Benzo[g.h.i]perylene									0.021	0.029									0.459[1]
Benzo[k]fluoranthene										0.013						21[2]			0.296[4]
Chrysene*									0.026	0.022						210[2]			0.539[4]
Fluoranthene*									0.060	0.062						82000[2]			1.345[4]
Indeno(1,2,3-c,d)pyrene*									0.023	0.025						2.1[2]			0.385[4]
Phenanthrene									0.026	0.021									0.703[4]
Pyrene									0.056	0.51						17000[2]			1.362[4]

Total Petroleum Hydrocarbons in Soil
NO results below detection limits listed
(See Hills Laboratories Analysis Report)

C15 – C36									42										

Location	21	21	22	22	23	23	24	24	25	25	26	26	27	27	28				
Sample Ref	S46	S47	S48	S49	S50	S51	S52	S53	S54	S55	S56	S57	S58	S59	S60	**Industrial Commercial Guidelines**	**Residential Guidelines (25%/10% Produce**	**Recreational Guidelines**	**Regional Recent Soil Background**
Sample Depth (m)	Surface	0.5	Surface	0.5	Surface	0.5	Surface	0.5	Surface	0.5	Surface	0.5	Surface	0.5	Surface				
Heavy Metals																			
Total Arsenic	6	7	7	7	6	7	5	6	7	7	7	6	6	6	6	70[1]	17/20[1]	80[1]	12.58[1]
Total Cadmium	0.19	0.16	0.26	<0.10	0.21	<0.10	0.19	<0.10	0.26	<0.10	0.20	<0.10	0.20	<0.10	0.20	1300[1]	0.8/3.0[1]	400[1]	0.19[1]
Total Chromium	18	22	20	21	18	17	16	17	19	19	19	19	19	18	19	>10000/6300[1]	>10000/460/290[1]	>10000/1500[1]	22.7[1]
Total Copper	10	10	10	12	11	11	10	8	12	9	9	9	9	9	9	>10000[1]	>10000[1]	>10000[1]	20.3[1]
Total Lead	25	26	26	22	30	19.7	29	19.2	30	19.0	24	21	24	18.4	23	3300[1]	160/210[1]	880[1]	40.96[1]
Total Nickel	15	16	15	16	14	15	12	13	15	15	14	16	16	14	15	1800[2]	130[2]	600[2]	20.7[2]
Total Zinc	84	88	79	66	95	62	101	79	108	62	87	69	82	63	79	35000[2]	7000[2]	14000[2]	93.94[2]

Organochlorine Screening in Soil
NO results below detection limits listed
(See Hills laboratories Analysis Report

Polycyclic Aromatic Hydrocarbons Screening in Soil
NO results below detection limits listed
(See Hill Laboratories Analysis Report)

Benzol[a]anthracene							0.5									2.1[2]			0.47
Benzo[a]pyrene (BAP)*					0.018		0.029												0.595[4]
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES					0.027		0.043								0.020	35[1]	6/10[1]	40[1]	
Benzo[a]pyrene Toxic Equivalence (TEF)					0.036		0.063												
Benzo[b]fluoranthene + Benzol[j] fluoranthene					0.036		0.062									2.1[2]			0.947[4]
Benzo[e]pyrene					0.034		0.056								0.024				
Benzo[g.h.i]perylene					0.017		0.028												0.459[1]
Benzo[k]fluoranthene					0.020		0.033								0.016	21[2]			0.296[4]
Chrysene*					0.013		0.023									210[2]			0.539[4]
Fluoranthene*					0.023		0.039								0.014	82000[2]			1.345[4]
Indeno(1,2,3-c,d)pyrene*																2.1[2]			0.385[4]
Phenanthrene					0.50		0.090								0.041				0.703[4]
Pyrene					0.020		0.032								0.015	17000[2]			1.362[4]

Total Petroleum Hydrocarbons in Soil
NO results below detection limits listed
(See Hills Laboratories Analysis Report)

C15 – C36							75												

Location	28	29	29	29	30	30	30				
Sample Ref	S61	S62	S63	S64	S65	S66	S67	**Industrial Commercial Guidelines**	**Residential Guidelines (25%/10% Produce**	**Recreational Guidelines**	**Regional Recent Soil Background**
Sample Depth (m)	0.5	Surface	0.5	1.0	Surface	0.5	1.0				

Heavy Metals

Total Arsenic	6	6	7	7	5	7	3	70[1]	17/20[1]	80[1]	12.58[1]
Total Cadmium	<0.10	0.18	<0.10	<0.10	0.19	<0.10	<0.10	1300[1]	0.8/3.0[1]	400[1]	0.19[1]
Total Chromium	18	17	19	18	16	20	14	>10000/6300[1]	>10000/460/290[1]	>10000/1500[1]	22.7[1]
Total Copper	7	9	10	10	9	9	5	>10000[1]	>10000[1]	>10000[1]	20.3[1]
Total Lead	19.6	24	20	18.7	33	21	13.3	3300[1]	160/210[1]	880[1]	40.96[1]
Total Nickel	15	14	15	15	13	16	11	1800[2]	130[2]	600[2]	20.7[2]
Total Zinc	71	79	62	59	84	59	84	35000[2]	7000[2]	14000[2]	93.94[2]

Organochlorine Screening in Soil
NO results below detection limits listed
(See Hills laboratories Analysis Report

Polycyclic Aromatic Hydrocarbons Screening in Soil
NO results below detection limits listed
(See Hill Laboratories Analysis Report)

Benzol[a]anthracene		0.017			0.017			2.1[2]			0.47
Benzo[a]pyrene (BAP)*		0.026			0.028						0.595[4]
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES		0.035			0.042			35[1]	6/10[1]	40[1]	
Benzo[a]pyrene Toxic Equivalence (TEF)		0.034			0.042						
Benzo[b]fluoranthene + Benzol[j] fluoranthene		0.033			0.035			2.1[2]			0.947[4]
Benzo[e]pyrene		0.016			0.018						
Benzo[g.h.i]perylene		0.020			0.023						0.459[1]
Benzo[k]fluoranthene								21[2]			0.296[4]
Chrysene*		0.021			0.021			210[2]			0.539[4]
Fluoranthene*		0.049			0.056			82000[2]			1.345[4]
Indeno(1,2,3-c,d)pyrene*		0.019			0.022			2.1[2]			0.385[4]
Phenanthrene		0.020			0.025						0.703[4]
Pyrene		0.048			0.049			17000[2]			1.362[4]

Total Petroleum Hydrocarbons in Soil
NO results below detection limits listed
(See Hills Laboratories Analysis Report)

Notes
[1] -means NES-CS soil guidelines values
[2] -means MFE soil value guidelines
[5] - means GAMPHCS (NZ)
_ - means above background value

7.0 Legislation

KPES could be convinced, other than for two potential matters of concern, namely

(i) probable asbestos in the dwellings / buildings, and

(ii) the "condition" of the area beneath and around the concrete building platforms at 300 Springs Road, where "Soil Disturbance" Reg 8 (3) (c), and 'Soil Removal' (potentially) Reg 8(3) (d) permitted volume criteria could be exceeded during the development.

that the analysis results suggest strongly the land parcel could be considered to fall outside the NES-CS legislative framework and therefore be treated as a permitted activity. The exceedances are very minor both in value and frequency given the number of samples analysed.

KPES however acknowledges that with regard to the two matters of concern mentioned above whilst these are precautionary concerns on balance cannot be dismissed.

Therefore, for pragmatic purposes and reasons, and it is accepted that a HAIL activity "may" have occurred on the land, and therefore the NES-CS legislation could apply to this development (Reg.5(7).

8.0 Conceptual Site Model (CSM)

A CSM is provided below to represent potential source contaminants, their exposure pathways and receptors. The CSM is presented in two stages of the development

(i) initial desktop assessment phase prior to soil testing, and then

(ii) re-evaluation post sampling results.

The initial desktop review suggested the potential contaminants of concern, exposure pathways and potential receptors at the land parcel from this development based on the historical data were likely to be minor.

i) Initial Desktop

Source	- Site history
Contaminant of Concern	- Potential Heavy Metals, Oganochlorine Pesticides PAH, TPH
Pathway	- Inhalation of dust, Ingestion, Dermal Contact, Water
Receptors	- Contractors, Future occupants

ii) Post Soil Sampling

Source	- see Table 6.1 - Analysis Results and report discussion
Contaminant of Concern	- No analyte results were above recognised appropriate land use criteria.
Pathway	- Normal industry operational mitigation protocols apply
Receptors	- Contractors, Future occupants

9.0 Discussion

This investigation's findings have raised and discussed several matters. These are highlighted below:

(a) Soil Value Status

(i) Determine within NES-CS terms the values that exist on the land parcel, and whether these are appropriate for an industrial / commercial use development.

(ii) The analytical results indicate that industrial/ commercial soil guideline values are well met on this land parcel.

(iii) Not only are industrial/ commercial guidelines met but also residential soil guidelines, and considered background values. Therefore within NES-CS terms it could be concluded that the development falls outside that legislative control.

(iv) KPES however, recognizes two areas of potential concern, as raised in Section 7.0, namely the potential asbestos that may exist in the dwelling and other structures, and the condition of the ground around and beneath the existing concrete building platforms remaining at 300 Springs Road, requiring future and additional investigative attention.

The solution to the asbestos matter is provided in Section 9(b) below.

With regard to the "concrete platform "resolution this is referred to in section 9(c) but outlined more specifically in Section 9(d) included as part of the Site Management Plan (SMP).

(v) During this soil sampling operation, the 'soil appearance' did not display any physical adverse condition. It provided the appearance of a good quality top soil with clean sandy silt beneath.

(b) Asbestos

(i) KPES recommends that an asbestos survey of the dwellings and buildings be undertaken, and if asbestos is found, it is deconstructed out of the dwelling, prior to demolition, by an approved operator, and the asbestos containing material disposed appropriately.

An Asbestos Clearance Certificate should be provided to CCC, post successful and appropriate removal and disposal, and/or also if no asbestos is found.

(c) Soil Management and Disposal

(i) While soil value land use suitability compliance exists, some potential future areas may require, different disposal determination/destination options. i.e as and if applicable around the remaining building platform areas on 300 Springs Road.

No soil however needs to be removed from the site but if it is can be considered as cleanfill subject to the above caveat. in

(ii) Destinations disposal facilities exist for such material in Christchurch environs.

(d) Site Management Plan (SMP)

This report (PSI/DSI) has outlined the environmental land contamination concerns, (be they considered minimal) to progress the development in the most appropriate way forward, is considered to be by way of a SMP to take into account the potential asbestos issues and the area around beneath the remaining concrete building platform at 300 Springs Road.

The below SMP has therefore been prepared.

SMP

This SMP shall be read in conjunction with this report. It is incumbent on all contractors undertaking the works and construction, to comply with the provisions of the SMP.

i. The principal contractor shall undertake to ensure all contractors and their employees are familiar with the SMP, as it may impact on their work.

ii. The work as discussed in Section 9 of this report relating to the below will be as follows, namely

(a) while the asbestos, and the suitability of ground around and beneath the concrete floor building platform areas may be undertaken at any time, it is recommended that they are completed first to allow the later full earthworks operation to be undertaken unimpeded.
(b) the “asbestos” resolution be undertaken as discussed in Section 9 (b) above, and
(c) the concrete platform investigation resolution be carried out as follows

- Concrete (but no soil) be uplifted / scrutinised for possible contaminants by SQEP/ if none determined / disposed to appropriate/approved hardfill disposal destination
- The ground beneath the concrete and the nearby area be visually investigated for underground vessels (UST’s) and/or any other unusual matter, and then
- Soil tests (at not less than four locations in the area), at surface and 0.5mbgl at each location, and at two of those locations to 1.0m bgl be carried out.
- The analytes as a minimum will include, heavy metals, an organochlorine pesticide screen, PAH and TPH.
- The test results will determine the extent of any subsequent “human health/environmental action”.

iii. All speed shall be made to complete the earthworks to the point where “clean” cover material covers the entire site. At that point the SMP will cease subject to no further subsurface work being undertaken (when it will recommence).

iv. Future volumes of potential “contaminated soil” to be removed (if any) is unknown at this time.

v. Any soil material if removed off site, shall only be deposited at disposal facilities capable of receiving such soils.

vi. No material shall be disposed at any destination without consultation and approval by an environmental consultant (SEQP) and the ADC.

vii. Should any unforeseen matter having an adverse impact / effect occur during the development operation a SQEP shall be immediately called for advice, with resolution as rapidly as practically possible. The CCC shall also be notified.

viii. The contractor shall keep a record of all soil materials (and loads) that leave the site with documentation that provides:
- the date of removal
- transport company
- disposal destination and date received
- weigh-bridge weight of each load

ix. The contractor will during the earthworks operations, ensure all practical measures are undertaken to prevent and control the emission of dust, including the tracking of soil off the site on the wheels of vehicles.

x. A Site Validation Report (SVR) shall be furnished to the Council within three months of the work completion. For this development at the completion of each stage of the development.

10.0 Conclusion

KPES concludes that the findings of the investigation indicate:

(iv) The analytical results show that industrial / commercial development soil value guidelines will be met on this land parcel subject:
- to the clearance of any potential asbestos in the dwellings/ buildings, if present, and
-the potential findings of matters of concern when the building platforms are removed at 300 Springs Road.

- accomplished by way of the Site Management Plan in Section 9(d) of this report.

(ii) Disposal facilities for soils that require to be removed off site exist in the Canterbury area.

(iii) All waste materials leaving the site as part of this development shall be disposed at approved facilities.

(iv) The land in the context of contaminant is considered to be of low human health and environmental risk.

As a result, the proposed development should be able to proceed, and all land use consents granted.

11.0 Limitations

Puna Property Holdings Ltd agree to indemnify KPES Ltd (including payment of legal costs incurred in its defence) against any claims brought by a third party against KPES LTD arising out of the provision of the Services.

The Services are prepared for the benefit of the Puna Property Holdings Ltd and Christchurch City Council only. No third party may rely upon any advice or work done by KPES in relation to the Services.

In preparing the report, KPES has undertaken limited site sampling (as outlined in the report). KPES's findings are based on the results of the soil sampling at each specified location at the time of inspection KPES makes no representation or warranty, express or implied that the remaining area that has not been sampled is not without contamination.

It is acknowledged that the Site may contain contaminated material. Puna Property Holdings Ltd agree that KPES shall have no liability in respect of any contaminated ground or other area. All dealings with contaminated material and areas shall be the responsibility of Puna Property Holdings Ltd including any removal or disposal of such material. Further, any matter relating to contamination shall be treated as an event beyond the reasonable control of KPES.

Appendix A: Historical Aerial Photographs

Historical Photos – 300 Springs Road



1955 - 1959



1960 - 1964



1975 - 1979



1980 - 1984



1990 - 1994



2000 - 2004

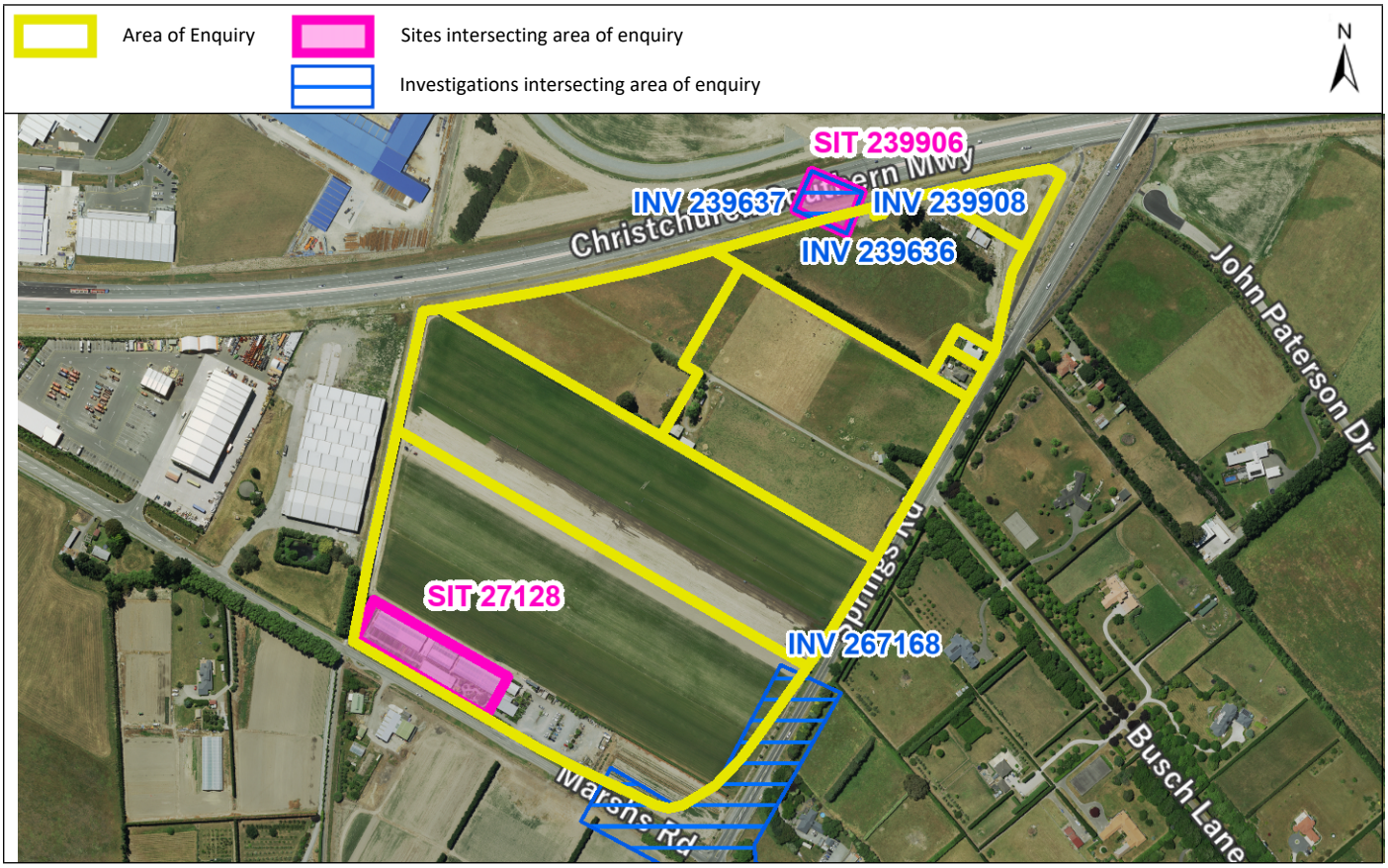
	
2010 - 2014	2015 - 2019
	
2019 - past	

Appendix B: Ecan LLUR

Property Statement
from the Listed Land Use Register

Visit ecan.govt.nz/HAIL for more information or
contact Customer Services at ecan.govt.nz/contact/ and quote ENQ387768

Date generated: 19 August 2024
Land parcels: Section 2 SO 556764
Section 5 SO 562497
Lot 1 DP 82095
Section 4 SO 550060
Section 6 SO 550060
Section 4 SO 562497
Section 7 SO 482614
Lot 1 DP 24385
Lot 2 DP 24385



The information presented in this map is specific to the property you have selected. Information on nearby properties may not be shown on this map, even if the property is visible.

Sites at a glance

Sites within enquiry area

Site number	Name	Location	HAIL activity(s)	Category
27128	27128	Marshs Road, Templeton-Halswell	A10 - Persistent pesticide bulk storage or use;	Not Investigated
239906	300 Springs Road, Christchurch	300 Springs Road, Christchurch	G5 - Waste disposal to land;	Managed - Recreational

More detail about the sites

Site 27128: 27128 (Intersects enquiry area.)

Category: Not Investigated
Definition: Verified HAIL has not been investigated.

Location: Marshs Road, Templeton-Halswell
Legal description(s): Lot 2 DP 49632

HAIL activity(s):

Period from	Period to	HAIL activity
Pre 2004	2011	Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds

Notes:

14 Oct 2013 Area defined from: 2004-2011 ECan Aerial Photographs

Note: Glass houses were noted in the aerial photographs reviewed.

Investigations:

There are no investigations associated with this site.

Site 239906: 300 Springs Road, Christchurch (Intersects enquiry area.)

Category: Managed - Recreational
Definition: Site investigations demonstrate that hazardous substances present above applicable guidelines are adequately managed for land use - Recreational.

Location: 300 Springs Road, Christchurch
Legal description(s): Section 4 SO 562497,Section 5 SO 497260

HAIL activity(s):

Period from	Period to	HAIL activity
		Waste disposal to land (excluding where biosolids have been used as soil conditioners)

Notes:

30 Jul 2019 The Detailed Site Investigation (DSI) identified a rubbish pit consisting of soil mixed with scrap metal, fibrous cement pipe and board, plastic, and glass bottles, during topsoil stripping for the Canterbury Southern Motorway Stage 2 project. Therefore this area has been given the HAIL activity G5 - Waste disposal to land. Sampling within the DSI indicated the rubbish pit was contaminated with asbestos fibres and fines.

The Site Validation Report (SVR) indicated asbestos containing waste and soil were transported to Kate Valley Landfill for disposal. Validation sampling within the SVR indicated that the remedial action had reduced concentrations of asbestos in soil to below detectable levels in all locations except on the floor of the deepest part of the excavation (VS-7). The pit was filled in with clean gravel followed by topsoil which was planted over with grass. This area will be categorised as 'Below guideline values - Commercial/Industrial' after it is audited.

Investigations:

INV 239636 **Springs Road Rubbish Pit Waste Characterisation - CSM2, CH-11900**
Sephira Environmental Ltd - Detailed Site Investigation
25 Oct 2018

INV 239908 **Remedial Action Plan/ Site Management Plan - Rubbish Tip Removal - CSM2 Project - CH-11900, Springs Road, Prebbleton**
Sephira Environmental Ltd - Site Remedial Action Plan
25 Oct 2018

INV 239637 **Site Validation Report, CSM2, CH-11900, Springs Road Waste Pit**

Sephira Environmental Ltd - Site Validation Report
29 Nov 2018

Summary of investigation(s):

Site history: 300 Springs Road, Halswell, Christchurch (the site) was used as farm paddocks from the 1940s until the late 1970s. In the early 1990s a dwelling or shed was present on the site. The dwelling has since been removed and a part of the Christchurch Southern Motorway currently passes through the site.

INV239636 - Springs Road Rubbish Pit Waste Characterisation - CSM2, CH-11900 - Sephira Environmental Limited 2018

Investigation objective: Sephira Environmental Limited (Sephira Environmental) were engaged in 2018 to complete a detailed site investigation of a rubbish pit that was discovered during earthworks for the construction of the Christchurch Southern Motorway. The rubbish pit had been excavated during earthworks and the stockpiled material contained a mixture of soil and scrap metal, plastic, glass bottles and fibrous cement pipe. Separate stockpiles of project related striped topsoil had been placed adjacent to the pit. This topsoil was mixed with root balls, branches and grass mats. Two soil samples were collected from the stockpiled soil mixed with waste material. These samples were analysed for waste characterisation using leachate testing (Toxic Characteristic Leaching Procedure (TCLP)) for 10 heavy metals (arsenic, beryllium, boron, cadmium, chromium, copper, lead, mercury, zinc and nickel), polycyclic aromatic hydrocarbons (PAHs) and organochlorine pesticides (OCPs). Three soil samples were collected from the topsoil stockpile and analysed for total matrix analysis for the same 10 heavy metals, PAHs and OCPs. All five samples were analysed for asbestos. The total topsoil matrix analytical results were compared with National Environmental Standards Soil Contaminant Standards (NES SCSs) for commercial/industrial land use because of the proposed end use of the site, and regional background concentration criteria to determine the potential of excavated soil being accepted as clean fill.

Results: The TCLP testing indicated that the two waste pit samples (WP-1 and WP-2) contained asbestos. In both WP-1 and WP-2 samples, TCLP testing indicated that asbestos concentrations exceeded the waste acceptance criteria for Kate Valley Landfill. Whereas all heavy metal, PAH and OCP concentrations were below the waste acceptance criteria for Kate Valley Landfill in both WP-1 and WP-2 samples. No OCPs or asbestos fines or fibres were detected in the three topsoil stockpile samples (SP-1 to SP-3). In all three topsoil stockpile samples, all heavy metal, asbestos, OCP and PAH concentrations did not exceed the commercial/industrial land use criteria. All three topsoil stockpile samples also did not exceed regional background levels for asbestos, OCP, PAH and all heavy metal concentrations, except for Zinc, which exceeded regional background levels in all three stockpile topsoil samples. Sephira Environmental recommended the topsoil stockpile was appropriate for re-use on site or could potentially be disposed of at Burwood Landfill following the removal of the green waste.

INV239908 - Remedial Action Plan/ Site Management Plan - Rubbish Tip Removal - CSM2 Project - CH-11900, Springs Road, Prebbleton - Sephira Environmental 2018

Investigation objective: Sephira Environmental were engaged in 2018 to produce a remedial action plan/ site management plan for the site to define the objectives and validation plan for remediation of soil containing asbestos as well as the removal of soil and debris with asbestos. The RAP proposed to remove all material with asbestos concentrations above 0.001% w/w.

INV239637 - Site Validation Report, CSM2, CH-11900, Springs Road Waste Pit - Sephira Environmental 2018

Investigation objective: Sephira Environmental were engaged in 2018 to produce a site validation report of the site to document the remediation of the asbestos contaminated waste pit. Following the initial excavation and removal of the waste pit material to Kate Valley Landfill, a total of seventeen validation soil samples were collected from the walls, floor and around the outside of the pit where fibrous cement pit had been found prior to remediation. Soil samples were collected from a depth of 0.0 m to 0.1 m below the ground or within the wall. The soil samples were analysed for asbestos. No additional validation testing was deemed necessary since no visible staining or debris remained on site, therefore any residual contaminant concentrations associated with the rubbish pit were unlikely to exceed soil contaminant standards applicable to commercial/industrial sites. The analytical results were compared with BRANZ guidelines for asbestos in soil.

Results: One soil sample at the base of the excavation pit (V-7) exhibited a concentration of asbestos fines and fibres above the Tier 1 human health risk based soil guidance value applicable to all sites (0.001% by weight). All other samples exhibited no detectable concentrations of asbestos fibres, fines or fragments of asbestos containing material.

Conclusion: This site has been categorised as 'Managed - Recreational'.

Justification: The site has been appropriately investigated. Apart from one soil sample (V-7), all other samples exhibited no detectable concentrations of asbestos fibres, fines or fragments of asbestos containing material. V-7 is located where a stormwater management swale will be located. The residual asbestos contamination is 620-670 millimetres (mm) below what will be the finished surface of the stormwater swale. Construction of the swale will also include the importation of 370 mm of clean gravel and 250-300 mm of topsoil which will be planted with grass to stabilise it. Provided that works take place under a management plan, and that contractors are aware of the residual asbestos contamination when undertaking maintenance on the swale, the site should be suitable for ongoing recreational use.

Nearby investigations of interest

INV 267168 **Prebbleton Roundabout (Marshs and Springs Road) Combined Preliminary and Detailed Site Investigation**
GHD Limited - Detailed Site Investigation
12 Aug 2020

Summary of investigation(s):

Environment Canterbury has received a Detailed Site Investigation report that includes all or part of the property you have selected.

A DSI seeks to identify the type, extent and level of contamination (if any) in an area. Soil, soil-gas or water samples will have been collected and analysed.

This investigation has not been summarised.

Disclaimer

The enclosed information is derived from Environment Canterbury's Listed Land Use Register and is made available to you under the Local Government Official Information and Meetings Act 1987.

The information contained in this report reflects the current records held by Environment Canterbury regarding the activities undertaken on the site, its possible contamination and based on that information, the categorisation of the site. Environment Canterbury has not verified the accuracy or completeness of this information. It is released only as a copy of Environment Canterbury's records and is not intended to provide a full, complete or totally accurate assessment of the site. It is provided on the basis that Environment Canterbury makes no warranty or representation regarding the reliability, accuracy or completeness of the information provided or the level of contamination (if any) at the relevant site or that the site is suitable or otherwise for any particular purpose. Environment Canterbury accepts no responsibility for any loss, cost, damage or expense any person may incur as a result of the use, reference to or reliance on the information contained in this report.

Any person receiving and using this information is bound by the provisions of the Privacy Act 1993.

Appendix C: Sephira Environmental

(i) RAP/SMP-Rubbish Tip Removal –Oct 2018
(ii) Waste Characterisation - Oct 2018
(iii) Site Validation Report- November 2018

Remedial Action Plan/ Site Management Plan – Rubbish Tip Removal

CSM2 Project - CH-11900, Springs Road, Prebbleton



Prepared for:	Downer-McConnell Dowel Joint Venture
Prepared by:	Sephira Environmental Limited
Date:	25 October 2018
Document No:	DMDJV-A0356-002R-v0

Sephira ENVIRONMENTAL

Section 1 - Site Conditions and Proposed Remedial Action Plan

Remedial Action Plan (RAP)/ Site Management Plan (SMP) Introduction

Site Location: CH-11900 of the CSM2 Project, Springs Road CHCH
Legal Description: Part RS 1480
Regional Council: Environment Canterbury
Local Council: Christchurch City Council
Current Land Use: Commercial
Proposed Land Use: Commercial
Proposed Activity: Remediation earthworks.

Purpose of the RAP/SMP

- To define the objectives and validation plan for remediation of soil containing asbestos, in conjunction with the removal of soil and debris with asbestos-containing material.
- To communicate procedures to site worker how to correctly manage contaminated soil during the remediation earthworks for the protection of human health and the environment.
- To provide assurance to council that any impacted soil disturbed during earthworks will be managed correctly.
- No long-term management plan is likely to be required because the contaminated soil will be removed.

Source of Contamination

A historic farm tip/burn pit that contains residual household waste, scrap metal and a cache of asbestos cement pipe.

Summary of Site Investigation

On or about 15 October 2018 the Downer -McConnell Dowell Joint Venture was undertaking excavation to remove topsoil and achieve project design elevations for the construction of the Phase 2 section of the Christchurch Southern Motorway when they encountered an area of buried debris including fibrous cement pipe. On 16 October Sephira Environmental visited the site and inspected the rubbish pit and collected 2 samples of soil both of which contained asbestos fibres at concentrations exceeding 0.001% by weight. The debris in the pit highly weathered and is therefore much darker than the surrounding soil. Based on the distribution of the fibrous cement pipe across the area of the pit and the two soil sample results exhibiting elevated concentrations of asbestos, the entire pit is presumed to be contaminate with asbestos. Figure 1 presents the approximate location and area of the burn pit

Figure 1: Approximate limits of asbestos-impacted soil (base image: Google Earth)



Proposed Remedial Action Plan

The CSM2 project proposes to remove all asbestos-containing material and soil from the property that exceeds the Tier 1 human health risk-based guideline of 0.001 % wt./wt. The soil contamination is presumed to occur in a 5 m by 8 m area as shown in Figure 1. The anticipated volume of soil to be disturbed is approximately 60 m^3. Excavation will be undertaken until no visible debris or soil staining is observed, followed by validation testing.

Application of the NES

Disturbance of more than 25 m^3 or the exportation of more than 5 m^3 of the underlying site soil will trigger the necessity to obtain a consent from Christchurch City Council under the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (NES 2011). The site has been characterised and the soil contains asbestos at concentrations above the proposed land use: commercial. The earthworks is expected to be considered a Discretionary Activity under Regulation 11 of NES (2011). The CSM2 Project has been granted a global NES (2011) consent that will apply to this remedial action.

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Section 2 - Remedial Action Procedures

Site Set Up

Prior to breaking ground:

- the site shall be secured with appropriate temporary fencing, warning tape and/or signage to prevent public access and potential exposure to asbestos and other contaminants.
- water-based dust suppression systems shall be sufficiently established to facilitate the site works and prevent the migration of asbestos into clean adjacent areas.
- staging areas for waste containers, decontamination systems and air monitoring shall be established.

Minimisation of Air and Water Discharges

- Soil shall be loaded directly into lined transportation bins for off-site disposal.
- Water shall be applied by sprinkler or mister to the site soil prior to commencement of works and damped down regularly to mitigate the production of airborne dust.
- Dust suppression misting shall be undertaken continually during all loading of asbestos contaminated soil.
- When wind speed exceeds such a level that dust is noted to be airborne, operations shall cease.
- The Remedial Action Supervisor shall be responsible for ensuring that the dust mitigation measures are implemented when necessary.

Removal of the contaminated soil and debris shall progress from one end of the remediation area to the other. Care shall be taken during the loading of bins to limit the spread of contamination into already cleaned areas of the site. Clean-up of any soil that gets deposited onto an area outside of this area shall be the responsibility of the Remedial Action Contractor.

Soil imported to backfill the voids created by the remediation, if any, shall be cleanfill, as described in Section 3.

Selection of Disposal Facility

The soil and debris excavated for off-site disposal during this remedial action is considered contaminated with asbestos. All such material shall be transported to a facility licensed to receive asbestos-contaminated material such as Kate Valley Landfill.

Air Monitoring

Air monitoring shall be carried out inside the perimeter of the asbestos removal by an independent, licensed air monitoring specialist, engaged by the Remedial Action Contractor, for the duration of the remediation works. The purpose of this monitoring is to verify that asbestos fibres are not being released and that the relevant Workplace Exposure Standard(s) is complied with.

Regulations 44 and 45 of the Asbestos Regulations 2016 specify actions which shall be taken if the respirable fibre levels in the air monitoring exceed trace levels, which is defined as, "*in air, an average concentration over any 8-hour period of less than 0.01 respirable asbestos fibres per millilitre of air.*"

On this site if any air monitoring result exceeds 0.01 fibres/mL, all remediation works shall cease, the Remedial Action Contractor and Environmental Consultant shall be advised, and the area of works damped down until such a time that the cause of the respirable fibre level can be investigated, further control measures can be agreed with WorkSafe can be implemented.

Validation of Remediation= - Validation Sampling

Two soil samples from the base of the remediation, and one from each remaining wall of the excavation area will be collected to confirm that soil exceeding the Tier 1 guideline value of 0.001% wt./wt. has been removed. The sampling will be overseen by a suitably qualified and experienced environmental professional (SQEP).

Site Validation Report

A Site Validation report (SVR) report will be prepared by a suitably qualified and experienced environmental professional (SQEP) within two months of the remediation. The report will include:

- Description of the remedial activities,
- Results of soil validation sampling,
- Documentation of the volume of soil removed from the site including trucking and disposal facility manifests,
- Description of any unexpected activities or visits from council.

Section 3 - Environmental Site Management Plan

Roles and Responsibilities

Remedial Action Contractor:
Oversee all elements of the asbestos-impacted soil remedial action; maintain current Certificate of Competency from WorkSafe NZ to undertake "restricted asbestos work"; comply with all elements of the WorkSafe Asbestos Regulations and guidelines; ensure the health and safety of all workers and the environment; communicate risks to all site workers and provide appropriate training and equipment on how to mitigate these risks; add asbestos hazards to all site hazard signage and conduct relevant health and safety toolbox talks; comply with all health, safety and environmental elements of this RAP/SMP; and, direct the safe removal of asbestos-impacted soil from the work area.
Environmental Consultant/SQEP: Complete sampling and reporting, as required; attend site if unexpected contamination is encountered to provide advice; and communicate with council.
Site Workers: Follow directions of Supervisor, comply with plan, communicate concerns.
Waste Hauler: Follow directions of Supervisor, comply with plan, maintain dangerous goods endorsement on license, follow NZ road rules, follow directions of the receiving landfill.

Stormwater and Sediment Control

Where soil has been impacted by contaminants, the following procedures apply:

- Runoff from areas where contaminated soil is excavated should be kept away from site drains. Wherever possible stormwater runoff shall be directed toward the open excavated areas of the site and allowed to infiltrate there.
- Clean roof runoff, if any, should be directed immediately to the stormwater drains near the home through gutters, downspouts and piping and should not be allowed to runoff into areas of contaminated soil.

Dust Control

Inhalation of contaminated dust is a hazard.

- Stockpiling of soil shall be prohibited except within secured disposal bins.
- Avoid working or standing in areas down-wind of earthwork activities.
- Keep windows/doors of vehicles closed when parked in the earthworks area.
- Apply water by sprinkler prior to commencement of works. Damp down site regularly to reduce any airborne dust and prevent visible dust emissions beyond the site boundary.
- When wind speed exceeds such a level that dust is noted to be airborne, operations should cease.

Imported Fill

Imported fill shall meet MfE cleanfill definition:

- 'Material that when buried will have no adverse effect on people or the environment. Cleanfill material includes virgin natural materials such as clay, soil, and rock, and other inert materials such as concrete or brick that are free of:
  - Combustible, putrescible, degradable or leachable components;
  - Hazardous substances;
  - Products or materials derived from hazardous waste treatment, hazardous waste stabilisation or hazardous waste disposal practices;
  - Materials that may present a risk to human or animal health such as medical and veterinary waste, asbestos or radioactive substances; and
  - Liquid waste.'

If the cleanfill definition above is not required by consent, the imported fill must, at a minimum, meet the soil contaminant standards for the proposed land use. If the source of the imported fill is questionable laboratory testing of the fill to be imported may be required.

Contingency for Unanticipated Conditions

Due to the uncertain nature of uncontrolled fill, earthworks can expose caches of ACM, drums, or stained and odorous materials. Hazards to workers/public can arise from these pathways:

- Inhalation or ingestion of dusts composed of contaminated soil above relevant land use thresholds; and
- Adsorption of contaminants through dermal exposure to dusts, fumes and liquids.

Hazard identification should be achieved through diligent inspection by contractors or engineers involved with site earthworks, augmented with focused investigations where indications of contamination hazard (i.e., soil staining or chemical odours) are identified.

If the presence of potentially contaminated material is identified, stop excavation immediately and establish a 2 m buffer around the issue. The Environmental Consultant/SQEP should be contacted to advise on the required actions.

Hazard avoidance. The main hazards exist when material is handled. Keep soil disturbance and direct human exposure to the lowest level possible. Use necessary personal protective gear as recommended by a health and safety professional, as applicable.

Section 4 – Acronyms, References and Limitations

Acronyms and Abbreviations

ACM – Asbestos-containing materials
Bgl – Below ground level
CCC – Christchurch City Council
DSI – Detailed site investigation (contaminated land)
ECan – Environment Canterbury (Canterbury Regional Council)
HAIL – Hazardous activities and industries list
m – metre
MfE – Ministry for the Environment
mg/kg- milligram per kilogram
NES - Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011.
PSI – Preliminary site investigation (contaminated land)
SMP – Site management plan
SSSP – Site-specific safety plan
SQEP – Suitably qualified and experienced environmental professiona/practitioner

References

- BRANZ 2017: New Zealand Guidelines for Assessing and Managing Asbestos in Soil. Produced by BRANZ in association with the Australasian Land & Groundwater Association (ALGA). November 2017.
- Occupational Safety and Health, Department of Labour, 1994: Health and Safety Guidelines on the Cleanup of Contaminated Sites.

Document Limitations

1. The document was prepared based on a site-specific scope agreed between the client and Sephira Environmental Limited which has a specific purpose and it is not intended to be used for any other purpose. These purposes were outlined in the proposal to the client.
2. The methods used are those described in the report and methods not specified cannot be assumed to have been undertaken.
3. The results are based on published information and data from the site and we provide no warrantee that the conditions will be exactly as represented in the report. Due to the variability of site conditions the document cannot be held to represent a complete understanding of the conditions of a site and we assume no responsibility for unexpected conditions which may be discovered.
4. The document only describes the site conditions at the time the report was prepared. Changes to the site or near the site due to the effects of time or changes in legislation may occur which render the report conclusions as inapplicable.
5. The document was prepared with the standard of care generally accepted at the time it was prepared and no other warrantee is expressed or implied in regard to the conclusions of this report.
6. We accept no responsibility for the information provided to us for use in the document. It is assumed to be accurate as received regardless of the source. We have made no independent verification of the data received, beyond the agreed scope of the work.
7. We accept no responsibility to any third party or their actions related to reliance on this document. We prepared the document for the client only or for specific third parties who are authorised in the report.
8. This report should be read in full and we accept no responsibility for use of any part of the report.
9. This report does not include legal advice which should be gained from professional practitioners.

Sephira ENVIRONMENTAL

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29 November 2018

Chris McHugh
Project Engineer
CSM2/Downer-McConnell Dowell Joint Venture
997 Robinsons Road
Rolleston, Christchurch 7678

DMDJV-A0356-00L3-v0

Re: Site Validation Report, CSM2, CH-11900, Springs Road Waste Pit

The Downer-McConnell Dowell Joint Venture (DMDJV) requested that Sephira Environmental Limited (Sephira Environmental) prepare a Site Validation Report to document the remediation of an asbestos contaminated waste pit located in a portion of the Christchurch Southern Motorway- Stage 2 (CSM2). This letter presents our observations and the results of analysis of the samples we collected.

Background

On 16 October 2018, Sephira Environmental visited the portion of the CSM2 project site between Springs Road and Marshs Road in Prebbleton to inspect and sample a recently discovered rubbish pit. The rubbish pit location, relative to the CSM2 project design, is near chain number CH-11900. Figure 1 shows the approximate location relative to Springs Road and the progress of the project as of 21 September 2018.



Figure 1: Approximate Location of Rubbish Tip (image source: Google Earth)

During our inspection we noted that the contents of the pit was a mix of typical rural household waste (glass bottles, metal, hay bale plastic,), demolition debris (fibrous cement pipe, timber, scrap metal), and stained soil. The soil contained in the pit was darkened and ashy indicating that the waste pit had been burned. The majority of the contents of the pit had been excavated and staged on the edge of the pit. Stockpiles of project related striped topsoil had been staged adjacent to the pit contents to the east of the pit. Pieces of fibrous cement pipe were noted in multiple locations throughout the waste pit area, which was presumed to be asbestos containing. The pipe was generally fair condition and no small fragments of potential asbestos containing material was initially noted on the surface of the pit contents. However, during sampling of the staged pit contents fragments of older, more degraded fibrous cement materials were encountered. Analysis of two samples of the staged pit contents were tested and found to be contaminated with asbestos fibres and fines at concentrations exceeding the Tier 1 risk-based guideline value applicable to all types of sites (0.001% wt/wt). The waste samples were also tested for leachate concentrations of heavy metals, polycyclic aromantic hydrocarbons, and organochlorine pesticides to facilitate remediation and off-site disposal.

Three samples were collected from the topsoil stockpiles and tested for concentrations of asbestos, heavy metals, polycyclic aromatic hydrocarbons and organochlorine pesticides. All three samples exhibited no detectable asbestos, trace levels of polycyclic aromatic hydrocarbons, and at or near background concentrations of heavy metals. It was determined that the topsoil stockpile could be reused on site once the root balls and branches it contained were removed. The results of our initial testing are reported fully in a previous investigation letter report to DMDJV (Sephira 2018). Figure 2 shows the conditions of the waste pit on 16 October 2018.



Figure 2: CH-11900 waste pit conditions, 16 October 2018 (images source: Downer NZ)

Frews Contracting Limited, a licensed asbestos removal company, was contracted to excavate and containerise the contents of the waste pit for disposal at Kate Valley Landfill. The remedial action took place on 26, 29, 30 and 31 October 2018. The asbestos pipe and waste material were excavated directly into lined transport bins staged adjacent to the pit. Once full, the liners of the bins were sealed shut with commercial adhesive tape, and a secondary cover tarpaulin was used to close the top of the bin. All bins were transported under appropriate waste manifests to Kate Valley Landfill for disposal. During the remedial action no waste was stockpiled on the ground outside of the clean-up area, and no full waste bins were stored on site or at any other location. In total 510.8 tonnes of asbestos containing waste and soil were transported to Kate Valley for disposal. Copies of the waste disposal records are presented in Appendix A.

Frews Contracting Limited arranged to have perimeter air monitoring undertaken by Precise Consulting and Laboratory Limited on all four days of remedial earthworks. Each day four air monitoring stations were established adjacent to the work area, and samples were collected over 6 to 8 hours of the work period. All air monitoring samples exhibited fibre concentrations less than 0.01 fibres per millilitre, which is the air concentration standard for achieving clearance to re-enter an area following asbestos removal (Worksafe 2017). Copies of the air monitoring laboratory data are presented in Appendix B. A copy of the Frews daily field logs and asbestos project notification to Worksafe NZ are also presented in Appendix B.

Validation Inspection and Sampling

Sephira Environmental visited the site in the afternoon of 29 October 2018 to inspect the excavation and collect soil samples to validate that the remedial action was successful in removing all accessible contamination. When we arrived, we found the remediation area contained within temporary fencing and all the residual waste originally observed within the pit and on the surrounding ground surface was removed. The stockpile of topsoil had also been removed. The remaining open pit was approximately 4 m long and 3.5 m wide. The pit had been excavated to two depths with the southern end being approximately 1.4 m deep and the northern end being approximately 2.4 m deep. The former waste pit floor was composed of sandy gravel and walls of the pit were observed to be composed of silt. No burn stains, odours or residual debris was noted in any portion of walls and floor except for a single fragment of fibrous cement pipe located on the pit floor at the extreme norther end. The ground surface outside of the pit had been excavated to a depth equal to the original ground elevation. Photographs of the site conditions on 29 October 2018 are presented in Appendix C.

Six validation soil samples were collected from the excavation pit walls (VS-1 to VS-6 and 1 validation sample was collected from each of the two pit floor elevations (VS-7 and VS-8). A series of 9 additional surface soil samples (VS-9 to VS-17) were collected around the outside of the pit and in areas where fibrous cement pit had been staged on the ground surface prior to the remediation. At each sampling location freshly gloved hands and pre-cleaned hand trowels were used to collect soil from a depth of 0.0m to 0.1 m below the ground or sidewall surface. The samples were placed directly into clean snap lock plastic bags labelled with a unique sample title, and the date and time of sampling. Gloves were changed, and hand trowels were decontaminated with soap and water between sampling locations. Figure 2 presents the approximate sampling locations within the remediated burned waste pit.

The snap lock bag samples were hand carried under appropriate chain of custody to Environmental and Industrial Analysis Group in Christchurch and submitted for semi-quantitative asbestos analysis. No additional validation testing was deemed necessary since no

visible staining or debris remained on site and therefore any residual contaminant concentrations associated with the rubbish pit were very unlikely to exceed soil contaminant standards applicable to commercial/industrial sites.

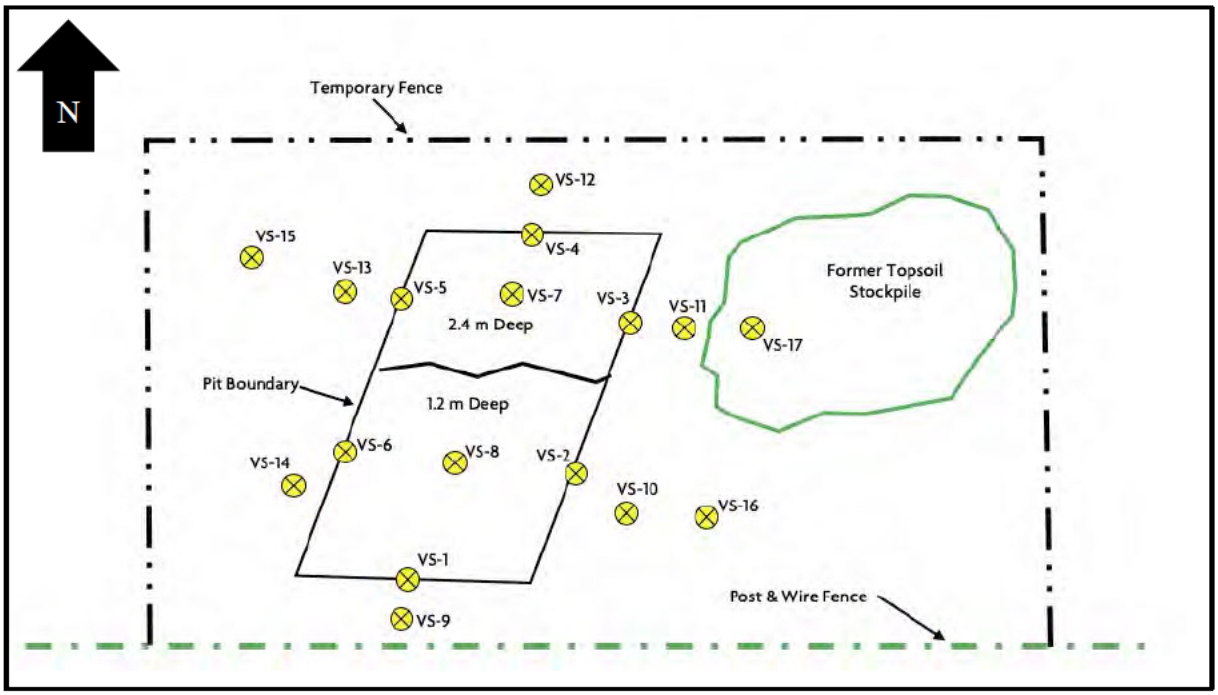


Figure 2: Approximate Sampling Locations (not to scale)

Results

Semi-qualitative analysis of all but one of the 17 validation samples exhibited no detectable concentration of asbestos fibres, fines or fragments of asbestos containing material. Validation sample V-7 collected on the pit floor where the fragment of fibrous pipe was found contained 0.134% wt./wt. of asbestos in the form of asbestos fines and fragments less than 10 mm in diameter. This result greatly exceeds the 0.001% wt/wt Tier 1 human health risk-based guideline value applied to all sites (BRANZ 2017). A copy of the asbestos laboratory report is presented in Appendix D.

Conclusions and Recommendations

An asbestos contaminated rubbish pit located near Chain Mark 11900 of the CSM2 project site was excavated and containerised for off-site disposal at Kate Valley Landfill. In total 510.8 tonnes of soil and debris that contained burned household and light commercial waste, including fragments of asbestos containing cement pipe was removed. Air monitoring conducted during the excavation process documented that no significant release of asbestos to air occurred during the remedial works. Analysis of 17 validation floor, wall and surface soil samples documented that the remedial action has reduced concentrations of asbestos in soil to below detectable levels in all locations except on the floor of the deepest part of the excavation (VS-7). The location of one failing validation sampling point has been determined through GPS measurements by project engineers to be located where a stormwater management swale will be located at the conclusion of the CSM2 project. The elevation of the residual asbestos contamination is 620 mm to 670 mm below what will be the finished surface of the stormwater swale. Construction of the swale will include the importation of 370 mm of clean sub-base gravel followed by an additional 250 mm to 300 mm of topsoil which will be planted with grass to stabilise it. No additional excavation to the depth of the residual

contamination will be necessary to finalise the stormwater swale or CSM2 carriage way adjacent to it.

Based on the foregoing, it is our opinion that the validation testing has demonstrated that the asbestos contamination in the rubbish pit has been adequately remediated to protect the health and safety of site workers, and future users of the land and those who will be responsible for maintaining it. No further action is required other than the documentation and long-term management planning recommended below.

We recommend that the Downer-McConnell Dowell Joint Venture document the 3-dimensional location (GPS x, y, z coordinates) of the residual asbestos contamination and include that information in their project closure documentation for the CSM2 Project. This information must be made available to the New Zealand Transport Agency so that their employees and sub-contractors undertaking deep excavation in this area are prepared to properly address the contamination as necessary.

Report Limitations

1. The document was prepared based on a site-specific scope agreed between the client and Sephira Environmental Limited which has a specific purpose and it is not intended to be used for any other purpose. These purposes were outlined in the proposal to the client.
2. The methods used are those described in the report and methods not specified cannot be assumed to have been undertaken.
3. The results are based on published information and data from the site and we provide no warrantee that the conditions will be exactly as represented in the report. Due to the variability of site conditions the document cannot be held to represent a complete understanding of the conditions of a site and we assume no responsibility for unexpected conditions which may be discovered.
4. The document only describes the site conditions at the time the report was prepared. Changes to the site or near the site due to the effects of time or changes in legislation may occur which render the report conclusions as inapplicable.
5. The document was prepared with the standard of care generally accepted at the time it was prepared and no other warrantee is expressed or implied in regard to the conclusions of this report.
6. We accept no responsibility for the information provided to us for use in the document. It is assumed to be accurate as received regardless of the source. We have made no independent verification of the data received, beyond the agreed scope of the work.
7. We accept no responsibility to any third party or their actions related to reliance on this document. We prepared the document for the client only or for specific third parties who are authorised in the report.
8. This report should be read in full and we accept no responsibility for use of any part of the report.
9. This report does not include legal advice which should be gained from professional practitioners.

Closure

Sephira Environmental appreciates the opportunity to provide you with these environmental consulting services. If you have any questions or comments regarding this letter report please do not hesitate to contact me at your convenience, otherwise I look forward to working with you again in the near future.

Kind regards,



C. Brett Mongillo
Principal Environmental Scientist
Suitably Qualified and Experienced Environmental Professional
Sephira Environmental Limited
www.sepiraenvironmental.co.nz

References:

1. Sephira 2018. Springs Road Rubbish Pit Waste Characterisation – CSM2, CH-11900. 25 October 2018
2. BRANZ 2017. New Zealand Guidelines for Assessing and Managing Asbestos in Soil. BRANZ Ltd and ALGA New Zealand Asbestos Group. November 2017
3. Kate Valley Landfill Waste Acceptance - TCLP Limits. Transwaste Canterbury and Canterbury Waste Services. September 2006.
4. NESCS 2011. Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011. Came in force on 1 January 2012.

Attachments:

A: Waste Disposal Documents
B: Air Monitoring Data and Remediation Contractor Logs
C: Site Photographs
D: EIAG and Analytical Reports

Attachment A – Waste Disposal Documents



WEIGHING DOCKET 906794
26 Oct 2018 11:58 am

Reg GTJ782 Frews Contracting Ltd

Tag Id 580249
Frews Hino (01/07/13)

Trailer TFCL1

2nd Load: Special Waste

Permit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manifest Number : 34297

Gross 18,020 Kg
Tare 7,380 K
Net 10,640 K

CSM MARSHS ROAD

Special Waste Manifest

MANIFEST No. 34297

ails Permit No. B1084

ss Contracting Ltd
2IS Ladvale Farm
Homestead

Contact Phone 027224 3251 Fax 03348 8573

Details (If different from Permit Holder above)

AS ABove

Contact Phone Fax

Description of Waste	HD ASBESTOS CSM MARSHS RD
Lab. Test No. (where applicable)	
Batch I.D.	
Date of Collection	One or two bins (circle) 1 2

D Waste Transporter Details Immediate Container Turnaround Requested ☐

Transporter Name	AS ABove
Address	
Contact Person	Driver Name
Contact Phone	Fax
Truck Registration GTJ782	Container No. 23

E To be completed at Landfill Permit Verified ☐ Special handling ☐

Date of Arrival		Time of Arrival	
Weighbridge Docket No.		Weight	
GPS Disposal Location	N	E	RL
Disposal Time			
Operator / Technician			
Notes			

Generator Copy

November 2016 *Issue: 6* *LMP 4-3 F*

CWS Canterbury Waste Services

PO Box 142 Amberley 7441
Phone: 0800 66 44 33
Email: landfill@cws.co.nz

CSM (32970)

E

Special Waste Manifest

MANIFEST No. 34581

CWS Kate Valley Landfill

WEIGHING DOCKET 906785
26 Oct 2018 11:19 am

Reg TRUCKD Frews Contracting Ltd

Tag Id 092809
Frews Isuzu

1st Load: Special Waste

Permit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manifest Number : 34581

Gross 23,680 Kg
Tare 15,980 K
Net 7,700 K

WEIGHING DOCKET 906786
26 Oct 2018 11:19 am

Reg TRUCKD Frews Contracting Ltd

Tag Id 092809
Frews Isuzu

Trailer 2N186

2nd Load: Special Waste

Pe Number : B1084
Billi Customer : Frews (HD Asbestos)
Manife umber : 34581

Gross 20,680 Kg
Tare 9,600 K
Net 11,080 K

ails Permit No. B1084

CONTRACTING

ROYDVALE AVE

AREWOOD

Contact Phone 027 2243251 Fax 03 3488563

Details (If different from Permit Holder above)

FS ABOVE

Contact Phone Fax

ASBESTOS WASTE

SM MARSHS RD

One or two bins (circle) 1 (2)

s Immediate Container Turnaround Requested ☐

FS ABOVE

Driver Name ALLAN

Fax

Container No. 31982

ill Permit Verified ☐

Time of Arrival Special handling ☐

Weight

N E RL

Notes

Generator Copy

November 2016 *Issue: 6* *LMP 4-3 F*

CWS Canterbury Waste Services
PO Box 142 Amberley 7441
Phone: 0800 66 44 33
Email: landfill@cws.co.nz

CSM (32970)

TE

Special Waste Manifest

MANIFEST No. 34582

CWS Kate Valley Landfill

WEIGHING DOCKET 906828
26 Oct 2018 3:29 pm

Reg TRUCKD Frews Contracting Ltd

Tag Id 092809
Frews Isuzu

1st Load: Special Waste

Permit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manifest Number : 34582

Gross 24,260 Kg
Tare 16,320 K
Net 7,940 K

WEIGHING DOCKET 906829
26 Oct 2018 3:29 pm

Reg TRUCKD Frews Contracting Ltd

Tag Id 092809
Frews Isuzu

Trailer 2N186

2nd Load: Special Waste

Permit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manifest Number : 34582

Gross 24,340 Kg
Tare 9,540 K
Net 14,800 K

etails Permit No. B1084

JS CONTRACTING
ROYDVALE AVE
HAREWOOD

Contact Phone 027 2243251 Fax 03 3488563

r Details (If different from Permit Holder above)

S ABOVE

Contact Phone Fax

ASBESTOS WASTE
CSM MARSHS RD

One or two bins (circle) 1 (2)

ils Immediate Container Turnaround Requested ☐

ABOVE

Driver Name ALLAN

Fax

Container No. 8 & 28

lfill Permit Verified ☐

Time of Arrival Special handling ☐

Weight

N E RL

Notes

Generator Copy

November 2016 *Issue: 6* *LMP 4-3 F*

CWS Canterbury Waste Services
PO Box 142 Amberley 7441
Phone: 0800 66 44 33
Email: landfill@cws.co.nz

Special Waste Manifest

MANIFEST No. 34372

CWS Kate Valley Landfill

WEIGHING DOCKET 906960
29 Oct 2018 11:53 am

Reg HMK999 Frews Contracting Ltd

Tag Id 825432
Frews Hino (12/06/15)

1st Load: Special Waste

Permit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manifest Number : 34372

Gross 23,340 Kg
Tare 15,420 K
Net 7,920 K

WEIGHING DOCKET 906961
29 Oct 2018 11:53 am

Reg HMK999 Frews Contracting Ltd

Tag Id 825432
Frews Hino (12/06/15)

Trailer TFCL2

2nd Load: Special Waste

Permit Number : B1070
Billing Customer : Bin King Limited (HD Asbestos)
Manifest Number : 34372

Gross 19,680 Kg
Tare 8,220 K
Net 11,460 K

tails

Permit No. B1084.

Frews. Contracting.

Contact Phone Fax

Details (If different from Permit Holder above)

C.S.M.

Marshes Rd.

Contact Phone Fax

2x 15m Bin.

HD ASBESTO.

One or two bins (circle) 1 2

ls

Immediate Container Turnaround Requested ☐

Frews.

Driver Name Guy M.

Fax

Container No.

fill

Permit Verified ☐

Time of Arrival

Special handling ☐

Weight

N E RL

Notes

Generator Copy

November 2016 Issue:

PO Box 142 Amberley 7441
Phone: 0800 66 44 33

CWS Kate Valley Landfill

WEIGHING DOCKET 907010
29 Oct 2018 3:23 pm

Reg GTJ782 Frews Contracting Ltd

Tag Id 580249
Frews Hino (01/07/13)

1st Load: Special Waste

Permit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manifest Number : 34300

Gross 21,660 Kg
Tare 15,660 K
Net 6,000 K

WEIGHING DOCKET 907011
29 Oct 2018 3:23 pm

Reg GTJ782 Frews Contracting Ltd

Tag Id 580249
Frews Hino (01/07/13)

Trailer TFCL1

2nd Load: Special Waste

Permit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manifest Number : 34300

Gross 18,300 Kg
Tare 7,700 K
Net 10,600 K

Special Waste Manifest

MANIFEST No. 34300

tails Permit No. B1084

Contact Phone 027824251 Fax 033488863

Details (If different from Permit Holder above)

Contact Phone Fax

One or two bins (circle) 1 2

s Immediate Container Turnaround Requested ☐

Driver Name

Fax

Container No.

II Permit Verified ☐

Time of Arrival Special handling ☐

Weight

E RL

Notes

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November 2016 *Issue: 6* *LMP 4-3 F*

Canterbury Waste Services
PO Box 142 Amberley 7441
Phone: 0800 66 44 33
Email: landfill@cws.co.nz

Special Waste Manifest

MANIFEST No. 34299

CWS Kate Valley Landfill

WEIGHING DOCKET 906970
29 Oct 2018 12:29 pm

Reg GTJ782 Frews Contracting Ltd

Tag Id 580249
Frews Hino (01/07/13)

1st Load: Special Waste

Permit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manifest Number : 34299

Gross 22,780 Kg
Tare 15,980 K
Net 6,800 K

WEIGHING DOCKET 906971
29 Oct 2018 12:29 pm

Reg GTJ782 Frews Contracting Ltd

Tag Id 580249
Frews Hino (01/07/13)

Trailer TFCL1

2nd Load: Special Waste

Permit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manifest Number : 34299

Gross 20,660 Kg
Tare 7,360 K
Net 13,300 K

tails Permit No. B1084

Frews Contracting Ltd
218 Ramdrake Ave
Home ward.

Contact Phone 027224325 1 Fax 03548863

Details (If different from Permit Holder above)

As Above

Contact Phone Fax

Asbestos HD
CSM Marshes Rd

One or two bins (circle) 1 **2**

s Immediate Container Turnaround Requested ☐

As Above

Driver Name Steve Wooten

Fax

Container No. Bins 23 &

ill Permit Verified ☐

Time of Arrival Special handling ☐

Weight

I E RL

Notes

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November 2016 *Issue: 6* *LMP 4-3 F*

Canterbury Waste Services
PO Box 142 Amberley 7441
Phone: 0800 66 44 33
Email: landfill@cws.co.nz

Special Waste Manifest

MANIFEST No. 34298

CWS Kate Valley Landfill

WEIGHING DOCKET 906926
29 Oct 2018 8:54 am

Reg GTJ782 Frews Contracting Ltd

Tag Id 580249
Frews Hino (01/07/13)

1st Load: Special Waste

Permit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manifest Number : 34298

Gross 22,800 Kg
Tare 15,780 K
Net 7,020 K

WEIGHING DOCKET 906927
29 Oct 2018 8:54 am

Reg GTJ782 Frews Contracting Ltd

Tag Id 580249
Frews Hino (01/07/13)

Trailer TFCL1

2nd Load: Special Waste

Permit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manifest Number : 34298

Gross 17,540 Kg
Tare 7,720 K
Net 9,820 K

tails Permit No. B1084

Frews Contracting Ltd
218 Ranfurly Rise
Hornby

Contact Phone 027 22-3251 Fax 03 [illegible]

Details (If different from Permit Holder above)

AS Asbestos

Contact Phone Fax

AS 05.05 HD
Cm MATISH R2

One or two bins (circle) 1 2

ls Immediate Container Turnaround Requested ☐

AS Asbestos

Driver Name [illegible]

Fax

Container No. HB - 27 + 6

Fill Permit Verified ☐

Time of Arrival Special handling ☐

Weight

N E RL

Notes

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November 2016 *Issue: 6* *LMP 4-3 F*

CWS Canterbury Waste Services
PO Box 142 Amberley 7441
Phone: 0800 66 44 33
Email: landfill@cws.co.nz

Special Waste Manifest

MANIFEST No. 34584

CWS Kate Valley Landfill

WEIGHING DOCKET 907002
29 Oct 2018 2:47 pm

Reg TRUCKD Frews Contracting Ltd

Tag Id 092809
Frews Isuzu

1st Load: Special Waste

Permit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manifest Number : 34584

Gross 24,660 Kg
Tare 15,920 K
Net 8,740 K

WEIGHING DOCKET 907003
29 Oct 2018 2:47 pm

Reg TRUCKD Frews Contracting Ltd

Tag Id 092809
Frews Isuzu

Trailer 2N186

2nd Load: Special Waste

Permit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manifest Number : 34584

Gross 21,200 Kg
Tare 9,540 K
Net 11,660 K

:ails Permit No. B1084

contracting ltd

ale Ave

arewood

Contact Phone 027 224 3251 Fax 03 3488563

Details (If different from Permit Holder above)

As Above

Contact Phone Fax

Asbestos waste

csm marshs rd

One or two bins (circle) 1 (2)

ls Immediate Container Turnaround Requested ☐

As Above

Driver Name Nick

Fax

Container No.

Hb 24 & Hb30

Fill Permit Verified ☐

Time of Arrival Special handling ☐

Weight

N E RL

Notes

CWS Canterbury Waste Services

PO Box 142 Amberley 7441
Phone: 0800 66 44 33
Email: landfill@cws.co.nz

Special Waste Manifest

MANIFEST No. 34583

CWS Kate Valley Landfill

WEIGHING DOCKET 906944
29 Oct 2018 10:28 am

Reg TRUCKD Frews Contracting Ltd

Tag Id 092809
Frews Isuzu

1st Load: Special Waste

Permit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manifest Number : 34583

Gross 23,700 Kg
Tare 16,000 K
Net 7,700 K

WEIGHING DOCKET 906945
29 Oct 2018 10:28 am

Reg TRUCKD Frews Contracting Ltd

Tag Id 092809
Frews Isuzu

Trailer 2N186

2nd Load: Special Waste

Per Number : B1084
tomer : Frews (HD Asbestos)
Number : 34583

Gross 25,340 Kg
Tare 9,620 K
Net 15,720 K

:ails Permit No. B1084

JS CONTRACTING

LOYDALE AVE

TAREWOOD

Contact Phone 027 2243251 Fax 03 3488563

Details (If different from Permit Holder above)

AS ABOVE

Contact Phone Fax

ASBESTOS WASTE

CSM MARSHS RD

One or two bins (circle) 1 (2)

ls Immediate Container Turnaround Requested ☐

S ABOVE

Driver Name ALLAN

Fax

Container No. 31432

fill Permit Verified ☐

Time of Arrival Special handling ☐

Weight

N E RL

Notes

Generator Copy

November 2016 *Issue: 6* *LMP 4-3 F*

CWS Canterbury Waste Services
PO Box 142 Amberley 7441
Phone: 0800 66 44 33
Email: landfill@cws.co.nz

CSM MARSHS RD

E5

Special Waste Manifest

MANIFEST No. 34586

CWS Kate Valley Landfill

WEIGHING DOCKET 907086
30 Oct 2018 11:15 am

Reg TRUCKD Frews Contracting Ltd

Tag Id 092809
Frews Isuzu

1st Load: Special Waste

Permit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manifest Number : 34586

Gross 23,400 Kg
Tare 16,340 K
Net 7,060 K

WEIGHING DOCKET 907087
30 Oct 2018 11:15 am

Reg TRUCKD Frews Contracting Ltd

Tag Id 092809
Frews Isuzu

Trailer 2N186

2nd Load: Special Waste

Per Number : B1084
Billi Customer : Frews (HD Asbestos)
Manifest Number : 34586

Gross 25,660 Kg
Tare 9,580 K
Net 16,080 K

ails Permit No. B1084

CONTRACTING

ROYDVALE AVE

LEWOOD

Contact Phone 027 2243251 Fax 03 3488563

Details (If different from Permit Holder above)

AS ABOVE

Contact Phone Fax

ASBESTOS WASTE

SM MARSHS RD

One or two bins (circle) 1 (2)

s Immediate Container Turnaround Requested ☐

AS ABOVE

Driver Name ALLAN

Fax

Container No.
6928

ill Permit Verified ☐

Time of Arrival Special handling ☐

Weight

N E RL

Notes

CWS Canterbury Waste Services

PO Box 142 Amberley 7441
Phone: 0800 66 44 33
Email: landfill@cws.co.nz

CSM MARSHS RD

E

Special Waste Manifest

MANIFEST No. 34585

CWS Kate Valley Landfill

WEIGHING DOCKET 907032
30 Oct 2018 8:09 am

Reg TRUCKD Frews Contracting Ltd

Tag Id 092809
Frews Isuzu

1st Load: Special Waste

Permit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manifest Number : 34585

Gross 22,640 Kg
Tare 16,180 K
Net 6,460 K

ails Permit No. B 1084

contracting ltd

ake Ave

wood

Contact Phone 027 224 3251 Fax 03 3488563

Details (If different from Permit Holder above)

Is Above

Contact Phone Fax

Asbestos waste

SM marshs rd

One or two bins (circle) 1 (2)

WEIGHING DOCKET 907033
30 Oct 2018 8:09 am

Reg TRUCKD Frews Contracting Ltd

Tag Id 092809
Frews Isuzu

Trailer 2N186

2nd Load: Special Waste

nit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manifest Number : 34585

Gross 27,560 Kg
Tare 9,640 K
Net 17,920 K

s Immediate Container Turnaround Requested ☐

Above

Driver Name Allan

Fax

Container No.

HB 32 & 26

ll Permit Verified ☐

Time of Arrival Special handling ☐

Weight

E RL

Notes

Generator Copy

November 2016 *Issue: 6* *LMP 4-3 F*

CWS Canterbury Waste Services

PO Box 142 Amberley 7441
Phone: 0800 66 44 33
Email: landfill@cws.co.nz

CSM MARSHS RD

E

Special Waste Manifest

MANIFEST No. 34587

CWS Kate Valley Landfill

WEIGHING DOCKET 907127
30 Oct 2018 3:04 pm

Reg TRUCKD Frews Contracting Ltd

Tag Id 092809
Frews Isuzu

1st Load: Special Waste

Permit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manifest Number : 34587

Gross 24,500 Kg
Tare 16,040 K
Net 8,460 K

WEIGHING DOCKET 907128
30 Oct 2018 3:04 pm

Reg TRUCKD Frews Contracting Ltd

Tag Id 092809
Frews Isuzu

Trailer 2N186

2nd Load: Special Waste

Permit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manifest Number : 34587

Gross 24,460 Kg
Tare 9,640 K
Net 14,820 K

ails Permit No. B1084

S CONTRACTING
ROYDVALE AVE
AREWOOD

Contact Phone 027 8243251 Fax 03 3488563

Details (If different from Permit Holder above)

AS ABOVE

Contact Phone Fax

ASBESTOS WASTE
SM MARSHS RD

One or two bins (circle) 1 (2)

s Immediate Container Turnaround Requested ☐

AS ABOVE

Driver Name ALLAN

Fax

Container No. 26 & 32

fill Permit Verified ☐

Time of Arrival Special handling ☐

Weight

N E RL

Notes

Generator Copy

November 2016 *Issue: 6* *LMP 4-3 F*

Canterbury Waste Services
PO Box 142 Amberley 7441
Phone: 0800 66 44 33
Email: landfill@cws.co.nz

Special Waste Manifest

MANIFEST No. 34203

CWS Kate Valley Landfill

WEIGHING DOCKET 907129
30 Oct 2018 3:11 pm

Reg GTJ782 Frews Contracting Ltd

Tag Id 580249
Frews Hino (01/07/13)

1st Load: Special Waste

Permit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manifest Number : 34203

Gross 21,860 Kg
Tare 15,940 K
Net 5,920 K

WEIGHING DOCKET 907130
30 Oct 2018 3:11 pm

Reg GTJ782 Frews Contracting Ltd

Tag Id 580249
Frews Hino (01/07/13)

Trailer TFCL1

2nd Load: Special Waste

Permit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manifest Number : 34203

Gross 19,620 Kg
Tare 7,360 K
Net 12,260 K

ails Permit No. B1084

Contact Phone 022 224 3251 Fax 03348 8563

Details (If different from Permit Holder above)

Contact Phone Fax

One or two bins (circle) 1 2

Immediate Container Turnaround Requested

Driver Name

Fax

Container No.

ll

Permit Verified

Time of Arrival

Special handling

Weight

E RL

Notes

Generator Copy

November 2016 *Issue: 6* *LMP 4-3 F*

CWS Canterbury Waste Services
PO Box 142 Amberley 7441
Phone: 0800 66 44 33
Email: landfill@cws.co.nz

Special Waste Manifest

MANIFEST No. 34201

CWS Kate Valley Landfill

WEIGHING DOCKET 907034
30 Oct 2018 8:17 am

Reg GTJ782 Frews Contracting Ltd

Tag Id 580249
Frews Hino (01/07/13)

1st Load: Special Waste

Permit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manifest Number : 34201

Gross 23,860 Kg
Tare 15,440 K
Net 8,420 K

WEIGHING DOCKET 907035
30 Oct 2018 8:17 am

Reg GTJ782 Frews Contracting Ltd

Tag Id 580249
Frews Hino (01/07/13)

Trailer TFCL1

2nd Load: Special Waste

Permit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manifest Number : 34201

Gross 19,200 Kg
Tare 7,400 K
Net 11,800 K

ails Permit No. B1084

vs Contracting Ltd
218 Haydons Rd
Hornsund

Contact Phone 027224 3251 Fax 033+88173

Details (If different from Permit Holder above)

AS Above

Contact Phone Fax

ASBESTOS HD
CSM MARSHALS RD

One or two bins (circle) 1 2

s Immediate Container Turnaround Requested ☐

AS Above

Driver Name Steve Waters

Fax

Container No. 15m3 228 23

ill Permit Verified ☐

Time of Arrival Special handling ☐

Weight

N E RL

Notes

Generator Copy

CWS Canterbury Waste Services
PO Box 142 Amberley 7441
Phone: 0800 66 44 33
Email: landfill@cws.co.nz

Special Waste Manifest

MANIFEST No. 34202

CWS Kate Valley Landfill

WEIGHING DOCKET 907088
30 Oct 2018 11:25 am

Reg GTJ782 Frews Contracting Ltd

Tag Id 580249
Frews Hino (01/07/13)

1st Load: Special Waste

Permit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manifest Number : 34202

Gross 23,480 Kg
Tare 15,760 K
Net 7,720 K

WEIGHING DOCKET 907089
30 Oct 2018 11:25 am

Reg GTJ782 Frews Contracting Ltd

Tag Id 580249
Frews Hino (01/07/13)

Trailer TFCL1

2nd Load: Special Waste

Permit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manifest Number : 34202

Gross 18,540 Kg
Tare 7,340 K
Net 11,200 K

ails Permit No. B1084

Contracting Ltd
Roydvale Ave
Harewood

Contact Phone 0272243251 Fax 0334805?

Details (If different from Permit Holder above)

As Above

Contact Phone Fax

AS B.S.O.S Ltd
CSM materials Ltd

One or two bins (circle) 1 (2)

Immediate Container Turnaround Requested ☐

As Above

Driver Name Steve Watson

Fax

Container No. L79 30

Permit Verified ☐

Time of Arrival Special handling ☐

Weight

E RL

Notes

Generator Copy

November 2016 *Issue: 6* *LMP 4-3 F*

CWS Canterbury Waste Services
PO Box 142 Amberley 7441
Phone: 0800 66 44 33
Email: landfill@cws.co.nz

CSM MARSHS RD

TE

Special Waste Manifest

MANIFEST No. 34588

CWS Kate Valley Landfill

WEIGHING DOCKET 907157
31 Oct 2018 8:20 am

Reg TRUCKD Frews Contracting Ltd

Tag Id 092809
Frews Isuzu

1st Load: Special Waste

Permit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manifest Number : 34588

Gross 23,680 Kg
Tare 16,140 K
Net 7,540 K

WEIGHING DOCKET 907158
31 Oct 2018 8:20 am

Reg TRUCKD Frews Contracting Ltd

Tag Id 092809
Frews Isuzu

Trailer 2N186

2nd Load: Special Waste

Permit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manifest Number : 34588

Gross 24,980 Kg
Tare 9,480 K
Net 15,500 K

tails Permit No. B1084

S CONTRACTING
8 ROYDALE AVE
ARELWOOD

Contact Phone 027 2243251 Fax 03 3488563

Details (If different from Permit Holder above)

AS ABOVE

Contact Phone Fax

ASBESTOS WASTE
CSM MARSHS RD

One or two bins (circle) 1 (2)

ls Immediate Container Turnaround Requested ☐

AS ABOVE

Driver Name ALLAN

Fax

Container No. 27 & 30

fill Permit Verified ☐

Time of Arrival Special handling ☐

Weight

N E RL

Notes

Generator Copy

November 2016 *Issue: 6* *LMP 4-3 F*

Canterbury Waste Services
PO Box 142 Amberley 7441
Phone: 0800 66 44 33
Email: landfill@cws.co.nz

CSM MARSHS RD

TE

Special Waste Manifest

MANIFEST No. 34589

CWS Kate Valley Landfill

WEIGHING DOCKET 907223
31 Oct 2018 11:23 am

Reg TRUCKD Frews Contracting Ltd

Tag Id 092809
Frews Isuzu

1st Load: Special Waste

Permit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manifest Number : 34589

Gross 23,380 Kg
Tare 15,900 K
Net 7,480 K

tails Permit No. B1084

IS CONTRACTING

? ROYDALE AVE

HAREWOOD

Contact Phone 027 2243251 Fax 03 3489563

Details (If different from Permit Holder above)

AS ABOVE

Contact Phone Fax

ASBESTOS WASTE

CSM MARSHS RD

One or two bins (circle) 1 (2)

WEIGHING DOCKET 907224
31 Oct 2018 11:23 am

Reg TRUCKD Frews Contracting Ltd

Tag Id 092809
Frews Isuzu

Trailer 2N186

2nd Load: Special Waste

Permit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manifest Number : 34589

Gross 25,300 Kg
Tare 9,600 K
Net 15,700 K

ls Immediate Container Turnaround Requested ☐

AS ABOVE

Driver Name ALLAN

Fax

Container No. 31 & 32

fill Permit Verified ☐

Time of Arrival Special handling ☐

Weight

N E RL

Notes

Generator Copy

November 2016 *Issue: 6* *LMP 4-3 F*

CWS Canterbury Waste Services
PO Box 142 Amberley 7441
Phone: 0800 66 44 33
Email: landfill@cws.co.nz

TE

Special Waste Manifest

MANIFEST No. 34204

CWS Kate Valley Landfill

WEIGHING DOCKET 907159
31 Oct 2018 8:24 am

Reg GTJ782 Frews Contracting Ltd

Tag Id 580249
Frews Hino (01/07/13)

1st Load: Special Waste

Permit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manifest Number : 34204

Gross 22,920 Kg
Tare 16,020 K
Net 6,900 K

WEIGHING DOCKET 907160
31 Oct 2018 8:24 am

Reg GTJ782 Frews Contracting Ltd

Tag Id 580249
Frews Hino (01/07/13)

Trailer TFCL1

2nd Load: Special Waste

Permit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manifest Number : 34204

Gross 19,900 Kg
Tare 7,360 K
Net 12,540 K

tails Permit No. B1084

Contract - Ltd
218 Clydevale Ave
Hornwood

Contact Phone 027224 3251 Fax 0334 88567

Details (If different from Permit Holder above)

AS Above

Contact Phone Fax

ASBESTOS IND
CSM: MARSHALLS RD

One or two bins (circle) 1 2

ls Immediate Container Turnaround Requested ☐

AS Above

Driver Name Steve Mathews

Fax

Container No. 5023

fill Permit Verified ☐

Time of Arrival Special handling ☐

Weight

N E RL

Notes

Generator Copy

CWS Canterbury Waste Services
PO Box 142 Amberley 7441
Phone: 0800 66 44 33
Email: landfill@cws.co.nz

Special Waste Manifest

MANIFEST No. 34205

CWS Kate Valley Landfill

WEIGHING DOCKET 907227
31 Oct 2018 11:45 am

Reg GTJ782 Frews Contracting Ltd

Tag Id 580249
Frews Hino (01/07/13)

1st Load: Special Waste

Permit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manifest Number : 34205

Gross 22,920 Kg
Tare 15,860 K
Net 7,060 K

WEIGHING DOCKET 907228
31 Oct 2018 11:45 am

Reg GTJ782 Frews Contracting Ltd

Tag Id 580249
Frews Hino (01/07/13)

Trailer TFCL1

2nd Load: Special Waste

Permit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manifest Number : 34205

Gross 20,500 Kg
Tare 8,280 K
Net 12,220 K

tails

Permit No. B1084

Contracting
18 Rangiriri Place

Contact Phone 027224 3251

Fax

Details (If different from Permit Holder above)

AS ABowen

Contact Phone

Fax

ASBESTOS HD
GSM MANUKA RD

One or two bins (circle) 1 2

ls

Immediate Container Turnaround Requested ☐

AS ABowen

Driver Name Steve Watkins

Fax

Container No. 8 + 23

ill

Permit Verified ☐

Time of Arrival

Special handling ☐

Weight

N E RL

Notes

Generator Copy

November 2016 *Issue: 6* *LMP 4-3 F*

Canterbury Waste Services
PO Box 142 Amberley 7441
Phone: 0800 66 44 33
Email: landfill@cws.co.nz

Special Waste Manifest

MANIFEST No. 34206

CWS Kate Valley Landfill

WEIGHING DOCKET 907263
31 Oct 2018 3:16 pm

Reg GTJ782 Frews Contracting Ltd

Tag Id 580249
Frews Hino (01/07/13)

1st Load: Special Waste

Permit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manifest Number : 34206

Gross 23,240 Kg
Tare 15,820 K
Net 7,420 K

WEIGHING DOCKET 907264
31 Oct 2018 3:16 pm

Reg GTJ782 Frews Contracting Ltd

Tag Id 580249
Frews Hino (01/07/13)

Trailer TFCL1

2nd Load: Special Waste

Permit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manifest Number : 34206

Gross 18,740 Kg
Tare 7,360 K
Net 11,380 K

tails Permit No. B1084

Contact Phone 027 224 3251 Fax 03348 8563

Details (If different from Permit Holder above)

Contact Phone Fax

One or two bins (circle) 1 (2)

s Immediate Container Turnaround Requested ☐

Driver Name Steve Wakes

Fax

Container No. 2 - BINS

ll

Permit Verified ☐

Time of Arrival Special handling ☐

Weight

E RL

Notes

CWS Canterbury Waste Services

PO Box 142 Amberley 7441
Phone: 0800 66 44 33
Email: landfill@cws.co.nz

CSM MARSHS RD

WEIGHING DOCKET 907365
1 Nov 2018 12:42 pm

Reg TRUCKD Frews Contracting Ltd

Tag Id 092809
Frews Isuzu

Trailer 2N186

2nd Load: Special Waste

Permit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manifest Number : 34591

Gross 28,000 Kg
Tare 9,620 K
Net 18,380 K

E

Special Waste Manifest

MANIFEST No. 34591

ails Permit No. 31084

CONTRACTING
ROYDVALE AVE
BREWOOD

Contact Phone: 027 2243251 Fax: 03 3488563

Details (If different from Permit Holder above)

S ABOVE

Contact Phone Fax

ASBESTOS WASTE
SM MARSHS RD

Lab. Test No. (where applicable)

Batch I.D.

Date of Collection: 01-11-18 One or two bins (circle) (1) 2

D Waste Transporter Details Immediate Container Turnaround Requested ☐

Transporter Name: AS ABOVE

Address

Contact Person Driver Name: ALLAN

Contact Phone Fax

Truck Registration: TRUCKD Container No.: 32

E To be completed at Landfill Permit Verified ☐

Date of Arrival Time of Arrival Special handling ☐

Weighbridge Docket No. Weight

GPS Disposal Location N E RL

Disposal Time

Operator / Technician

Notes

Generator Copy

November 2016 *Issue: 6* *LMP 4-3 F*

CWS Canterbury Waste Services
PO Box 142 Amberley 7441
Phone: 0800 66 44 33
Email: landfill@cws.co.nz

CSM MARSHS RD

TE

Special Waste Manifest

MANIFEST No. 34590

CWS Kate Valley Landfill

WEIGHING DOCKET 907299
1 Nov 2018 8:53 am

Reg TRUCKD Frews Contracting Ltd

Tag Id 092809
Frews Isuzu

1st Load: Special Waste

Permit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manifest Number : 34590

Gross 24,720 Kg
Tare 16,440 K
Net 8,280 K

WEIGHING DOCKET 907300
1 Nov 2018 8:53 am

Reg TRUCKD Frews Contracting Ltd

Tag Id 092809
Frews Isuzu

Trailer 2N186

2nd Load: Special Waste

Permit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manifest Number : 34590

Gross 22,900 Kg
Tare 9,480 K
Net 13,420 K

tails Permit No. B1084

S CONTRACTING
LOYDALE AVE
HAREWOOD

Contact Phone 027 8243251 Fax 03 3488563

Details (If different from Permit Holder above)

AS ABOVE

Contact Phone Fax

ASBESTOS WASTE
SCM MARSHS RD

One or two bins (circle) 1 (2)

ls Immediate Container Turnaround Requested ☐

AS ABOVE

Driver Name ALLAN

Fax

Container No. 6930

fill Permit Verified ☐

Time of Arrival Special handling ☐

Weight

N E RL

Notes

Generator Copy

November 2016 *Issue: 6* *LMP 4-3 F*

Canterbury Waste Services
PO Box 142 Amberley 7441
Phone: 0800 66 44 33
Email: landfill@cws.co.nz

Special Waste Manifest

MANIFEST No. 34208

CWS Kate Valley Landfill

WEIGHING DOCKET 907366
1 Nov 2018 12:51 pm

Reg GTJ782 Frews Contracting Ltd

Tag Id 580249
Frews Hino (01/07/13)

1st Load: Special Waste

Permit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manifest Number : 34208

Gross 23,600 Kg
Tare 15,680 K
Net 7,920 K

WEIGHING DOCKET 907367
1 Nov 2018 12:51 pm

Reg GTJ782 Frews Contracting Ltd

Tag Id 580249
Frews Hino (01/07/13)

Trailer TFCL1

2nd Load: Special Waste

Permit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manifest Number : 34208

Gross 19,060 Kg
Tare 7,400 K
Net 11,660 K

etails Permit No. B1084

Contracting Ltd
Redvale Rd
Kerikeri

Contact Phone 027224 3251 Fax 09 384 8876

Details (If different from Permit Holder above)

Contact Phone Fax

Asbestos Land
CSM Waste Rd

One or two bins (circle) **1** **2**

s Immediate Container Turnaround Requested ☐

Driver Name Steve Watkins

Fax

Container No. 2 Bins

ll Permit Verified ☐

Time of Arrival Special handling ☐

Weight

E RL

Notes

CWS Canterbury Waste Services
PO Box 142 Amberley 7441
Phone: 0800 66 44 33
Email: landfill@cws.co.nz

Special Waste Manifest

MANIFEST No. 34207

CWS Kate Valley Landfill

WEIGHING DOCKET 907301
1 Nov 2018 8:56 am

Reg GTJ782 Frews Contracting Ltd

Tag Id 580249
Frews Hino (01/07/13)

1st Load: Special Waste

Permit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manifest Number : 34207

Gross 20,500 Kg
Tare 15,740 K
Net 4,760 K

WEIGHING DOCKET 907302
1 Nov 2018 8:56 am

Reg GTJ782 Frews Contracting Ltd

Tag Id 580249
Frews Hino (01/07/13)

Trailer TFCL1

2nd Load: Special Waste

Permit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manif Number : 34207

Gross 19,440 Kg
Tare 7,360 K
Net 12,080 K

tails Permit No. B1084

Contracting Ltd
Road Valley Ave
Horewood

Contact Phone 027224 3251 Fax 07 348 8561

Details (If different from Permit Holder above)

As Above

Contact Phone Fax

Asbestos HD
CSM Marshs Road

One or two bins (circle) 1 2

s Immediate Container Turnaround Requested ☐

As Above

Driver Name Steven Wekas

Fax

Container No. 27 + 28

ill Permit Verified ☐

Time of Arrival Special handling ☐

Weight

J E RL

Technician

Notes

Generator Copy

November 2016 *Issue: 6* *LMP 4-3 F*

Canterbury Waste Services
PO Box 142 Amberley 7441
Phone: 0800 66 44 33
Email: landfill@cws.co.nz

C&A MARSHS RD

TE

Special Waste Manifest

MANIFEST No. 34595

CWS Kate Valley Landfill

WEIGHING DOCKET 907634
5 Nov 2018 1:25 pm

Reg TRUCKD Frews Contracting Ltd

Tag Id 092809
Frews Isuzu

1st Load: Special Waste

Permit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manifest Number : 34595

Gross 24,580 Kg
Tare 16,360 K
Net 8,220 K

WEIGHING DOCKET 907635
5 Nov 2018 1:25 pm

Reg TRUCKD Frews Contracting Ltd

Tag Id 092809
Frews Isuzu

Trailer 2N186

2nd Load: Special Waste

Permit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manifest Number : 34595

Gross 15,940 Kg
Tare 9,300 K
Net 6,640 K

tails Permit No. B1084

CONTRACTING

ROYDVALE AVE

ELWOOD

Contact Phone 027 8243251 Fax 03 3488563

Details (If different from Permit Holder above)

AS ABOVE

Contact Phone Fax

ASBESTOS WASTE

One or two bins (circle) 1 (2)

ls Immediate Container Turnaround Requested ☐

S ABOVE

Driver Name ALLAN

Fax

Container No. 8822

fill Permit Verified ☐

Time of Arrival Special handling ☐

Weight

N E RL

Notes

Generator Copy

November 2016 *Issue: 6* *LMP 4-3 F*

CWS Canterbury Waste Services
PO Box 142 Amberley 7441
Phone: 0800 66 44 33
Email: landfill@cws.co.nz

CSM MARSHS RD

WEIGHING DOCKET 907584
5 Nov 2018 9:30 am

Reg TRUCKD Frews Contracting Ltd

Tag Id 092809
Frews Isuzu

Trailer 2N186

2nd Load: Special Waste

Permit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manifest Number : 34594

Gross 20,500 Kg
Tare 9,520 K
Net 10,980 K

TE

Special Waste Manifest

MANIFEST No. 34594

tails Permit No. B1084

CONTRACTING

ROYDVALE AVE

HAREWOOD

Contact Phone 027 2248251 Fax 03 3488563

r Details (If different from Permit Holder above)

AS ABOVE

Contact Phone Fax

ASBESTOS WASTE

CSM MARSHS RD

Lab. Test No. (where applicable)

Batch I.D.

Date of Collection 05-11-18 One or two bins (circle) (1) 2

D Waste Transporter Details Immediate Container Turnaround Requested ☐

Transporter Name AS ABOVE

Address

Contact Person Driver Name ALLAN

Contact Phone Fax

Truck Registration TRUCKD Container No. 24

E To be completed at Landfill Permit Verified ☐

Date of Arrival Time of Arrival Special handling ☐

Weighbridge Docket No. Weight

GPS Disposal Location N E RL

Disposal Time

Operator / Technician

Notes

Generator Copy

November 2016 *Issue: 6* *LMP 4-3 F*

CWS Canterbury Waste Services

PO Box 142 Amberley 7441
Phone: 0800 66 44 33
Email: landfill@cws.co.nz

CSM MARSHS RD

WEIGHING DOCKET 907735
6 Nov 2018 9:29 am

Reg TRUCKD Frews Contracting Ltd

Tag Id 092809
Frews Isuzu

Trailer 2N186

2nd Load: Special Waste

Permit Number : B1084
Billing Customer : Frews (HD Asbestos)
Manifest Number : 34597

Gross 17,180 Kg
Tare 9,480 K
Net 7,700 K

E

Special Waste Manifest

MANIFEST No. 34597

ils Permit No. B1084

CONTRACTING
Roydvale Ave
KELWOOD

Contact Phone 027 2243251 Fax 03 3488563

tails (If different from Permit Holder above)

'S ABOVE

Contact Phone Fax

ESTOS WASTE
MARSHS RD

Lab. Test No. (where applicable)

Batch I.D.

Date of Collection 06-11-18

One or two bins (circle) (1) 2

D Waste Transporter Details Immediate Container Turnaround Requested ☐

Transporter Name AS ABOVE

Address

Contact Person Driver Name ALLAN

Contact Phone Fax

Truck Registration TRUCKD Container No. 31

E To be completed at Landfill Permit Verified ☐

Date of Arrival Time of Arrival Special handling ☐

Weighbridge Docket No. Weight

GPS Disposal Location N E RL

Disposal Time

Operator / Technician

Notes

CWS Canterbury Waste Services
PO Box 142 Amberley 7441
Phone: 0800 66 44 33
Email: landfill@cws.co.nz

Attachment B – Air Monitoring Data & Remediation Contractor Logs



Airborne Fibre Analysis

PRECISE
CONSULTING & LABORATORY

Report Date: 26 Oct 2018

Certificate Number: A1810261700

Client Name & Address:

Frews Contracting Ltd

218 Roydvale Avenue, Burnside, Christchurch

Client Reference: 11866

Site Location:

Springs Road, CHCH Southern Motorway

Test Type:

Air Monitoring

Sampled By:

Max Lines

Test Method:

Filters examined in accordance with Safe Work Australia's Guidance Note on the Membrane Filter Method for the Estimation of Airborne Asbestos Fibres, 2nd Edition, 2005 [NOHSC:3003 (2005)].

Results:

Sample locations, sample times, flow rates, fibres/field and results are shown in the appended table.

Notes:

The results within this test report only relate to the samples tested.

Approved Counter: Max Lines

Key Technical Person: Max Lines

Precise Consulting & Laboratory Limited
Unit 4, 91 Byron Street, Sydenham, Christchurch 8023

P: 03 943 5394 W: www.preciseconsulting.co.nz

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

Airborne Fibre Analysis

Certificate Number: A1810261700
Report Date: 26 Oct 2018
Site Location: Springs Road, CHCH Southern Motorway

PRECISE
CONSULTING & LABORATORY

Sample ID	Monitoring Type	Sample Location	Start Time	Finish Time	Run Time (min)	Average Flow Rate (L/min)	Fibre Count (fibres/100 fields)	Result (fibres/mL)
286	Control	Northwest of removal area	07:35	14:51	436	1.50	0.0	<0.01
949	Control	Southwest of removal area	07:33	14:50	437	1.50	0.0	<0.01
170	Control	Southeast of removal area	07:32	14:49	437	1.50	0.0	<0.01
974	Control	Northeast of removal area	07:31	14:48	437	1.50	0.0	<0.01

Work in progress: Control air monitoring during contaminated soil work - 26 Oct 2018

Comments:

Discussion of results:

The sample results reported in the above table should be compared with the recommended control levels outlined in Section 30.3.1 of the Health and Safety at Work Act Approved Code of Practice - Management and Removal of Asbestos, November 2016 (amended December 2016).

These recommended control levels, listed below, provide an indication of the occupational exposure levels relevant to quality control and re-occupancy for an area.

< 0.01 fibres/mL - trace level
> 0.01 fibres/mL but < 0.02 fibres/mL - above recommended control levels
> 0.02 fibres/mL – notifiable event

Control levels refer to respirable airborne asbestos fibre concentrations which, if exceeded, indicate there is a need to review current control measures or take other action. Air monitoring should be completed to confirm the removal area is no longer above the control levels once remediation actions have been completed.

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

Airborne Fibre Analysis

PRECISE
CONSULTING & LABORATORY

Report Date: 29 Oct 2018

Certificate Number: A1810291606

Client Name & Address:

Frews Contracting Ltd

218 Roydvale Avenue, Burnside, Christchurch

Client Reference: 11866

Site Location:

Springs Road, CHCH Southern Motorway

Test Type:

Air Monitoring

Sampled By:

Max Lines

Test Method:

Filters examined in accordance with Safe Work Australia's Guidance Note on the Membrane Filter Method for the Estimation of Airborne Asbestos Fibres, 2nd Edition, 2005 [NOHSC:3003 (2005)].

Results:

Sample locations, sample times, flow rates, fibres/field and results are shown in the appended table.

Notes:

The results within this test report only relate to the samples tested.

Approved Counter: Henry Howat

Key Technical Person: Henry Howat

Precise Consulting & Laboratory Limited
Unit 4, 91 Byron Street, Sydenham, Christchurch 8023

P: 03 943 5394 W: www.preciseconsulting.co.nz

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

Airborne Fibre Analysis

Certificate Number: A1810291606
Report Date: 29 Oct 2018
Site Location: Springs Road, CHCH Southern Motorway

PRECISE
CONSULTING & LABORATORY

Sample ID	Monitoring Type	Sample Location	Start Time	Finish Time	Run Time (min)	Average Flow Rate (L/min)	Fibre Count (fibres/100 fields)	Result (fibres/mL)
264	Control	Northwest of removal area	07:40	14:56	436	1.50	0.0	<0.01
112	Control	Southwest of removal area	07:38	14:54	436	1.50	0.0	<0.01
300	Control	Southeast of removal area	07:36	14:52	436	1.50	0.0	<0.01
344	Control	Northeast of removal area	07:34	14:50	436	1.50	0.0	<0.01

Work in progress: Control air monitoring during contaminated soil work - 29 Oct 2018

Comments:

Discussion of results:

The sample results reported in the above table should be compared with the recommended control levels outlined in Section 30.3.1 of the Health and Safety at Work Act Approved Code of Practice - Management and Removal of Asbestos, November 2016 (amended December 2016).

These recommended control levels, listed below, provide an indication of the occupational exposure levels relevant to quality control and re-occupancy for an area.

< 0.01 fibres/mL - trace level
> 0.01 fibres/mL but < 0.02 fibres/mL - above recommended control levels
> 0.02 fibres/mL – notifiable event

Control levels refer to respirable airborne asbestos fibre concentrations which, if exceeded, indicate there is a need to review current control measures or take other action. Air monitoring should be completed to confirm the removal area is no longer above the control levels once remediation actions have been completed.

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

Airborne Fibre Analysis

PRECISE
CONSULTING & LABORATORY

Report Date: 30 Oct 2018

Certificate Number: A1810301729

Client Name & Address:

Frews Contracting Ltd

218 Roydvale Avenue, Burnside, Christchurch

Client Reference: 11866

Site Location:

Springs Road, CHCH Southern Motorway

Test Type:

Air Monitoring

Sampled By:

Max Lines

Test Method:

Filters examined in accordance with Safe Work Australia's Guidance Note on the Membrane Filter Method for the Estimation of Airborne Asbestos Fibres, 2nd Edition, 2005 [NOHSC:3003 (2005)].

Results:

Sample locations, sample times, flow rates, fibres/field and results are shown in the appended table.

Notes:

The results within this test report only relate to the samples tested.

Approved Counter: Henry Howat

Key Technical Person: Max Lines

Precise Consulting & Laboratory Limited
Unit 4, 91 Byron Street, Sydenham, Christchurch 8023

P: 03 943 5394 W: www.preciseconsulting.co.nz

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

Airborne Fibre Analysis

Certificate Number: A1810301729
Report Date: 30 Oct 2018
Site Location: Springs Road, CHCH Southern Motorway

PRECISE
CONSULTING & LABORATORY

Sample ID	Monitoring Type	Sample Location	Start Time	Finish Time	Run Time (min)	Average Flow Rate (L/min)	Fibre Count (fibres/100 fields)	Result (fibres/mL)
537	Control	Northwest of removal area	07:41	13:35	354	1.50	0.0	<0.01
299	Control	Southwest of removal area	07:40	13:35	355	1.50	0.0	<0.01
424	Control	Southeast of removal area	07:39	13:36	357	1.50	0.0	<0.01
115	Control	Northeast of removal area	07:38	13:37	359	1.50	0.0	<0.01

Work in progress: Control air monitoring during contaminated soil work - 30 Oct 2018

Comments:

Discussion of results:

The sample results reported in the above table should be compared with the recommended control levels outlined in Section 30.3.1 of the Health and Safety at Work Act Approved Code of Practice - Management and Removal of Asbestos, November 2016 (amended December 2016).

These recommended control levels, listed below, provide an indication of the occupational exposure levels relevant to quality control and re-occupancy for an area.

< 0.01 fibres/mL - trace level
> 0.01 fibres/mL but < 0.02 fibres/mL - above recommended control levels
> 0.02 fibres/mL – notifiable event

Control levels refer to respirable airborne asbestos fibre concentrations which, if exceeded, indicate there is a need to review current control measures or take other action. Air monitoring should be completed to confirm the removal area is no longer above the control levels once remediation actions have been completed.

Precise Consulting & Laboratory Limited
Unit 4, 91 Byron Street, Sydenham, Christchurch 8023

P: 03 943 5394 W: www.preciseconsulting.co.nz

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

Airborne Fibre Analysis

PRECISE
CONSULTING & LABORATORY

Report Date: 31 Oct 2018

Certificate Number: A1810311623

Client Name & Address:

Frews Contracting Ltd

218 Roydvale Avenue, Burnside, Christchurch

Client Reference: 11866

Site Location:

Springs Road, CHCH Southern Motorway

Test Type:

Air Monitoring

Sampled By:

Max Lines

Test Method:

Filters examined in accordance with Safe Work Australia's Guidance Note on the Membrane Filter Method for the Estimation of Airborne Asbestos Fibres, 2nd Edition, 2005 [NOHSC:3003 (2005)].

Results:

Sample locations, sample times, flow rates, fibres/field and results are shown in the appended table.

Notes:

The results within this test report only relate to the samples tested.

Approved Counter: Henry Howat

Key Technical Person: Henry Howat

Precise Consulting & Laboratory Limited
Unit 4, 91 Byron Street, Sydenham, Christchurch 8023

P: 03 943 5394 W: www.preciseconsulting.co.nz

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

Airborne Fibre Analysis

Certificate Number: A1810311623
Report Date: 31 Oct 2018
Site Location: Springs Road, CHCH Southern Motorway

PRECISE
CONSULTING & LABORATORY

Sample ID	Monitoring Type	Sample Location	Start Time	Finish Time	Run Time (min)	Average Flow Rate (L/min)	Fibre Count (fibres/100 fields)	Result (fibres/mL)
183	Control	Northwest of removal area	07:38	15:33	475	1.50	1.0	<0.01
366	Control	Southwest of removal area	07:37	15:32	475	1.50	0.0	<0.01
134	Control	Southeast of removal area	07:36	15:31	475	1.50	0.0	<0.01
180	Control	Northeast of removal area	07:35	15:30	475	1.50	0.0	<0.01

Work in progress: Control air monitoring during contaminated soil work - 31 Oct 2018

Comments:

Discussion of results:

The sample results reported in the above table should be compared with the recommended control levels outlined in Section 30.3.1 of the Health and Safety at Work Act Approved Code of Practice - Management and Removal of Asbestos, November 2016 (amended December 2016).

These recommended control levels, listed below, provide an indication of the occupational exposure levels relevant to quality control and re-occupancy for an area.

< 0.01 fibres/mL - trace level
> 0.01 fibres/mL but < 0.02 fibres/mL - above recommended control levels
> 0.02 fibres/mL – notifiable event

Control levels refer to respirable airborne asbestos fibre concentrations which, if exceeded, indicate there is a need to review current control measures or take other action. Air monitoring should be completed to confirm the removal area is no longer above the control levels once remediation actions have been completed.

Precise Consulting & Laboratory Limited
Unit 4, 91 Byron Street, Sydenham, Christchurch 8023

P: 03 943 5394 W: www.preciseconsulting.co.nz

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

SAFE WORK METHOD STATEMENT

PPE required:	Hardhat, Steel Caps Hearing Protection Disposable suits, Hi Vis, Gloves, Half face respirators with P2/3 FILTERS.	Training Required. COC/Class A License. Asbestos Awareness License Required. T Endorsement. Class 4
Plant required:	Excavator. Bins. Trucks. Water cart.	Date:

Sequence of works	What are the hazards	Initial Risks	What Controls are Required?	Residual Risks
Break down the work activity into logical steps and ensure each step is significant enough to accomplish a major part of the proposed work activity.	List the hazards identified from each step and rate the initial risk	Risk Rating = Likelihood x Severity	Use the 'hierarchy of risk control': (Elimination – Substitution - Isolation – Engineering Controls – Administration - Personal Protective Equipment)	Risk Rating = Likelihood x Severity
1. Set Up Work Area	On site personnel	5 x 4 = 20	Fenced. Signage. Inductions. Communication. Toolbox	5x 1 = 5
2.a. Remove Contaminated material. .	Excavator	5 x 4 = 20	Trained and competent operator. Licenced personnel only. ROPS. SOP. Communication. Toolbox. Remain out of swing area. Demarcated work area / isolation zone	5 x 1 = 5
2.b.	Rollover Subsidence	5 x 3 = 15	Trained and competent operator. Licensed personnel only. ROPS.	5 x 1= 5
2.c.	Falling objects	5 x 3 = 15	Trained and competent operator. Licenced personnel only. ROPS Demarcated work area/isolation zone Communication	5 x 1 = 5

Sequence of works	What are the hazards	Initial Risks	What Controls are Required?	Residual Risks
2.d.	Slips Trips Falls	4 x 3 = 12	Cease work in unsuitable conditions	4 x 1 = 4
2.e.	Noise	3 x3 = 9	Hearing Protection on site staff. Nuisance avoidance by working within controlled hours.	3 x1 = 3
2.f	Cuts, abrasions, sprains strains	4 x 3 = 12	PPE. Housekeeping.	4 x 1 = 4
2.g.	Trucks	5 x 4 = 20	Trained and competent personnel. Flashing beacons. PPE for drivers on site. Dedicated route. Coordination with other drivers on site	5 x 1 = 5
2.h.	Asbestos	5 x 4 = 20	Controlled work area. PPE Suits and masks. Continual monitoring as work progresses. Use of bidim, plastic and water to prevent cross contamination. Cease work in unsuitable weather conditions Eating, drinking and smoking is prohibited within control areas.	5 x 1 = 5
2.i.	Environmental damage	4 x 4 = 16	Dust suppression available to avoid migration off site.	4 x 1 = 4
2.g.	Damage to services	5 x 4 = 20	Services to be identified and marked prior to excavation Use of cable locator where required. Hand digging where required to ensure no damage to services. Services to be identified by WW Construction.	5 x 1 = 5

Sequence of works	What are the hazards	Initial Risks	What Controls are Required?	Residual Risks
3.a. Decontaminate Plant	Public	5 x 4 = 20	Fenced. Barricades. Signage. Trained and experienced staff.	5 x 1 = 5
3.b.	Excavator	5 x 4 = 20	Trained and competent operator. Licenced personnel only. ROPS. SOP. Communication. Toolbox. Remain out of swing area. Demarcated work area / isolation zone	5 x 1 = 5
3.c.	Asbestos	5 x 4 = 20	Controlled work area. PPE Suits and masks. Continual monitoring as work progresses. Use of bidim, plastic and water to prevent cross contamination. Cease work in unsuitable weather conditions	5 x 1 = 5

	Name	Position	Date	Signature
1	Ross.	CLASS A HS Manager	26/10	
2	Ant	Operator	26/10	
3				
4				
5				

frews contracting

Date	Weather Conditions	Site Conditions	Progress/Problems Associated with Site Works	Number of Personnel On Site.	Record of Soil removed From Site	Record of Soil/Fill Imported To Site	H & S Information & Non-compliances	Incidents Accidents & Near Misses	Complaints & Corrective Measures	Any other Information
26/10	FINE	GOOD	-	2 + DRIVERS.	BINS TO KU.	NA.		1 TRUCK STUCK. ON ARM.		
29/10	SHOWERS	GOOD	-	2 + DRIVERS	BINS TO KU	NA				
30/10	RAIN	OK		2 + DRIVERS	BINS TO KU	NA				

Environmental Observations

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Pre Start Site Assessment – Site Specific

Site	Assessor	Signed
CSM PIT SPRINGS	ROB WARE	

Hazards	✓	Notes/Controls
Height/Overhead Work		
Falling Material	✓	Remain out of swing area.
Ladders	NA	
Scaffolds	NA	
Roofs	NA	
Cranes	NA	
Elevated Work Platforms	NA	
Asbestos Equipment		
Masks Fit Tested	✓	
Neg Air Unit		Not required
Leads tested	NA	
Hepa Class Vacuum		Not required
Decon unit checked		Not required
PLANT		
WoF/ Current test tag	✓	
Machine guards	✓	
RCDs	NA	
General Equipment		
Public access/protection	✓	
Signage/barriers	✓	
Organisation/housekeeping	✓	
Wet/slippery environment	✓	
Hazardous materials	✓	Asbestos.
Chemicals		
Services (gas/water/power)	NA	
Exposure to weather	✓	
Extreme Temperatures		
Traffic and Noise	✓	
Dust and debris	✓	Water cart
Explosion / fire		Fire extinguishers
Machinery and Mobile Plant	✓	Truck + Excavator. Experienced operators TMP
Personal Protection Equipment		
Safety Boots	✓	
Hearing Protection	✓	
Eye Protection	✓	
Hi Viz Clothing	✓	
Safety Helmet	✓	
Respiratory Protection	✓	
Protective Overalls	✓	

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TOOLBOX TALK

PROJECT/SITE: SPRINGFIELD PH 1	EMPLOYER: FREWS
FOREMAN/SUPERVISOR: ROLL JOSEE PRINCIPAL: DMCD	DATE: 26-10-15

Attendees:

Roy
Ant

Signatures of attendees:

Roy Ver
Acting

Site activity/safe work practices/accident/incident investigations discussed:

Removal of contaminated material.
RPE - PPE.
Dust suppression with water cart.
Fenced. Trained personnel

Employee issues raised:	Date to be resolved by:

Safe observations reviewed/discussed:

Moves on carriageway. Flashing lights - give way.
Remain in area.
Bidim for containment of any spillage.

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TOOLBOX TALK

PROJECT/SITE: CSM SPRINGS P/T	EMPLOYER:
FOREMAN/SUPERVISOR: NEIL PRINCIPAL: DMCD	DATE: 29-10-18

Attendees:	Signatures of attendees:
Ross Simon Alt	

Site activity/safe work practices/accident/incident investigations discussed:

Continue with removal of contaminated material.
PPE - PPE.
Water Cart as required.
Remain out of Swing area.

Employee issues raised:	Date to be resolved by:

Safe observations reviewed/discussed:

TMP. Be aware of Many movements

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TOOLBOX TALK

PROJECT/SITE: CSM Spaces 2	EMPLOYER:
FOREMAN/SUPERVISOR: Ross PRINCIPAL: DMCD	DATE: 3/10

Attendees:	Signatures of attendees:
Ross Ant	

Site activity/safe work practices/accident/incident investigations discussed:

Removal of Contaminated Material
RPE + PPE.
Supervision as required
Beware of swing area of excavator + truck + bin movements

Employee issues raised:	Date to be resolved by:

Safe observations reviewed/discussed:

Weather to be monitored - Runoff to be controlled

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TOOLBOX TALK

PROJECT/SITE: CSM SPRING RD	EMPLOYER:
FOREMAN/SUPERVISOR: Ross	DATE: 31-10-18
PRINCIPAL: DAVID	

Attendees:	Signatures of attendees:
Ross Ant	

Site activity/safe work practices/accident/incident investigations discussed:

Remove remaining contaminated.
RPE, PPE
Trend - Bin Movements
Excavator swing area to kept clear
Dust suppression as required.

Employee issues raised:	Date to be resolved by:

Safe observations reviewed/discussed:

Moxy on carriage way.
Excavator to be decontaminated ready for removal at completion of works.

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Notification Of Licensed Asbestos Removal. This email confirms that WorkSafe has received your notification of asbestos removal work.

Reference ID	0029042
Date Created	16/10/2018 2:07:43: p m
Does this information relate to the immediate removal of asbestos work?*	No
Have you given notice to WorkSafe by telephone?*	No

Licensee details

Name of licence holder*	Frews Contracting Limited
Asbestos removal licence number OR Certificate of Competence number OR WKSL number*	RA17070120
Business contact number*	s 9(2)(a)
Email*	

Supervisor details

Title	Mr
Last name*	Voice
First name*	Kenneth
Middle names	Ross
Certificate of Competence (CoC) number	
Business contact number*	s 9(2)(a)
Email*	

Clearance inspection

Title	Mr
Last name*	Mongillo
First name*	C
Middle names	Brett
Assessor licence number	
Assessor licence expiry	

Person or organisation for whom the work is being carried out

Full legal name*	Downer McConnell-Dowell
Trading name	
New Zealand Business Number (NZBN)	
Business contact number*	s 9(2)(a)
Email	
Contact name*	Chris McHugh

Attachment C – Site Photos



Photo 1: Looking northeast, shows fenced remediation area with pit in centre (29 October 2018)



Photo 2: Looking north, shows remediated pit with shallow end in foreground (29 October 2018).



Photo 3: Looking northeast across deep end of remediated pit (29 October 2018)



Photo 4: Looking northeast across former topsoil stockpile area (29 October 2018)

Attachment D – Laboratory Report



Date: Tuesday 6th November 2018

Client Reference: A0356

Sephira Environmental Limited
101a Mays Road
St Albans
Christchurch 8052

EIAG Reference No: F11080

For the Attention of: Brett Mongillo

Dear Brett,

Re: CSM2 – Springs Road Tip

Test Method – EIAG001: Polarised light microscopy including dispersion staining in accordance with the Australian Standard AS4964-2004 "Method for the qualitative identification of asbestos in bulk samples".

Where material weights passed through a 2mm sieve and are greater than 100g, representative sub samples of 50g were taken by cone and quartering using EIAG's in house method in accordance with the Australian Standard AS4964-2004.

Asbestos is reported as weight (g) found in each sample/sub sample. Where asbestos has been identified it has been broken down into three categories.

Identified asbestos is reported as either
ACM- Asbestos Containing Material
FA- Fibrous Asbestos
AF- Asbestos Fines

The samples in this report are reported 'As Received'. The Environmental and Industrial Analysis Group does not take responsibility for the sampling procedure or accuracy of sample location description as these have been provided by the client.

Seventeen samples were received on Friday 2nd November 2018. The samples were taken from CSM2 – Springs Road Tip.

The fibre identification analysis results are presented in the appended table.

Should you require further information please contact Belinda Hughes.

Yours sincerely

BHughes

……..
Belinda Hughes
Key Technical Person
ENVIRONMENTAL AND INDUSTRIAL ANALYSIS GROUP

ASBESTOS ANALYSIS REPORT

Tuesday 6th November 2018 **Reference No: F11080**

Laboratory Reference No.	Client Sample No.	Sampling Address/Sampling Location/Description/Dimensions	Fibre Identification Analysis Results
F11080.1	VS - 1	CSM2 – Springs Road Tip Pit Wall, Soil	
		>10 mm Sample weight: N/A	N/A
		10-2 mm Sample weight: 3.32 g	Organic Fibres No Asbestos Detected
		<2mm (Sample weight: 897.23 g) Sub sample weight: 50.20 g	Organic Fibres No Asbestos Detected
		Total sample weight: 900.55 g	
F11080.2	VS - 2	CSM2 – Springs Road Tip Pit Wall, Soil	
		>10 mm Sample weight: N/A	N/A
		10-2 mm Sample weight: 3.06 g	Organic Fibres No Asbestos Detected
		<2mm (Sample weight: 779.70 g) Sub sample weight: 51.65 g	Organic Fibres No Asbestos Detected
		Total sample weight: 782.76 g	
F11080.3	VS - 3	CSM2 – Springs Road Tip Pit Wall, Soil	
		>10 mm Sample weight: 28.29 g	N/A
		10-2 mm Sample weight: 13.11 g	Organic Fibres No Asbestos Detected
		<2mm (Sample weight: 902.63 g) Sub sample weight: 50.26 g	Organic Fibres No Asbestos Detected
		Total sample weight: 944.03 g	

ASBESTOS ANALYSIS REPORT

Tuesday 6th November 2018 **Reference No: F11080**

Laboratory Reference No.	Client Sample No.	Sampling Address/Sampling Location/Description/Dimensions	Fibre Identification Analysis Results
F11080.4	VS - 4	CSM2 – Springs Road Tip Pit Wall, Soil	
		>10 mm Sample weight: 26.83 g	Organic Fibres No Asbestos Detected
		10-2 mm Sample weight: 12.56 g	Organic Fibres No Asbestos Detected
		<2mm (Sample weight: 961.49 g) Sub sample weight: 49.72 g	Organic Fibres No Asbestos Detected
		Total sample weight: 1000.88 g	
F11080.5	VS - 5	CSM2 – Springs Road Tip Pit Wall, Soil	
		>10 mm Sample weight: 14.48 g	Organic Fibres No Asbestos Detected
		10-2 mm Sample weight: 63.92 g	Organic Fibres No Asbestos Detected
		<2mm (Sample weight: 824.92 g) Sub sample weight: 49.90 g	Organic Fibres No Asbestos Detected
		Total sample weight: 903.32 g	
F11080.6	VS - 6	CSM2 – Springs Road Tip Pit Wall, Soil	
		>10 mm Sample weight: N/A	N/A
		10-2 mm Sample weight: 2.95 g	Organic Fibres No Asbestos Detected
		<2mm (Sample weight: 1032.01 g) Sub sample weight: 50.10 g	Organic Fibres No Asbestos Detected
		Total sample weight: 1034.96 g	

ASBESTOS ANALYSIS REPORT

Tuesday 6th November 2018 **Reference No: F11080**

Laboratory Reference No.	Client Sample No.	Sampling Address/Sampling Location/Description/Dimensions	Fibre Identification Analysis Results
F11080.7	VS - 7	CSM2 – Springs Road Tip Pit Floor, Soil	
		>10 mm Sample weight: 269.19 g	Organic Fibres No Asbestos Detected
		10-2 mm Sample weight: 139.55 g	**Chrysotile (White Asbestos)** **Amosite (Brown Asbestos)** Organic Fibres ACM (cement) weight: 0.9592 g FA weight: 0.2835 g
		<2mm (Sample weight: 520.00 g) Sub sample weight: 50.81 g	Organic Fibres No Asbestos Detected
		Total sample weight: 928.74 g	
F11080.8	VS - 8	CSM2 – Springs Road Tip Pit Floor, Soil	
		>10 mm Sample weight: 519.04 g	Organic Fibres No Asbestos Detected
		10-2 mm Sample weight: 255.39 g	Organic Fibres No Asbestos Detected
		<2mm (Sample weight: 558.54 g) Sub sample weight: 50.56 g	Organic Fibres No Asbestos Detected
		Total sample weight: 1332.97 g	
F11080.9	VS - 9	CSM2 – Springs Road Tip Pit Edge, Soil	
		>10 mm Sample weight: N/A	N/A
		10-2 mm Sample weight: 5.48 g	Organic Fibres No Asbestos Detected
		<2mm (Sample weight: 778.77 g) Sub sample weight: 51.17 g	Organic Fibres No Asbestos Detected
		Total sample weight: 784.25 g	

ASBESTOS ANALYSIS REPORT

Tuesday 6th November 2018 **Reference No: F11080**

Laboratory Reference No.	Client Sample No.	Sampling Address/Sampling Location/Description/Dimensions	Fibre Identification Analysis Results
F11080.10	VS - 10	CSM2 – Springs Road Tip Pit Edge, Soil	
		>10 mm Sample weight: 13.33 g	Organic Fibres No Asbestos Detected
		10-2 mm Sample weight: 21.08 g	Organic Fibres No Asbestos Detected
		<2mm (Sample weight: 1266.18 g) Sub sample weight: 49.58 g	Organic Fibres No Asbestos Detected
		Total sample weight: 1300.59 g	
F11080.11	VS - 11	CSM2 – Springs Road Tip Pit Edge, Soil	
		>10 mm Sample weight: 49.35 g	Organic Fibres No Asbestos Detected
		10-2 mm Sample weight: 28.65 g	Organic Fibres No Asbestos Detected
		<2mm (Sample weight: 927.69 g) Sub sample weight: 52.16 g	Organic Fibres No Asbestos Detected
		Total sample weight: 1005.69 g	
F11080.12	VS - 12	CSM2 – Springs Road Tip Pit Edge, Soil	
		>10 mm Sample weight: 26.76 g	Organic Fibres No Asbestos Detected
		10-2 mm Sample weight: 13.93 g	Organic Fibres No Asbestos Detected
		<2mm (Sample weight: 1026.06 g) Sub sample weight: 50.16 g	Organic Fibres No Asbestos Detected
		Total sample weight: 1066.75 g	

ASBESTOS ANALYSIS REPORT

Tuesday 6th November 2018 **Reference No: F11080**

Laboratory Reference No.	Client Sample No.	Sampling Address/Sampling Location/Description/Dimensions	Fibre Identification Analysis Results
F11080.13	VS - 13	CSM2 – Springs Road Tip Pit Edge, Soil	
		>10 mm Sample weight: 20.27 g	Organic Fibres No Asbestos Detected
		10-2 mm Sample weight: 23.00 g	Organic Fibres No Asbestos Detected
		<2mm (Sample weight: 899.61 g) Sub sample weight: 49.41 g	Organic Fibres No Asbestos Detected
		Total sample weight: 942.88 g	
F11080.14	VS - 14	CSM2 – Springs Road Tip Pit Edge, Soil	
		>10 mm Sample weight: 9.93 g	Organic Fibres No Asbestos Detected
		10-2 mm Sample weight: 6.33 g	Organic Fibres No Asbestos Detected
		<2mm (Sample weight: 787.38 g) Sub sample weight: 51.38 g	Organic Fibres No Asbestos Detected
		Total sample weight: 803.64 g	
F11080.15	VS - 15	CSM2 – Springs Road Tip Pit Edge, Soil	
		>10 mm Sample weight: 12.81 g	Organic Fibres No Asbestos Detected
		10-2 mm Sample weight: 14.50 g	Organic Fibres No Asbestos Detected
		<2mm (Sample weight: 910.88 g) Sub sample weight: 51.48 g	Organic Fibres No Asbestos Detected
		Total sample weight: 938.19 g	

ASBESTOS ANALYSIS REPORT

Tuesday 6th November 2018 **Reference No: F11080**

Laboratory Reference No.	Client Sample No.	Sampling Address/Sampling Location/Description/Dimensions	Fibre Identification Analysis Results
F11080.16	VS - 16	CSM2 – Springs Road Tip Surface Soil – East, Soil	
		>10 mm Sample weight: 96.26 g	Organic Fibres No Asbestos Detected
		10-2 mm Sample weight: 45.98 g	Organic Fibres No Asbestos Detected
		<2mm (Sample weight: 792.65 g) Sub sample weight: 49.32 g	Organic Fibres No Asbestos Detected
		Total sample weight: 934.89 g	
F11080.17	VS - 17	CSM2 – Springs Road Tip Surface Soil – East, Soil	
		>10 mm Sample weight: 84.16 g	Organic Fibres No Asbestos Detected
		10-2 mm Sample weight: 55.80 g	Organic Fibres No Asbestos Detected
		<2mm (Sample weight: 804.89 g) Sub sample weight: 51.86 g	Organic Fibres No Asbestos Detected
		Total sample weight: 944.85 g	

Note: **The results contained in this report relate specifically to the samples submitted.**
Reporting limit is 0.1g/kg as per the AS4964-2004.
Reporting raw asbestos weights within soil samples is outside of EIAG's IANZ accreditation.
This document may not be reproduced except in full.

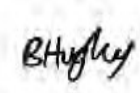
Identified By:



……

Holly Eeg BA (ERsc & Anth)
Laboratory Technician

Reviewed By:



……

Belinda Hughes PgDip (Envr)
Laboratory Technician

Form No: QLA001 – B	CONTROLLED DOCUMENT
CHAIN OF CUSTODY FORM – Sephira Environmental	Version Number: 1 Issue Date: August 2016 Authorised By: Jessica Campbell *Document is Uncontrolled When Printed*
EIAG Contact Name:	**Receiving Laboratory:** Please complete sample receipt details below and email copy of COC to EIAG contact
EIAG Contact Email:	
Client Business Name: Sephira Environmental Limited	
Contact Name: C. Brett Mongillo	Received By:
Company Address: 101a Mays Road, St Albans, Christchurch, 8052	Date & Time:
Contact No: s 9(2)(a)	Signature:
Report Email: s 9(2)(a)	Sephira Ref. #: A0356
Account Email: s 9(2)(a)	Client Ref. #:
Sample Details: VALIDATION SAMPLES	COC emailed to EIAG: Yes / No *(Circle)* Turn Around time Requested *(Circle)* (3 - 5 Business days) 48 Hour 24 Hour
Site Reference: CSM2 - SPRINGS ROAD TIP	Analysis Required
Accessibility:	Sampled By: C. Brett Mongillo
Time & Date: 01/11/18	AS RECEIVED

Lab. Sample Number	Client Sample Number	Product	Sample Location: *(Provide the information you require on the analysis report)*	Bulk ID	Fibre. C		Bulk	Tape	Dust	Soil/Ore
1	VS-1	SOIL	PIT WALL							✓
2	VS-2		PIT WALL							✓
3	VS-3		PIT WALL							✓
4	VS-4		PIT WALL							✓
5	VS-5		PIT WALL							✓
6	VS-6		PIT WALL							✓
7	VS-7		PIT FLOOR							✓
8	VS-8		PIT FLOOR							✓
9	VS-9		PIT EDGE							✓
10	VS-10	↓	PIT EDGE							✓

Number of Samples Received: 17 Soils	Date required: ASAP 06.11.18
Date/Time Received: 2/11/18	Results to be sent to client by:
Name: Lexi	Email ☐ Post ☐
Signature:	F11080
Job Number:	
WFM UPDATED WITH SAMPLE AMOUNT AND COSTS: YES / NO	

This form has been altered to suit the client (Sephira Environmental) and has been approved by EIAG's Quality Manager

Form No: QLA001 – B	CONTROLLED DOCUMENT
CHAIN OF CUSTODY FORM – Sephira Environmental	Version Number: 1 Issue Date: August 2016 Authorised By: Jessica Campbell *Document is Uncontrolled When Printed*
EIAG Contact Name:	**Receiving Laboratory:** Please complete sample receipt details below and email copy of COC to EIAG contact
EIAG Contact Email:	
Client Business Name: Sephira Environmental Limited	
Contact Name: C. Brett Mongillo	Received By:
Company Address: 101a Mays Road, St Albans, Christchurch, 8052	Date & Time:
Contact No: s 9(2)(a)	Signature:
Report Email: s 9(2)(a)	Sephira Ref. #: A0356
Account Email: s 9(2)(a)	Client Ref. #:
Sample Details: VALIDATION SAMPLES	COC emailed to EIAG: Yes / No *(Circle)* Turn Around time Requested *(Circle)* 3 - 5 Business days 48 Hour 24 Hour
Site Reference: CSM2 – SPRINGS ROAD TIP	Analysis Required
Accessibility: 01/11/18	Sampled By: C. Brett Mongillo
Time & Date:	AS RECEIVED

Lab. Sample Number	Client Sample Number	Product	Sample Location: *(Provide the information you require on the analysis report)*	Bulk ID	Fibre. C		Bulk	Tape	Dust	Soil/Ore
11	VS-11	SOIL	PIT EDGE							✓
12	VS-12	↓	PIT EDGE							✓
13	VS-13		PIT EDGE							✓
14	VS-14		PIT EDGE							✓
15	VS-15		PIT EDGE							✓
16	VS-16		SURFACE SOIL - EAST							✓
17	VS-17		SURFACE SOIL EAST							✓

Number of Samples Received: 17	Date required: ASAP
Date/Time Received: 2/11/18	Results to be sent to client by:
Name: Lexi.	Email ☐ Post ☐
Signature:	
Job Number: F11080	
WFM UPDATED WITH SAMPLE AMOUNT AND COSTS: YES / NO	

This form has been altered to suit the client (Sephira Environmental) and has been approved by EIAG's Quality Manager

Appendix D: R J Hill laboratories Analysis Results

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

0508 HILL LAB (44 555 22)
+64 7 858 2000
mail@hill-labs.co.nz
www.hill-labs.co.nz

Certificate of Analysis

Client:	KPES Limited	**Lab No:**	3659888	SPv2
Contact:	Klaus Prusas	**Date Received:**	29-Aug-2024	
	C/- KPES Limited	**Date Reported:**	05-Sep-2024	
	62 Clausen Avenue	**Quote No:**	133076	
	Leeston 7632	**Order No:**		
		Client Reference:	Springs	
		Submitted By:	Klaus Prusas	

Sample Type: Soil

Sample Name:		S1- Surface 28-Aug-2024 9:30 am	S2- 0.5 28-Aug-2024 9:32 am	S3- Surface 28-Aug-2024 9:40 am	S4- 0.5 28-Aug-2024 9:42 am	S5- 1.0 28-Aug-2024 9:45 am
Lab Number:		3659888.1	3659888.2	3659888.3	3659888.4	3659888.5
Individual Tests						
Dry Matter	g/100g as rcvd	75	81	77	81	84
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	7	7	6	7	5
Total Recoverable Cadmium	mg/kg dry wt	0.17	< 0.10	0.18	< 0.10	< 0.10
Total Recoverable Chromium	mg/kg dry wt	19	18	20	19	16
Total Recoverable Copper	mg/kg dry wt	11	9	11	9	7
Total Recoverable Lead	mg/kg dry wt	24	21	24	21	16.7
Total Recoverable Nickel	mg/kg dry wt	15	15	15	15	12
Total Recoverable Zinc	mg/kg dry wt	82	67	83	67	53
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012
alpha-BHC	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012
beta-BHC	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012
delta-BHC	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012
gamma-BHC (Lindane)	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012
cis-Chlordane	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012
trans-Chlordane	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012
2,4'-DDD	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012
4,4'-DDD	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012
2,4'-DDE	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012
4,4'-DDE	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012
2,4'-DDT	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012
4,4'-DDT	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012
Total DDT Isomers	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.07
Dieldrin	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012
Endosulfan I	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012
Endosulfan II	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012
Endosulfan sulphate	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012
Endrin	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012
Endrin aldehyde	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012
Endrin ketone	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012
Heptachlor	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012
Heptachlor epoxide	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012
Hexachlorobenzene	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012
Methoxychlor	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 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:		S1- Surface 28-Aug-2024 9:30 am	S2- 0.5 28-Aug-2024 9:32 am	S3- Surface 28-Aug-2024 9:40 am	S4- 0.5 28-Aug-2024 9:42 am	S5- 1.0 28-Aug-2024 9:45 am
Lab Number:		3659888.1	3659888.2	3659888.3	3659888.4	3659888.5
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Total of Reported PAHs in Soil	mg/kg dry wt	< 0.4	< 0.3	< 0.4	< 0.3	< 0.3
1-Methylnaphthalene	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012
2-Methylnaphthalene	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012
Acenaphthylene	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012
Acenaphthene	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012
Anthracene	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012
Benzo[a]anthracene	mg/kg dry wt	< 0.014	< 0.013	0.013	< 0.013	< 0.012
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.014	< 0.013	0.019	< 0.013	< 0.012
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 0.032	< 0.030	< 0.032	< 0.030	< 0.028
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 0.032	< 0.030	< 0.032	< 0.030	< 0.028
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	0.013	< 0.013	0.023	< 0.013	< 0.012
Benzo[e]pyrene	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.014	< 0.013	0.014	< 0.013	< 0.012
Benzo[k]fluoranthene	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012
Chrysene	mg/kg dry wt	< 0.014	< 0.013	0.015	< 0.013	< 0.012
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012
Fluoranthene	mg/kg dry wt	0.022	< 0.013	0.037	< 0.013	< 0.012
Fluorene	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.014	< 0.013	0.014	< 0.013	< 0.012
Naphthalene	mg/kg dry wt	< 0.07	< 0.07	< 0.07	< 0.07	< 0.06
Perylene	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012
Phenanthrene	mg/kg dry wt	< 0.014	< 0.013	0.017	< 0.013	< 0.012
Pyrene	mg/kg dry wt	0.024	< 0.013	0.039	< 0.013	< 0.012
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:		S6- Surface 28-Aug-2024 10:00 am	S7- 0.5 28-Aug-2024 10:02 am	S8- Surface 28-Aug-2024 10:05 am	S9- 0.5 28-Aug-2024 10:07 am	S10- Surface 28-Aug-2024 10:10 am
Lab Number:		3659888.6	3659888.7	3659888.8	3659888.9	3659888.10
Individual Tests						
Dry Matter	g/100g as rcvd	81	91	79	87	76
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	5	4	7	4	6
Total Recoverable Cadmium	mg/kg dry wt	0.12	< 0.10	0.13	< 0.10	0.15
Total Recoverable Chromium	mg/kg dry wt	15	12	20	12	18
Total Recoverable Copper	mg/kg dry wt	7	6	10	5	11
Total Recoverable Lead	mg/kg dry wt	15.5	11.6	22	11.5	23
Total Recoverable Nickel	mg/kg dry wt	11	12	14	9	14
Total Recoverable Zinc	mg/kg dry wt	55	33	74	38	77
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.013	< 0.011	< 0.013	< 0.012	< 0.013
alpha-BHC	mg/kg dry wt	< 0.013	< 0.011	< 0.013	< 0.012	< 0.013
beta-BHC	mg/kg dry wt	< 0.013	< 0.011	< 0.013	< 0.012	< 0.013
delta-BHC	mg/kg dry wt	< 0.013	< 0.011	< 0.013	< 0.012	< 0.013
gamma-BHC (Lindane)	mg/kg dry wt	< 0.013	< 0.011	< 0.013	< 0.012	< 0.013
cis-Chlordane	mg/kg dry wt	< 0.013	< 0.011	< 0.013	< 0.012	< 0.013
trans-Chlordane	mg/kg dry wt	< 0.013	< 0.011	< 0.013	< 0.012	< 0.013
2,4'-DDD	mg/kg dry wt	< 0.013	< 0.011	< 0.013	< 0.012	< 0.013
4,4'-DDD	mg/kg dry wt	< 0.013	< 0.011	< 0.013	< 0.012	< 0.013

Sample Type: Soil						
Sample Name:		S6- Surface 28-Aug-2024 10:00 am	S7- 0.5 28-Aug-2024 10:02 am	S8- Surface 28-Aug-2024 10:05 am	S9- 0.5 28-Aug-2024 10:07 am	S10- Surface 28-Aug-2024 10:10 am
Lab Number:		3659888.6	3659888.7	3659888.8	3659888.9	3659888.10
Organochlorine Pesticides Screening in Soil						
2,4'-DDE	mg/kg dry wt	< 0.013	< 0.011	< 0.013	< 0.012	< 0.013
4,4'-DDE	mg/kg dry wt	< 0.013	< 0.011	< 0.013	< 0.012	< 0.013
2,4'-DDT	mg/kg dry wt	< 0.013	< 0.011	< 0.013	< 0.012	< 0.013
4,4'-DDT	mg/kg dry wt	< 0.013	< 0.011	< 0.013	< 0.012	< 0.013
Total DDT Isomers	mg/kg dry wt	< 0.08	< 0.07	< 0.08	< 0.07	< 0.08
Dieldrin	mg/kg dry wt	< 0.013	< 0.011	< 0.013	< 0.012	< 0.013
Endosulfan I	mg/kg dry wt	< 0.013	< 0.011	< 0.013	< 0.012	< 0.013
Endosulfan II	mg/kg dry wt	< 0.013	< 0.011	< 0.013	< 0.012	< 0.013
Endosulfan sulphate	mg/kg dry wt	< 0.013	< 0.011	< 0.013	< 0.012	< 0.013
Endrin	mg/kg dry wt	< 0.013	< 0.011	< 0.013	< 0.012	< 0.013
Endrin aldehyde	mg/kg dry wt	< 0.013	< 0.011	< 0.013	< 0.012	< 0.013
Endrin ketone	mg/kg dry wt	< 0.013	< 0.011	< 0.013	< 0.012	< 0.013
Heptachlor	mg/kg dry wt	< 0.013	< 0.011	< 0.013	< 0.012	< 0.013
Heptachlor epoxide	mg/kg dry wt	< 0.013	< 0.011	< 0.013	< 0.012	< 0.013
Hexachlorobenzene	mg/kg dry wt	< 0.013	< 0.011	< 0.013	< 0.012	< 0.013
Methoxychlor	mg/kg dry wt	< 0.013	< 0.011	< 0.013	< 0.012	< 0.013
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Total of Reported PAHs in Soil	mg/kg dry wt	< 0.3	< 0.3	-	-	-
1-Methylnaphthalene	mg/kg dry wt	< 0.013	< 0.011	-	-	-
2-Methylnaphthalene	mg/kg dry wt	< 0.013	< 0.011	-	-	-
Acenaphthylene	mg/kg dry wt	< 0.013	< 0.011	-	-	-
Acenaphthene	mg/kg dry wt	< 0.013	< 0.011	-	-	-
Anthracene	mg/kg dry wt	< 0.013	< 0.011	-	-	-
Benzo[a]anthracene	mg/kg dry wt	< 0.013	< 0.011	-	-	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	0.013	< 0.011	-	-	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 0.030	< 0.027	-	-	-
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 0.030	< 0.027	-	-	-
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	0.017	< 0.011	-	-	-
Benzo[e]pyrene	mg/kg dry wt	< 0.013	< 0.011	-	-	-
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.013	< 0.011	-	-	-
Benzo[k]fluoranthene	mg/kg dry wt	< 0.013	< 0.011	-	-	-
Chrysene	mg/kg dry wt	< 0.013	< 0.011	-	-	-
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.013	< 0.011	-	-	-
Fluoranthene	mg/kg dry wt	0.024	< 0.011	-	-	-
Fluorene	mg/kg dry wt	< 0.013	< 0.011	-	-	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.013	< 0.011	-	-	-
Naphthalene	mg/kg dry wt	< 0.07	< 0.06	-	-	-
Perylene	mg/kg dry wt	< 0.013	< 0.011	-	-	-
Phenanthrene	mg/kg dry wt	< 0.013	< 0.011	-	-	-
Pyrene	mg/kg dry wt	0.024	< 0.011	-	-	-
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	-	-	-

Sample Name:		S11- 0.5 28-Aug-2024 10:12 am	S12- Surface 28-Aug-2024 10:25 am	S13- 0.5 28-Aug-2024 10:17 am	S14- Surface 28-Aug-2024 10:25 am	S15- 0.5 28-Aug-2024 10:27 am
Lab Number:		3659888.11	3659888.12	3659888.13	3659888.14	3659888.15
Individual Tests						
Dry Matter	g/100g as rcvd	83	77	84	77	81

Sample Type: Soil						
Sample Name:		S11- 0.5 28-Aug-2024 10:12 am	S12- Surface 28-Aug-2024 10:25 am	S13- 0.5 28-Aug-2024 10:17 am	S14- Surface 28-Aug-2024 10:25 am	S15- 0.5 28-Aug-2024 10:27 am
Lab Number:		3659888.11	3659888.12	3659888.13	3659888.14	3659888.15
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	6	6	5	6	6
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	0.14	< 0.10	0.15	< 0.10
Total Recoverable Chromium	mg/kg dry wt	19	20	18	19	20
Total Recoverable Copper	mg/kg dry wt	9	11	9	11	9
Total Recoverable Lead	mg/kg dry wt	19.9	24	17.3	23	21
Total Recoverable Nickel	mg/kg dry wt	15	16	14	15	17
Total Recoverable Zinc	mg/kg dry wt	62	79	57	79	71
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012
alpha-BHC	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012
beta-BHC	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012
delta-BHC	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012
gamma-BHC (Lindane)	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012
cis-Chlordane	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012
trans-Chlordane	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012
2,4'-DDD	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012
4,4'-DDD	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012
2,4'-DDE	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012
4,4'-DDE	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012
2,4'-DDT	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012
4,4'-DDT	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012
Total DDT Isomers	mg/kg dry wt	< 0.07	< 0.08	< 0.07	< 0.08	< 0.08
Dieldrin	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012
Endosulfan I	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012
Endosulfan II	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012
Endosulfan sulphate	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012
Endrin	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012
Endrin aldehyde	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012
Endrin ketone	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012
Heptachlor	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012
Heptachlor epoxide	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012
Hexachlorobenzene	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012
Methoxychlor	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012

Sample Name:		S16- 1.0 28-Aug-2024 10:30 am	S17- Surface 28-Aug-2024 10:35 am	S18- 0.5 28-Aug-2024 10:37 am	S19- Surface 28-Aug-2024 10:45 am	S20- 0.5 28-Aug-2024 10:47 am
Lab Number:		3659888.16	3659888.17	3659888.18	3659888.19	3659888.20
Individual Tests						
Dry Matter	g/100g as rcvd	84	77	86	77	82
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	5	6	4	6	6
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	0.17	< 0.10	0.16	< 0.10
Total Recoverable Chromium	mg/kg dry wt	15	18	12	17	19
Total Recoverable Copper	mg/kg dry wt	8	11	4	9	9
Total Recoverable Lead	mg/kg dry wt	16.6	25	12.1	22	19.6
Total Recoverable Nickel	mg/kg dry wt	13	13	9	13	14
Total Recoverable Zinc	mg/kg dry wt	54	82	42	70	70
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012
alpha-BHC	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012
beta-BHC	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012
delta-BHC	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012
gamma-BHC (Lindane)	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012
cis-Chlordane	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012

Sample Type: Soil						
Sample Name:		S16- 1.0 28-Aug-2024 10:30 am	S17- Surface 28-Aug-2024 10:35 am	S18- 0.5 28-Aug-2024 10:37 am	S19- Surface 28-Aug-2024 10:45 am	S20- 0.5 28-Aug-2024 10:47 am
Lab Number:		3659888.16	3659888.17	3659888.18	3659888.19	3659888.20
Organochlorine Pesticides Screening in Soil						
trans-Chlordane	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012
2,4'-DDD	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012
4,4'-DDD	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012
2,4'-DDE	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012
4,4'-DDE	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012
2,4'-DDT	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012
4,4'-DDT	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012
Total DDT Isomers	mg/kg dry wt	< 0.08	< 0.08	< 0.07	< 0.08	< 0.08
Dieldrin	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012
Endosulfan I	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012
Endosulfan II	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012
Endosulfan sulphate	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012
Endrin	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012
Endrin aldehyde	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012
Endrin ketone	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012
Heptachlor	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012
Heptachlor epoxide	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012
Hexachlorobenzene	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012
Methoxychlor	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012

Sample Name:		S21- Surface 28-Aug-2024 10:55 am	S22- 0.5 28-Aug-2024 10:57 am	S23- Surface 28-Aug-2024 11:05 am	S24- 0.5 28-Aug-2024 11:07 am	S25- Surface 28-Aug-2024 11:10 am
Lab Number:		3659888.21	3659888.22	3659888.23	3659888.24	3659888.25
Individual Tests						
Dry Matter	g/100g as rcvd	78	84	79	84	75
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	5	5	6	5	6
Total Recoverable Cadmium	mg/kg dry wt	0.14	< 0.10	0.14	< 0.10	0.16
Total Recoverable Chromium	mg/kg dry wt	15	15	17	16	19
Total Recoverable Copper	mg/kg dry wt	8	7	8	7	11
Total Recoverable Lead	mg/kg dry wt	22	14.9	19.7	16.4	22
Total Recoverable Nickel	mg/kg dry wt	12	13	13	13	14
Total Recoverable Zinc	mg/kg dry wt	80	58	71	54	78
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.013
alpha-BHC	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.013
beta-BHC	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.013
delta-BHC	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.013
gamma-BHC (Lindane)	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.013
cis-Chlordane	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.013
trans-Chlordane	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.013
2,4'-DDD	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.013
4,4'-DDD	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.013
2,4'-DDE	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.013
4,4'-DDE	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.013
2,4'-DDT	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.013
4,4'-DDT	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.013
Total DDT Isomers	mg/kg dry wt	< 0.08	< 0.07	< 0.08	< 0.07	< 0.08
Dieldrin	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.013
Endosulfan I	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.013
Endosulfan II	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.013
Endosulfan sulphate	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.013
Endrin	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.013
Endrin aldehyde	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.013

Sample Type: Soil						
Sample Name:		S21- Surface 28-Aug-2024 10:55 am	S22- 0.5 28-Aug-2024 10:57 am	S23- Surface 28-Aug-2024 11:05 am	S24- 0.5 28-Aug-2024 11:07 am	S25- Surface 28-Aug-2024 11:10 am
Lab Number:		3659888.21	3659888.22	3659888.23	3659888.24	3659888.25
Organochlorine Pesticides Screening in Soil						
Endrin ketone	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.013
Heptachlor	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.013
Heptachlor epoxide	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.013
Hexachlorobenzene	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.013
Methoxychlor	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.013
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Total of Reported PAHs in Soil	mg/kg dry wt	-	-	< 0.3	< 0.3	-
1-Methylnaphthalene	mg/kg dry wt	-	-	< 0.013	< 0.012	-
2-Methylnaphthalene	mg/kg dry wt	-	-	< 0.013	< 0.012	-
Acenaphthylene	mg/kg dry wt	-	-	< 0.013	< 0.012	-
Acenaphthene	mg/kg dry wt	-	-	< 0.013	< 0.012	-
Anthracene	mg/kg dry wt	-	-	< 0.013	< 0.012	-
Benzo[a]anthracene	mg/kg dry wt	-	-	< 0.013	< 0.012	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	-	-	0.016	< 0.012	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	-	-	< 0.030	< 0.028	-
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	-	-	< 0.030	< 0.028	-
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	-	-	0.021	< 0.012	-
Benzo[e]pyrene	mg/kg dry wt	-	-	< 0.013	< 0.012	-
Benzo[g,h,i]perylene	mg/kg dry wt	-	-	0.013	< 0.012	-
Benzo[k]fluoranthene	mg/kg dry wt	-	-	< 0.013	< 0.012	-
Chrysene	mg/kg dry wt	-	-	0.013	< 0.012	-
Dibenzo[a,h]anthracene	mg/kg dry wt	-	-	< 0.013	< 0.012	-
Fluoranthene	mg/kg dry wt	-	-	0.031	< 0.012	-
Fluorene	mg/kg dry wt	-	-	< 0.013	< 0.012	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	-	-	0.013	< 0.012	-
Naphthalene	mg/kg dry wt	-	-	< 0.07	< 0.06	-
Perylene	mg/kg dry wt	-	-	< 0.013	< 0.012	-
Phenanthrene	mg/kg dry wt	-	-	0.016	< 0.012	-
Pyrene	mg/kg dry wt	-	-	0.030	< 0.012	-
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	-

Sample Name:		S26- 0.5 28-Aug-2024 11:17 am	S27- Surface 28-Aug-2024 11:20 am	S28- 0.5 28-Aug-2024 11:22 am	S29- 1.0 28-Aug-2024 11:25 am	S30- Surface 28-Aug-2024 11:30 am
Lab Number:		3659888.26	3659888.27	3659888.28	3659888.29	3659888.30
Individual Tests						
Dry Matter	g/100g as rcvd	83	79	87	85	79
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	7	5	4	4	4
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	0.17	< 0.10	< 0.10	< 0.10
Total Recoverable Chromium	mg/kg dry wt	19	14	13	13	13
Total Recoverable Copper	mg/kg dry wt	11	8	5	6	7
Total Recoverable Lead	mg/kg dry wt	21	16.8	10.2	11.9	14.9
Total Recoverable Nickel	mg/kg dry wt	14	10	11	11	10
Total Recoverable Zinc	mg/kg dry wt	64	70	37	36	58
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
alpha-BHC	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
beta-BHC	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013

Sample Type: Soil						
Sample Name:		S26- 0.5 28-Aug-2024 11:17 am	S27- Surface 28-Aug-2024 11:20 am	S28- 0.5 28-Aug-2024 11:22 am	S29- 1.0 28-Aug-2024 11:25 am	S30- Surface 28-Aug-2024 11:30 am
Lab Number:		3659888.26	3659888.27	3659888.28	3659888.29	3659888.30
Organochlorine Pesticides Screening in Soil						
delta-BHC	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
gamma-BHC (Lindane)	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
cis-Chlordane	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
trans-Chlordane	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
2,4'-DDD	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
4,4'-DDD	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
2,4'-DDE	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
4,4'-DDE	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
2,4'-DDT	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
4,4'-DDT	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
Total DDT Isomers	mg/kg dry wt	< 0.07	< 0.08	< 0.07	< 0.07	< 0.08
Dieldrin	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
Endosulfan I	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
Endosulfan II	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
Endosulfan sulphate	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
Endrin	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
Endrin aldehyde	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
Endrin ketone	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
Heptachlor	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
Heptachlor epoxide	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
Hexachlorobenzene	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
Methoxychlor	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
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	-	< 0.013	< 0.012	< 0.012	-
2-Methylnaphthalene	mg/kg dry wt	-	< 0.013	< 0.012	< 0.012	-
Acenaphthylene	mg/kg dry wt	-	< 0.013	< 0.012	< 0.012	-
Acenaphthene	mg/kg dry wt	-	< 0.013	< 0.012	< 0.012	-
Anthracene	mg/kg dry wt	-	< 0.013	< 0.012	< 0.012	-
Benzo[a]anthracene	mg/kg dry wt	-	0.013	< 0.012	< 0.012	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	-	0.020	< 0.012	< 0.012	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	-	< 0.031	< 0.028	< 0.028	-
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	-	< 0.031	< 0.028	< 0.028	-
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	-	0.025	< 0.012	< 0.012	-
Benzo[e]pyrene	mg/kg dry wt	-	0.013	< 0.012	< 0.012	-
Benzo[g,h,i]perylene	mg/kg dry wt	-	0.017	< 0.012	< 0.012	-
Benzo[k]fluoranthene	mg/kg dry wt	-	< 0.013	< 0.012	< 0.012	-
Chrysene	mg/kg dry wt	-	0.017	< 0.012	< 0.012	-
Dibenzo[a,h]anthracene	mg/kg dry wt	-	< 0.013	< 0.012	< 0.012	-
Fluoranthene	mg/kg dry wt	-	0.038	< 0.012	< 0.012	-
Fluorene	mg/kg dry wt	-	< 0.013	< 0.012	< 0.012	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	-	0.017	< 0.012	< 0.012	-
Naphthalene	mg/kg dry wt	-	< 0.07	< 0.06	< 0.06	-
Perylene	mg/kg dry wt	-	< 0.013	< 0.012	< 0.012	-
Phenanthrene	mg/kg dry wt	-	0.018	< 0.012	< 0.012	-
Pyrene	mg/kg dry wt	-	0.037	< 0.012	< 0.012	-
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	-	45	< 40	< 40	-
Total hydrocarbons (C7 - C36)	mg/kg dry wt	-	< 80	< 80	< 80	-

Sample Type: Soil						
Sample Name:		S31- 0.5 28-Aug-2024 11:32 am	S32- Surface 28-Aug-2024 11:55 am	S33- 0.5 28-Aug-2024 11:57 am	S34- 1.0 28-Aug-2024 12:00 pm	S35- Surface 28-Aug-2024 12:05 pm
Lab Number:		3659888.31	3659888.32	3659888.33	3659888.34	3659888.35
Individual Tests						
Dry Matter	g/100g as rcvd	83	78	85	85	76
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	4	5	4	5	6
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	0.15	< 0.10	< 0.10	0.19
Total Recoverable Chromium	mg/kg dry wt	15	15	15	15	17
Total Recoverable Copper	mg/kg dry wt	5	8	5	5	10
Total Recoverable Lead	mg/kg dry wt	12.5	19.3	14.0	13.0	23
Total Recoverable Nickel	mg/kg dry wt	12	12	10	11	13
Total Recoverable Zinc	mg/kg dry wt	40	69	50	40	75
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
alpha-BHC	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
beta-BHC	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
delta-BHC	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
gamma-BHC (Lindane)	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
cis-Chlordane	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
trans-Chlordane	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
2,4'-DDD	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
4,4'-DDD	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
2,4'-DDE	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
4,4'-DDE	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
2,4'-DDT	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
4,4'-DDT	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
Total DDT Isomers	mg/kg dry wt	< 0.08	< 0.08	< 0.07	< 0.07	< 0.08
Dieldrin	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
Endosulfan I	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
Endosulfan II	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
Endosulfan sulphate	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
Endrin	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
Endrin aldehyde	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
Endrin ketone	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
Heptachlor	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
Heptachlor epoxide	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
Hexachlorobenzene	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013
Methoxychlor	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.012	< 0.013

Sample Name:		S36- 0.5 28-Aug-2024 12:07 pm	S37- Surface 28-Aug-2024 12:10 pm	S38- 0.5 28-Aug-2024 12:12 pm	S39- Surface 28-Aug-2024 1:30 pm	S40- 0.5 28-Aug-2024 1:32 pm
Lab Number:		3659888.36	3659888.37	3659888.38	3659888.39	3659888.40
Individual Tests						
Dry Matter	g/100g as rcvd	85	76	85	76	80
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	3	5	4	6	6
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	0.17	< 0.10	0.20	< 0.10
Total Recoverable Chromium	mg/kg dry wt	14	17	15	17	20
Total Recoverable Copper	mg/kg dry wt	4	9	6	10	9
Total Recoverable Lead	mg/kg dry wt	12.4	22	12.8	30	24
Total Recoverable Nickel	mg/kg dry wt	10	13	14	14	16
Total Recoverable Zinc	mg/kg dry wt	55	74	50	95	83
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.013
alpha-BHC	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.013
beta-BHC	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.013
delta-BHC	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.013

Sample Type: Soil						
Sample Name:		S36- 0.5 28-Aug-2024 12:07 pm	S37- Surface 28-Aug-2024 12:10 pm	S38- 0.5 28-Aug-2024 12:12 pm	S39- Surface 28-Aug-2024 1:30 pm	S40- 0.5 28-Aug-2024 1:32 pm
Lab Number:		3659888.36	3659888.37	3659888.38	3659888.39	3659888.40
Organochlorine Pesticides Screening in Soil						
gamma-BHC (Lindane)	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.013
cis-Chlordane	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.013
trans-Chlordane	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.013
2,4'-DDD	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.013
4,4'-DDD	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.013
2,4'-DDE	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.013
4,4'-DDE	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.013
2,4'-DDT	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.013
4,4'-DDT	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.013
Total DDT Isomers	mg/kg dry wt	< 0.07	< 0.08	< 0.07	< 0.08	< 0.08
Dieldrin	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.013
Endosulfan I	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.013
Endosulfan II	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.013
Endosulfan sulphate	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.013
Endrin	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.013
Endrin aldehyde	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.013
Endrin ketone	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.013
Heptachlor	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.013
Heptachlor epoxide	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.013
Hexachlorobenzene	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.013
Methoxychlor	mg/kg dry wt	< 0.012	< 0.013	< 0.012	< 0.013	< 0.013
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	-	-	-	< 0.013	< 0.013
2-Methylnaphthalene	mg/kg dry wt	-	-	-	< 0.013	< 0.013
Acenaphthylene	mg/kg dry wt	-	-	-	< 0.013	< 0.013
Acenaphthene	mg/kg dry wt	-	-	-	< 0.013	< 0.013
Anthracene	mg/kg dry wt	-	-	-	< 0.013	< 0.013
Benzo[a]anthracene	mg/kg dry wt	-	-	-	0.021	0.018
Benzo[a]pyrene (BAP)	mg/kg dry wt	-	-	-	0.029	0.029
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	-	-	-	0.043	0.045
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	-	-	-	0.043	0.044
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	-	-	-	0.038	0.036
Benzo[e]pyrene	mg/kg dry wt	-	-	-	0.019	0.022
Benzo[g,h,i]perylene	mg/kg dry wt	-	-	-	0.021	0.029
Benzo[k]fluoranthene	mg/kg dry wt	-	-	-	< 0.013	0.013
Chrysene	mg/kg dry wt	-	-	-	0.026	0.022
Dibenzo[a,h]anthracene	mg/kg dry wt	-	-	-	< 0.013	< 0.013
Fluoranthene	mg/kg dry wt	-	-	-	0.060	0.062
Fluorene	mg/kg dry wt	-	-	-	< 0.013	< 0.013
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	-	-	-	0.023	0.025
Naphthalene	mg/kg dry wt	-	-	-	< 0.07	< 0.07
Perylene	mg/kg dry wt	-	-	-	< 0.013	0.021
Phenanthrene	mg/kg dry wt	-	-	-	0.026	0.021
Pyrene	mg/kg dry wt	-	-	-	0.056	0.051
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	-	-	-	42	< 40
Total hydrocarbons (C7 - C36)	mg/kg dry wt	-	-	-	< 80	< 80

Sample Type: Soil						
Sample Name:		S41- Surface 28-Aug-2024 1:35 pm	S42- 0.5 28-Aug-2024 1:37 pm	S43- 1.0 28-Aug-2024 1:40 pm	S44- Surface 28-Aug-2024 1:45 pm	S46- 0.5 28-Aug-2024 1:47 pm
Lab Number:		3659888.41	3659888.42	3659888.43	3659888.44	3659888.45
Individual Tests						
Dry Matter	g/100g as rcvd	72	78	83	75	83
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	7	6	7	7	7
Total Recoverable Cadmium	mg/kg dry wt	0.20	< 0.10	< 0.10	0.16	< 0.10
Total Recoverable Chromium	mg/kg dry wt	21	19	17	19	19
Total Recoverable Copper	mg/kg dry wt	12	10	11	10	10
Total Recoverable Lead	mg/kg dry wt	32	22	19.3	26	21
Total Recoverable Nickel	mg/kg dry wt	16	17	13	15	16
Total Recoverable Zinc	mg/kg dry wt	101	83	58	84	67
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.014	< 0.013	< 0.012	< 0.013	< 0.012
alpha-BHC	mg/kg dry wt	< 0.014	< 0.013	< 0.012	< 0.013	< 0.012
beta-BHC	mg/kg dry wt	< 0.014	< 0.013	< 0.012	< 0.013	< 0.012
delta-BHC	mg/kg dry wt	< 0.014	< 0.013	< 0.012	< 0.013	< 0.012
gamma-BHC (Lindane)	mg/kg dry wt	< 0.014	< 0.013	< 0.012	< 0.013	< 0.012
cis-Chlordane	mg/kg dry wt	< 0.014	< 0.013	< 0.012	< 0.013	< 0.012
trans-Chlordane	mg/kg dry wt	< 0.014	< 0.013	< 0.012	< 0.013	< 0.012
2,4'-DDD	mg/kg dry wt	< 0.014	< 0.013	< 0.012	< 0.013	< 0.012
4,4'-DDD	mg/kg dry wt	< 0.014	< 0.013	< 0.012	< 0.013	< 0.012
2,4'-DDE	mg/kg dry wt	< 0.014	< 0.013	< 0.012	< 0.013	< 0.012
4,4'-DDE	mg/kg dry wt	< 0.014	< 0.013	< 0.012	< 0.013	< 0.012
2,4'-DDT	mg/kg dry wt	< 0.014	< 0.013	< 0.012	< 0.013	< 0.012
4,4'-DDT	mg/kg dry wt	< 0.014	< 0.013	< 0.012	< 0.013	< 0.012
Total DDT Isomers	mg/kg dry wt	< 0.09	< 0.08	< 0.07	< 0.08	< 0.08
Dieldrin	mg/kg dry wt	< 0.014	< 0.013	< 0.012	< 0.013	< 0.012
Endosulfan I	mg/kg dry wt	< 0.014	< 0.013	< 0.012	< 0.013	< 0.012
Endosulfan II	mg/kg dry wt	< 0.014	< 0.013	< 0.012	< 0.013	< 0.012
Endosulfan sulphate	mg/kg dry wt	< 0.014	< 0.013	< 0.012	< 0.013	< 0.012
Endrin	mg/kg dry wt	< 0.014	< 0.013	< 0.012	< 0.013	< 0.012
Endrin aldehyde	mg/kg dry wt	< 0.014	< 0.013	< 0.012	< 0.013	< 0.012
Endrin ketone	mg/kg dry wt	< 0.014	< 0.013	< 0.012	< 0.013	< 0.012
Heptachlor	mg/kg dry wt	< 0.014	< 0.013	< 0.012	< 0.013	< 0.012
Heptachlor epoxide	mg/kg dry wt	< 0.014	< 0.013	< 0.012	< 0.013	< 0.012
Hexachlorobenzene	mg/kg dry wt	< 0.014	< 0.013	< 0.012	< 0.013	< 0.012
Methoxychlor	mg/kg dry wt	< 0.014	< 0.013	< 0.012	< 0.013	< 0.012

Sample Name:		S46- Surface 28-Aug-2024 1:55 pm	S47- 0.5 28-Aug-2024 1:57 pm	S48- Surface 28-Aug-2024 2:00 pm	S49- 0.5 28-Aug-2024 2:02 pm	S50- Surface 28-Aug-2024 2:05 pm
Lab Number:		3659888.46	3659888.47	3659888.48	3659888.49	3659888.50
Individual Tests						
Dry Matter	g/100g as rcvd	74	81	75	83	79
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	6	7	7	7	6
Total Recoverable Cadmium	mg/kg dry wt	0.19	0.16	0.16	< 0.10	0.21
Total Recoverable Chromium	mg/kg dry wt	18	22	20	21	18
Total Recoverable Copper	mg/kg dry wt	10	10	10	12	11
Total Recoverable Lead	mg/kg dry wt	25	26	26	22	30
Total Recoverable Nickel	mg/kg dry wt	15	16	15	16	14
Total Recoverable Zinc	mg/kg dry wt	84	88	79	66	95
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013
alpha-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013
beta-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013
delta-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013

Sample Type: Soil						
Sample Name:		S46- Surface 28-Aug-2024 1:55 pm	S47- 0.5 28-Aug-2024 1:57 pm	S48- Surface 28-Aug-2024 2:00 pm	S49- 0.5 28-Aug-2024 2:02 pm	S50- Surface 28-Aug-2024 2:05 pm
Lab Number:		3659888.46	3659888.47	3659888.48	3659888.49	3659888.50
Organochlorine Pesticides Screening in Soil						
gamma-BHC (Lindane)	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013
cis-Chlordane	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013
trans-Chlordane	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013
2,4'-DDD	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013
4,4'-DDD	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013
2,4'-DDE	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013
4,4'-DDE	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013
2,4'-DDT	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013
4,4'-DDT	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013
Total DDT Isomers	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.07	< 0.08
Dieldrin	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013
Endosulfan I	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013
Endosulfan II	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013
Endosulfan sulphate	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013
Endrin	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013
Endrin aldehyde	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013
Endrin ketone	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013
Heptachlor	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013
Heptachlor epoxide	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013
Hexachlorobenzene	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013
Methoxychlor	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Total of Reported PAHs in Soil	mg/kg dry wt	-	-	-	-	0.3
1-Methylnaphthalene	mg/kg dry wt	-	-	-	-	< 0.013
2-Methylnaphthalene	mg/kg dry wt	-	-	-	-	< 0.013
Acenaphthylene	mg/kg dry wt	-	-	-	-	< 0.013
Acenaphthene	mg/kg dry wt	-	-	-	-	< 0.013
Anthracene	mg/kg dry wt	-	-	-	-	< 0.013
Benzo[a]anthracene	mg/kg dry wt	-	-	-	-	0.018
Benzo[a]pyrene (BAP)	mg/kg dry wt	-	-	-	-	0.027
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	-	-	-	-	0.036
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	-	-	-	-	0.035
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	-	-	-	-	0.034
Benzo[e]pyrene	mg/kg dry wt	-	-	-	-	0.017
Benzo[g,h,i]perylene	mg/kg dry wt	-	-	-	-	0.020
Benzo[k]fluoranthene	mg/kg dry wt	-	-	-	-	0.013
Chrysene	mg/kg dry wt	-	-	-	-	0.023
Dibenzo[a,h]anthracene	mg/kg dry wt	-	-	-	-	< 0.013
Fluoranthene	mg/kg dry wt	-	-	-	-	0.050
Fluorene	mg/kg dry wt	-	-	-	-	< 0.013
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	-	-	-	-	0.020
Naphthalene	mg/kg dry wt	-	-	-	-	< 0.07
Perylene	mg/kg dry wt	-	-	-	-	< 0.013
Phenanthrene	mg/kg dry wt	-	-	-	-	0.020
Pyrene	mg/kg dry wt	-	-	-	-	0.050
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

Sample Type: Soil						
Sample Name:		S51- 0.5 28-Aug-2024 2:07 pm	S52- Surface 28-Aug-2024 2:10 pm	S53- 0.5 28-Aug-2024 2:12 pm	S54- Surface 28-Aug-2024 2:15 pm	S55- 0.5 28-Aug-2024 2:17 pm
Lab Number:		3659888.51	3659888.52	3659888.53	3659888.54	3659888.55
Individual Tests						
Dry Matter	g/100g as rcvd	83	74	83	73	85
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	7	5	6	7	7
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	0.19	< 0.10	0.26	< 0.10
Total Recoverable Chromium	mg/kg dry wt	17	16	17	19	19
Total Recoverable Copper	mg/kg dry wt	11	10	8	12	9
Total Recoverable Lead	mg/kg dry wt	19.7	29	19.2	30	19.0
Total Recoverable Nickel	mg/kg dry wt	15	12	13	15	15
Total Recoverable Zinc	mg/kg dry wt	62	101	79	108	62
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.012	< 0.014	< 0.012	< 0.014	< 0.012
alpha-BHC	mg/kg dry wt	< 0.012	< 0.014	< 0.012	< 0.014	< 0.012
beta-BHC	mg/kg dry wt	< 0.012	< 0.014	< 0.012	< 0.014	< 0.012
delta-BHC	mg/kg dry wt	< 0.012	< 0.014	< 0.012	< 0.014	< 0.012
gamma-BHC (Lindane)	mg/kg dry wt	< 0.012	< 0.014	< 0.012	< 0.014	< 0.012
cis-Chlordane	mg/kg dry wt	< 0.012	< 0.014	< 0.012	< 0.014	< 0.012
trans-Chlordane	mg/kg dry wt	< 0.012	< 0.014	< 0.012	< 0.014	< 0.012
2,4'-DDD	mg/kg dry wt	< 0.012	< 0.014	< 0.012	< 0.014	< 0.012
4,4'-DDD	mg/kg dry wt	< 0.012	< 0.014	< 0.012	< 0.014	< 0.012
2,4'-DDE	mg/kg dry wt	< 0.012	< 0.014	< 0.012	< 0.014	< 0.012
4,4'-DDE	mg/kg dry wt	< 0.012	< 0.014	< 0.012	< 0.014	< 0.012
2,4'-DDT	mg/kg dry wt	< 0.012	< 0.014	< 0.012	< 0.014	< 0.012
4,4'-DDT	mg/kg dry wt	< 0.012	< 0.014	< 0.012	< 0.014	< 0.012
Total DDT Isomers	mg/kg dry wt	< 0.08	< 0.08	< 0.07	< 0.08	< 0.07
Dieldrin	mg/kg dry wt	< 0.012	< 0.014	< 0.012	< 0.014	< 0.012
Endosulfan I	mg/kg dry wt	< 0.012	< 0.014	< 0.012	< 0.014	< 0.012
Endosulfan II	mg/kg dry wt	< 0.012	< 0.014	< 0.012	< 0.014	< 0.012
Endosulfan sulphate	mg/kg dry wt	< 0.012	< 0.014	< 0.012	< 0.014	< 0.012
Endrin	mg/kg dry wt	< 0.012	< 0.014	< 0.012	< 0.014	< 0.012
Endrin aldehyde	mg/kg dry wt	< 0.012	< 0.014	< 0.012	< 0.014	< 0.012
Endrin ketone	mg/kg dry wt	< 0.012	< 0.014	< 0.012	< 0.014	< 0.012
Heptachlor	mg/kg dry wt	< 0.012	< 0.014	< 0.012	< 0.014	< 0.012
Heptachlor epoxide	mg/kg dry wt	< 0.012	< 0.014	< 0.012	< 0.014	< 0.012
Hexachlorobenzene	mg/kg dry wt	< 0.012	< 0.014	< 0.012	< 0.014	< 0.012
Methoxychlor	mg/kg dry wt	< 0.012	< 0.014	< 0.012	< 0.014	< 0.012
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Total of Reported PAHs in Soil	mg/kg dry wt	< 0.3	0.5	< 0.3	-	-
1-Methylnaphthalene	mg/kg dry wt	< 0.012	< 0.014	< 0.012	-	-
2-Methylnaphthalene	mg/kg dry wt	< 0.012	< 0.014	< 0.012	-	-
Acenaphthylene	mg/kg dry wt	< 0.012	< 0.014	< 0.012	-	-
Acenaphthene	mg/kg dry wt	< 0.012	< 0.014	< 0.012	-	-
Anthracene	mg/kg dry wt	< 0.012	< 0.014	< 0.012	-	-
Benzo[a]anthracene	mg/kg dry wt	< 0.012	0.029	< 0.012	-	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.012	0.043	< 0.012	-	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 0.029	0.063	< 0.029	-	-
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 0.029	0.062	< 0.028	-	-
Benzo[b]fluoranthene + Benzo[j]fluoranthene	mg/kg dry wt	< 0.012	0.056	< 0.012	-	-
Benzo[e]pyrene	mg/kg dry wt	< 0.012	0.028	< 0.012	-	-
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.012	0.033	< 0.012	-	-
Benzo[k]fluoranthene	mg/kg dry wt	< 0.012	0.023	< 0.012	-	-
Chrysene	mg/kg dry wt	< 0.012	0.039	< 0.012	-	-
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.012	< 0.014	< 0.012	-	-

Sample Type: Soil						
Sample Name:		S51- 0.5 28-Aug-2024 2:07 pm	S52- Surface 28-Aug-2024 2:10 pm	S53- 0.5 28-Aug-2024 2:12 pm	S54- Surface 28-Aug-2024 2:15 pm	S55- 0.5 28-Aug-2024 2:17 pm
Lab Number:		3659888.51	3659888.52	3659888.53	3659888.54	3659888.55
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Fluoranthene	mg/kg dry wt	< 0.012	0.090	< 0.012	-	-
Fluorene	mg/kg dry wt	< 0.012	< 0.014	< 0.012	-	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.012	0.032	< 0.012	-	-
Naphthalene	mg/kg dry wt	< 0.06	< 0.07	< 0.06	-	-
Perylene	mg/kg dry wt	< 0.012	< 0.014	< 0.012	-	-
Phenanthrene	mg/kg dry wt	< 0.012	0.042	< 0.012	-	-
Pyrene	mg/kg dry wt	< 0.012	0.080	< 0.012	-	-
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	75	< 40	-	-
Total hydrocarbons (C7 - C36)	mg/kg dry wt	< 80	< 80	< 80	-	-

Sample Name:		S57- Surface 28-Aug-2024 2:20 pm	S57- 0.5 28-Aug-2024 2:22 pm	S58- Surface 28-Aug-2024 2:25 pm	S59- 0.5 28-Aug-2024 2:27 pm	S60- Surface 28-Aug-2024 2:30 pm
Lab Number:		3659888.56	3659888.57	3659888.58	3659888.59	3659888.60
Individual Tests						
Dry Matter	g/100g as rcvd	72	84	78	83	78
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	7	6	6	6	6
Total Recoverable Cadmium	mg/kg dry wt	0.20	< 0.10	0.20	< 0.10	0.20
Total Recoverable Chromium	mg/kg dry wt	19	19	19	18	19
Total Recoverable Copper	mg/kg dry wt	9	9	9	9	9
Total Recoverable Lead	mg/kg dry wt	24	21	24	18.4	23
Total Recoverable Nickel	mg/kg dry wt	14	16	16	14	15
Total Recoverable Zinc	mg/kg dry wt	87	69	82	63	79
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.014	< 0.012	< 0.013	< 0.012	< 0.013
alpha-BHC	mg/kg dry wt	< 0.014	< 0.012	< 0.013	< 0.012	< 0.013
beta-BHC	mg/kg dry wt	< 0.014	< 0.012	< 0.013	< 0.012	< 0.013
delta-BHC	mg/kg dry wt	< 0.014	< 0.012	< 0.013	< 0.012	< 0.013
gamma-BHC (Lindane)	mg/kg dry wt	< 0.014	< 0.012	< 0.013	< 0.012	< 0.013
cis-Chlordane	mg/kg dry wt	< 0.014	< 0.012	< 0.013	< 0.012	< 0.013
trans-Chlordane	mg/kg dry wt	< 0.014	< 0.012	< 0.013	< 0.012	< 0.013
2,4'-DDD	mg/kg dry wt	< 0.014	< 0.012	< 0.013	< 0.012	< 0.013
4,4'-DDD	mg/kg dry wt	< 0.014	< 0.012	< 0.013	< 0.012	< 0.013
2,4'-DDE	mg/kg dry wt	< 0.014	< 0.012	< 0.013	< 0.012	< 0.013
4,4'-DDE	mg/kg dry wt	< 0.014	< 0.012	< 0.013	< 0.012	< 0.013
2,4'-DDT	mg/kg dry wt	< 0.014	< 0.012	< 0.013	< 0.012	< 0.013
4,4'-DDT	mg/kg dry wt	< 0.014	< 0.012	< 0.013	< 0.012	< 0.013
Total DDT Isomers	mg/kg dry wt	< 0.09	< 0.07	< 0.08	< 0.08	< 0.08
Dieldrin	mg/kg dry wt	< 0.014	< 0.012	< 0.013	< 0.012	< 0.013
Endosulfan I	mg/kg dry wt	< 0.014	< 0.012	< 0.013	< 0.012	< 0.013
Endosulfan II	mg/kg dry wt	< 0.014	< 0.012	< 0.013	< 0.012	< 0.013
Endosulfan sulphate	mg/kg dry wt	< 0.014	< 0.012	< 0.013	< 0.012	< 0.013
Endrin	mg/kg dry wt	< 0.014	< 0.012	< 0.013	< 0.012	< 0.013
Endrin aldehyde	mg/kg dry wt	< 0.014	< 0.012	< 0.013	< 0.012	< 0.013
Endrin ketone	mg/kg dry wt	< 0.014	< 0.012	< 0.013	< 0.012	< 0.013
Heptachlor	mg/kg dry wt	< 0.014	< 0.012	< 0.013	< 0.012	< 0.013
Heptachlor epoxide	mg/kg dry wt	< 0.014	< 0.012	< 0.013	< 0.012	< 0.013
Hexachlorobenzene	mg/kg dry wt	< 0.014	< 0.012	< 0.013	< 0.012	< 0.013
Methoxychlor	mg/kg dry wt	< 0.014	< 0.012	< 0.013	< 0.012	< 0.013

Sample Type: Soil						
Sample Name:		S57- Surface 28-Aug-2024 2:20 pm	S57- 0.5 28-Aug-2024 2:22 pm	S58- Surface 28-Aug-2024 2:25 pm	S59- 0.5 28-Aug-2024 2:27 pm	S60- Surface 28-Aug-2024 2:30 pm
Lab Number:		3659888.56	3659888.57	3659888.58	3659888.59	3659888.60
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Total of Reported PAHs in Soil	mg/kg dry wt	-	-	-	-	< 0.4
1-Methylnaphthalene	mg/kg dry wt	-	-	-	-	< 0.013
2-Methylnaphthalene	mg/kg dry wt	-	-	-	-	< 0.013
Acenaphthylene	mg/kg dry wt	-	-	-	-	< 0.013
Acenaphthene	mg/kg dry wt	-	-	-	-	< 0.013
Anthracene	mg/kg dry wt	-	-	-	-	< 0.013
Benzo[a]anthracene	mg/kg dry wt	-	-	-	-	< 0.013
Benzo[a]pyrene (BAP)	mg/kg dry wt	-	-	-	-	0.020
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	-	-	-	-	< 0.031
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	-	-	-	-	< 0.031
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	-	-	-	-	0.024
Benzo[e]pyrene	mg/kg dry wt	-	-	-	-	< 0.013
Benzo[g,h,i]perylene	mg/kg dry wt	-	-	-	-	0.016
Benzo[k]fluoranthene	mg/kg dry wt	-	-	-	-	< 0.013
Chrysene	mg/kg dry wt	-	-	-	-	0.014
Dibenzo[a,h]anthracene	mg/kg dry wt	-	-	-	-	< 0.013
Fluoranthene	mg/kg dry wt	-	-	-	-	0.041
Fluorene	mg/kg dry wt	-	-	-	-	< 0.013
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	-	-	-	-	0.015
Naphthalene	mg/kg dry wt	-	-	-	-	< 0.07
Perylene	mg/kg dry wt	-	-	-	-	< 0.013
Phenanthrene	mg/kg dry wt	-	-	-	-	0.023
Pyrene	mg/kg dry wt	-	-	-	-	0.037
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

Sample Name:		S61- 0.5 28-Aug-2024 2:32 pm	S62- Surface 28-Aug-2024 2:55 pm	S63- 0.5 28-Aug-2024 2:57 pm	S64- 1.0 28-Aug-2024 3:00 pm	S65- Surface 28-Aug-2024 3:05 pm
Lab Number:		3659888.61	3659888.62	3659888.63	3659888.64	3659888.65
Individual Tests						
Dry Matter	g/100g as rcvd	82	73	83	80	76
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	6	6	7	7	5
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	0.18	< 0.10	< 0.10	0.19
Total Recoverable Chromium	mg/kg dry wt	18	17	19	18	16
Total Recoverable Copper	mg/kg dry wt	7	9	10	10	9
Total Recoverable Lead	mg/kg dry wt	19.6	24	20	18.7	33
Total Recoverable Nickel	mg/kg dry wt	15	14	15	15	13
Total Recoverable Zinc	mg/kg dry wt	71	79	62	59	84
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013
alpha-BHC	mg/kg dry wt	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013
beta-BHC	mg/kg dry wt	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013
delta-BHC	mg/kg dry wt	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013
gamma-BHC (Lindane)	mg/kg dry wt	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013
cis-Chlordane	mg/kg dry wt	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013
trans-Chlordane	mg/kg dry wt	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013
2,4'-DDD	mg/kg dry wt	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013
4,4'-DDD	mg/kg dry wt	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013

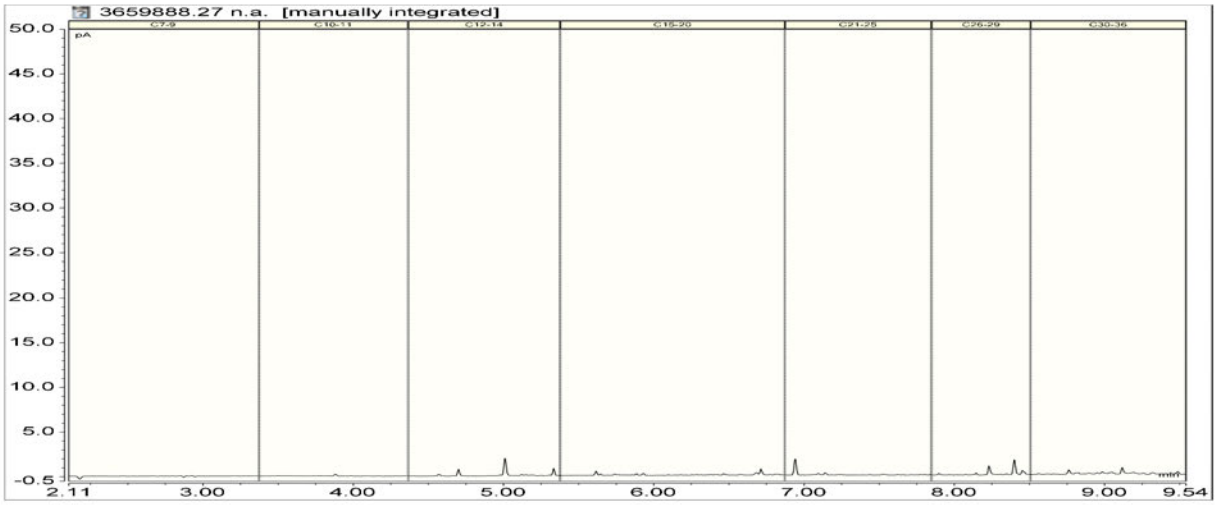
Sample Type: Soil						
Sample Name:		S61- 0.5 28-Aug-2024 2:32 pm	S62- Surface 28-Aug-2024 2:55 pm	S63- 0.5 28-Aug-2024 2:57 pm	S64- 1.0 28-Aug-2024 3:00 pm	S65- Surface 28-Aug-2024 3:05 pm
Lab Number:		3659888.61	3659888.62	3659888.63	3659888.64	3659888.65
Organochlorine Pesticides Screening in Soil						
2,4'-DDE	mg/kg dry wt	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013
4,4'-DDE	mg/kg dry wt	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013
2,4'-DDT	mg/kg dry wt	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013
4,4'-DDT	mg/kg dry wt	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013
Total DDT Isomers	mg/kg dry wt	< 0.08	< 0.09	< 0.08	< 0.08	< 0.08
Dieldrin	mg/kg dry wt	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013
Endosulfan I	mg/kg dry wt	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013
Endosulfan II	mg/kg dry wt	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013
Endosulfan sulphate	mg/kg dry wt	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013
Endrin	mg/kg dry wt	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013
Endrin aldehyde	mg/kg dry wt	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013
Endrin ketone	mg/kg dry wt	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013
Heptachlor	mg/kg dry wt	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013
Heptachlor epoxide	mg/kg dry wt	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013
Hexachlorobenzene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013
Methoxychlor	mg/kg dry wt	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Total of Reported PAHs in Soil	mg/kg dry wt	< 0.3	< 0.4	< 0.3	< 0.3	0.3
1-Methylnaphthalene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013
2-Methylnaphthalene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013
Acenaphthylene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013
Acenaphthene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013
Anthracene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013
Benzo[a]anthracene	mg/kg dry wt	< 0.013	0.017	< 0.013	< 0.013	0.017
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.013	0.026	< 0.013	< 0.013	0.028
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 0.030	0.035	< 0.030	< 0.030	0.042
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 0.029	0.034	< 0.029	< 0.030	0.042
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.013	0.033	< 0.013	< 0.013	0.035
Benzo[e]pyrene	mg/kg dry wt	< 0.013	0.016	< 0.013	< 0.013	0.018
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.013	0.020	< 0.013	< 0.013	0.023
Benzo[k]fluoranthene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013
Chrysene	mg/kg dry wt	< 0.013	0.021	< 0.013	< 0.013	0.021
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013
Fluoranthene	mg/kg dry wt	< 0.013	0.049	< 0.013	< 0.013	0.056
Fluorene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.013	0.019	< 0.013	< 0.013	0.022
Naphthalene	mg/kg dry wt	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07
Perylene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013
Phenanthrene	mg/kg dry wt	< 0.013	0.020	< 0.013	< 0.013	0.025
Pyrene	mg/kg dry wt	< 0.013	0.048	< 0.013	< 0.013	0.049
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:		S66- 0.5 28-Aug-2024 3:07 pm	S67- 1.0 28-Aug-2024 3:10 pm
Lab Number:		3659888.66	3659888.67
Individual Tests			
Dry Matter	g/100g as rcvd	81	86

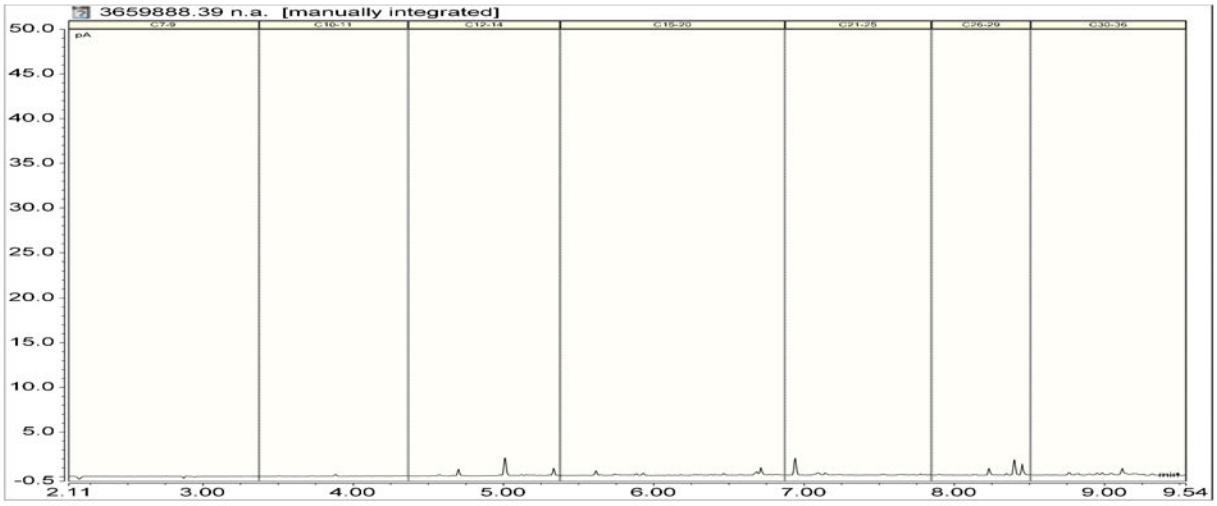
Sample Type: Soil			
Sample Name:		S66- 0.5 28-Aug-2024 3:07 pm	S67- 1.0 28-Aug-2024 3:10 pm
Lab Number:		3659888.66	3659888.67
Heavy Metals, Screen Level			
Total Recoverable Arsenic	mg/kg dry wt	7	3
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	< 0.10
Total Recoverable Chromium	mg/kg dry wt	20	14
Total Recoverable Copper	mg/kg dry wt	9	5
Total Recoverable Lead	mg/kg dry wt	21	13.3
Total Recoverable Nickel	mg/kg dry wt	16	11
Total Recoverable Zinc	mg/kg dry wt	69	45
Organochlorine Pesticides Screening in Soil			
Aldrin	mg/kg dry wt	< 0.013	< 0.012
alpha-BHC	mg/kg dry wt	< 0.013	< 0.012
beta-BHC	mg/kg dry wt	< 0.013	< 0.012
delta-BHC	mg/kg dry wt	< 0.013	< 0.012
gamma-BHC (Lindane)	mg/kg dry wt	< 0.013	< 0.012
cis-Chlordane	mg/kg dry wt	< 0.013	< 0.012
trans-Chlordane	mg/kg dry wt	< 0.013	< 0.012
2,4'-DDD	mg/kg dry wt	< 0.013	< 0.012
4,4'-DDD	mg/kg dry wt	< 0.013	< 0.012
2,4'-DDE	mg/kg dry wt	< 0.013	< 0.012
4,4'-DDE	mg/kg dry wt	< 0.013	< 0.012
2,4'-DDT	mg/kg dry wt	< 0.013	< 0.012
4,4'-DDT	mg/kg dry wt	< 0.013	< 0.012
Total DDT Isomers	mg/kg dry wt	< 0.08	< 0.07
Dieldrin	mg/kg dry wt	< 0.013	< 0.012
Endosulfan I	mg/kg dry wt	< 0.013	< 0.012
Endosulfan II	mg/kg dry wt	< 0.013	< 0.012
Endosulfan sulphate	mg/kg dry wt	< 0.013	< 0.012
Endrin	mg/kg dry wt	< 0.013	< 0.012
Endrin aldehyde	mg/kg dry wt	< 0.013	< 0.012
Endrin ketone	mg/kg dry wt	< 0.013	< 0.012
Heptachlor	mg/kg dry wt	< 0.013	< 0.012
Heptachlor epoxide	mg/kg dry wt	< 0.013	< 0.012
Hexachlorobenzene	mg/kg dry wt	< 0.013	< 0.012
Methoxychlor	mg/kg dry wt	< 0.013	< 0.012
Polycyclic Aromatic Hydrocarbons Screening in Soil*			
Total of Reported PAHs in Soil	mg/kg dry wt	< 0.3	< 0.3
1-Methylnaphthalene	mg/kg dry wt	< 0.013	< 0.012
2-Methylnaphthalene	mg/kg dry wt	< 0.013	< 0.012
Acenaphthylene	mg/kg dry wt	< 0.013	< 0.012
Acenaphthene	mg/kg dry wt	< 0.013	< 0.012
Anthracene	mg/kg dry wt	< 0.013	< 0.012
Benzo[a]anthracene	mg/kg dry wt	< 0.013	< 0.012
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.013	< 0.012
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 0.030	< 0.028
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 0.030	< 0.028
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.013	< 0.012
Benzo[e]pyrene	mg/kg dry wt	< 0.013	< 0.012
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.013	< 0.012
Benzo[k]fluoranthene	mg/kg dry wt	< 0.013	< 0.012
Chrysene	mg/kg dry wt	< 0.013	< 0.012
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.013	< 0.012
Fluoranthene	mg/kg dry wt	< 0.013	< 0.012
Fluorene	mg/kg dry wt	< 0.013	< 0.012
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.013	< 0.012

Sample Type: Soil			
	Sample Name:	S66- 0.5 28-Aug-2024 3:07 pm	S67- 1.0 28-Aug-2024 3:10 pm
	Lab Number:	3659888.66	3659888.67
Polycyclic Aromatic Hydrocarbons Screening in Soil*			
Naphthalene	mg/kg dry wt	< 0.07	< 0.06
Perylene	mg/kg dry wt	< 0.013	< 0.012
Phenanthrene	mg/kg dry wt	< 0.013	< 0.012
Pyrene	mg/kg dry wt	< 0.013	< 0.012
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

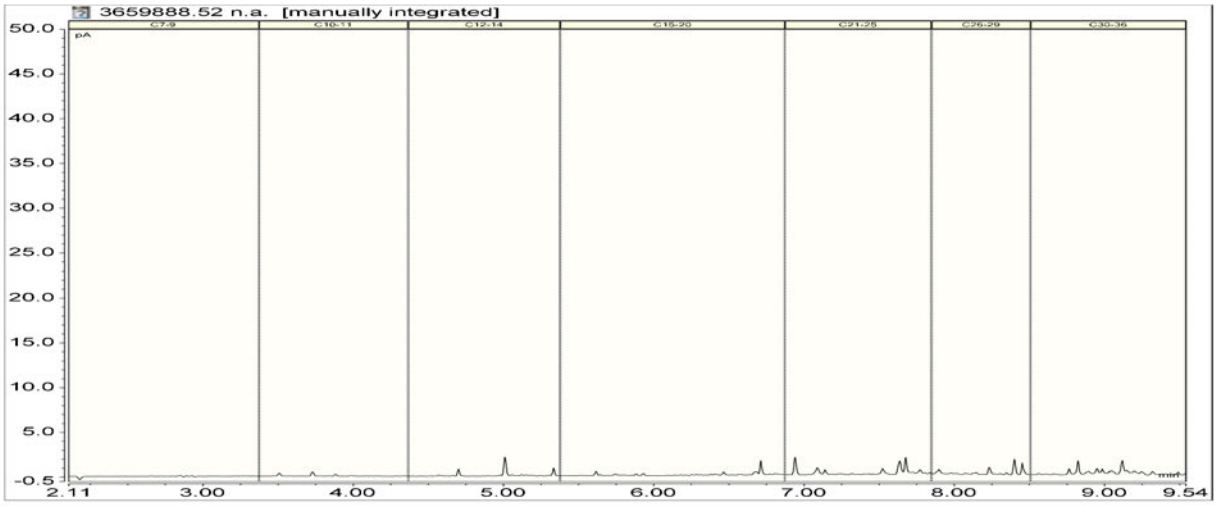
3659888.27
S27- Surface 28-Aug-2024 11:20 am
Client Chromatogram for TPH by FID



3659888.39
S39- Surface 28-Aug-2024 1:30 pm
Client Chromatogram for TPH by FID



3659888.52
S52- Surface 28-Aug-2024 2:10 pm
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).	-	1-67
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	1-7, 23-24, 27-29, 39-40, 50-53, 60-67
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	1-67
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	1-7, 23-24, 27-29, 39-40, 50-53, 60-67
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	1-7, 23-24, 27-29, 39-40, 50-53, 60-67
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	1-7, 23-24, 27-29, 39-40, 50-53, 60-67
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	1-67
Organochlorine Pesticides Screening in Soil	Sonication extraction, GC-ECD analysis. Tested on as received sample. In-house based on US EPA 8081.	0.010 - 0.06 mg/kg dry wt	1-67
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.	-	27, 39, 52
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	20 mg/kg dry wt	1-7, 23-24, 27-29, 39-40, 50-53, 60-67
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	1-7, 23-24, 27-29, 39-40, 50-53, 60-67
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	1-7, 23-24, 27-29, 39-40, 50-53, 60-67
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	1-7, 23-24, 27-29, 39-40, 50-53, 60-67

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 30-Aug-2024 and 05-Sep-2024. 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

Appendix E: Photographs

Photos – 300 Springs Road



1.0 – 300 Springs Rd- looking toward Motorway



2.0 – Entrance to 318/320 Springs Rd looking Nor West



3.0 – Paddock to the Left of 318/320 Springs Rd



4.0 – Paddock to the right of 318/320 Springs Rd



5.0 – Historic- Farmer Produce Shop – 318 Springs Rd



6.0 – Coolstore ex Shop



7.0 – ex Shop



8.0 – Dwelling – 318 Springs Rd



9.0 – Farm Shed – 318 Springs Rd



10.0 – Farm Shed



11.0 – 300 Springs Rd, looking from midpoint to Motorway



12.0 – 300 Springs Road



13.0 – Test Pit



14.0 – Test Pit



15.0 – Test Pit



16.0 – Test Pit



17.0 – Test Pit



18.0 – Test Pit



19.0 – Test Pit



20.0 – Test Pit



21.0 – Test Pit



22.0 – Test Pit



23.0 – Test Pit



24.0 – Test Pit



25.0 – Test Pit



26.0 – Test Pit



27.0 – Test Pit



28.0 – Test Pit



29.0 – Test Pit

Appendix B: Historical Aerials

Historical Photos



1940 - 1945



1955 - 1959



1980 - 1984



1990 - 1994



1995 - 1999



2000 - 2005



2010 - present

Appendix C: Hill Laboratories Ltd - Analysis Results

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

0508 HILL LAB (44 555 22)
+64 7 858 2000
mail@hill-labs.co.nz
www.hill-labs.co.nz

Certificate of Analysis

Client:	KPES Limited	**Lab No:**	4024782	SPv1
Contact:	Klaus Prusas	**Date Received:**	05-Nov-2025	
	C/- KPES Limited	**Date Reported:**	10-Nov-2025	
	62 Clausen Avenue	**Quote No:**	136469	
	Leeston 7632	**Order No:**		
		Client Reference:		
		Submitted By:	Klaus Prusas	

Sample Type: Soil

Sample Name:		S1 - Surface 05-Nov-2025 8:30 am	S1/1 - 0.5 05-Nov-2025 8:45 am	S2 - Surface 05-Nov-2025 9:00 am	S2/1 - 0.5 05-Nov-2025 9:05 am	S3 - Surface 05-Nov-2025 9:45 am
Lab Number:		4024782.1	4024782.2	4024782.3	4024782.4	4024782.5
Individual Tests						
Dry Matter	g/100g as rcvd	82	87	86	84	82
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	5	3	4	4	4
Total Recoverable Cadmium	mg/kg dry wt	0.14	< 0.10	0.12	< 0.10	0.14
Total Recoverable Chromium	mg/kg dry wt	17	13	14	13	16
Total Recoverable Copper	mg/kg dry wt	8	6	6	5	7
Total Recoverable Lead	mg/kg dry wt	21	12.5	15.4	10.7	18.7
Total Recoverable Nickel	mg/kg dry wt	12	10	11	11	12
Total Recoverable Zinc	mg/kg dry wt	65	41	56	38	66
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
alpha-BHC	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
beta-BHC	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
delta-BHC	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
gamma-BHC (Lindane)	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
cis-Chlordane	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
trans-Chlordane	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
2,4'-DDD	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
4,4'-DDD	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
2,4'-DDE	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
4,4'-DDE	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
2,4'-DDT	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
4,4'-DDT	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Total DDT Isomers	mg/kg dry wt	< 0.08	< 0.07	< 0.07	< 0.07	< 0.08
Dieldrin	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Endosulfan I	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Endosulfan II	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Endosulfan sulphate	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Endrin	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Endrin aldehyde	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Endrin ketone	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Heptachlor	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Heptachlor epoxide	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Hexachlorobenzene	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Methoxychlor	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 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:		S3/1 - 0.5 05-Nov-2025 9:50 am	S4 - Surface 05-Nov-2025 10:25 am	S4/1 - 0.5 05-Nov-2025 10:30 am	S5 - Surface 05-Nov-2025 11:05 am	S5/1 - 0.5 05-Nov-2025 11:10 am
Lab Number:		4024782.6	4024782.7	4024782.8	4024782.9	4024782.10
Individual Tests						
Dry Matter	g/100g as rcvd	86	84	84	83	86
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	5	5	4	6	5
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	0.13	< 0.10	0.13	< 0.10
Total Recoverable Chromium	mg/kg dry wt	18	16	18	16	17
Total Recoverable Copper	mg/kg dry wt	6	6	5	7	6
Total Recoverable Lead	mg/kg dry wt	17.1	19.1	13.1	18.1	16.9
Total Recoverable Nickel	mg/kg dry wt	14	12	14	11	14
Total Recoverable Zinc	mg/kg dry wt	52	62	46	62	46
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
alpha-BHC	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
beta-BHC	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
delta-BHC	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
gamma-BHC (Lindane)	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
cis-Chlordane	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
trans-Chlordane	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
2,4'-DDD	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
4,4'-DDD	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
2,4'-DDE	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
4,4'-DDE	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
2,4'-DDT	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
4,4'-DDT	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Total DDT Isomers	mg/kg dry wt	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07
Dieldrin	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Endosulfan I	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Endosulfan II	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Endosulfan sulphate	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Endrin	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Endrin aldehyde	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Endrin ketone	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Heptachlor	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Heptachlor epoxide	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Hexachlorobenzene	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Methoxychlor	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012

Sample Name:		S6 - Surface 05-Nov-2025 11:25 am	S6/1 - 0.5 05-Nov-2025 11:30 am	S6/2 - 1.0 05-Nov-2025 11:35 am	S7 - Surface 05-Nov-2025 12:15 pm	S7/1 - 0.5 05-Nov-2025 12:20 pm
Lab Number:		4024782.11	4024782.12	4024782.13	4024782.14	4024782.15
Individual Tests						
Dry Matter	g/100g as rcvd	81	84	83	83	84
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	6	3	5	8	3
Total Recoverable Cadmium	mg/kg dry wt	0.11	< 0.10	< 0.10	0.12	< 0.10
Total Recoverable Chromium	mg/kg dry wt	15	14	16	16	14
Total Recoverable Copper	mg/kg dry wt	7	5	10	8	5
Total Recoverable Lead	mg/kg dry wt	18.1	12.2	16.9	19.6	13.9
Total Recoverable Nickel	mg/kg dry wt	12	11	12	13	11
Total Recoverable Zinc	mg/kg dry wt	62	38	49	73	40
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
alpha-BHC	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
beta-BHC	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
delta-BHC	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012

Sample Type: Soil						
Sample Name:		S6 - Surface 05-Nov-2025 11:25 am	S6/1 - 0.5 05-Nov-2025 11:30 am	S6/2 - 1.0 05-Nov-2025 11:35 am	S7 - Surface 05-Nov-2025 12:15 pm	S7/1 - 0.5 05-Nov-2025 12:20 pm
Lab Number:		4024782.11	4024782.12	4024782.13	4024782.14	4024782.15
Organochlorine Pesticides Screening in Soil						
gamma-BHC (Lindane)	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
cis-Chlordane	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
trans-Chlordane	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
2,4'-DDD	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
4,4'-DDD	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
2,4'-DDE	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
4,4'-DDE	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
2,4'-DDT	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
4,4'-DDT	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Total DDT Isomers	mg/kg dry wt	< 0.08	< 0.07	< 0.08	< 0.07	< 0.07
Dieldrin	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Endosulfan I	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Endosulfan II	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Endosulfan sulphate	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Endrin	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Endrin aldehyde	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Endrin ketone	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Heptachlor	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Heptachlor epoxide	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Hexachlorobenzene	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Methoxychlor	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012

Sample Name:		S8 - Surface 05-Nov-2025 12:40 pm	S8/1 - 0.5 05-Nov-2025 12:45 pm	S9 - Surface 05-Nov-2025 2:15 pm	S9/1 - 0.5 05-Nov-2025 2:20 pm	S9/2 - 1.0 05-Nov-2025 2:25 pm
Lab Number:		4024782.16	4024782.17	4024782.18	4024782.19	4024782.20
Individual Tests						
Dry Matter	g/100g as rcvd	81	84	83	78	93
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	5	4	5	4	3
Total Recoverable Cadmium	mg/kg dry wt	0.11	< 0.10	0.12	< 0.10	< 0.10
Total Recoverable Chromium	mg/kg dry wt	18	14	17	13	10
Total Recoverable Copper	mg/kg dry wt	8	5	8	5	4
Total Recoverable Lead	mg/kg dry wt	20	11.8	19.5	10.9	9.2
Total Recoverable Nickel	mg/kg dry wt	14	12	13	11	9
Total Recoverable Zinc	mg/kg dry wt	70	43	69	39	30
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.013	< 0.011
alpha-BHC	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.013	< 0.011
beta-BHC	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.013	< 0.011
delta-BHC	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.013	< 0.011
gamma-BHC (Lindane)	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.013	< 0.011
cis-Chlordane	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.013	< 0.011
trans-Chlordane	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.013	< 0.011
2,4'-DDD	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.013	< 0.011
4,4'-DDD	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.013	< 0.011
2,4'-DDE	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.013	< 0.011
4,4'-DDE	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.013	< 0.011
2,4'-DDT	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.013	< 0.011
4,4'-DDT	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.013	< 0.011
Total DDT Isomers	mg/kg dry wt	< 0.08	< 0.07	< 0.08	< 0.08	< 0.07
Dieldrin	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.013	< 0.011
Endosulfan I	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.013	< 0.011
Endosulfan II	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.013	< 0.011
Endosulfan sulphate	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.013	< 0.011

Sample Type: Soil						
Sample Name:		S8 - Surface 05-Nov-2025 12:40 pm	S8/1 - 0.5 05-Nov-2025 12:45 pm	S9 - Surface 05-Nov-2025 2:15 pm	S9/1 - 0.5 05-Nov-2025 2:20 pm	S9/2 - 1.0 05-Nov-2025 2:25 pm
Lab Number:		4024782.16	4024782.17	4024782.18	4024782.19	4024782.20
Organochlorine Pesticides Screening in Soil						
Endrin	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.013	< 0.011
Endrin aldehyde	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.013	< 0.011
Endrin ketone	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.013	< 0.011
Heptachlor	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.013	< 0.011
Heptachlor epoxide	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.013	< 0.011
Hexachlorobenzene	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.013	< 0.011
Methoxychlor	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.013	< 0.011

Sample Name:		S10 - Surface 05-Nov-2025 3:00 pm	S10/1 - 0.5 05-Nov-2025 3:05 pm
Lab Number:		4024782.21	4024782.22
Individual Tests			
Dry Matter	g/100g as rcvd	85	86
Heavy Metals, Screen Level			
Total Recoverable Arsenic	mg/kg dry wt	6	5
Total Recoverable Cadmium	mg/kg dry wt	0.13	< 0.10
Total Recoverable Chromium	mg/kg dry wt	17	14
Total Recoverable Copper	mg/kg dry wt	8	7
Total Recoverable Lead	mg/kg dry wt	19.7	13.4
Total Recoverable Nickel	mg/kg dry wt	13	12
Total Recoverable Zinc	mg/kg dry wt	64	43
Organochlorine Pesticides Screening in Soil			
Aldrin	mg/kg dry wt	< 0.012	< 0.012
alpha-BHC	mg/kg dry wt	< 0.012	< 0.012
beta-BHC	mg/kg dry wt	< 0.012	< 0.012
delta-BHC	mg/kg dry wt	< 0.012	< 0.012
gamma-BHC (Lindane)	mg/kg dry wt	< 0.012	< 0.012
cis-Chlordane	mg/kg dry wt	< 0.012	< 0.012
trans-Chlordane	mg/kg dry wt	< 0.012	< 0.012
2,4'-DDD	mg/kg dry wt	< 0.012	< 0.012
4,4'-DDD	mg/kg dry wt	< 0.012	< 0.012
2,4'-DDE	mg/kg dry wt	< 0.012	< 0.012
4,4'-DDE	mg/kg dry wt	< 0.012	< 0.012
2,4'-DDT	mg/kg dry wt	< 0.012	< 0.012
4,4'-DDT	mg/kg dry wt	< 0.012	< 0.012
Total DDT Isomers	mg/kg dry wt	< 0.07	< 0.07
Dieldrin	mg/kg dry wt	< 0.012	< 0.012
Endosulfan I	mg/kg dry wt	< 0.012	< 0.012
Endosulfan II	mg/kg dry wt	< 0.012	< 0.012
Endosulfan sulphate	mg/kg dry wt	< 0.012	< 0.012
Endrin	mg/kg dry wt	< 0.012	< 0.012
Endrin aldehyde	mg/kg dry wt	< 0.012	< 0.012
Endrin ketone	mg/kg dry wt	< 0.012	< 0.012
Heptachlor	mg/kg dry wt	< 0.012	< 0.012
Heptachlor epoxide	mg/kg dry wt	< 0.012	< 0.012
Hexachlorobenzene	mg/kg dry wt	< 0.012	< 0.012
Methoxychlor	mg/kg dry wt	< 0.012	< 0.012

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**

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).	-	1-22
Heavy Metals, 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	1-22
Organochlorine Pesticides Screening in Soil	Sonication extraction, GC-ECD analysis. Tested on as received sample. In-house based on US EPA 8081.	0.010 - 0.06 mg/kg dry wt	1-22
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	1-22

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 06-Nov-2025 and 10-Nov-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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Certificate of Analysis

Client:	KPES Limited	**Lab No:**	4026875	A2Pv1
Contact:	Klaus Prusas	**Date Received:**	07-Nov-2025	
	C/- KPES Limited	**Date Reported:**	11-Nov-2025	
	62 Clausen Avenue	**Quote No:**	136471	
	Leeston 7632	**Order No:**		
		Client Reference:	SpringsE 3	
		Submitted By:	Klaus Prusas	

Sample Type: Soil

Sample Name:		SP1 Surface 07-Nov-2025 8:00 am	SP1/1 0.5m 07-Nov-2025 8:15 am	SP2 Surface 07-Nov-2025 8:20 am	SP2/1 0.5m 07-Nov-2025 8:25 am	SP2/2 1.0m 07-Nov-2025 8:30 am
Lab Number:		4026875.1	4026875.2	4026875.3	4026875.4	4026875.5
Asbestos Presence / Absence		Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.
Description of Asbestos Form		-	-	-	-	-
Asbestos in ACM as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Asbestos as Fibrous Asbestos as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Asbestos as Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
As Received Weight	g	621.4	693.7	813.2	695.6	659.1
Dry Weight	g	563.4	634.1	782.3	609.9	551.3
Moisture*	%	9	9	4	12	16
Sample Fraction >10mm	g dry wt	6.2	97.5	175.2	< 0.1	< 0.1
Sample Fraction <10mm to >2mm	g dry wt	47.5	196.2	379.3	14.1	22.7
Sample Fraction <2mm	g dry wt	508.2	339.8	226.6	594.3	526.9
<2mm Subsample Weight	g dry wt	57.6	57.6	57.8	53.3	57.8
Weight of Asbestos in ACM (Non-Friable)	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Weight of Asbestos as Fibrous Asbestos (Friable)	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Weight of Asbestos as Asbestos Fines (Friable)*	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001

Sample Name:		SP3 Surface 07-Nov-2025 8:40 am	SP3/1 0.5m 07-Nov-2025 8:45 am	SP3/2 1.0m 07-Nov-2025 8:50 am	SP4 Surface 07-Nov-2025 9:00 am	SP4/1 0.5m 07-Nov-2025 9:05 am
Lab Number:		4026875.6	4026875.7	4026875.8	4026875.9	4026875.10
Asbestos Presence / Absence		Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.
Description of Asbestos Form		-	-	-	-	-
Asbestos in ACM as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Asbestos as Fibrous Asbestos as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Asbestos as Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
As Received Weight	g	754.6	810.0	710.2	1,017.5	687.8
Dry Weight	g	686.8	752.1	597.6	1,002.7	612.6

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:		SP3 Surface 07-Nov-2025 8:40 am	SP3/1 0.5m 07-Nov-2025 8:45 am	SP3/2 1.0m 07-Nov-2025 8:50 am	SP4 Surface 07-Nov-2025 9:00 am	SP4/1 0.5m 07-Nov-2025 9:05 am
Lab Number:		4026875.6	4026875.7	4026875.8	4026875.9	4026875.10
Moisture*	%	9	7	16	1	11
Sample Fraction >10mm	g dry wt	166.3	< 0.1	< 0.1	377.0	115.3
Sample Fraction <10mm to >2mm	g dry wt	141.5	1.3	14.0	364.8	65.6
Sample Fraction <2mm	g dry wt	377.9	750.5	582.6	260.1	430.7
<2mm Subsample Weight	g dry wt	55.4	53.9	55.6	56.6	58.4
Weight of Asbestos in ACM (Non-Friable)	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Weight of Asbestos as Fibrous Asbestos (Friable)	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Weight of Asbestos as Asbestos Fines (Friable)*	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001

Glossary of Terms

• Loose fibres (Minor) - One or two fibres/fibre bundles identified during analysis by stereo microscope/PLM.
• Loose fibres (Major) - Three or more fibres/fibre bundles identified during analysis by stereo microscope/PLM.
• ACM Debris (Minor) - One or two small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
• ACM Debris (Major) - Large (>2mm) piece, or more than three small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
• Unknown Mineral Fibres - Mineral fibres of unknown type detected by polarised light microscopy including dispersion staining. The fibres detected may or may not be asbestos fibres. To confirm the identities, another independent analytical technique may be required.
• Trace - Trace levels of asbestos, as defined by AS4964-2004.
For further details, please contact the Asbestos Team.

Please refer to the BRANZ New Zealand Guidelines for Assessing and Managing Asbestos in Soil.
https://www.branz.co.nz/asbestos

The following assumptions have been made:

1. Asbestos Fines in the <2mm fraction, after homogenisation, is evenly distributed throughout the fraction
2. The weight of asbestos in the sample is unaffected by the ashing process.

Results are representative of the sample provided to Hill Laboratories only.

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**
New Zealand Guidelines Semi Quantitative Asbestos in Soil			
As Received Weight	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; Unit 1, 17 Print Place, Middleton, Christchurch.	0.1 g	1-10
Dry Weight	Sample dried at 100 to 105°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; Unit 1, 17 Print Place, Middleton, Christchurch.	0.1 g	1-10
Moisture*	Sample dried at 100 to 105°C. Calculation = (As received weight - Dry weight) / as received weight x 100.	1 %	1-10
Sample Fraction >10mm	Sample dried at 100 to 105°C, 10mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; Unit 1, 17 Print Place, Middleton, Christchurch.	0.1 g dry wt	1-10
Sample Fraction <10mm to >2mm	Sample dried at 100 to 105°C, 10mm and 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; Unit 1, 17 Print Place, Middleton, Christchurch.	0.1 g dry wt	1-10
Sample Fraction <2mm	Sample dried at 100 to 105°C, 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; Unit 1, 17 Print Place, Middleton, Christchurch.	0.1 g dry wt	1-10
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; Unit 1, 17 Print Place, Middleton, Christchurch. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0.01%	1-10
Description of Asbestos Form	Description of asbestos form and/or shape if present.	-	1-10

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Weight of Asbestos in ACM (Non-Friable)	Measurement on analytical balance, from the >10mm Fraction. Weight of asbestos based on assessment of ACM form. Analysed at Hill Laboratories - Asbestos; Unit 1, 17 Print Place, Middleton, Christchurch. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-10
Asbestos in ACM as % of Total Sample*	Calculated from weight of asbestos in ACM and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-10
Weight of Asbestos as Fibrous Asbestos (Friable)	Measurement on analytical balance, from the >10mm Fraction. Analysed at Hill Laboratories - Asbestos; Unit 1, 17 Print Place, Middleton, Christchurch. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-10
Asbestos as Fibrous Asbestos as % of Total Sample*	Calculated from weight of fibrous asbestos and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-10
Weight of Asbestos as Asbestos Fines (Friable)*	Measurement on analytical balance, from the <10mm Fractions. Analysed at Hill Laboratories - Asbestos; Unit 1, 17 Print Place, Middleton, Christchurch. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-10
Asbestos as Asbestos Fines as % of Total Sample*	Calculated from weight of asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-10
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	Calculated from weight of fibrous asbestos plus asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-10

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed on 11-Nov-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.



John Keneth Paglingayen BApSc
Laboratory Technician - Asbestos

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Certificate of Analysis

Client:	KPES Limited	**Lab No:**	4025947	SPv1
Contact:	Klaus Prusas	**Date Received:**	06-Nov-2025	
	C/- KPES Limited	**Date Reported:**	14-Nov-2025	
	62 Clausen Avenue	**Quote No:**	136469	
	Leeston 7632	**Order No:**		
		Client Reference:		
		Submitted By:	Klaus Prusas	

Sample Type: Soil

		Sample Name:	S11_Surface 06-Nov-2025 8:20 am	S11/1_0.5 06-Nov-2025 8:25 am	S12_Surface 06-Nov-2025 8:40 am	S12/1_0.5 06-Nov-2025 8:45 am	S12/2_1.0 06-Nov-2025 8:55 am
		Lab Number:	4025947.1	4025947.2	4025947.3	4025947.4	4025947.5
Individual Tests							
Dry Matter	g/100g as rcvd		80	88	78	86	84
Heavy Metals, Screen Level							
Total Recoverable Arsenic	mg/kg dry wt		6	3	6	3	3
Total Recoverable Cadmium	mg/kg dry wt		0.14	< 0.10	0.11	< 0.10	< 0.10
Total Recoverable Chromium	mg/kg dry wt		16	13	17	16	13
Total Recoverable Copper	mg/kg dry wt		7	4	7	5	6
Total Recoverable Lead	mg/kg dry wt		19.3	10.7	18.4	11.5	11.9
Total Recoverable Nickel	mg/kg dry wt		13	11	12	12	11
Total Recoverable Zinc	mg/kg dry wt		65	38	68	43	39
Organochlorine Pesticides Screening in Soil							
Aldrin	mg/kg dry wt		< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
alpha-BHC	mg/kg dry wt		< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
beta-BHC	mg/kg dry wt		< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
delta-BHC	mg/kg dry wt		< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
gamma-BHC (Lindane)	mg/kg dry wt		< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
cis-Chlordane	mg/kg dry wt		< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
trans-Chlordane	mg/kg dry wt		< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
2,4'-DDD	mg/kg dry wt		< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
4,4'-DDD	mg/kg dry wt		< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
2,4'-DDE	mg/kg dry wt		< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
4,4'-DDE	mg/kg dry wt		< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
2,4'-DDT	mg/kg dry wt		< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
4,4'-DDT	mg/kg dry wt		< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
Total DDT Isomers	mg/kg dry wt		< 0.08	< 0.07	< 0.08	< 0.07	< 0.07
Dieldrin	mg/kg dry wt		< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
Endosulfan I	mg/kg dry wt		< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
Endosulfan II	mg/kg dry wt		< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
Endosulfan sulphate	mg/kg dry wt		< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
Endrin	mg/kg dry wt		< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
Endrin aldehyde	mg/kg dry wt		< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
Endrin ketone	mg/kg dry wt		< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
Heptachlor	mg/kg dry wt		< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
Heptachlor epoxide	mg/kg dry wt		< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
Hexachlorobenzene	mg/kg dry wt		< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
Methoxychlor	mg/kg dry wt		< 0.013	< 0.012	< 0.013	< 0.012	< 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:		S13_Surface 06-Nov-2025 9:30 am	S13/1_0.5 06-Nov-2025 9:35 am	S14_Surface 06-Nov-2025 10:00 am	S14/1_0.5 06-Nov-2025 10:05 am	S14/2_1.0 06-Nov-2025 10:10 am
Lab Number:		4025947.6	4025947.7	4025947.8	4025947.9	4025947.10
Individual Tests						
Dry Matter	g/100g as rcvd	78	84	80	87	86
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	6	4	6	4	3
Total Recoverable Cadmium	mg/kg dry wt	0.11	< 0.10	0.12	< 0.10	< 0.10
Total Recoverable Chromium	mg/kg dry wt	16	14	15	14	12
Total Recoverable Copper	mg/kg dry wt	7	7	7	6	6
Total Recoverable Lead	mg/kg dry wt	17.6	13.8	16.9	11.8	9.9
Total Recoverable Nickel	mg/kg dry wt	12	12	12	11	10
Total Recoverable Zinc	mg/kg dry wt	59	44	60	41	35
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
alpha-BHC	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
beta-BHC	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
delta-BHC	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
gamma-BHC (Lindane)	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
cis-Chlordane	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
trans-Chlordane	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
2,4'-DDD	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
4,4'-DDD	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
2,4'-DDE	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
4,4'-DDE	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
2,4'-DDT	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
4,4'-DDT	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
Total DDT Isomers	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.07	< 0.07
Dieldrin	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
Endosulfan I	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
Endosulfan II	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
Endosulfan sulphate	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
Endrin	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
Endrin aldehyde	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
Endrin ketone	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
Heptachlor	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
Heptachlor epoxide	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
Hexachlorobenzene	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
Methoxychlor	mg/kg dry wt	< 0.013	< 0.012	< 0.013	< 0.012	< 0.012

Sample Name:		S15_Surface 06-Nov-2025 10:55 am	S15/1_0.5 06-Nov-2025 11:00 am	S16_Surface 06-Nov-2025 11:45 am	S16/1_0.5 06-Nov-2025 11:50 am	S17_Surface 06-Nov-2025 12:50 pm
Lab Number:		4025947.11	4025947.12	4025947.13	4025947.14	4025947.15
Individual Tests						
Dry Matter	g/100g as rcvd	82	87	86	87	86
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	4	3	5	3	5
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Chromium	mg/kg dry wt	16	13	15	14	16
Total Recoverable Copper	mg/kg dry wt	7	5	6	5	7
Total Recoverable Lead	mg/kg dry wt	16.6	10.3	15.2	12.1	16.7
Total Recoverable Nickel	mg/kg dry wt	12	10	11	11	12
Total Recoverable Zinc	mg/kg dry wt	61	36	55	38	60
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
alpha-BHC	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
beta-BHC	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
delta-BHC	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012

Sample Type: Soil						
Sample Name:		S15_Surface 06-Nov-2025 10:55 am	S15/1_0.5 06-Nov-2025 11:00 am	S16_Surface 06-Nov-2025 11:45 am	S16/1_0.5 06-Nov-2025 11:50 am	S17_Surface 06-Nov-2025 12:50 pm
Lab Number:		4025947.11	4025947.12	4025947.13	4025947.14	4025947.15
Organochlorine Pesticides Screening in Soil						
gamma-BHC (Lindane)	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
cis-Chlordane	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
trans-Chlordane	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
2,4'-DDD	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
4,4'-DDD	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
2,4'-DDE	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
4,4'-DDE	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
2,4'-DDT	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
4,4'-DDT	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Total DDT Isomers	mg/kg dry wt	< 0.08	< 0.07	< 0.07	< 0.07	< 0.07
Dieldrin	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Endosulfan I	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Endosulfan II	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Endosulfan sulphate	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Endrin	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Endrin aldehyde	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Endrin ketone	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Heptachlor	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Heptachlor epoxide	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Hexachlorobenzene	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Methoxychlor	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012

Sample Name:		S17/1_0.5 06-Nov-2025 12:55 pm	S18_Surface 06-Nov-2025 1:40 pm	S18/1_0.5 06-Nov-2025 1:45 pm	S19_Surface 06-Nov-2025 2:05 pm	S19/1_0.5 06-Nov-2025 2:10 pm
Lab Number:		4025947.16	4025947.17	4025947.18	4025947.19	4025947.20
Individual Tests						
Dry Matter	g/100g as rcvd	82	84	85	84	85
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	5	6	4	5	4
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	0.13	< 0.10	0.11	< 0.10
Total Recoverable Chromium	mg/kg dry wt	15	16	14	16	15
Total Recoverable Copper	mg/kg dry wt	6	7	5	7	5
Total Recoverable Lead	mg/kg dry wt	15.3	18.0	11.8	17.9	12.8
Total Recoverable Nickel	mg/kg dry wt	12	11	12	12	12
Total Recoverable Zinc	mg/kg dry wt	47	63	46	61	49
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.013	< 0.012	< 0.012	< 0.012	< 0.012
alpha-BHC	mg/kg dry wt	< 0.013	< 0.012	< 0.012	< 0.012	< 0.012
beta-BHC	mg/kg dry wt	< 0.013	< 0.012	< 0.012	< 0.012	< 0.012
delta-BHC	mg/kg dry wt	< 0.013	< 0.012	< 0.012	< 0.012	< 0.012
gamma-BHC (Lindane)	mg/kg dry wt	< 0.013	< 0.012	< 0.012	< 0.012	< 0.012
cis-Chlordane	mg/kg dry wt	< 0.013	< 0.012	< 0.012	< 0.012	< 0.012
trans-Chlordane	mg/kg dry wt	< 0.013	< 0.012	< 0.012	< 0.012	< 0.012
2,4'-DDD	mg/kg dry wt	< 0.013	< 0.012	< 0.012	< 0.012	< 0.012
4,4'-DDD	mg/kg dry wt	< 0.013	< 0.012	< 0.012	< 0.012	< 0.012
2,4'-DDE	mg/kg dry wt	< 0.013	< 0.012	< 0.012	< 0.012	< 0.012
4,4'-DDE	mg/kg dry wt	< 0.013	< 0.012	< 0.012	0.013	< 0.012
2,4'-DDT	mg/kg dry wt	< 0.013	< 0.012	< 0.012	< 0.012	< 0.012
4,4'-DDT	mg/kg dry wt	< 0.013	< 0.012	< 0.012	< 0.012	< 0.012
Total DDT Isomers	mg/kg dry wt	< 0.08	< 0.07	< 0.07	< 0.07	< 0.08
Dieldrin	mg/kg dry wt	< 0.013	< 0.012	< 0.012	< 0.012	< 0.012
Endosulfan I	mg/kg dry wt	< 0.013	< 0.012	< 0.012	< 0.012	< 0.012
Endosulfan II	mg/kg dry wt	< 0.013	< 0.012	< 0.012	< 0.012	< 0.012
Endosulfan sulphate	mg/kg dry wt	< 0.013	< 0.012	< 0.012	< 0.012	< 0.012

Sample Type: Soil						
Sample Name:		S17/1_0.5 06-Nov-2025 12:55 pm	S18_Surface 06-Nov-2025 1:40 pm	S18/1_0.5 06-Nov-2025 1:45 pm	S19_Surface 06-Nov-2025 2:05 pm	S19/1_0.5 06-Nov-2025 2:10 pm
Lab Number:		4025947.16	4025947.17	4025947.18	4025947.19	4025947.20
Organochlorine Pesticides Screening in Soil						
Endrin	mg/kg dry wt	< 0.013	< 0.012	< 0.012	< 0.012	< 0.012
Endrin aldehyde	mg/kg dry wt	< 0.013	< 0.012	< 0.012	< 0.012	< 0.012
Endrin ketone	mg/kg dry wt	< 0.013	< 0.012	< 0.012	< 0.012	< 0.012
Heptachlor	mg/kg dry wt	< 0.013	< 0.012	< 0.012	< 0.012	< 0.012
Heptachlor epoxide	mg/kg dry wt	< 0.013	< 0.012	< 0.012	< 0.012	< 0.012
Hexachlorobenzene	mg/kg dry wt	< 0.013	< 0.012	< 0.012	< 0.012	< 0.012
Methoxychlor	mg/kg dry wt	< 0.013	< 0.012	< 0.012	< 0.012	< 0.012

Sample Name:		S20_Surface 06-Nov-2025 3:00 pm	S20/1_0.5 06-Nov-2025 3:05 pm
Lab Number:		4025947.21	4025947.22
Individual Tests			
Dry Matter	g/100g as rcvd	85	83
Heavy Metals, Screen Level			
Total Recoverable Arsenic	mg/kg dry wt	5	5
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	< 0.10
Total Recoverable Chromium	mg/kg dry wt	15	16
Total Recoverable Copper	mg/kg dry wt	6	8
Total Recoverable Lead	mg/kg dry wt	16.6	16.8
Total Recoverable Nickel	mg/kg dry wt	11	12
Total Recoverable Zinc	mg/kg dry wt	56	46
Organochlorine Pesticides Screening in Soil			
Aldrin	mg/kg dry wt	< 0.012	< 0.012
alpha-BHC	mg/kg dry wt	< 0.012	< 0.012
beta-BHC	mg/kg dry wt	< 0.012	< 0.012
delta-BHC	mg/kg dry wt	< 0.012	< 0.012
gamma-BHC (Lindane)	mg/kg dry wt	< 0.012	< 0.012
cis-Chlordane	mg/kg dry wt	< 0.012	< 0.012
trans-Chlordane	mg/kg dry wt	< 0.012	< 0.012
2,4'-DDD	mg/kg dry wt	< 0.012	< 0.012
4,4'-DDD	mg/kg dry wt	< 0.012	< 0.012
2,4'-DDE	mg/kg dry wt	< 0.012	< 0.012
4,4'-DDE	mg/kg dry wt	0.013	< 0.012
2,4'-DDT	mg/kg dry wt	< 0.012	< 0.012
4,4'-DDT	mg/kg dry wt	< 0.012	< 0.012
Total DDT Isomers	mg/kg dry wt	< 0.07	< 0.08
Dieldrin	mg/kg dry wt	< 0.012	< 0.012
Endosulfan I	mg/kg dry wt	< 0.012	< 0.012
Endosulfan II	mg/kg dry wt	< 0.012	< 0.012
Endosulfan sulphate	mg/kg dry wt	< 0.012	< 0.012
Endrin	mg/kg dry wt	< 0.012	< 0.012
Endrin aldehyde	mg/kg dry wt	< 0.012	< 0.012
Endrin ketone	mg/kg dry wt	< 0.012	< 0.012
Heptachlor	mg/kg dry wt	< 0.012	< 0.012
Heptachlor epoxide	mg/kg dry wt	< 0.012	< 0.012
Hexachlorobenzene	mg/kg dry wt	< 0.012	< 0.012
Methoxychlor	mg/kg dry wt	< 0.012	< 0.012
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

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).	-	1-22
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	1-22
Heavy Metals, 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	1-22
Organochlorine Pesticides Screening in Soil	Sonication extraction, GC-ECD analysis. Tested on as received sample. In-house based on US EPA 8081.	0.010 - 0.06 mg/kg dry wt	1-22
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	21-22
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	21-22
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	21-22
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	21-22

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 07-Nov-2025 and 14-Nov-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.

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Ara Heron BSc (Tech)
Client Services Manager - Environmental

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Certificate of Analysis

Client:	KPES Limited	**Lab No:**	4026845	SPv1
Contact:	Klaus Prusas	**Date Received:**	07-Nov-2025	
	C/- KPES Limited	**Date Reported:**	18-Nov-2025	
	62 Clausen Avenue	**Quote No:**	136470	
	Leeston 7632	**Order No:**		
		Client Reference:	SpringsE 2	
		Submitted By:	Klaus Prusas	

Sample Type: Soil

Sample Name:		S21 Surface 07-Nov-2025 9:35 am	S21 0.5m 07-Nov-2025 9:40 am	S22 Surface 07-Nov-2025 9:55 am	S22/1 0.5m 07-Nov-2025 10:00 am	S22/2 1.0m 07-Nov-2025 10:10 am
Lab Number:		4026845.1	4026845.2	4026845.3	4026845.4	4026845.5
Individual Tests						
Dry Matter	g/100g as rcvd	96	86	95	85	91
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	4	4	6	5	4
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Chromium	mg/kg dry wt	13	16	16	15	11
Total Recoverable Copper	mg/kg dry wt	10	6	12	8	5
Total Recoverable Lead	mg/kg dry wt	19.3	16.9	19.9	15.7	10.7
Total Recoverable Nickel	mg/kg dry wt	11	12	11	12	10
Total Recoverable Zinc	mg/kg dry wt	62	56	93	47	35
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011
alpha-BHC	mg/kg dry wt	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011
beta-BHC	mg/kg dry wt	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011
delta-BHC	mg/kg dry wt	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011
gamma-BHC (Lindane)	mg/kg dry wt	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011
cis-Chlordane	mg/kg dry wt	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011
trans-Chlordane	mg/kg dry wt	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011
2,4'-DDD	mg/kg dry wt	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011
4,4'-DDD	mg/kg dry wt	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011
2,4'-DDE	mg/kg dry wt	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011
4,4'-DDE	mg/kg dry wt	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011
2,4'-DDT	mg/kg dry wt	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011
4,4'-DDT	mg/kg dry wt	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011
Total DDT Isomers	mg/kg dry wt	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07
Dieldrin	mg/kg dry wt	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011
Endosulfan I	mg/kg dry wt	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011
Endosulfan II	mg/kg dry wt	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011
Endosulfan sulphate	mg/kg dry wt	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011
Endrin	mg/kg dry wt	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011
Endrin aldehyde	mg/kg dry wt	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011
Endrin ketone	mg/kg dry wt	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011
Heptachlor	mg/kg dry wt	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011
Heptachlor epoxide	mg/kg dry wt	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011
Hexachlorobenzene	mg/kg dry wt	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011
Methoxychlor	mg/kg dry wt	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011

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.

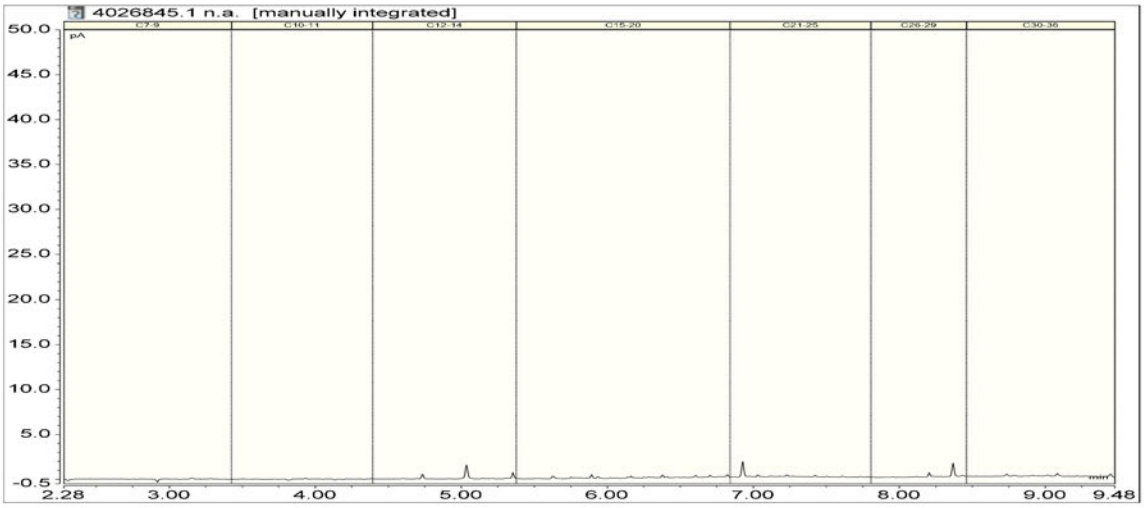
Sample Type: Soil						
Sample Name:		S21 Surface 07-Nov-2025 9:35 am	S21 0.5m 07-Nov-2025 9:40 am	S22 Surface 07-Nov-2025 9:55 am	S22/1 0.5m 07-Nov-2025 10:00 am	S22/2 1.0m 07-Nov-2025 10:10 am
Lab Number:		4026845.1	4026845.2	4026845.3	4026845.4	4026845.5
Total Petroleum Hydrocarbons in Soil						
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	47	< 40	< 40	< 40	< 40
Total hydrocarbons (C7 - C36)	mg/kg dry wt	< 80	< 80	< 80	< 80	< 80

Sample Name:		S23 Surface 07-Nov-2025 11:15 am	S23/1 0.5m 07-Nov-2025 11:20 am	S23/2 1.0m 07-Nov-2025 11:25 am	S24 Surface 07-Nov-2025 11:35 am	S24/1 0.5m 07-Nov-2025 11:45 am
Lab Number:		4026845.6	4026845.7	4026845.8	4026845.9	4026845.10
Individual Tests						
Dry Matter	g/100g as rcvd	92	85	83	97	84
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	7	3	4	4	4
Total Recoverable Cadmium	mg/kg dry wt	0.15	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Chromium	mg/kg dry wt	14	14	13	13	14
Total Recoverable Copper	mg/kg dry wt	12	4	8	7	4
Total Recoverable Lead	mg/kg dry wt	17.7	11.7	12.6	14.6	14.1
Total Recoverable Nickel	mg/kg dry wt	11	11	10	10	12
Total Recoverable Zinc	mg/kg dry wt	66	47	42	67	47
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.011	< 0.012	< 0.012	< 0.010	< 0.012
alpha-BHC	mg/kg dry wt	< 0.011	< 0.012	< 0.012	< 0.010	< 0.012
beta-BHC	mg/kg dry wt	< 0.011	< 0.012	< 0.012	< 0.010	< 0.012
delta-BHC	mg/kg dry wt	< 0.011	< 0.012	< 0.012	< 0.010	< 0.012
gamma-BHC (Lindane)	mg/kg dry wt	< 0.011	< 0.012	< 0.012	< 0.010	< 0.012
cis-Chlordane	mg/kg dry wt	< 0.011	< 0.012	< 0.012	< 0.010	< 0.012
trans-Chlordane	mg/kg dry wt	< 0.011	< 0.012	< 0.012	< 0.010	< 0.012
2,4'-DDD	mg/kg dry wt	< 0.011	< 0.012	< 0.012	< 0.010	< 0.012
4,4'-DDD	mg/kg dry wt	< 0.011	< 0.012	< 0.012	< 0.010	< 0.012
2,4'-DDE	mg/kg dry wt	< 0.011	< 0.012	< 0.012	< 0.010	< 0.012
4,4'-DDE	mg/kg dry wt	< 0.011	< 0.012	< 0.012	< 0.010	< 0.012
2,4'-DDT	mg/kg dry wt	< 0.011	< 0.012	< 0.012	< 0.010	< 0.012
4,4'-DDT	mg/kg dry wt	< 0.011	< 0.012	< 0.012	< 0.010	< 0.012
Total DDT Isomers	mg/kg dry wt	< 0.07	< 0.07	< 0.08	< 0.06	< 0.08
Dieldrin	mg/kg dry wt	< 0.011	< 0.012	< 0.012	< 0.010	< 0.012
Endosulfan I	mg/kg dry wt	< 0.011	< 0.012	< 0.012	< 0.010	< 0.012
Endosulfan II	mg/kg dry wt	< 0.011	< 0.012	< 0.012	< 0.010	< 0.012
Endosulfan sulphate	mg/kg dry wt	< 0.011	< 0.012	< 0.012	< 0.010	< 0.012
Endrin	mg/kg dry wt	< 0.011	< 0.012	< 0.012	< 0.010	< 0.012
Endrin aldehyde	mg/kg dry wt	< 0.011	< 0.012	< 0.012	< 0.010	< 0.012
Endrin ketone	mg/kg dry wt	< 0.011	< 0.012	< 0.012	< 0.010	< 0.012
Heptachlor	mg/kg dry wt	< 0.011	< 0.012	< 0.012	< 0.010	< 0.012
Heptachlor epoxide	mg/kg dry wt	< 0.011	< 0.012	< 0.012	< 0.010	< 0.012
Hexachlorobenzene	mg/kg dry wt	< 0.011	< 0.012	< 0.012	< 0.010	< 0.012
Methoxychlor	mg/kg dry wt	< 0.011	< 0.012	< 0.012	< 0.010	< 0.012

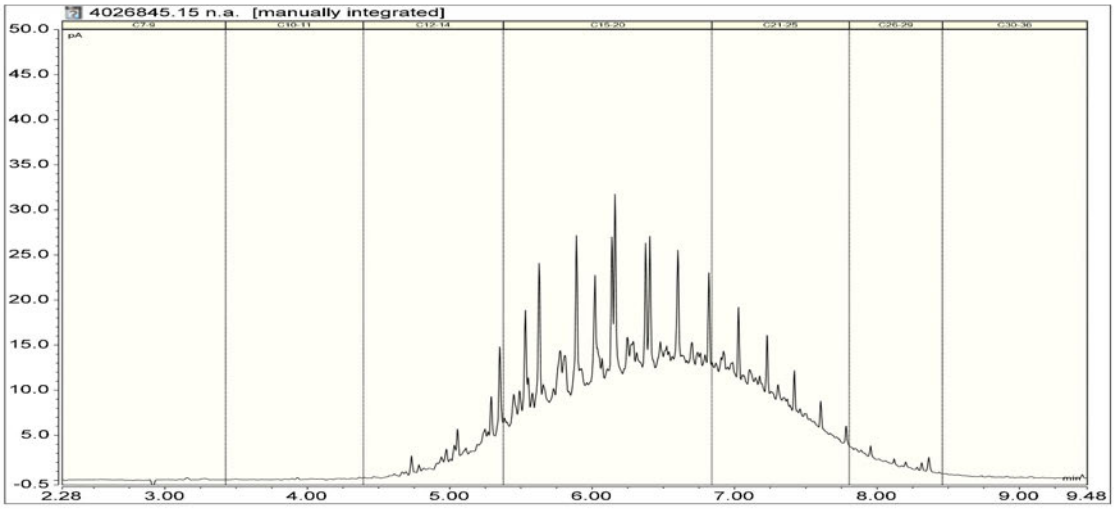
Sample Name:		SD1 07-Nov-2025 10:30 am	S25 Surface 07-Nov-2025 12:25 pm	S25/1 0.5m 07-Nov-2025 12:35 pm	S25/2 1.0m 07-Nov-2025 12:45 pm	SD2 07-Nov-2025 10:30 am
Lab Number:		4026845.11	4026845.12	4026845.13	4026845.14	4026845.15
Individual Tests						
Dry Matter	g/100g as rcvd	98	89	82	82	96
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	-	8	4	4	-
Total Recoverable Cadmium	mg/kg dry wt	-	0.25	< 0.10	< 0.10	-
Total Recoverable Chromium	mg/kg dry wt	-	15	15	14	-

Sample Type: Soil							
Sample Name:		SD1 07-Nov-2025 10:30 am	S25 Surface 07-Nov-2025 12:25 pm	S25/1 0.5m 07-Nov-2025 12:35 pm	S25/2 1.0m 07-Nov-2025 12:45 pm	SD2 07-Nov-2025 10:30 am
Lab Number:		4026845.11	4026845.12	4026845.13	4026845.14	4026845.15
Heavy Metals, Screen Level						
Total Recoverable Copper	mg/kg dry wt	-	45	5	5	-
Total Recoverable Lead	mg/kg dry wt	-	23	14.1	12.8	-
Total Recoverable Nickel	mg/kg dry wt	-	9	12	13	-
Total Recoverable Zinc	mg/kg dry wt	-	145	53	43	-
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	-	< 0.011	< 0.013	< 0.012	-
alpha-BHC	mg/kg dry wt	-	< 0.011	< 0.013	< 0.012	-
beta-BHC	mg/kg dry wt	-	< 0.011	< 0.013	< 0.012	-
delta-BHC	mg/kg dry wt	-	< 0.011	< 0.013	< 0.012	-
gamma-BHC (Lindane)	mg/kg dry wt	-	< 0.011	< 0.013	< 0.012	-
cis-Chlordane	mg/kg dry wt	-	< 0.011	< 0.013	< 0.012	-
trans-Chlordane	mg/kg dry wt	-	< 0.011	< 0.013	< 0.012	-
2,4'-DDD	mg/kg dry wt	-	< 0.011	< 0.013	< 0.012	-
4,4'-DDD	mg/kg dry wt	-	< 0.011	< 0.013	< 0.012	-
2,4'-DDE	mg/kg dry wt	-	< 0.011	< 0.013	< 0.012	-
4,4'-DDE	mg/kg dry wt	-	< 0.011	< 0.013	< 0.012	-
2,4'-DDT	mg/kg dry wt	-	< 0.011	< 0.013	< 0.012	-
4,4'-DDT	mg/kg dry wt	-	< 0.011	< 0.013	< 0.012	-
Total DDT Isomers	mg/kg dry wt	-	< 0.07	< 0.08	< 0.08	-
Dieldrin	mg/kg dry wt	-	< 0.011	< 0.013	< 0.012	-
Endosulfan I	mg/kg dry wt	-	< 0.011	< 0.013	< 0.012	-
Endosulfan II	mg/kg dry wt	-	< 0.011	< 0.013	< 0.012	-
Endosulfan sulphate	mg/kg dry wt	-	< 0.011	< 0.013	< 0.012	-
Endrin	mg/kg dry wt	-	< 0.011	< 0.013	< 0.012	-
Endrin aldehyde	mg/kg dry wt	-	< 0.011	< 0.013	< 0.012	-
Endrin ketone	mg/kg dry wt	-	< 0.011	< 0.013	< 0.012	-
Heptachlor	mg/kg dry wt	-	< 0.011	< 0.013	< 0.012	-
Heptachlor epoxide	mg/kg dry wt	-	< 0.011	< 0.013	< 0.012	-
Hexachlorobenzene	mg/kg dry wt	-	< 0.011	< 0.013	< 0.012	-
Methoxychlor	mg/kg dry wt	-	< 0.011	< 0.013	< 0.012	-
Total Petroleum Hydrocarbons in Soil						
C7 - C9	mg/kg dry wt	< 20	-	-	-	< 20
C10 - C14	mg/kg dry wt	< 20	-	-	-	145
C15 - C36	mg/kg dry wt	< 40	-	-	-	1,810
Total hydrocarbons (C7 - C36)	mg/kg dry wt	< 80	-	-	-	1,950

4026845.1
S21 Surface 07-Nov-2025 9:35 am
Client Chromatogram for TPH by FID



4026845.15
SD2 07-Nov-2025 10:30 am
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).	-	1-10, 12-14
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	1-15
Heavy Metals, 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	1-10, 12-14
Organochlorine Pesticides Screening in Soil	Sonication extraction, GC-ECD analysis. Tested on as received sample. In-house based on US EPA 8081.	0.010 - 0.06 mg/kg dry wt	1-10, 12-14

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
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, 15
C7 - C9	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	1-5, 11, 15
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	1-5, 11, 15
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	1-5, 11, 15
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	1-5, 11, 15

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 10-Nov-2025 and 18-Nov-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.

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Graham Corban MSc Tech (Hons)
Client Services Manager - Environmental

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Private Bag 3205
Hamilton 3240 New Zealand

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www.hill-labs.co.nz

Certificate of Analysis

Client:	KPES Limited	**Lab No:**	4026874	SPv1
Contact:	Klaus Prusas	**Date Received:**	07-Nov-2025	
	C/- KPES Limited	**Date Reported:**	17-Nov-2025	
	62 Clausen Avenue	**Quote No:**	136471	
	Leeston 7632	**Order No:**		
		Client Reference:	SpringsE 3	
		Submitted By:	Klaus Prusas	

Sample Type: Soil

Sample Name:		SP1 Surface 07-Nov-2025 8:00 am	SP1/1 0.5m 07-Nov-2025 8:15 am	SP2 Surface 07-Nov-2025 8:20 am	SP2/1 0.5m 07-Nov-2025 8:25 am	SP2/2 1.0m 07-Nov-2025 8:30 am
Lab Number:		4026874.1	4026874.2	4026874.3	4026874.4	4026874.5
Individual Tests						
Dry Matter	g/100g as rcvd	90	89	97	90	84
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	12	4	5	8	8
Total Recoverable Cadmium	mg/kg dry wt	0.11	< 0.10	0.13	< 0.10	< 0.10
Total Recoverable Chromium	mg/kg dry wt	20	13	15	15	17
Total Recoverable Copper	mg/kg dry wt	17	6	15	12	10
Total Recoverable Lead	mg/kg dry wt	24	13.5	81	32	22
Total Recoverable Nickel	mg/kg dry wt	16	10	9	10	13
Total Recoverable Zinc	mg/kg dry wt	77	81	210	113	150
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.012	< 0.011	< 0.010	< 0.011	< 0.012
alpha-BHC	mg/kg dry wt	< 0.012	< 0.011	< 0.010	< 0.011	< 0.012
beta-BHC	mg/kg dry wt	< 0.012	< 0.011	< 0.010	< 0.011	< 0.012
delta-BHC	mg/kg dry wt	< 0.012	< 0.011	< 0.010	< 0.011	< 0.012
gamma-BHC (Lindane)	mg/kg dry wt	< 0.012	< 0.011	< 0.010	< 0.011	< 0.012
cis-Chlordane	mg/kg dry wt	< 0.012	< 0.011	< 0.010	< 0.011	< 0.012
trans-Chlordane	mg/kg dry wt	< 0.012	< 0.011	< 0.010	< 0.011	< 0.012
2,4'-DDD	mg/kg dry wt	< 0.012	< 0.011	< 0.010	< 0.011	< 0.012
4,4'-DDD	mg/kg dry wt	< 0.012	< 0.011	< 0.010	< 0.011	< 0.012
2,4'-DDE	mg/kg dry wt	< 0.012	< 0.011	< 0.010	< 0.011	< 0.012
4,4'-DDE	mg/kg dry wt	< 0.012	< 0.011	< 0.010	< 0.011	< 0.012
2,4'-DDT	mg/kg dry wt	< 0.012	< 0.011	< 0.010	< 0.011	< 0.012
4,4'-DDT	mg/kg dry wt	< 0.012	< 0.011	< 0.010	< 0.011	< 0.012
Total DDT Isomers	mg/kg dry wt	< 0.07	< 0.07	< 0.06	< 0.07	< 0.07
Dieldrin	mg/kg dry wt	< 0.012	< 0.011	< 0.010	< 0.011	< 0.012
Endosulfan I	mg/kg dry wt	< 0.012	< 0.011	< 0.010	< 0.011	< 0.012
Endosulfan II	mg/kg dry wt	< 0.012	< 0.011	< 0.010	< 0.011	< 0.012
Endosulfan sulphate	mg/kg dry wt	< 0.012	< 0.011	< 0.010	< 0.011	< 0.012
Endrin	mg/kg dry wt	< 0.012	< 0.011	< 0.010	< 0.011	< 0.012
Endrin aldehyde	mg/kg dry wt	< 0.012	< 0.011	< 0.010	< 0.011	< 0.012
Endrin ketone	mg/kg dry wt	< 0.012	< 0.011	< 0.010	< 0.011	< 0.012
Heptachlor	mg/kg dry wt	< 0.012	< 0.011	< 0.010	< 0.011	< 0.012
Heptachlor epoxide	mg/kg dry wt	< 0.012	< 0.011	< 0.010	< 0.011	< 0.012
Hexachlorobenzene	mg/kg dry wt	< 0.012	< 0.011	< 0.010	< 0.011	< 0.012
Methoxychlor	mg/kg dry wt	< 0.012	< 0.011	< 0.010	< 0.011	< 0.012

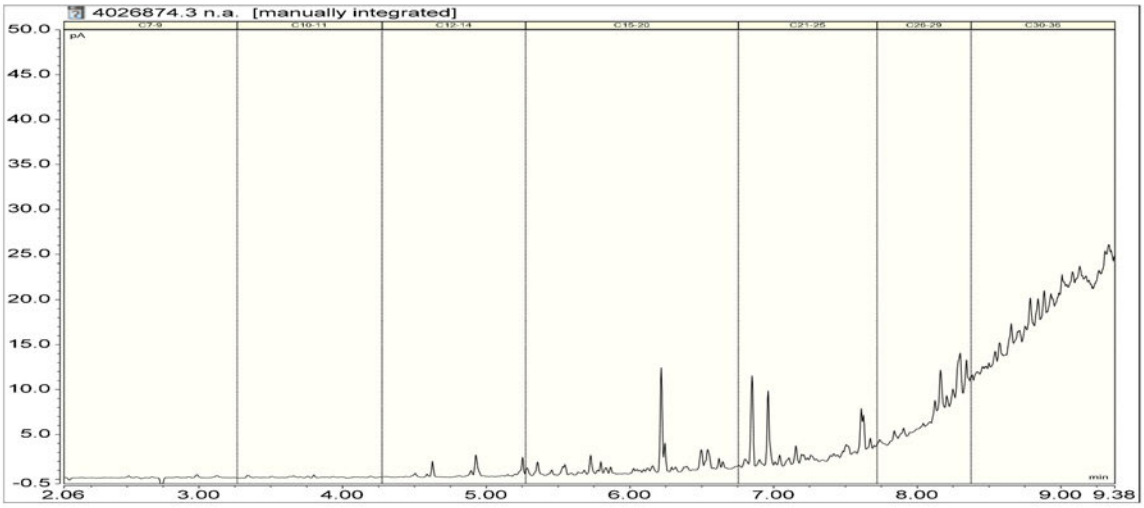
This Laboratory is accredited by International Accreditation New Zealand (IANZ), which represents New Zealand in the International Laboratory Accreditation Cooperation (ILAC). Through the ILAC Mutual Recognition Arrangement (ILAC-MRA) this accreditation is internationally recognised.
The tests reported 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:		SP1 Surface 07-Nov-2025 8:00 am	SP1/1 0.5m 07-Nov-2025 8:15 am	SP2 Surface 07-Nov-2025 8:20 am	SP2/1 0.5m 07-Nov-2025 8:25 am	SP2/2 1.0m 07-Nov-2025 8:30 am
Lab Number:		4026874.1	4026874.2	4026874.3	4026874.4	4026874.5
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Total of Reported PAHs in Soil	mg/kg dry wt	< 0.3	< 0.3	50	0.6	< 0.3
1-Methylnaphthalene	mg/kg dry wt	< 0.012	< 0.011	0.45	< 0.011	< 0.012
2-Methylnaphthalene	mg/kg dry wt	< 0.012	< 0.011	0.49	< 0.011	< 0.018
Acenaphthylene	mg/kg dry wt	< 0.012	< 0.011	0.80	< 0.011	< 0.012
Acenaphthene	mg/kg dry wt	< 0.012	< 0.011	0.32	< 0.011	< 0.012
Anthracene	mg/kg dry wt	< 0.012	< 0.011	2.2	< 0.011	< 0.012
Benzo[a]anthracene	mg/kg dry wt	< 0.012	< 0.011	3.6	0.041	< 0.012
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.012	< 0.011	3.3	0.054	< 0.012
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 0.027	< 0.026	4.9	0.079	< 0.028
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 0.027	< 0.026	4.8	0.078	< 0.028
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.012	< 0.011	3.4	0.062	< 0.012
Benzo[e]pyrene	mg/kg dry wt	< 0.012	< 0.011	1.72	0.034	< 0.012
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.012	< 0.011	1.57	0.033	< 0.012
Benzo[k]fluoranthene	mg/kg dry wt	< 0.012	< 0.011	1.40	0.024	< 0.012
Chrysene	mg/kg dry wt	< 0.012	< 0.011	3.0	0.042	< 0.012
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.012	< 0.011	0.48	< 0.011	< 0.012
Fluoranthene	mg/kg dry wt	0.012	< 0.011	7.4	0.079	< 0.012
Fluorene	mg/kg dry wt	< 0.012	< 0.011	1.63	< 0.011	< 0.012
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.012	< 0.011	1.74	0.036	< 0.012
Naphthalene	mg/kg dry wt	< 0.06	< 0.06	0.30	< 0.06	< 0.06
Perylene	mg/kg dry wt	< 0.012	< 0.011	0.71	0.012	< 0.012
Phenanthrene	mg/kg dry wt	< 0.012	< 0.011	9.0	0.033	< 0.012
Pyrene	mg/kg dry wt	0.012	< 0.011	6.9	0.078	< 0.012
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	1,600	< 40	< 40
Total hydrocarbons (C7 - C36)	mg/kg dry wt	< 80	< 80	1,610	< 80	< 80

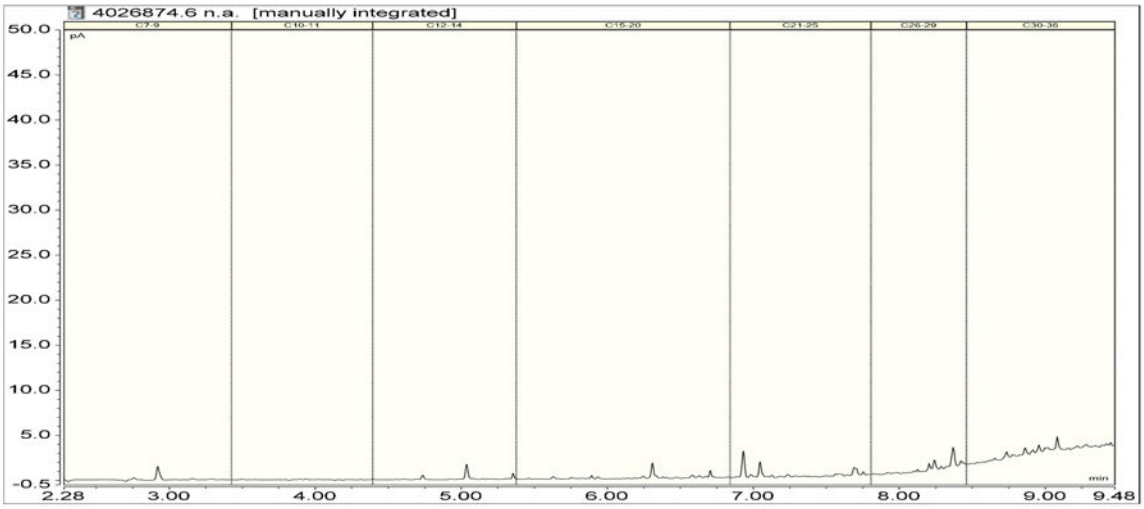
Sample Name:		SP3 Surface 07-Nov-2025 8:40 am	SP3/1 0.5m 07-Nov-2025 8:45 am	SP3/2 1.0m 07-Nov-2025 8:50 am	SP4 Surface 07-Nov-2025 9:00 am	SP4/1 0.5m 07-Nov-2025 9:05 am
Lab Number:		4026874.6	4026874.7	4026874.8	4026874.9	4026874.10
Individual Tests						
Dry Matter	g/100g as rcvd	88	93	83	98	85
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	13	3	5	5	5
Total Recoverable Cadmium	mg/kg dry wt	0.30	< 0.10	< 0.10	< 0.10	0.66
Total Recoverable Chromium	mg/kg dry wt	21	10	16	12	15
Total Recoverable Copper	mg/kg dry wt	29	4	7	8	22
Total Recoverable Lead	mg/kg dry wt	104	10.3	18.3	15.5	38
Total Recoverable Nickel	mg/kg dry wt	11	10	13	10	12
Total Recoverable Zinc	mg/kg dry wt	169	32	63	52	152
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.010	< 0.012
alpha-BHC	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.010	< 0.012
beta-BHC	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.010	< 0.012
delta-BHC	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.010	< 0.012
gamma-BHC (Lindane)	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.010	< 0.012
cis-Chlordane	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.010	< 0.012
trans-Chlordane	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.010	< 0.012
2,4'-DDD	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.010	< 0.012
4,4'-DDD	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.010	< 0.012

Sample Type: Soil						
Sample Name:		SP3 Surface 07-Nov-2025 8:40 am	SP3/1 0.5m 07-Nov-2025 8:45 am	SP3/2 1.0m 07-Nov-2025 8:50 am	SP4 Surface 07-Nov-2025 9:00 am	SP4/1 0.5m 07-Nov-2025 9:05 am
Lab Number:		4026874.6	4026874.7	4026874.8	4026874.9	4026874.10
Organochlorine Pesticides Screening in Soil						
2,4'-DDE	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.010	< 0.012
4,4'-DDE	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.010	< 0.012
2,4'-DDT	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.010	< 0.012
4,4'-DDT	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.010	< 0.012
Total DDT Isomers	mg/kg dry wt	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Dieldrin	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.010	< 0.012
Endosulfan I	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.010	< 0.012
Endosulfan II	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.010	< 0.012
Endosulfan sulphate	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.010	< 0.012
Endrin	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.010	< 0.012
Endrin aldehyde	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.010	< 0.012
Endrin ketone	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.010	< 0.012
Heptachlor	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.010	< 0.012
Heptachlor epoxide	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.010	< 0.012
Hexachlorobenzene	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.010	< 0.012
Methoxychlor	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.010	< 0.012
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Total of Reported PAHs in Soil	mg/kg dry wt	15.7	< 0.3	< 0.3	6.2	3.1
1-Methylnaphthalene	mg/kg dry wt	0.012	< 0.011	< 0.012	0.011	0.013
2-Methylnaphthalene	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.015	< 0.012
Acenaphthylene	mg/kg dry wt	0.129	< 0.011	< 0.012	0.151	0.060
Acenaphthene	mg/kg dry wt	0.018	< 0.011	< 0.012	0.022	0.013
Anthracene	mg/kg dry wt	0.44	< 0.011	< 0.012	0.199	0.082
Benzo[a]anthracene	mg/kg dry wt	1.10	< 0.011	< 0.012	0.42	0.22
Benzo[a]pyrene (BAP)	mg/kg dry wt	1.19	< 0.011	< 0.012	0.53	0.28
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	1.79	< 0.026	< 0.029	0.82	0.40
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	1.76	< 0.025	< 0.029	0.81	0.40
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	1.36	< 0.011	< 0.012	0.58	0.29
Benzo[e]pyrene	mg/kg dry wt	0.71	< 0.011	< 0.012	0.30	0.156
Benzo[g,h,i]perylene	mg/kg dry wt	0.83	< 0.011	< 0.012	0.40	0.159
Benzo[k]fluoranthene	mg/kg dry wt	0.52	< 0.011	< 0.012	0.25	0.124
Chrysene	mg/kg dry wt	0.91	< 0.011	< 0.012	0.44	0.21
Dibenzo[a,h]anthracene	mg/kg dry wt	0.179	< 0.011	< 0.012	0.104	0.040
Fluoranthene	mg/kg dry wt	2.4	< 0.011	< 0.012	0.87	0.42
Fluorene	mg/kg dry wt	0.089	< 0.011	< 0.012	0.068	0.048
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	0.85	< 0.011	< 0.012	0.39	0.158
Naphthalene	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.05	< 0.06
Perylene	mg/kg dry wt	0.30	< 0.011	< 0.012	0.123	0.058
Phenanthrene	mg/kg dry wt	2.3	< 0.011	< 0.012	0.55	0.32
Pyrene	mg/kg dry wt	2.4	< 0.011	< 0.012	0.75	0.41
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	290	< 40	< 40	44	49
Total hydrocarbons (C7 - C36)	mg/kg dry wt	290	< 80	< 80	< 80	< 80

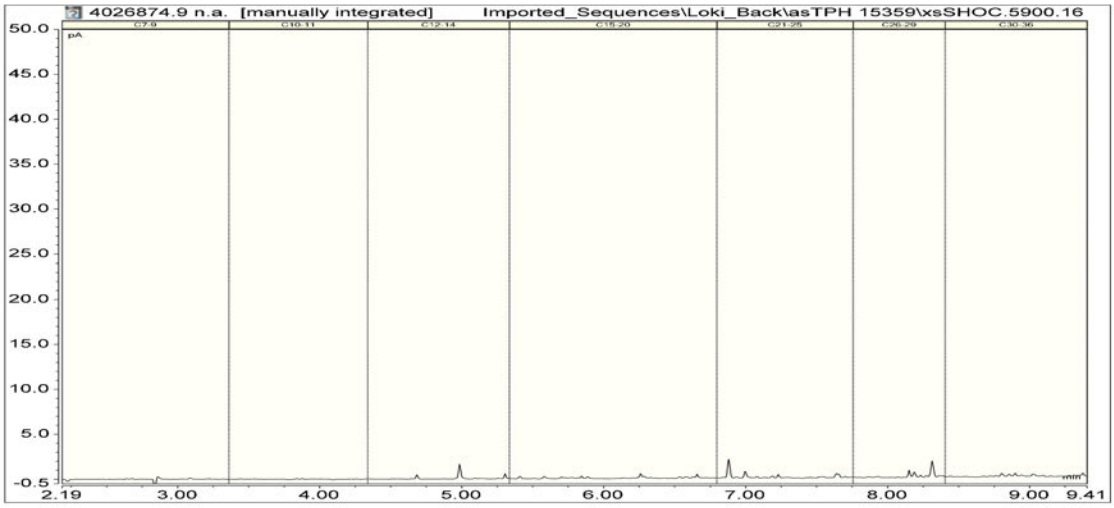
4026874.3
SP2 Surface 07-Nov-2025 8:20 am
Client Chromatogram for TPH by FID



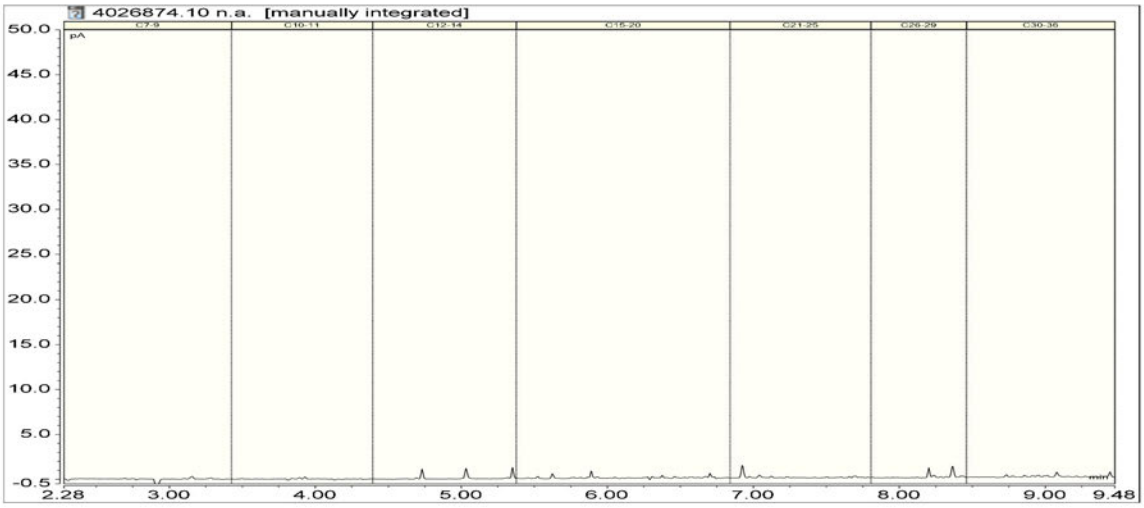
4026874.6
SP3 Surface 07-Nov-2025 8:40 am
Client Chromatogram for TPH by FID



4026874.9
SP4 Surface 07-Nov-2025 9:00 am
Client Chromatogram for TPH by FID



4026874.10
SP4/1 0.5m 07-Nov-2025 9:05 am
Client Chromatogram for TPH by FID



Analyst's Comments

The matrix of sample 4026874.1 has affected the System Monitoring Compounds 1-methylnaphthalene-d10, Fluoranthene-d10 and Benzo[a]pyrene-d12 in the PAH analysis, whereby the recovery was 58%, 58% and 55% respectively. Therefore the results may be underestimated.

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).	-	1-10
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	1-10
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	1-10
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	1-10
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	1-10
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	1-10
Heavy Metals, 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	1-10
Organochlorine Pesticides Screening in Soil	Sonication extraction, GC-ECD analysis. Tested on as received sample. In-house based on US EPA 8081.	0.010 - 0.06 mg/kg dry wt	1-10
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.	-	3, 6, 9-10
C7 - C9	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	1-10
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	1-10
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	1-10
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	1-10

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 10-Nov-2025 and 17-Nov-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

Appendix D: Photographs



1.0 – North End – 300 Springs Road



2.0 – Test Pit 1



3.0 – Test Pit 2



4.0 – Test Pit 3



5.0 – Test Pit 4



6.0 – 374 Springs Rd – Looking SE



7.0 – 374 Springs Rd – Looking East



8.0 – ADT (Diesel) (Samples SD1 and SD2)



9.0 – Nursery



10.0 – Car Park



11.0 – Test Pit 21



12.0 – Test Pit 22



13.0 – Test Pit 23