



SOIL SAMPLING INVESTIGATION

320A Cumnor Terrace, Woolston, Christchurch

June 2023

Prepared for: Peebles Group Ltd

Prepared by: KPES Ltd

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Prepared by: Klaus Prusas, Director, KPES Ltd



Signed:

Date: 6 June 2023

Klaus Prusas Environmental Services Ltd (KPES Ltd)
25 Kaka Road
South Bay
KAIKOURA 7300

027 347 9210

Klaus.prusas@gmail.com

Peebles Group Ltd
Soil Sampling Investigation
320A Cumnor Terrace, Woolston
Christchurch

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1.0 Introduction

Peebles Group Ltd engaged KPES Ltd to carry out a Soil Sampling Investigation Assessment of the 'stop bank' land on the eastern bank of the Heathcote River and Portlink Industrial Park / 320A Cumnor Terrace, Woolston, Christchurch.

The purpose of the investigation assessment was to report on the findings of the soil sampling results to assist in land related discussions, in relation to the stop banks only, between Christchurch City and Peebles Group Ltd.

This investigation is to provide current investigative results to the discussion.

2.0 Background

2.1 Site Location

The subject of this investigation is the stop bank land; the land between the Heathcote River and the commercial site at 320A Cumnor Terrace, Woolston, Christchurch.

Figure 1.1 – Site Location and Figure 4.1 – Sample Locations identifies the land.

The stop banks presently appear to form a recreational walking / cycling track land use area. Beyond the stop banks to the east is the Portlink Industrial Park container storage facility.

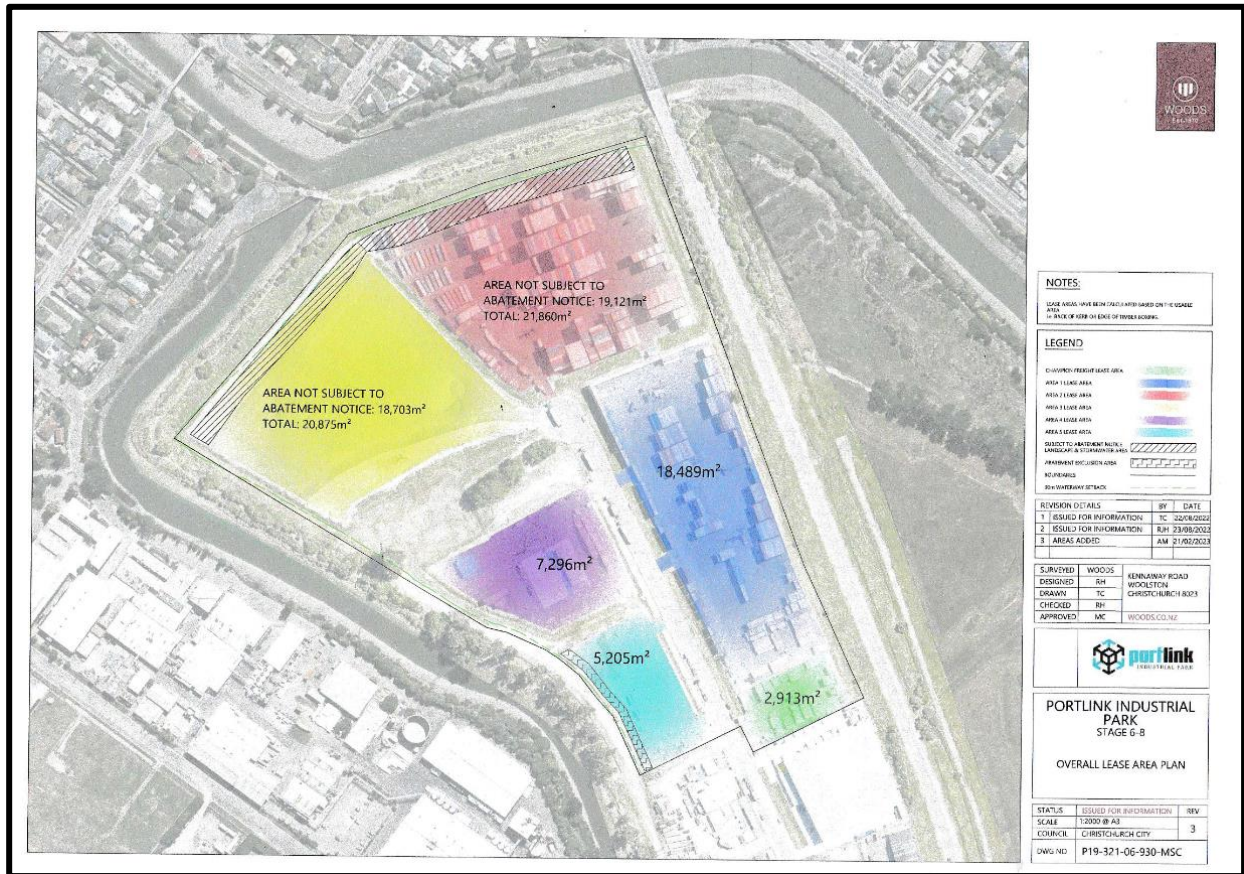


Figure 1.0 – Site Location

2.2 Site History

KPES Ltd only intends to discuss the site history in brief as both parties are aware of the history and the *resultant stop banks*.

In Brief

The land area of 320A Cumnor Terrace was known originally as Kennaway Farm (adjacent to Tunnel Road, Ferrymead, Christchurch). The land was subject to a PSI by PDP, July 2005 (see Appendix A) for the purposes of a future commercial / industrial development of the land. That report concluded (in 2005 terms / pre NES-CS 2011) that the site was suitable for an industrial / commercial land use, but found some analytes above background values.

Prior to this time the land had been grass covered; at times in paddocks; with some market gardening post 1946 and also some filling.

The land area was subsequently permitted to be developed to become Portlink Industrial Park, and as part of that development clean fill was permitted to be accepted.

The Contracting Company developed acceptance criteria and during 2021 / 2022 undertook a number of soil samples to test their acceptance criteria (see Appendix B). Appendix C (CCL – email) provides further discussion regarding their cleanfill operation at the site.

3.0 Site Notations

The site 320A Cumnor Terrace is registered as a HAIL site on Environment Canterbury’s Listed Land Use Register (LLUR) and categorised as an A10 – Persistent pesticides bulk storage or use. The PDP July 2005 is noted on the LLUR. (See Appendix D – Ecan – LLUR).

The land is zoned Industrial General, under the Christchurch City Plan.

4.0 Sampling Locations and Methodology

4.1 Sample Location Selections

The soil sampling was carried out at ten (10) locations along the area at stop bank bounded by the Heathcote River and the Portlink Industrial Park. The sampling was carried out at 0.2/0.3 and 0.7m bgl.

Table 4.0 – GPS Co-ordinates (below) and Figure 4.1 Sampling Locations describe the locations.

Location	Time	Depth (m)	Latitude	Longitude	Comment
C1	12.00	0.150	43.331993	172.241202	Soil
C2 C2/1	12.10 12.15	0.2 0.7	43.331925	172.412310	Soil
C3	12.30	0.2	43.338868	172.412692	Soil
C4	12.55	0.2	43.332176	172.415914	Soil – some gravel
C5 C5/1	1.05 1.15	0.2 0.7	43.332249	172.411697	Soil
C6	1.25	0.2	43.332420	172.411451	Soil
C7 C7/1	2.25 2.70	0.2 0.7	43.332960	172.412059	Soil
C8	2.45	0.3	43.332960	172.412407	Soil
C9	2.55	0.3	43.732905	172.412684	Soil
C10	3.10	0.2	43.333160	172.412788	Soil

Table 4.0 – GPS Co-Ordinates

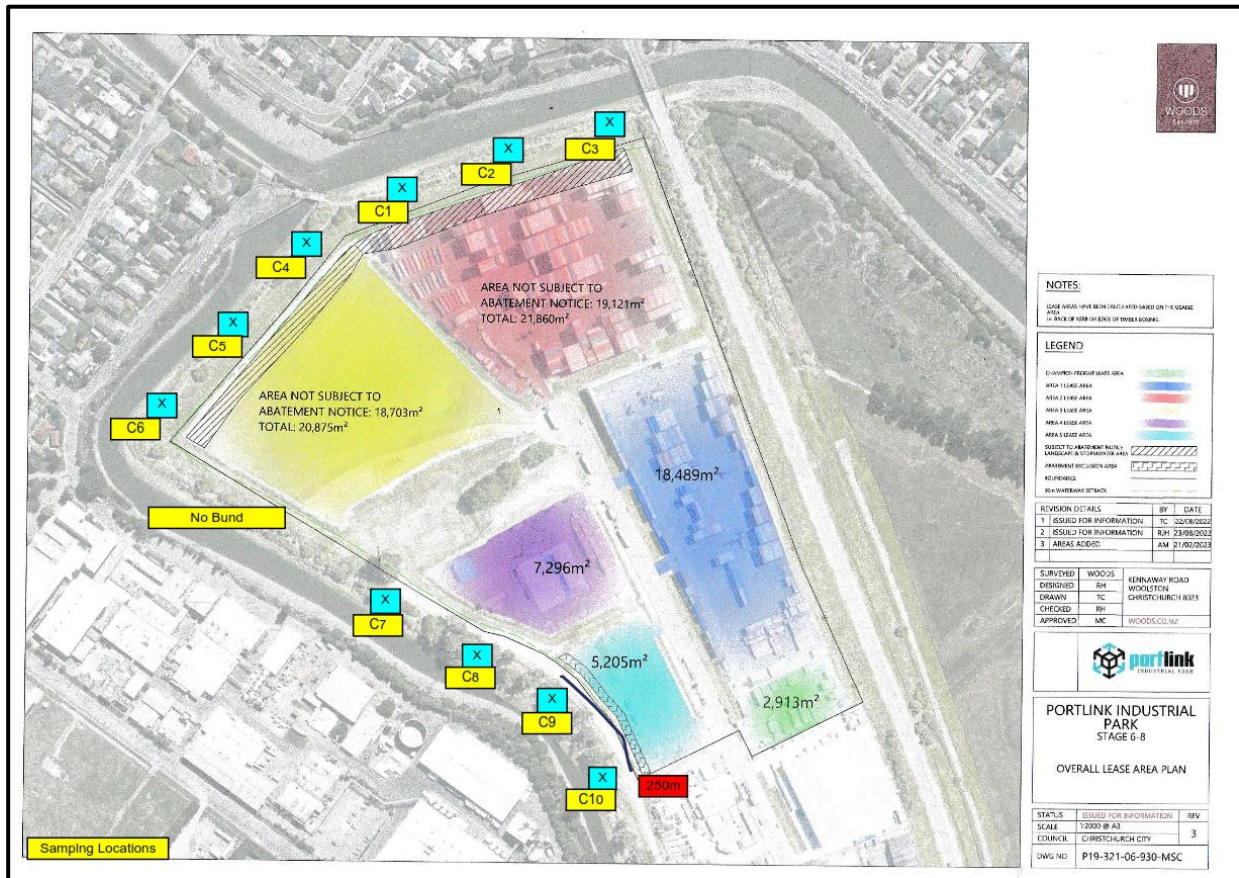


Figure 4.1: Sampling Locations

5.0 Sample Results

The results of the soil sampling indicated –

- That at all locations industrial / commercial, recreational and residential soil value guideline criteria were met, the most relevant in this context it is surmised is the meeting of recreational and residential criteria.
- The underlying / original background values for this Woolston area (for 'Recent Gley Soils) slightly exceeded for some analytes.
- Asbestos was detected at one sample location (i.e location C3 at 0.2m depth) but at less than residential concentration values.

Table 5: Sampling Analysis – 320A Cumnor Terrace, Christchurch

Sample Ref	C1	C2	C2/1	C3	C4	C5	C5/1	C6	C7	C7	C8	C9	C10	Industrial Commercial Guidelines	Residential Guidelines	Recreational Guidelines	Background Values (Recent Gley Soils)
Sample Depth (m)	0.2	0.2	0.7	0.2	0.2	0.2	0.7	0.2	0.2	0.7	0.3	0.3	0.2				

Heavy Metals

Total Arsenic	6	5	6	5	5	6	6	5	7	6	6	7	6	70 ¹	17 ¹ /20 ¹ /45 ¹	80 ¹	8.6
Total Cadmium	<0.10	0.11	0.13	0.10	0.11	0.13	0.11	0.11	0.12	0.11	0.12	0.12	0.11	1300 ¹	0.8 ¹ /3.0 ¹ /230	400 ¹	0.07
Total Chromium	17	16	17	18	22	22	21	20	20	20	19	19	17	>10000/6300 ¹	>10000/460 ¹	>10000/1500 ¹	25.4
Total Copper	11	11	10	13	12	15	42	39	49	45	13	15	13	>10000 ¹	>10000 ¹	>10000 ¹	11.9
Total Lead	32	34	30	33	42	43	42	39	49	45	36	39	31	3300 ¹	160 ¹ /210 ¹ /500 ¹	880 ¹	36.3
Total Nickel	11	11	12	12	11	12	12	12	14	12	12	12	12	1800 ²	130 ²	600 ²	15.9
Total Zinc	72	80	81	86	86	89	84	83	96	93	94	92	85	35000 ²	7000 ²	1400 ²	103

**Polycyclic Aromatic Hydrocarbons Screening in Soil
Only Results Above Detection Limits Recorded
(See Hill Laboratories Analysis Report)**

Total of Reported PAHs in Soil	2.4	0.7	0.5	1.9	2.8	1.7	3.5	2.6	2.0	2.8	1.9	1.6	2.5				
1-Methylnaphthalene													0.025				
2-Methylnaphthalene					0.011		0.012	0.012		0.012			0.031				
Acenaphthylene	0.051			0.0220	0.036	0.022	0.041	0.035	0.024	0.033	0.022	0.019	0.025	Na ³			
Acenaphthene														33000 ³			
Anthracene	0.059			0.039	0.060	0.027	0.057	0.046	0.035	0.046	0.043	0.112	0.172	17000 ³			
⁴ Benzo[a]pyrene (BAP) : Potency Equivalency Factor (PEF) NES-CS	0.36	0.091	0.074	0.25	0.38	0.25	0.50	0.37	0.27	0.40	0.25	0.24	0.30	35 ¹	10 ¹	40 ¹	
Benzo[g,h,i]perylene	0.171	0.045	0.037	0.133	0.178	0.134	0.24	0.195	0.143	0.20	0.128	0.121	0.139	Na ³	5.3 ³		
Fluorene	0.018				0.016									22000 ³	15 ³		
Napthalene														230 ³	58 ⁵		
Perylene	0.057	0.013	0.011	0.040	0.054	0.038	0.077	0.056	0.42	0.060	0.039	0.036	0.046				
Phenanthrene	0.147	0.035	0.033	0.111	0.21	0.078	0.168	0.139	0.117	0.144	0.120	0.094	0.146	Na ³	2300 ³		
Pyrene	0.30	0.097	0.080	0.28	0.38	0.22	0.52	0.34	0.28	0.41	0.27	0.22	0.41	17000 ²	1600 ⁵		

Notes:

¹ Means Table B2 Users Guide - NES, April 2012

² Background Christchurch Trace Elements in Soil (Feb 2007)

³ Means MFE- Environmental Guideline Values

⁴ Means-BAP includes: Benzo[a]anthracene, Benzo[b]fluoranthene + Benzo[j] fluoranthene, Benzo[e]pyrene, Benzo[k]fluoranthene, Chrysene, Dibenzo(a,h)anthracene Fluoranthene, Indeno(1,2,3-c,d)pyrene, Indeno(1,2,3-c,d)pyrene

⁵ Means Tables 4.13 and 4.14 GAMPHCSNZ

Sample Ref	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
Sample Depth	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2

Asbestos in Soil

Asbestos Presence / Absence	Asbestos NOT detected	Asbestos NOT detected	Chrysotile (White Asbestos) 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			Loose Fibres								
As Received Weight g	728.7	749.2	704.7	632.3	659.7	573.7	747.1	828.4	773.8	653.1	
Dry Weight g	659.1	694.6	585.0	582.1	541.6	507.9	667.2	748.7	638.7	533.1	
Moisture %	10	7	17	8	18	11	11	10	17	18	
Asbestos in ACM as % of Total Sample % w/w	<0.001	<0.001	<0.001	<0.001	<0.001	<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	<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	<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	<0.001	<0.001	<0.001	<0.001	<0.001	
Sample Fraction >10mm g	194.9	32.2	95.1	107.4	35.8	126.9	85.1	174.8	113.9	57.0	
Sample Fraction <10mm to 2mm g	240.9	187.2	168.6	148.7	200.0	138.9	129.0	276.0	169.5	139.8	
Sample Fraction <2mm g	222.5	472.3	318.7	321.0	304.5	241.2	451.1	297.1	353.8	334.9	
<2mm Subsample Weight g	57.6	55.2	54.3	54.8	56.8	54.2	50.5	50.2	56.0	54.8	
Weight of Asbestos in ACM (Non-Friable) g	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Weight of Asbestos as Fibrous Asbestos (Friable) g	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Weight of Asbestos as Asbestos Fines (Friable) g	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	

6.0 Conclusion / Discussion

This investigation including the soil sampling results indicate:

- i. The stop banks meet NES-CS residential soil value criteria, the most stringent NES-CS land use criteria. (As a consequence, they also meet recreational criteria)
- ii. While not quite meeting the underlying/original background soil values of this Woolston area, the soil values are very close to meeting that standard, and furthermore indicated a consistency in soil value along the length of the stop bank.

If the Christchurch Urban Background criteria were applied, “background” compliance would largely be achieved. That background value had been created for Christchurch to suit an urban environment.

- iii. The land / clean fill operator indicated that a minimum of 300mm soil cover would be placed on the stop bank surface. KPES in its investigation suggests a much greater than 300mm cover exists. Sampling at 0.7m bgl indicated “soil”. Only at location C4 did some gravel appear in the sample.
- iv. The evidence suggests that only materials from the site were used for stop bank formation (i.e no imported material). Evidence states/indicates that there was sufficient material available on the land for the development of the site and the stop banks.
- v. In PDP July 2005 reporting suggests similar levels to that of this investigation.

In conclusion while the stop banks would appear to meet recreational criteria (the land use categorisation it is understood it will be used as), the stop banks also meet residential criteria, a more stringent standard.

7.0 Limitations

Peebles Group Ltd agrees 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 Peebles Group Ltd. No third party may rely upon any advice or work done by KPES Ltd in relation to the Services.

It is acknowledged that while the site has been investigated and indicated as meeting NES-CS criteria contamination may still exist. Peebles Group Ltd agrees that KPES Ltd shall have no liability in respect of any contaminated ground or other area. All dealings with contaminated material and areas should it arise shall be the responsibility of the Peebles Group 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 Ltd.



Appendix A: PDP, PSI July 2005



6 July 2005

Phillip Percy
Eliot Sinclair and Partners Ltd
151 Kilmore Street
CHRISTCHURCH

Dear Phillip,

PRELIMINARY ENVIRONMENTAL SITE INVESTIGATION AT KENNAWAY FARM, TUNNEL ROAD, FERRYMEAD, CHRISTCHURCH

1.0 INTRODUCTION

Eliot Sinclair and Partners Ltd has engaged Pattle Delamore Partners Limited (PDP) to carry out a preliminary site investigation at Kennaway Farm, adjacent to Tunnel Road, Ferrymead, Christchurch. This environmental assessment has been carried out to provide a generalised overview of chemical residues that may be present within the surface soils as a result of the current use of the property for horse grazing and market gardening purposes. The site is intended to be developed into a commercial/industrial area.

This letter reports on the preliminary soil sampling that was carried out from the surface soils over the site, a review of the subsequent laboratory analysis results and comparison with relevant environmental acceptance criteria.

The objective of this investigation was to provide preliminary information on the surface soils over the site and to provide an assessment as to the potential environmental and human health risks that the soils may pose under a commercial/industrial land use setting.

A site location map and a site layout plan are appended as Figures 1 and 2 respectively. Photographs of the investigation site and specific features are also appended.

2.0 SITE DESCRIPTION

The investigation site consists of two land blocks adjacent to and to the west of Tunnel Road. The northernmost block (Lot 1 DP 53089 and pt RS120) is approximately 13 ha in size and the second block (Lot 2 DP 53089), located immediately to the south of Lot 1, is approximately 16.4 ha in size. Land parcel Pt RS 120 is located in the northeast corner of the site. The entire site (Lot 1, pt RS120 and Lot 2) is bounded to the northwest and west by the Heathcote River, to the east by Tunnel Road and to the southwest by industrial properties. The site is accessed via a drive that runs along the Heathcote River from the intersection of Cumnor Terrace and Chapmans Road.

A mixture of residential properties (closest is 65 m north), industrial properties (to the west and south) and agricultural land (beyond Tunnel Road to the east) surrounds the investigation site. The site has a level aspect and was being used at the time of investigation for horse grazing, with a small section (southwestern end of Lot 2, adjacent to the site access) used for market gardening purposes.

PRELIMINARY ENVIRONMENTAL SITE INVESTIGATION AT KENNAWAY FARM, TUNNEL ROAD, FERRYMEAD,
CHRISTCHURCH

An oval horse training track is present in the northern end of Lot 2 and a second horse training area is present to the northeast of the market garden area. A dwelling and a number of outbuildings associated with the horses and market gardening are present close to the site access as shown on Figure 3D. These buildings include a pump shed, a tractor storage shed, dirt floor stables and a miscellaneous storage shed. Photos are appended to this letter report. A dirt floored shed located along the southwest boundary of the market garden area appears to be a former horse stable now used for storage of market gardening equipment and horse feed.

A soil mound is present in the middle of Lot 1, as shown on Figure 3A. The area is approximately 40 m long, 8 m wide and 1.5 m in height. It is believed to be the result of historical earth moving.

2.1 Christchurch City Council Records

A review of records of old landfills within Christchurch (obtained from the Christchurch City Council) shows the investigation site contains an area listed as a 'Fill Site' from the Waimari Hazards Register. The affected area is approximately three to four hectares of land in the northern most portion of Lot 1. The records list the area as 'British Pavements Dump 1986?'. The fill is reported to be roading waste and concrete.

3.0 CURRENT SITE INVESTIGATIONS

The investigations undertaken at the site by PDP were carried out on 3 June 2005.

3.1 Soil Sampling Rationale

A total of 36 composite soil samples (L1-1 to L1-12, L2-1 to L2-16, L2-MG1 to L2-MG4 and L2-HT1 to L2-HT4) were collected from the site. Samples L1-1 to L1-12 (collected from Lot 1 and pt RS120, shown on Figure 3A) and L2-1 to L2-16 (collected from Lot 2, shown on Figure 3B) comprised of ten sub-samples each, while samples L2-HT1 to L2-HT4 and L2-MG1 to L2-MG4 comprised of four sub-samples each. Composite samples L2-HT1 to L2-HT4 were collected around the horse training tracks as identified on Figure 3C and composite samples L2-MG1 to L2-MG4 were collected in and around the market garden area as shown on Figure 3D.

As the majority of the site was reportedly historically used for horse grazing and a small portion for growing crops/plants (southwestern part of Lot 2), it would be expected that any residual chemical contaminants would be evenly distributed over the near surface soils. As such, it is expected that analysis of composite samples L1-1 to L1-12 and L2-1 to L2-16 would identify generalised areas of any contamination remaining at the site, based on its previous use. Additional targeted sampling was carried out around the market garden areas of Lot 2 since they could contain elevated pesticide chemical residues.

A further targeted sample, L1-SP1, was collected from the stockpile of soil in Lot 1.

3.2 Soil Sampling

Soil sampling was carried out in accordance with guidelines outlined by Auckland Regional Council (2002). Soil samples were collected at each sub-sample location using a stainless-steel hand-held soil corer. The corer was pushed into the ground surface with the foot to a depth of 75 mm below ground level to collect a plug of soil. The plug of soil was removed from the corer and placed into a pre-cleaned plastic bucket. This procedure was repeated at each of the ten sub-sample and four sub-sample locations. The ten/four plugs (sub-samples) of soil were then thoroughly mixed using a pre-cleaned stainless-steel trowel and then placed into a glass jar with a Teflon-lined sealed lid, which were provided by the analytical laboratory. A single soil sample, L1-SP1, collected from the stockpile within the centre of Lot 1 was collected with a stainless steel trowel and placed directly into a laboratory supplied glass jar.

An oval horse training track is present in the northern end of Lot 2 and a second horse training area is present to the northeast of the market garden area. A dwelling and a number of outbuildings associated with the horses and market gardening are present close to the site access as shown on Figure 3D. These buildings include a pump shed, a tractor storage shed, dirt floor stables and a miscellaneous storage shed. Photos are appended to this letter report. A dirt floored shed located along the southwest boundary of the market garden area appears to be a former horse stable now used for storage of market gardening equipment and horse feed.

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A review of records of old landfills within Christchurch (obtained from the Christchurch City Council) shows the investigation site contains an area listed as a 'Fill Site' from the Waimari Hazards Register. The affected area is approximately three to four hectares of land in the northern most portion of Lot 1. The records list the area as 'British Pavements Dump 1986?'. The fill is reported to be roading waste and concrete.

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Following collection, the soil samples were placed into chilled storage (chilly bin containing frozen ice packs) prior to being shipped via an overnight courier to RJ Hill Laboratories Ltd, in Hamilton for analysis. The samples were received by the laboratory on the following day after shipment.

Samples L1-1 to L1-12, L1-SP1, L2-1 to L2-16 and L2-MG1 to L2-MG4 were analysed for a suite of seven metals and organochlorine pesticides. These compounds are typically associated with historical pesticide use between the early 1900's (metal analytes) and the late 1960's (organochlorines). In addition, alternate samples collected from Lots 1 and 2, and samples L2-MG1 to L2-MG4, collected from the market garden area, were analysed for organonitrogen and organophosphorus pesticides. These compounds are typically associated with more recent and current pesticide use on market gardens. Analysis of samples L2-MG1 to L2-MG4 would assist in identifying chemicals associated with any market gardening related activities (pesticide use) that may have recently occurred in this area. These samples were targeted at potential 'hot-spots' based on visual observations of the site and information provided by a market gardener on site.

Samples collected around the horse training tracks, L2-HT1 to L2-HT4, were taken for the purpose of identifying polycyclic aromatic hydrocarbons (PAHs) which may be present following placement of ash/clinker placed to soften the horse track bed for horses' hoofs.

The soil sampling locations are shown in Figures 3A, 3B, 3C and 3D.

4.0 LABORATORY RESULTS

4.1 Metals Analysis

The laboratory results for the metal analyses are presented in Table 1. With regard to general composite sampling over Lot 1, pt RS120 and Lot 2, represented by samples L1-1 to L1-12 and L2-1 to L2-16 the results of the metals analysis showed similar concentrations, at or around background concentrations, over the site. Concentrations of metals in sample L1-SP1 were within the range shown in the general composite samples.

The results of the metals analyses for the soil samples collected around the market garden, represented by samples L2-MG1 to L2-MG4, showed slightly higher concentrations compared to the samples collected from the general areas of the site. For example, arsenic was recorded up to 19 mg/kg in soils within the market garden and up to 8 mg/kg within the general areas of the site. Similarly, lead and zinc were recorded up to 306 mg/kg and 453 mg/kg respectively within the market garden compared with 125 mg/kg and 190 mg/kg respectively within the general areas of the site.

4.2 Poly-cyclic Aromatic Hydrocarbons (PAHs)

The laboratory results for relevant PAH analyses are presented in Table 2. Naphthalene was recorded at the laboratory level of detection (0.2 mg/kg) with samples L2-HT1 and L2-HT4 and below the laboratory level of detection within the remaining two samples. Pyrene was recorded at 0.03 mg/kg within sample L2-HT1 but below the laboratory level of detection (0.04 mg/kg) within the remaining three samples and the calculated benzo[a]pyrene equivalent concentration¹ was not recorded above 0.05 mg/kg. The risk associated with the mixture of carcinogenic PAHs, based on the benzo(a)pyrene equivalent concentration has been calculated and is shown in Table 2.

¹ Benzo[a]pyrene equivalent concentration may be conceptualised as the concentration of benzo[a]pyrene that would give the same risk as a mixture of carcinogenic PAHs

4.3 Organochlorine Pesticides

The laboratory results for the relevant organochlorine pesticide analysis are presented in Table 3. Of the 24 individual pesticides analysed within the organochlorine pesticide suite, DDT associated compounds were recorded above the laboratory level of detection in 29 of the 33 samples (up to 0.89 mg/kg). DDT and associated compounds DDE and DDD are measured as the sum of all the isomers, Σ DDT. Σ DDT was recorded at its highest level for composite sample L1-SS3 (0.89 mg/kg). DDD was a pesticide in its own right and DDD and DDE are also degradation and metabolic products of DDT.

Dieldrin was recorded above the laboratory level of detection in four of the analysed samples, three of which were collected from the market garden area (up to 0.39 mg/kg). Delta-BHC was recorded above the laboratory level of detection in one sample (at 0.02 mg/kg; sample L2-S16) and Total Chlordane was detected above the laboratory level of detection in two of the samples (up to 0.09 mg/kg; sample L2-SS10).

Only the compounds recorded above the laboratory level of detection have been tabulated for comparison with the guideline criteria.

4.4 Organonitrogen/Organophosphorous Pesticides

Of the 72 individual pesticides analysed within this suite none were recorded above the laboratory limit of detection for the individual analysed compounds (0.06 mg/kg to 0.4 mg/kg). As none of the samples were recorded above the laboratory level of detection the results information has not been tabulated.

Copies of the laboratory reports are appended.

5.0 ENVIRONMENTAL ASSESSMENT

Guideline values have been developed for various chemicals to determine whether, for the particular site use, the concentrations present pose an unacceptable health risk to the users of the site via various exposure pathways. For this investigation, published New Zealand guidelines have been used for comparison with the soil analysis results. The guideline values have been taken from Ministry for the Environment (MfE) and Ministry of Health (MoH) guideline criteria entitled "*Health and Environmental Guidelines for Selected Timber Treatment Chemicals*" (1997). In accordance with MfE 2003, where New Zealand guidelines are not available reference has been made to the United States Environmental Protection Agency (USEPA) "*Region 9 Preliminary Remediation Goals (PRGs), 2002*". The USEPA guidelines do not represent an action level or a clean up level but provide an indication that further evaluation of the potential risks to human health be assessed. The four composite soil samples collected from the horse training tracks, which were analysed for polycyclic aromatic hydrocarbons (PAHs) were compared with Tier 1 generic guideline criteria presented in the MfE document "*Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites In New Zealand*" (1999).

Criteria for commercial/industrial land use have been used for this investigation, and the results have been compared with relevant environmental guidelines presented in Tables 1, 2 and 3.

The MfE/MoH (1997) and MfE (1999) guidelines were developed to protect human health and are based on ingestion of contaminated soil, dermal adsorption of contaminants from soil and inhalation of contaminated particles.

With respect to DDT and its associated compounds, no guideline value has been officially adopted for New Zealand at the time of writing this letter. However, a report prepared by Landcare Research entitled "*Review of Soil Acceptance Criteria for Copper and DDT*" (November 2004) has endorsed a residential guideline value initially calculated by Pattle Delamore Partners Ltd (November 2003). The PDP calculated residential guideline value of 25 mg/kg, based on the sum of DDT and associated compounds (DDD and DDE isomers) Σ DDT, has also been adopted by the CCC, until such

time the Ministry for the Environment formerly adopts a guideline value. The basis for this guideline is set out in a paper by Dr Graeme Proffitt of PDP, entitled 'Some Thoughts on the Redevelopment of Former Orchard Land for Residential Land Use' that was presented at the WasteMINZ conference (November 2003). In the absence of any commercial/industrial guideline criteria the residential land use criterion has been used in this assessment as a very conservative approach.

Similarly, no New Zealand guideline criteria currently exist for the protection of human health or the environment with respect to the presence of Dieldrin concentrations in soils at the time of writing this letter. Based on previous work PDP has undertaken with regard to environmental site assessments and the presence of Dieldrin in soils, Environment Canterbury and the MfE have endorsed an acceptable residential land use guideline value of 5 mg/kg (based on not more than 10% of home grown produce being consumed). The guideline value has been presented in the Egis Consulting, Australia report prepared for the Tasman District Council entitled, 'Derivation of Risk-Based Acceptance Criteria for Human Health and the Environment Revised Report', (February 2001). In the absence of any commercial/industrial guideline criteria the residential land use criterion has been used in this assessment as a very conservative approach.

5.1 Metals

Comparison of the seven individual metal analytes within the tested soils with the MoH/MfE (1997) guidelines and USEPA (2002) PRGs respectively shows that all samples have concentrations below the respective criteria for industrial commercial land use.

5.2 Organochlorine Pesticides

Comparison of the calculated Σ DDT compounds detected in composite soil samples with the Landcare and CCC endorsed guideline value of 25 mg/kg shows that the tested soils have acceptable concentrations under residential land use. This approach is very conservative as the expected end land use is commercial/industrial.

Comparison of the Dieldrin concentration detected within samples with the value adopted by the Tasman District Council of 5 mg/kg shows the tested soils have acceptable concentrations under residential land use. This approach is very conservative as the expected end land use is commercial/industrial.

alpha-BHC (also known as Cyclohexane) and total Chlordane were also recorded below USEPA (2002) PRG acceptance criteria for commercial/industrial land use within the tested soil samples.

5.3 Organonitrogen/Organophosphorous Pesticides

As no organonitrogen/organophosphorous compounds were recorded above the laboratory level of detection, it is assumed that these compounds are present within the tested soils at acceptable concentrations with respect to commercial/industrial land use criteria.

5.4 Polycyclic Aromatic Hydrocarbons

The four samples (L2-HT1 to L2-HT4) analysed for polycyclic aromatic hydrocarbons recorded concentrations that were below the MfE (1999) Tier 1 generic soil acceptance criteria for commercial/industrial land use.

6.0 CONCLUSIONS

Preliminary investigations have been undertaken at Kennaway Farm, adjacent to Tunnel Road, Christchurch. The investigation site was previously used for market gardening purposes and for general horse grazing. The investigations

included the collection of 37 soil samples, over the site and analysis for general contaminant indicators (arsenic, cadmium, chromium, copper, nickel, lead, zinc, organochlorine pesticides and organonitrogen/organophosphorous pesticides). Samples were also analysed for PAHs for areas currently used for horse training tracks.

The sampling results showed that the composite samples had acceptable concentrations of metals with respect to commercial/industrial land use guideline criteria.

With respect to organochlorine pesticides, only DDT associated compounds, Dieldrin, Delta-BHC and Chlordane were recorded above the laboratory level of detection in some of the tested samples. Comparison of DDT associated compounds with the Landcare/CCC endorsed residential land use guideline value showed acceptable concentrations under residential land use. Comparison of the Dieldrin concentrations with the Tasman District Council endorsed value also showed acceptable concentrations under residential land use. There are currently no New Zealand endorsed commercial/industrial land use guidelines and the use of residential criteria for these two compounds in this assessment is considered to be a very conservative approach. Delta-BHC and Chlordane were recorded at concentrations that were below the commercial/industrial guideline values. Organonitrogen/organophosphorous pesticide compounds were not recorded above the laboratory level of detection and as such are not considered to be a significant risk to human health or to the receiving environment. This approach is conservative given that the end use of the site is likely to be for commercial/industrial purposes. Acceptable polycyclic aromatic hydrocarbon concentrations were recorded in the four composite samples collected from the horse training areas of the site with respect to commercial/industrial land use.

Based on the results of the assessment the tested soils are suitable for the proposed development of the site for commercial/industrial purposes.

7.0 REFERENCES

- Landcare Research, November 2004. *Review of Soil Acceptance Criteria for Copper and DDT*. Prepared for Auckland Regional Council. Report No. LC0405/043.
- Auckland Regional Council, Auckland District Health Board 2002. *ARC Draft Soil Sampling Protocol for Horticultural Sites PRELIMINARY DRAFT 2b - 3/10/02*
- Ministry for the Environment (MfE), 2003. *Hierarchy and Application in New Zealand of Environmental Guidelines. Contaminated Land Management No. 2*, MfE, Wellington, 2003.
- Ministry for the Environment (MfE), 1999. *Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand*". Ministry for the Environment, Wellington, New Zealand.
- Ministry of Health (MoH), Ministry for the Environment (MfE), 1997. *Health and Environmental Guidelines for Selected Timber Treatment Chemicals*. Ministry of Health, Ministry for the Environment, Wellington, New Zealand.
- Pattle Delamore Partners Ltd, 2003. *Some Thoughts on the Redevelopment of Former Orchard Land for Residential Land Use*. Prepared by Dr Graeme Proffitt of Pattle Delamore Partners Ltd. Proceedings of the 15th Annual WasteMINZ conference, Nelson, 4-6 November 2003.
- Tasman District Council, February 2001. *Derivation of Risk-Based Acceptance Criteria for Human Health and the Environment Revised Report*. Prepared by Egis Consulting, Australia.
- United States Environmental Protection Agency (USEPA), Preliminary Remediation Goals (PRGs). 2002a.

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The sampling results showed that the composite samples had acceptable concentrations of metals with respect to commercial/industrial land use guideline criteria.

With respect to organochlorine pesticides, only DDT associated compounds, Dieldrin, Delta-BHC and Chlordane were recorded above the laboratory level of detection in some of the tested samples. Comparison of DDT associated compounds with the Landcare/CCC endorsed residential land use guideline value showed acceptable concentrations under residential land use. Comparison of the Dieldrin concentrations with the Tasman District Council endorsed value also showed acceptable concentrations under residential land use. There are currently no New Zealand endorsed commercial/industrial land use guidelines and the use of residential criteria for these two compounds in this assessment is considered to be a very conservative approach. Delta-BHC and Chlordane were recorded at concentrations that were below the commercial/industrial guideline values. Organonitrogen/organophosphorous pesticide compounds were not recorded above the laboratory level of detection and as such are not considered to be a significant risk to human health or to the receiving environment. This approach is conservative given that the end use of the site is likely to be for commercial/industrial purposes. Acceptable polycyclic aromatic hydrocarbon concentrations were recorded in the four composite samples collected from the horse training areas of the site with respect to commercial/industrial land use.

Based on the results of the assessment the tested soils are suitable for the proposed development of the site for commercial/industrial purposes.

7.0 REFERENCES

- Landcare Research, November 2004. *Review of Soil Acceptance Criteria for Copper and DDT*. Prepared for Auckland Regional Council. Report No. LC0405/043.
- Auckland Regional Council, Auckland District Health Board 2002. *ARC Draft Soil Sampling Protocol for Horticultural Sites PRELIMINARY DRAFT 2b - 3/10/02*
- Ministry for the Environment (MfE), 2003. *Hierarchy and Application in New Zealand of Environmental Guidelines. Contaminated Land Management No. 2*, MfE, Wellington, 2003.
- Ministry for the Environment (MfE), 1999. *Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand*". Ministry for the Environment, Wellington, New Zealand.
- Ministry of Health (MoH), Ministry for the Environment (MfE), 1997. *Health and Environmental Guidelines for Selected Timber Treatment Chemicals*. Ministry of Health, Ministry for the Environment, Wellington, New Zealand.
- Pattle Delamore Partners Ltd, 2003. *Some Thoughts on the Redevelopment of Former Orchard Land for Residential Land Use*. Prepared by Dr Graeme Proffitt of Pattle Delamore Partners Ltd. Proceedings of the 15th Annual WasteMINZ conference, Nelson, 4-6 November 2003.
- Tasman District Council, February 2001, *Derivation of Risk-Based Acceptance Criteria for Human Health and the Environment Revised Report*. Prepared by Egis Consulting, Australia.
- United States Environmental Protection Agency (USEPA), Preliminary Remediation Goals (PRGs). 2002a.

PRELIMINARY ENVIRONMENTAL SITE INVESTIGATION AT KENNAWAY FARM, TUNNEL ROAD, FERRYMEAD,
CHRISTCHURCH

8.0 LIMITATIONS

This letter has been prepared based on site observations and the analytical testing of 37 composite soil samples collected during preliminary site investigations undertaken by Pattle Delamore Partners Ltd on 3 June 2005.

The results of the soil sampling provide a screening of the chemicals present and should not be considered to be an accurate measure of the exact chemical concentration. The information has been used to describe the ground conditions in the vicinity of the soil samples. The interpreted conditions cannot be guaranteed. Due to the inherent non-homogenous nature of soil, re-testing conducted over the site soils could show elevated concentrations above indicated soil acceptance guideline values.

The information contained within this report applies to the date of the site inspection (3 June 2005). With time, the site conditions, or the environmental guidelines used in the report could change, so that the reported assessment and conclusions are no longer valid. Thus, in the future, the report should not be used without confirming the validity of the report's information at that time.

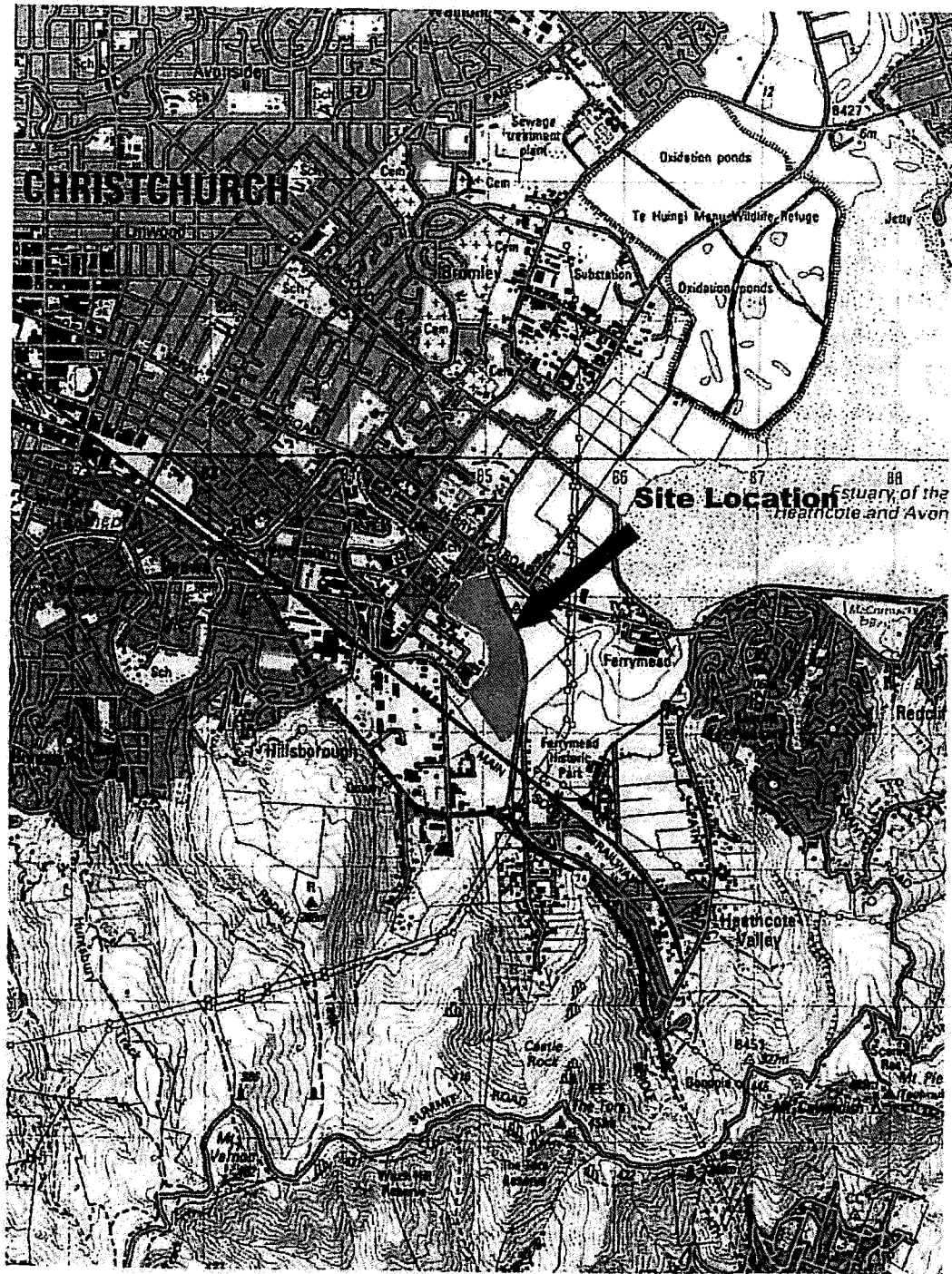
This letter has been prepared for Eliot Sinclair and Partners according to their instructions for the particular objectives described in the letter. The information contained in the letter should not be used by anyone else or for any other purposes.

Yours sincerely

PATTLE DELAMORE PARTNERS LIMITED



PP Ele Newton



NZMS 260 Map No. M35/M36

SCALE 1 : 50,000

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Figure 1 : Site Location

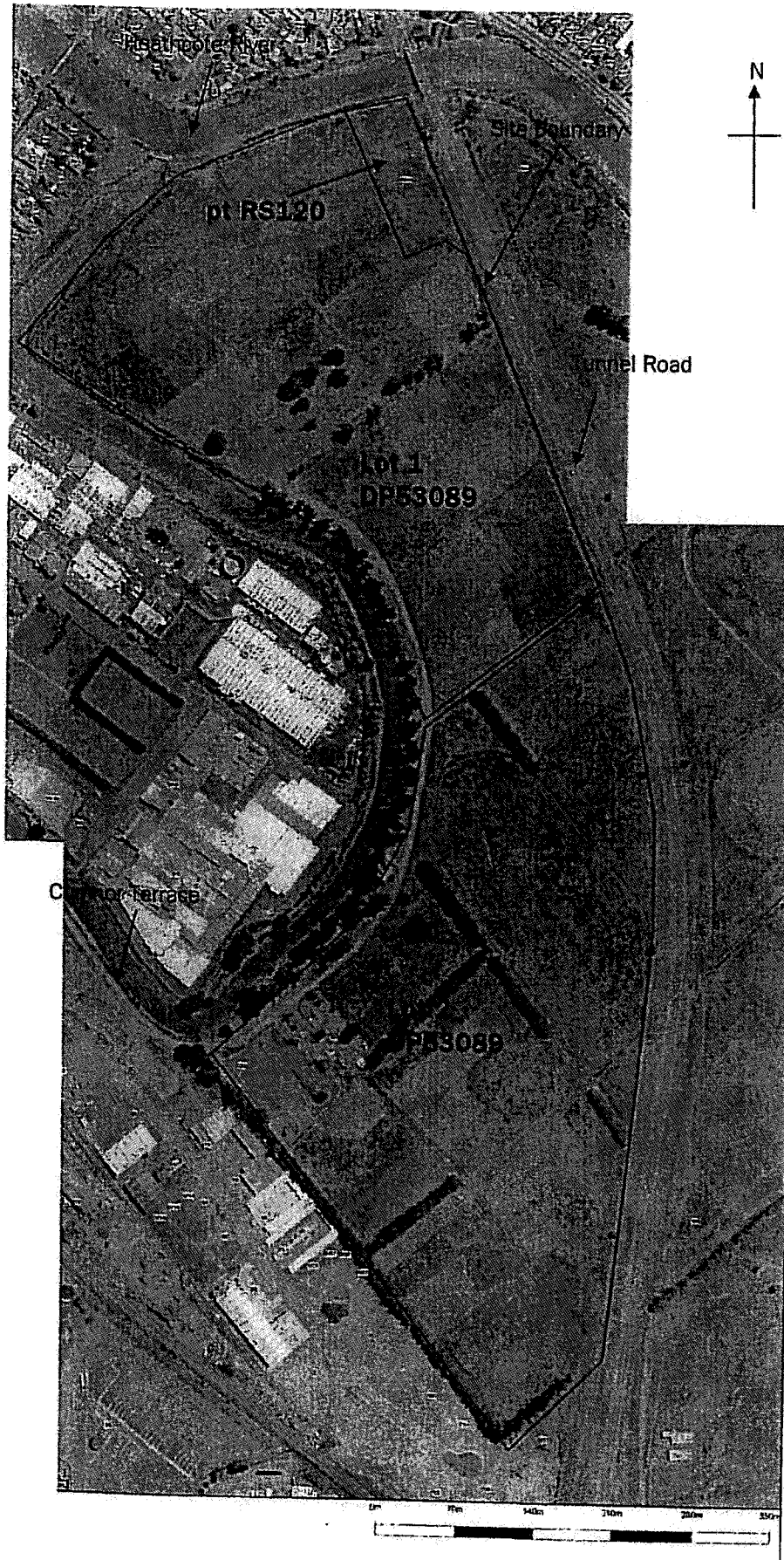


Figure 2: Site layout plan

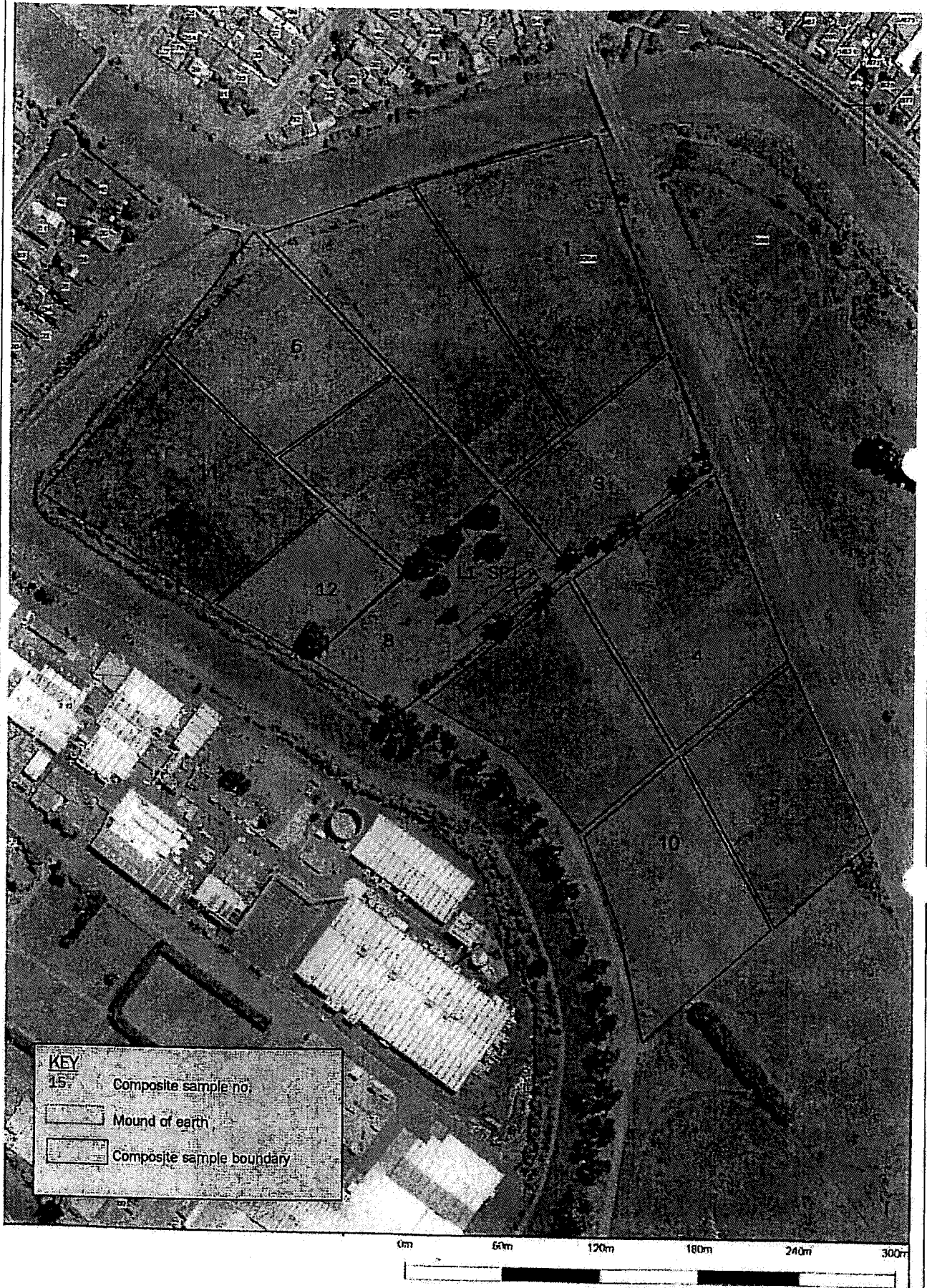


Figure 3A: Sampling Strategy, Lot 1

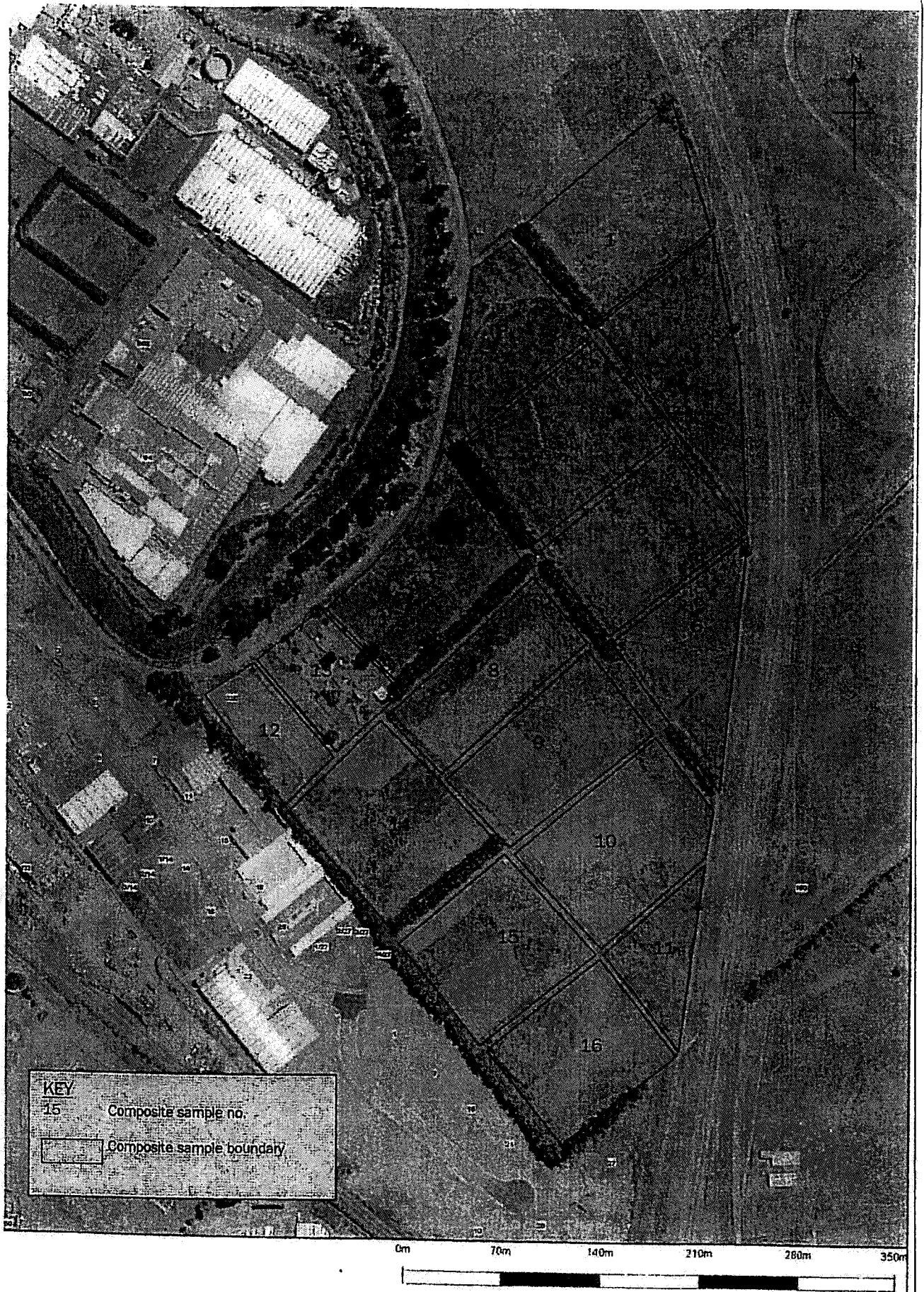


Figure 3B: Sampling Strategy, Lot 2

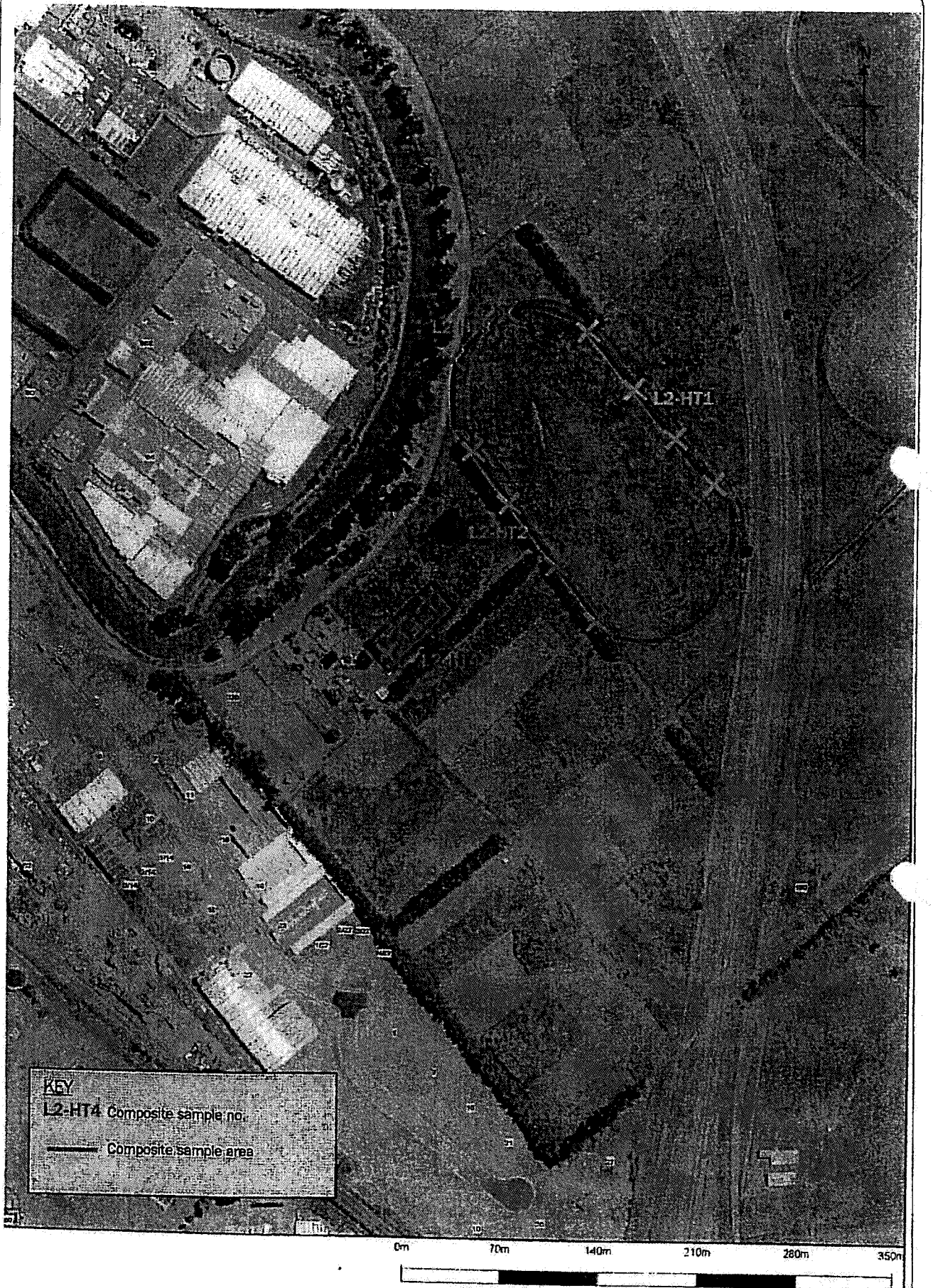


Figure 3C: Sampling Strategy, Horse Tracks




KEY	
L2-MG4	Composite sample no.
	Location of sheds and storage areas

Figure 3D: Sampling Strategy, Market Garden Area

Table 1: Soil Sampling Results - Metals

Analyte (mg/kg)	Mof, MFE Timber Treatment Guidelines	USEPA PRGs	Sample Name												
			Collected from Lot 1												Collected from soil mound
			Commercial/Industrial ³ Land Use	L1-SS1	L1-SS2	L1-SS3	L1-SS4	L1-SS5	L1-SS6	L1-SS7	L1-SS8	L1-SS9	L1-SS10	L1-SS11	L1-SS12
Total Recoverable Arsenic	500	-	5	5	5	5	5	4	5	5	4	4	6	4	4
Total Recoverable Cadmium	-	450	0.1	0.1	0.1	0.2	0.3	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.1
Total Recoverable Chromium	360 ²	-	20	24	18	18	18	17	17	23	16	15	30	21	17
Total Recoverable Copper	>10,000	-	11	11	12	11	11	10	10	15	10	10	13	9	14
Total Recoverable Nickel	-	20,000	11	11	12	12	11	10	10	11	11	10	11	10	12
Total Recoverable Lead	-	750	32.4	32.5	32.9	31.6	31.4	37.1	25	58.8	31	25.7	34.3	24.8	42.3
Total Recoverable Zinc	-	100,000	73	79	88	81	76	71	67	102	89	70	90	88	108

Analyte (mg/kg)	Mof, MFE Timber Treatment Guidelines	USEPA PRGs	Sample Name																			
			Collected from Lot 2																Collected from Market Garden Area			
			Commercial/Industrial ³ Land Use	L2-SS1	L2-SS2	L2-SS3	L2-SS4	L2-SS5	L2-SS6	L2-SS7	L2-SS8	L2-SS9	L2-SS10	L2-SS11	L2-SS12	L2-SS13	L2-SS14	L2-SS15	L2-SS16	L2-MG1	L2-MG2	L2-MG3
Total Recoverable Arsenic	500	-	4	3	3	3	3	4	3	4	4	4	5	4	8	4	6	5	13	17	19	4
Total Recoverable Cadmium	-	450	0.1	0.1	0.1	0.1	<0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.1	0.4	0.2	0.2	0.2	0.6	1	0.4	0.5
Total Recoverable Copper	>10,000	-	11	9	9	8	8	17	65	11	12	12	14	10	18	13	15	16	39	47	47	14
Total Recoverable Nickel	-	20,000	10	8	14	10	10	9	15	10	10	11	11	9	10	11	13	12	13	16	12	9
Total Recoverable Lead	-	750	27.8	23.1	19.1	24.5	21.3	37.5	125	25.1	25.3	27.4	33.9	22.8	185	27.9	30.7	32.6	234	306	107	39.8
Total Recoverable Zinc	-	100,000	74	66	81	78	58	74	90	78	72	71	78	78	190	81	82	82	336	453	374	144

Notes:

1. Criteria based on unpaved commercial/industrial site.
2. Assume chromium present as Cr (VI) as a conservative approach.
3. All results in mg/kg.

Table 2: Soil Sample Results - PAH (ALL PATHWAYS)

Sample Ref.	Soil guideline value ¹	L2 - HT 1	L2 - HT 2	L2 - HT 3	L2 - HT 4
	MfE (1999) ² Commercial/Industrial Land Use - ALL PATHWAYS				
Soil Type -	SAND ³	Sand	Sand	Sand	Sand
Sample Depth (m bgl)	Surface to 1 m	0 - 0.075m	0 - 0.075m	0 - 0.075m	0 - 0.075m
Naphthalene	(190) ^{4,v}	0.2	< 0.2	< 0.2	0.2
BaP Equivalent Conc. ⁶	(11) ^{4,d}	0.03615	0.03615	0.03615	0.0482
Pyrene	NA ⁵	0.03	< 0.03	< 0.03	< 0.04

Note:

1. All results in mg/kg.
2. Criteria from Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand (MfE, August 1999).
3. Criteria assume commercial/industrial land use, 'sand' soil type and contamination depth of surface to 1 m.
4. Values in brackets exceed threshold likely to correspond to formation of residual separate phase hydrocarbons.
5. NA indicates contaminant is not limiting as health based criterion is significantly higher than may be encountered on site. (i.e. 20,000 mg/kg for TPH, 10,000 mg/kg for other contaminants).
6. Risk associated with mixture of carcinogenic PAHs assessed by comparison with criteria based on Benzo(a)pyrene equivalent concentration.
7. The following notes indicate the limiting pathway for each criterion: v - volatilisation, d - dermal.

Table 3: Soil Sampling Results – Pesticides

Analytes (mg/kg)	Guideline value	Sample Ref												
		L1-SS1	L1-SS2	L1-SS3	L1-SS4	L1-SS5	L1-SS6	L1-SS7	L1-SS8	L1-SS9	L1-SS10	L1-SS11	L1-SS12	L1-SP1
		Collected from Lot 2												
ΣDDT	25 ¹	0.12	0.13	0.89	0.045	0.035	0.275	0.175	0.125	0.035	0.045	0.07	0.175	0.195
Dieldrin	5 ²	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Delta-BHC ⁴	140	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Cis-Chlordane	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Trans-Chlordane	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total Chlordane ((cis+trans)*100/42)	65 ³	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Table 3: Soil Sampling Results – Pesticides continued

Analytes (mg/kg)	Guideline value	Sample Ref																				
		L2-SS1	L2-SS2	L2-SS3	L2-SS4	L2-SS5	L2-SS6	L2-SS7	L2-SS8	L2-SS9	L2-SS10	L2-SS11	L2-SS12	L2-SS13	L2-SS14	L2-SS15	L2-SS16	L2-MG1	L2-MG2	L2-MG3	L2-MG4	
		Collected from Lot 2																Collected from Market Garden Area				
ΣDDT	25 ¹	0.06	0.035	0.09	0.12	0.09	0.04	0.055	<0.03	<0.03	0.05	0.035	0.035	0.425	<0.03	0.035	0.035	0.075	0.14	0.035	<0.03	
Dieldrin	5 ²	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.02	< 0.01	< 0.01	< 0.01
Delta-BHC ⁴	140	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Cis-Chlordane	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Trans-Chlordane	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total Chlordane ((cis+trans)*100/42)	65 ³	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

1. Landcare/Christchurch City Council approved guideline value for residential land use AS A CONSERVATIVE APPROACH.
2. Tasman District Council adopted guideline value (2001).
3. USEPA PRGs (2002) preliminary remediation goals. Value based on increased cancer risk of 1 in 100,000.
4. Compound also known as Cyclohexane



Photo 1: Market garden area and storage shed/ former stables

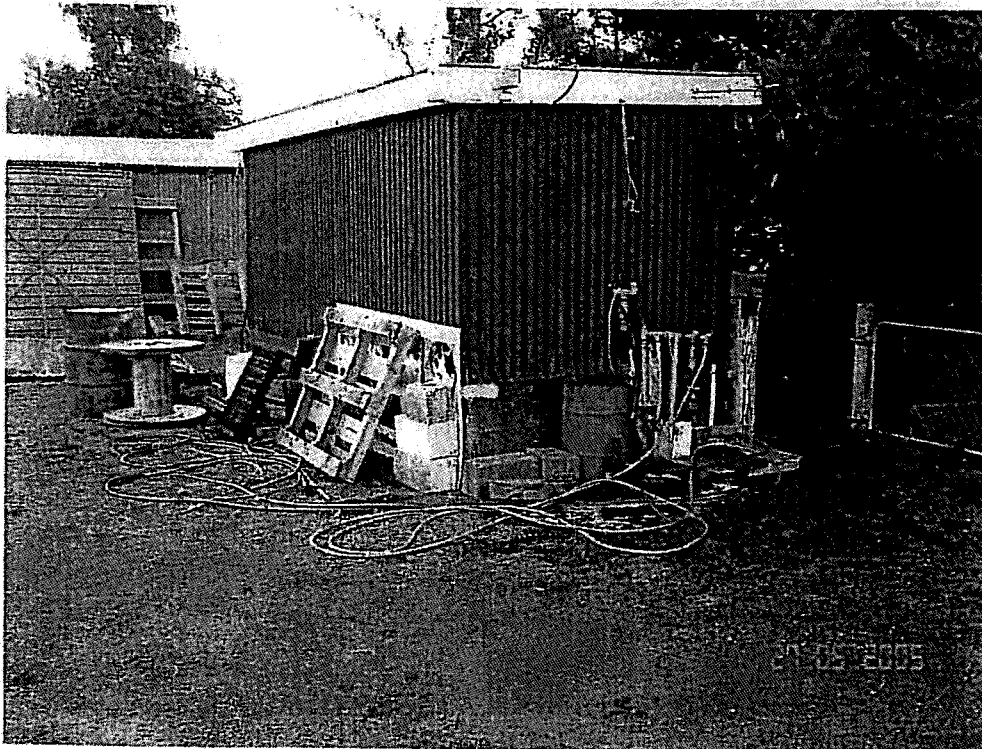


Photo 2: Pump shed



Photo 3: Market garden area storage shed

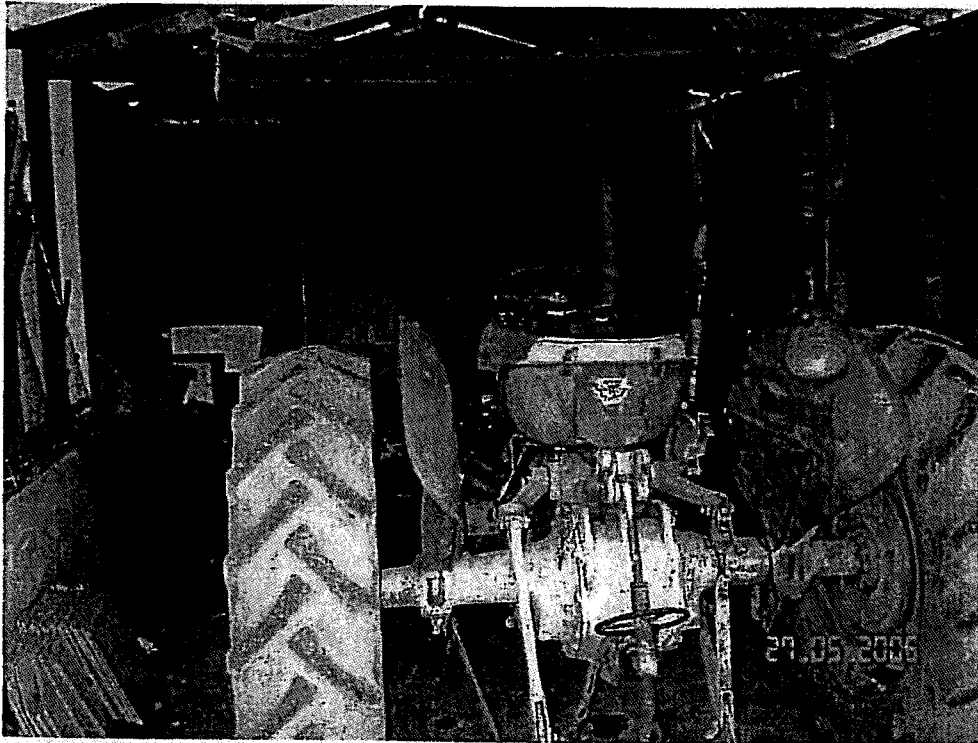


Photo 4: Tractor storage shed



Photo 5: Horse training area (L2-HT4)



Photo 6: Horse training track (L2-HT1 to HT3)

Hill Laboratories

R I Hill Laboratories Limited

Address:
1 Clyde Street,
Private Bag 3205,
✉ Hamilton, New Zealand

Telephone:
+64 (7) 858-2000
Facsimile:
☎ +64 (7) 858-2001

Email:
mail@hill-labs.co.nz
Internet:
www.hill-labs.co.nz



Client: Pattle Delamore Partners Ltd
Address: P O Box 389,
CHRISTCHURCH
Contact: Ele Newton

Laboratory No: 379685
Date Registered: 31/05/2005
Date Completed: 14/06/2005
Page Number: 1 of 16

Client's Reference: C01692100

The results for the analyses you requested are as follows:

Sample Type: Environmental Solids, Soil

Sample Name	Lab No	Dry Matter (g/100g as rcvd)
L1 - SS1 27/5/05	379685/1	71.0
L1 - SS3 27/5/05	379685/3	74.3
L1 - SS5 27/5/05	379685/5	69.7
L1 - SS7 27/5/05	379685/7	71.2
L1 - SS9 27/5/05	379685/9	71.2
L1 - SS11 27/5/05	379685/11	68.1
L2 - SS1 27/5/05	379685/13	69.8
L2 - SS3 27/5/05	379685/15	71.1
L2 - SS5 27/5/05	379685/17	65.2
L2 - SS7 27/5/05	379685/19	76.1
L2 - SS9 27/5/05	379685/21	63.4
L2 - SS11 27/5/05	379685/23	57.6
L2 - SS13 27/5/05	379685/25	77.8
L2 - SS15 27/5/05	379685/27	61.8
L2 - HT 1 27/5/05	379685/29	74.7
L2 - HT 2 27/5/05	379685/30	75.2
L2 - HT 3 27/5/05	379685/31	71.6
L2 - HT 4 27/5/05	379685/32	65.2
L2 - MG 1 27/5/05	379685/33	93.9
L2 - MG 2 27/5/05	379685/34	85.2
L2 - MG 3 27/5/05	379685/35	84.8
L2 - MG 4 27/5/05	379685/36	93.6



This Laboratory is accredited by International Accreditation New Zealand (previously known as TELARC). The tests reported herein have been performed in accordance with its terms of accreditation, with the exception of tests marked *, which are not accredited.
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Sample Type: Environmental Solids, Soil

Sample Name	Lab No	Total Recoverable Arsenic	Total Recoverable Cadmium	Total Recoverable Chromium	Total Recoverable Copper	Total Recoverable Nickel
		(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)
L1 - SS1 27/5/05	379685/1	5	0.1	20	11	11
L1 - SS2 27/5/05	379685/2	5	0.1	24	11	11
L1 - SS3 27/5/05	379685/3	5	0.1	18	12	12
L1 - SS4 27/5/05	379685/4	5	0.2	16	11	12
L1 - SS5 27/5/05	379685/5	5	0.3	16	11	11
L1 - SS6 27/5/05	379685/6	4	0.1	17	10	10
L1 - SS7 27/5/05	379685/7	5	0.1	17	10	10
L1 - SS8 27/5/05	379685/8	5	0.1	23	15	11
L1 - SS9 27/5/05	379685/9	4	0.2	16	10	11
L1 - SS10 27/5/05	379685/10	4	0.1	15	10	10
L1 - SS11 27/5/05	379685/11	6	0.1	30	13	11
L1 - SS12 27/5/05	379685/12	4	0.2	21	9	10
L2 - SS1 27/5/05	379685/13	4	0.1	15	11	10
L2 - SS2 27/5/05	379685/14	3	0.1	13	9	8
L2 - SS3 27/5/05	379685/15	3	0.1	13	9	14
L2 - SS4 27/5/05	379685/16	3	0.1	15	9	10
L2 - SS5 27/5/05	379685/17	3	< 0.1	14	8	10
L2 - SS6 27/5/05	379685/18	4	0.1	14	17	9
L2 - SS7 27/5/05	379685/19	3	0.2	14	65	15
L2 - SS8 27/5/05	379685/20	4	0.1	15	11	10
L2 - SS9 27/5/05	379685/21	4	0.1	16	12	10
L2 - SS10 27/5/05	379685/22	4	0.2	16	12	11
L2 - SS11 27/5/05	379685/23	5	0.2	18	14	11
L2 - SS12 27/5/05	379685/24	4	0.1	15	10	9
L2 - SS13 27/5/05	379685/25	8	0.4	16	18	10
L2 - SS14 27/5/05	379685/26	4	0.2	17	13	11
L2 - SS15 27/5/05	379685/27	6	0.2	18	15	13
L2 - SS16 27/5/05	379685/28	5	0.2	17	16	12
L2 - MG 1 27/5/05	379685/33	13	0.6	23	39	13
L2 - MG 2 27/5/05	379685/34	17	1.0	26	47	16
L2 - MG 3 27/5/05	379685/35	19	0.4	38	47	12
L2 - MG 4 27/5/05	379685/36	4	0.5	13	14	9

Sample Name	Lab No	Total Recoverable Lead	Total Recoverable Zinc
		(mg/kg dry wt)	(mg/kg dry wt)
L1 - SS1 27/5/05	379685/1	32.4	73
L1 - SS2 27/5/05	379685/2	32.5	79
L1 - SS3 27/5/05	379685/3	32.9	88
L1 - SS4 27/5/05	379685/4	31.6	81
L1 - SS5 27/5/05	379685/5	31.4	76
L1 - SS6 27/5/05	379685/6	37.1	71
L1 - SS7 27/5/05	379685/7	25.0	67
L1 - SS8 27/5/05	379685/8	58.6	102
L1 - SS9 27/5/05	379685/9	31.0	89

Sample Name	Lab No	Total Recoverable Lead (mg/kg dry wt)	Total Recoverable Zinc (mg/kg dry wt)
L1 - SS10 27/5/05	379685/10	25.7	70
L1 - SS11 27/5/05	379685/11	34.3	90
L1 - SS12 27/5/05	379685/12	24.8	68
L2 - SS1 27/5/05	379685/13	27.8	74
L2 - SS2 27/5/05	379685/14	23.1	56
L2 - SS3 27/5/05	379685/15	19.1	61
L2 - SS4 27/5/05	379685/16	24.5	78
L2 - SS5 27/5/05	379685/17	21.3	58
L2 - SS6 27/5/05	379685/18	37.5	74
L2 - SS7 27/5/05	379685/19	125	90
L2 - SS8 27/5/05	379685/20	25.1	78
L2 - SS9 27/5/05	379685/21	25.3	72
L2 - SS10 27/5/05	379685/22	27.4	71
L2 - SS11 27/5/05	379685/23	33.9	78
L2 - SS12 27/5/05	379685/24	22.8	78
L2 - SS13 27/5/05	379685/25	185	190
L2 - SS14 27/5/05	379685/26	27.9	81
L2 - SS15 27/5/05	379685/27	30.7	82
L2 - SS16 27/5/05	379685/28	32.6	82
L2 - MG 1 27/5/05	379685/33	234	336
L2 - MG 2 27/5/05	379685/34	306	453
L2 - MG 3 27/5/05	379685/35	107	374
L2 - MG 4 27/5/05	379685/36	39.8	144

Organochlorine pesticides, screening

Sample Name	L1 - SS1 27/5/05	L1 - SS2 27/5/05	L1 - SS3 27/5/05	L1 - SS4 27/5/05	L1 - SS5 27/5/05
Lab No	379685/1	379685/2	379685/3	379685/4	379685/5
Units	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)
2,4'-DDD	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,4'-DDE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,4'-DDT	< 0.01	< 0.01	0.02	< 0.01	< 0.01
4,4'-DDD	< 0.01	< 0.01	0.01	< 0.01	< 0.01
4,4'-DDE	0.04	0.05	0.04	< 0.01	< 0.01
4,4'-DDT	0.06	0.06	0.81	0.02	0.01
Aldrin	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Alpha-BHC	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Beta-BHC	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Delta-BHC	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Gamma-BHC (Lindane)	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Cis-Chlordane	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Trans-Chlordane	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total Chlordane ((cis+trans)*100/42)	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Endosulphan I	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Endosulphan II	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Endosulphan sulphate	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Sample Name	L1 - SS1 27/5/05	L1 - SS2 27/5/05	L1 - SS3 27/5/05	L1 - SS4 27/5/05	L1 - SS5 27/5/05
Lab No	379685/1	379685/2	379685/3	379685/4	379685/5
Units	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)
Endrin	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Endrin aldehyde	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Heptachlor	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Heptachlor epoxide	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Hexachlorobenzene	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Methoxychlor	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Organochlorine pesticides, screening

Sample Name	L1 - SS6 27/5/05	L1 - SS7 27/5/05	L1 - SS8 27/5/05	L1 - SS9 27/5/05	L1 - SS10 27/5/05
Lab No	379685/6	379685/7	379685/8	379685/9	379685/10
Units	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)
2,4'-DDD	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,4'-DDE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,4'-DDT	0.05	0.01	0.01	< 0.01	< 0.01
4,4'-DDD	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
4,4'-DDE	0.06	0.07	0.05	< 0.01	< 0.01
4,4'-DDT	0.15	0.08	0.05	0.01	0.02
Aldrin	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Alpha-BHC	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Beta-BHC	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Delta-BHC	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Gamma-BHC (Lindane)	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Cis-Chlordane	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Trans-Chlordane	< 0.01	< 0.01	< 0.01	< 0.01	0.01
Total Chlordane ((cis+trans)*100/42)	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.02	< 0.01	< 0.01	< 0.01	< 0.01
Endosulphan I	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Endosulphan II	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Endosulphan sulphate	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Endrin	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Endrin aldehyde	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Heptachlor	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Heptachlor epoxide	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Hexachlorobenzene	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Methoxychlor	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Organochlorine pesticides, screening

Sample Name	L1 - SS11 27/5/05	L1 - SS12 27/5/05	L2 - SS1 27/5/05	L2 - SS2 27/5/05	L2 - SS3 27/5/05
Lab No	379685/11	379685/12	379685/13	379685/14	379685/15
Units	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)
2,4'-DDD	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,4'-DDE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,4'-DDT	< 0.01	0.01	< 0.01	< 0.01	< 0.01
4,4'-DDD	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Sample Name	L1 - SS11 27/5/05	L1 - SS12 27/5/05	L2 - SS1 27/5/05	L2 - SS2 27/5/05	L2 - SS3 27/5/05
Lab No	379685/11	379685/12	379685/13	379685/14	379685/15
Units	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)
4,4'-DDE	0.02	0.07	0.01	< 0.01	0.04
4,4'-DDT	0.03	0.08	0.03	0.01	0.03
Aldrin	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Alpha-BHC	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Beta-BHC	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Delta-BHC	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Gamma-BHC (Lindane)	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Cis-Chlordane	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Trans-Chlordane	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total Chlordane ((cis+trans)*100/42)	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Endosulphan I	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Endosulphan II	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Endosulphan sulphate	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Endrin	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Endrin aldehyde	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Heptachlor	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Heptachlor epoxide	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Hexachlorobenzene	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Methoxychlor	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Organochlorine pesticides, screening

Sample Name	L2 - SS4 27/5/05	L2 - SS5 27/5/05	L2 - SS6 27/5/05	L2 - SS7 27/5/05	L2 - SS8 27/5/05
Lab No	379685/16	379685/17	379685/18	379685/19	379685/20
Units	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)
2,4'-DDD	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,4'-DDE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,4'-DDT	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
4,4'-DDD	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
4,4'-DDE	0.06	0.05	0.01	< 0.01	< 0.01
4,4'-DDT	0.04	0.02	0.01	0.03	< 0.01
Aldrin	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Alpha-BHC	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Beta-BHC	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Delta-BHC	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Gamma-BHC (Lindane)	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Cis-Chlordane	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Trans-Chlordane	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total Chlordane ((cis+trans)*100/42)	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Endosulphan I	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Endosulphan II	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Endosulphan sulphate	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Sample Name	L2 - SS4 27/5/05	L2 - SS5 27/5/05	L2 - SS6 27/5/05	L2 - SS7 27/5/05	L2 - SS8 27/5/05
Lab No	379685/16	379685/17	379685/18	379685/19	379685/20
Units	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)
Endrin	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Endrin aldehyde	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Heptachlor	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Heptachlor epoxide	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Hexachlorobenzene	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Methoxychlor	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Organochlorine pesticides, screening

Sample Name	L2 - SS9 27/5/05	L2 - SS10 27/5/05	L2 - SS11 27/5/05	L2 - SS12 27/5/05	L2 - SS13 27/5/05
Lab No	379685/21	379685/22	379685/23	379685/24	379685/25
Units	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)
2,4'-DDD	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,4'-DDE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,4'-DDT	< 0.01	< 0.01	< 0.01	< 0.01	0.02
4,4'-DDD	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
4,4'-DDE	< 0.01	0.01	0.01	< 0.01	0.29
4,4'-DDT	< 0.01	0.02	< 0.01	0.01	0.10
Aldrin	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Alpha-BHC	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Beta-BHC	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Delta-BHC	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Gamma-BHC (Lindane)	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Cis-Chlordane	< 0.01	0.02	< 0.01	< 0.01	< 0.01
Trans-Chlordane	< 0.01	0.02	< 0.01	< 0.01	< 0.01
Total Chlordane ((cis+trans)*100/42)	< 0.05	0.09	< 0.05	< 0.05	< 0.05
Dieldrin	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Endosulphan I	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Endosulphan II	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Endosulphan sulphate	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Endrin	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Endrin aldehyde	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Heptachlor	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Heptachlor epoxide	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Hexachlorobenzene	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Methoxychlor	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Organochlorine pesticides, screening

Sample Name	L2 - SS14 27/5/05	L2 - SS15 27/5/05	L2 - SS16 27/5/05	L2 - MG 1 27/5/05	L2 - MG 2 27/5/05
Lab No	379685/26	379685/27	379685/28	379685/33	379685/34
Units	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)
2,4'-DDD	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,4'-DDE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,4'-DDT	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
4,4'-DDD	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Sample Name	L2 - SS14 27/5/05	L2 - SS15 27/5/05	L2 - SS16 27/5/05	L2 - MG 1 27/5/05	L2 - MG 2 27/5/05
Lab No	379685/26	379685/27	379685/28	379685/33	379685/34
Units	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)
4,4'-DDE	< 0.01	< 0.01	< 0.01	< 0.01	0.01
4,4'-DDT	< 0.01	0.01	0.01	0.05	0.11
Aldrin	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Alpha-BHC	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Beta-BHC	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Delta-BHC	< 0.01	< 0.01	0.02	< 0.01	< 0.01
Gamma-BHC (Lindane)	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Cis-Chlordane	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Trans-Chlordane	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total Chlordane ((cis+trans)*100/42)	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	< 0.01	< 0.01	< 0.01	< 0.01	0.02
Endosulphan I	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Endosulphan II	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Endosulphan sulphate	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Endrin	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Endrin aldehyde	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Heptachlor	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Heptachlor epoxide	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Hexachlorobenzene	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Methoxychlor	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Organochlorine pesticides, screening

Sample Name	L2 - MG 3 27/5/05	L2 - MG 4 27/5/05
Lab No	379685/35	379685/36
Units	(mg/kg dry wt)	(mg/kg dry wt)
2,4'-DDD	< 0.01	< 0.01
2,4'-DDE	< 0.01	< 0.01
2,4'-DDT	< 0.01	< 0.01
4,4'-DDD	< 0.01	< 0.01
4,4'-DDE	< 0.01	< 0.01
4,4'-DDT	0.01	< 0.01
Aldrin	< 0.01	< 0.01
Alpha-BHC	< 0.01	< 0.01
Beta-BHC	< 0.01	< 0.01
Delta-BHC	< 0.01	< 0.01
Gamma-BHC (Lindane)	< 0.01	< 0.01
Cis-Chlordane	< 0.01	< 0.01
Trans-Chlordane	< 0.01	< 0.01
Total Chlordane ((cis+trans)*100/42)	< 0.05	< 0.05
Dieldrin	0.03	0.39
Endosulphan I	< 0.01	< 0.01
Endosulphan II	< 0.01	< 0.01

Sample Name	L2 - MG 3 27/5/05	L2 - MG 4 27/5/05
Lab No	379685/35	379685/36
Units	(mg/kg dry wt)	(mg/kg dry wt)
Endosulphan sulphate	< 0.01	< 0.01
Endrin	< 0.01	< 0.01
Endrin aldehyde	< 0.01	< 0.01
Heptachlor	< 0.01	< 0.01
Heptachlor epoxide	< 0.01	< 0.01
Hexachlorobenzene	< 0.01	< 0.01
Methoxychlor	< 0.01	< 0.01

Sample Type: Environmental Solids, Soil

Organonitrogen & Organophosphorus Pesticides

Sample Name	L1 - SS1 27/5/05	L1 - SS3 27/5/05	L1 - SS5 27/5/05	L1 - SS7 27/5/05	L1 - SS9 27/5/05
Lab No	379685/1	379685/3	379685/5	379685/7	379685/9
Units	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)
Acephate	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Acetochlor	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Alachlor	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Atrazine	< 0.07	< 0.06	< 0.07	< 0.07	< 0.07
Atrazine-desethyl	< 0.07	< 0.06	< 0.07	< 0.07	< 0.07
Atrazine-desisopropyl	< 0.07	< 0.06	< 0.07	< 0.07	< 0.07
Azinphos-methyl	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benalaxyl	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Bitertanol	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Bromacil	< 0.07	< 0.06	< 0.07	< 0.07	< 0.07
Bromopropylate	< 0.07	< 0.06	< 0.07	< 0.07	< 0.07
Captan	< 0.07	< 0.06	< 0.07	< 0.07	< 0.07
Carbaryl	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Carbofuran	< 0.07	< 0.06	< 0.07	< 0.07	< 0.07
Chlorfluazuron	< 0.07	< 0.06	< 0.07	< 0.07	< 0.07
Chlortoluron	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chlorpyrifos	< 0.07	< 0.06	< 0.07	< 0.07	< 0.07
Chlorpyrifos-methyl	< 0.07	< 0.06	< 0.07	< 0.07	< 0.07
Cyanazine	< 0.07	< 0.06	< 0.07	< 0.07	< 0.07
Cyfluthrin	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Cyhalothrin	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Cypermethrin	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Deltamethrin	< 0.07	< 0.06	< 0.07	< 0.07	< 0.07
Diazinon	< 0.07	< 0.06	< 0.07	< 0.07	< 0.07
Diuron	< 0.07	< 0.06	< 0.07	< 0.07	< 0.07
Dichlofluanid	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Dicloran	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dichlorvos	< 0.07	< 0.06	< 0.07	< 0.07	< 0.07
Difenoconazole	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Diphenylamine	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3

Sample Name	L1 - SS1 27/5/05	L1 - SS3 27/5/05	L1 - SS5 27/5/05	L1 - SS7 27/5/05	L1 - SS9 27/5/05
Lab No	379685/1	379685/3	379685/5	379685/7	379685/9
Units	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)
Fenpropimorph	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluometuron	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Furalaxyl	< 0.07	< 0.06	< 0.07	< 0.07	< 0.07
Flusilazole	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Fluazifop-p-butyl	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Haloxypop-r-methyl	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Hexazinone	< 0.07	< 0.06	< 0.07	< 0.07	< 0.07
Iprodione	< 0.07	< 0.06	< 0.07	< 0.07	< 0.07
Kresoxim-methyl	< 0.07	< 0.06	< 0.07	< 0.07	< 0.07
Linuron	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Malathion	< 0.07	< 0.06	< 0.07	< 0.07	< 0.07
Metaxyl	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Metolachlor	< 0.07	< 0.06	< 0.07	< 0.07	< 0.07
Metribuzin	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Myclobutanil	< 0.07	< 0.06	< 0.07	< 0.07	< 0.07
Norflurazon	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Oxadiazon	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Oxyfluorfen	< 0.07	< 0.06	< 0.07	< 0.07	< 0.07
Paclobutrazol	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Parathion-ethyl	< 0.07	< 0.06	< 0.07	< 0.07	< 0.07
Parathion-methyl	< 0.07	< 0.06	< 0.07	< 0.07	< 0.07
Pendimethalin	< 0.07	< 0.06	< 0.07	< 0.07	< 0.07
Permethrin	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Pirimicarb	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Pirimiphos methyl	< 0.07	< 0.06	< 0.07	< 0.07	< 0.07
Prochloraz	< 0.07	< 0.06	< 0.07	< 0.07	< 0.07
Procymidone	< 0.07	< 0.06	< 0.07	< 0.07	< 0.07
Prometryne	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Propachlor	< 0.07	< 0.06	< 0.07	< 0.07	< 0.07
Propazine	< 0.07	< 0.06	< 0.07	< 0.07	< 0.07
Propiconazole	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Quizalofop-p-ethyl	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Simazine	< 0.07	< 0.06	< 0.07	< 0.07	< 0.07
Terbacil	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Tabuconazole	< 0.07	< 0.06	< 0.07	< 0.07	< 0.07
Terbumeton	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Terbuthylazine	< 0.07	< 0.06	< 0.07	< 0.07	< 0.07
Terbuthylazine desethyl	< 0.07	< 0.06	< 0.07	< 0.07	< 0.07
Tolyfluanid	< 0.07	< 0.06	< 0.07	< 0.07	< 0.07
Triazophos	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Trifluralin	< 0.07	< 0.06	< 0.07	< 0.07	< 0.07
Vinclozolin	< 0.07	< 0.06	< 0.07	< 0.07	< 0.07

Organonitrogen & Organophosphorus Pesticides

Sample Name	L1 - SS11 27/5/05	L2 - SS1 27/5/05	L2 - SS3 27/5/05	L2 - SS5 27/5/05	L2 - SS7 27/5/05
Lab No	379685/11	379685/13	379685/15	379685/17	379685/19
Units	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)
Acephate	< 0.3	< 0.3	< 0.3	< 0.3	< 0.2
Acetochlor	< 0.3	< 0.3	< 0.3	< 0.3	< 0.2
Alachlor	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Atrazine	< 0.07	< 0.07	< 0.07	< 0.07	< 0.06
Atrazine-desethyl	< 0.07	< 0.07	< 0.07	< 0.07	< 0.06
Atrazine-desisopropyl	< 0.07	< 0.07	< 0.07	< 0.07	< 0.06
Azinphos-methyl	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benalaxyl	< 0.3	< 0.3	< 0.3	< 0.4	< 0.3
Bifertanol	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Bromacil	< 0.07	< 0.07	< 0.07	< 0.07	< 0.06
Bromopropylate	< 0.07	< 0.07	< 0.07	< 0.07	< 0.06
Captan	< 0.07	< 0.07	< 0.07	< 0.07	< 0.06
Carbaryl	< 0.3	< 0.3	< 0.3	< 0.4	< 0.3
Carbofuran	< 0.07	< 0.07	< 0.07	< 0.07	< 0.06
Chlorfluazuron	< 0.07	< 0.07	< 0.07	< 0.07	< 0.06
Chlortoluron	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chlorpyrifos	< 0.07	< 0.07	< 0.07	< 0.07	< 0.06
Chlorpyrifos-methyl	< 0.07	< 0.07	< 0.07	< 0.07	< 0.06
Cyanazine	< 0.07	< 0.07	< 0.07	< 0.07	< 0.06
Cyfluthrin	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Cyhalothrin	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Cypermethrin	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Deltamethrin	< 0.07	< 0.07	< 0.07	< 0.07	< 0.06
Diazinon	< 0.07	< 0.07	< 0.07	< 0.07	< 0.06
Diuron	< 0.07	< 0.07	< 0.07	< 0.07	< 0.06
Dichlofluanid	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Dicloran	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dichlorvos	< 0.07	< 0.07	< 0.07	< 0.07	< 0.06
Difenoconazole	< 0.3	< 0.3	< 0.3	< 0.4	< 0.3
Diphenylamine	< 0.3	< 0.3	< 0.3	< 0.4	< 0.3
Fenpropimorph	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluometuron	< 0.3	< 0.3	< 0.3	< 0.4	< 0.3
Furalaxyl	< 0.07	< 0.07	< 0.07	< 0.07	< 0.06
Flusilazole	< 0.3	< 0.3	< 0.3	< 0.4	< 0.3
Fluazifop-p-butyl	< 0.3	< 0.3	< 0.3	< 0.4	< 0.3
Haloxifop-r-methyl	< 0.3	< 0.3	< 0.3	< 0.4	< 0.3
Hexazinone	< 0.07	< 0.07	< 0.07	< 0.07	< 0.06
Iprodione	< 0.07	< 0.07	< 0.07	< 0.07	< 0.06
Kresoxlm-methyl	< 0.07	< 0.07	< 0.07	< 0.07	< 0.06
Linuron	< 0.3	< 0.3	< 0.3	< 0.4	< 0.3
Malathion	< 0.07	< 0.07	< 0.07	< 0.07	< 0.06
Metaxyl	< 0.3	< 0.3	< 0.3	< 0.4	< 0.3
Metolachlor	< 0.07	< 0.07	< 0.07	< 0.07	< 0.06
Metribuzin	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1

Sample Name	L1 - SS11 27/5/05	L2 - SS1 27/5/05	L2 - SS3 27/5/05	L2 - SS5 27/5/05	L2 - SS7 27/5/05
Lab No	379685/11	379685/13	379685/15	379685/17	379685/19
Units	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)
Myclobutanil	< 0.07	< 0.07	< 0.07	< 0.07	< 0.06
Norflurazon	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Oxadiazon	< 0.3	< 0.3	< 0.3	< 0.4	< 0.3
Oxyfluorfen	< 0.07	< 0.07	< 0.07	< 0.07	< 0.06
Paclobutrazol	< 0.3	< 0.3	< 0.3	< 0.4	< 0.3
Parathion-ethyl	< 0.07	< 0.07	< 0.07	< 0.07	< 0.06
Parathion-methyl	< 0.07	< 0.07	< 0.07	< 0.07	< 0.06
Pendimethalin	< 0.07	< 0.07	< 0.07	< 0.07	< 0.06
Permethrin	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Pirimicarb	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Pirimiphos methyl	< 0.07	< 0.07	< 0.07	< 0.07	< 0.06
Prochloraz	< 0.07	< 0.07	< 0.07	< 0.07	< 0.06
Procymidone	< 0.07	< 0.07	< 0.07	< 0.07	< 0.06
Prometryne	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Propachlor	< 0.07	< 0.07	< 0.07	< 0.07	< 0.06
Propazine	< 0.07	< 0.07	< 0.07	< 0.07	< 0.06
Propiconazole	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Quisalofop-p-ethyl	< 0.3	< 0.3	< 0.3	< 0.4	< 0.3
Simazine	< 0.07	< 0.07	< 0.07	< 0.07	< 0.06
Terbacil	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Tebuconazole	< 0.07	< 0.07	< 0.07	< 0.07	< 0.06
Terbumeton	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Terbuthylazine	< 0.07	< 0.07	< 0.07	< 0.07	< 0.06
Terbuthylazine desethyl	< 0.07	< 0.07	< 0.07	< 0.07	< 0.06
Tolyfluanid	< 0.07	< 0.07	< 0.07	< 0.07	< 0.06
Triazophos	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Trifluralin	< 0.07	< 0.07	< 0.07	< 0.07	< 0.06
Vinclozolin	< 0.07	< 0.07	< 0.07	< 0.07	< 0.06

Organonitrogen & Organophosphorus Pesticides

Sample Name	L2 - SS9 27/5/05	L2 - SS11 27/5/05	L2 - SS13 27/5/05	L2 - SS15 27/5/05	L2 - MG 1 27/5/05
Lab No	379685/21	379685/23	379685/25	379685/27	379685/33
Units	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)
Acephate	< 0.3	< 0.3	< 0.2	< 0.3	< 0.2
Acetochlor	< 0.3	< 0.3	< 0.2	< 0.3	< 0.2
Alachlor	< 0.1	< 0.2	< 0.1	< 0.2	< 0.1
Atrazine	< 0.07	< 0.08	< 0.06	< 0.08	< 0.05
Atrazine-desethyl	< 0.07	< 0.08	< 0.06	< 0.08	< 0.05
Atrazine-desisopropyl	< 0.07	< 0.08	< 0.06	< 0.08	< 0.05
Azinphos-methyl	< 0.1	< 0.2	< 0.1	< 0.2	< 0.1
Benalaxyl	< 0.4	< 0.4	< 0.3	< 0.4	< 0.3
Bitertanol	< 0.1	< 0.2	< 0.1	< 0.2	< 0.1
Bromacil	< 0.07	< 0.08	< 0.06	< 0.08	< 0.05
Bromopropylate	< 0.07	< 0.08	< 0.06	< 0.08	< 0.05
Captan	< 0.07	< 0.08	< 0.06	< 0.08	< 0.05

Sample Name	L2 - SS9 27/5/05	L2 - SS11 27/5/05	L2 - SS13 27/5/05	L2 - SS15 27/5/05	L2 - MG 1 27/5/05
Lab No	379685/21	379685/23	379685/25	379685/27	379685/33
Units	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)
Carbaryl	< 0.4	< 0.4	< 0.3	< 0.4	< 0.3
Carbofuran	< 0.07	< 0.08	< 0.06	< 0.08	< 0.05
Chlorfluazuron	< 0.07	< 0.08	< 0.06	< 0.08	< 0.05
Chlortoluron	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chlorpyrifos	< 0.07	< 0.08	< 0.06	< 0.08	< 0.05
Chlorpyrifos-methyl	< 0.07	< 0.08	< 0.06	< 0.08	< 0.05
Cyanazine	< 0.07	< 0.08	< 0.06	< 0.08	< 0.05
Cyfluthrin	< 0.1	< 0.2	< 0.1	< 0.2	< 0.1
Cyhalothrin	< 0.1	< 0.2	< 0.1	< 0.2	< 0.1
Cypermethrin	< 0.1	< 0.2	< 0.1	< 0.2	< 0.1
Deltamethrin	< 0.07	< 0.08	< 0.06	< 0.08	< 0.05
Diazinon	< 0.07	< 0.08	< 0.06	< 0.08	< 0.05
Diuron	< 0.07	< 0.08	< 0.06	< 0.08	< 0.05
Dichlofluanid	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Dicloran	< 0.1	< 0.2	< 0.1	< 0.2	< 0.1
Dichlorvos	< 0.07	< 0.08	< 0.06	< 0.08	< 0.05
Difenoconazole	< 0.4	< 0.4	< 0.3	< 0.4	< 0.3
Diphenylamine	< 0.4	< 0.4	< 0.3	< 0.4	< 0.3
Fenpropimorph	< 0.1	< 0.2	< 0.1	< 0.2	< 0.1
Fluometuron	< 0.4	< 0.4	< 0.3	< 0.4	< 0.3
Furalaxyl	< 0.07	< 0.08	< 0.06	< 0.08	< 0.05
Flusilazole	< 0.4	< 0.4	< 0.3	< 0.4	< 0.3
Fluazifop-p-butyl	< 0.4	< 0.4	< 0.3	< 0.4	< 0.3
Haloxyfop-r-methyl	< 0.4	< 0.4	< 0.3	< 0.4	< 0.3
Hexazinone	< 0.07	< 0.08	< 0.06	< 0.08	< 0.05
Iprodione	< 0.07	< 0.08	< 0.06	< 0.08	< 0.05
Kresoxim-methyl	< 0.07	< 0.08	< 0.06	< 0.08	< 0.05
Linuron	< 0.4	< 0.4	< 0.3	< 0.4	< 0.3
Malathion	< 0.07	< 0.08	< 0.06	< 0.08	< 0.05
Metalaxyl	< 0.4	< 0.4	< 0.3	< 0.4	< 0.3
Metolachlor	< 0.07	< 0.08	< 0.06	< 0.08	< 0.05
Metribuzin	< 0.1	< 0.2	< 0.1	< 0.2	< 0.1
Myclobutanil	< 0.07	< 0.08	< 0.06	< 0.08	< 0.05
Norflurazon	< 0.1	< 0.2	< 0.1	< 0.2	< 0.1
Oxadiazon	< 0.4	< 0.4	< 0.3	< 0.4	< 0.3
Oxyfluorfen	< 0.07	< 0.08	< 0.06	< 0.08	< 0.05
Paclobutrazol	< 0.4	< 0.4	< 0.3	< 0.4	< 0.3
Parathion-ethyl	< 0.07	< 0.08	< 0.06	< 0.08	< 0.05
Parathion-methyl	< 0.07	< 0.08	< 0.06	< 0.08	< 0.05
Pendimethalin	< 0.07	< 0.08	< 0.06	< 0.08	< 0.05
Permethrin	< 0.1	< 0.2	< 0.1	< 0.2	< 0.1
Pirimicarb	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Pirimiphos methyl	< 0.07	< 0.08	< 0.06	< 0.08	< 0.05
Prochloraz	< 0.07	< 0.08	< 0.06	< 0.08	< 0.05
Procymidone	< 0.07	< 0.08	< 0.06	< 0.08	< 0.05

Sample Name	L2 - SS9 27/5/05	L2 - SS11 27/5/05	L2 - SS13 27/5/05	L2 - SS15 27/5/05	L2 - MG 1 27/5/05
Lab No	379685/21	379685/23	379685/25	379685/27	379685/33
Units	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)
Prometryne	< 0.1	< 0.2	< 0.1	< 0.2	< 0.1
Propachlor	< 0.07	< 0.08	< 0.06	< 0.08	< 0.05
Propazine	< 0.07	< 0.08	< 0.06	< 0.08	< 0.05
Propiconazole	< 0.1	< 0.2	< 0.1	< 0.2	< 0.1
Quilzalofop-p-ethyl	< 0.4	< 0.4	< 0.3	< 0.4	< 0.3
Simazine	< 0.07	< 0.08	< 0.06	< 0.08	< 0.05
Terbacil	< 0.1	< 0.2	< 0.1	< 0.2	< 0.1
Tebuconazole	< 0.07	< 0.08	< 0.06	< 0.08	< 0.05
Terbumeton	< 0.1	< 0.2	< 0.1	< 0.2	< 0.1
Terbutylazine	< 0.07	< 0.08	< 0.06	< 0.08	< 0.05
Terbutylazine desethyl	< 0.07	< 0.08	< 0.06	< 0.08	< 0.05
Tolyfluanid	< 0.07	< 0.08	< 0.06	< 0.08	< 0.05
Triazophos	< 0.1	< 0.2	< 0.1	< 0.2	< 0.1
Trifluralin	< 0.07	< 0.08	< 0.06	< 0.08	< 0.05
Vinclozolin	< 0.07	< 0.08	< 0.06	< 0.08	< 0.05

Organonitrogen & Organophosphorus Pesticides

Sample Name	L2 - MG 2 27/5/05	L2 - MG 3 27/5/05	L2 - MG 4 27/5/05
Lab No	379685/34	379685/35	379685/36
Units	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)
Acephate	< 0.2	< 0.2	< 0.2
Acetochlor	< 0.2	< 0.2	< 0.2
Alachlor	< 0.1	< 0.1	< 0.1
Atrazine	< 0.06	< 0.06	< 0.05
Atrazine-desethyl	< 0.06	< 0.06	< 0.05
Atrazine-desisopropyl	< 0.06	< 0.06	< 0.05
Azinphos-methyl	< 0.1	< 0.1	< 0.1
Benalaxyl	< 0.3	< 0.3	< 0.3
Bifentanol	< 0.1	< 0.1	< 0.1
Bromacil	< 0.06	< 0.06	< 0.05
Bromopropylate	< 0.06	< 0.06	< 0.05
Captan	< 0.06	< 0.06	< 0.05
Carbaryl	< 0.3	< 0.3	< 0.3
Carbofuran	< 0.06	< 0.06	< 0.05
Chlorfluazuron	< 0.06	< 0.06	< 0.05
Chlortoluron	< 0.2	< 0.2	< 0.2
Chlorpyrifos	< 0.06	< 0.06	< 0.05
Chlorpyrifos-methyl	< 0.06	< 0.06	< 0.05
Cyanazine	< 0.06	< 0.06	< 0.05
Cyfluthrin	< 0.1	< 0.1	< 0.1
Cyhalothrin	< 0.1	< 0.1	< 0.1
Cypermethrin	< 0.1	< 0.1	< 0.1
Deltamethrin	< 0.06	< 0.06	< 0.05
Diazinon	< 0.06	< 0.06	< 0.05
Diuron	< 0.06	< 0.06	< 0.05

Sample Name	L2 - MG 2 27/5/05	L2 - MG 3 27/5/05	L2 - MG 4 27/5/05
Lab No	379685/34	379685/35	379685/36
Units	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)
Dichlofluanid	< 0.2	< 0.2	< 0.2
Dicloran	< 0.1	< 0.1	< 0.1
Dichlorvos	< 0.06	< 0.06	< 0.05
Difenoconazole	< 0.3	< 0.3	< 0.3
Diphenylamine	< 0.3	< 0.3	< 0.3
Fenprolmorph	< 0.1	< 0.1	< 0.1
Fluometuron	< 0.3	< 0.3	< 0.3
Furalaxyl	< 0.06	< 0.06	< 0.05
Flusilazole	< 0.3	< 0.3	< 0.3
Fluazifop-p-butyl	< 0.3	< 0.3	< 0.3
Haloxifop-r-methyl	< 0.3	< 0.3	< 0.3
Hexazinone	< 0.06	< 0.06	< 0.05
Iprodione	< 0.06	< 0.06	< 0.05
Kresoxim-methyl	< 0.06	< 0.06	< 0.05
Linuron	< 0.3	< 0.3	< 0.3
Malathion	< 0.06	< 0.06	< 0.05
Metalaxyl	< 0.3	< 0.3	< 0.3
Metolachlor	< 0.06	< 0.06	< 0.05
Metribuzin	< 0.1	< 0.1	< 0.1
Myclobutanil	< 0.06	< 0.06	< 0.05
Norflurazon	< 0.1	< 0.1	< 0.1
Oxadiazon	< 0.3	< 0.3	< 0.3
Oxyfluorfen	< 0.06	< 0.06	< 0.05
Paclobutrazol	< 0.3	< 0.3	< 0.3
Parathion-ethyl	< 0.06	< 0.06	< 0.05
Parathion-methyl	< 0.06	< 0.06	< 0.05
Pendimethalin	< 0.06	< 0.06	< 0.05
Permethrin	< 0.1	< 0.1	< 0.1
Pirimicarb	< 0.2	< 0.2	< 0.2
Pirimiphos methyl	< 0.06	< 0.06	< 0.05
Prochloraz	< 0.06	< 0.06	< 0.05
Procymidone	< 0.06	< 0.06	< 0.05
Prometryne	< 0.1	< 0.1	< 0.1
Propachlor	< 0.06	< 0.06	< 0.05
Propazine	< 0.06	< 0.06	< 0.05
Propiconazole	< 0.1	< 0.1	< 0.1
Quizalofop-p-ethyl	< 0.3	< 0.3	< 0.3
Simazine	< 0.06	< 0.06	< 0.05
Terbacil	< 0.1	< 0.1	< 0.1
Tebuconazole	< 0.06	< 0.06	< 0.05
Terbumeton	< 0.1	< 0.1	< 0.1
Terbuthylazine	< 0.06	< 0.06	< 0.05
Terbuthylazine desethyl	< 0.06	< 0.06	< 0.05
Tolyfluanid	< 0.06	< 0.06	< 0.05
Triazophos	< 0.1	< 0.1	< 0.1
Trifluralin	< 0.06	< 0.06	< 0.05
Vinclozolin	< 0.06	< 0.06	< 0.05

Sample Type: Environmental Solids, Soil**PAH Screen**

Sample Name	L2 - HT 1 27/5/05 379685/29	L2 - HT 2 27/5/05 379685/30	L2 - HT 3 27/5/05 379685/31	L2 - HT 4 27/5/05 379685/32
Units	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)
Acenaphthene	< 0.03	< 0.03	< 0.03	< 0.04
Acenaphthylene	< 0.03	< 0.03	< 0.03	< 0.04
Anthracene	0.04	< 0.03	< 0.03	0.05
Benzo[a]anthracene	< 0.03	< 0.03	< 0.03	< 0.04
Benzo[a]pyrene (BAP)	< 0.03	< 0.03	< 0.03	< 0.04
Benzo[b]fluoranthene	< 0.03	< 0.03	< 0.03	< 0.04
Benzo[g,h,i]perylene	< 0.03	< 0.03	< 0.03	< 0.04
Benzo[k]fluoranthene	< 0.03	< 0.03	< 0.03	< 0.04
Chrysene	< 0.03	< 0.03	< 0.03	< 0.04
Dibenzo[a,h]anthracene	< 0.03	< 0.03	< 0.03	< 0.04
Fluoranthene	< 0.03	< 0.03	< 0.03	< 0.04
Fluorene	< 0.03	< 0.03	< 0.03	< 0.04
Indeno[1,2,3-c,d]pyrene	< 0.03	< 0.03	< 0.03	< 0.04
Naphthalene	0.2	< 0.2	< 0.2	0.2
Phenanthrene	0.18	0.13	0.06	0.15
Pyrene	0.03	< 0.03	< 0.03	< 0.04

Sample Containers

The following table shows the sample containers that were associated with this job.

Container Description	Container Size (mL)	Number of Containers
Glass Jar (Soils)	300	36

Details of sample bottle preparation procedures are available upon request.

Summary of Methods Used and Detection Limits

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 clean 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.

Substance Type: Environmental Solids

Parameter	Method Used	Detection Limit
Dry and sieve sample	Air dry (35°C), sieved to pass 2mm.	N/A
Total Recoverable digest	Nitric / hydrochloric acid digestion, US EPA 200.2	N/A
Dry Matter	Dried at 103°C, gravimetric (removes 3-5% more water than air drying at 35°C)	0.1 g/100g as rcvd
Total Recoverable Arsenic	Nitric / hydrochloric acid digestion, ICP-MS, US EPA 200.2	2 mg/kg dry wt
Total Recoverable Cadmium	Nitric / hydrochloric acid digestion, ICP-MS, US EPA 200.2	0.1 mg/kg dry wt
Total Recoverable Chromium	Nitric / hydrochloric acid digestion, ICP-MS, US EPA 200.2	2 mg/kg dry wt
Total Recoverable Copper	Nitric / hydrochloric acid digestion, ICP-MS, US EPA 200.2	2 mg/kg dry wt
Total Recoverable Nickel	Nitric / hydrochloric acid digestion, ICP-MS, US EPA 200.2	2 mg/kg dry wt
Total Recoverable Lead	Nitric / hydrochloric acid digestion, ICP-MS, US EPA 200.2	0.4 mg/kg dry wt
Total Recoverable Zinc	Nitric / hydrochloric acid digestion, ICP-MS, US EPA 200.2	4 mg/kg dry wt
Florisil cleanup	Florisil column cleanup	N/A
Organochlorine pesticides, screening	Sonication extraction, GC-ECD	N/A
Organonitrogen & Organophosphorus Pesticides	ONOP screen method, soil: Sonication extraction, GC-MS, In-house	N/A
PAH Screen	Solvent extn, Florisil cleanup, GC-MS SIM	N/A

Analyst's Comments:

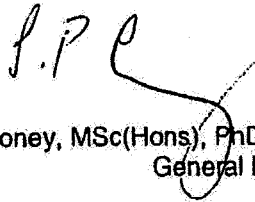
These samples were collected by yourselves and analysed as received at the laboratory.

Samples are held at the laboratory after reporting for a length of time depending on the preservation used and the stability of the analytes being tested. Once the storage period is completed the samples are discarded unless otherwise advised by the submitter.

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It has been noted that the duplicates for Cadmium on sample L2 - MG 4 27/5/05(our reference 379685/36), run as part of our in-house QC procedure showed greater variation than would normally be expected. This may reflect the heterogeneity of the sample.

Peter Robinson, MSc(Hons), PhD FNZIC
Environmental Division Manager


Terry Cooney, MSc(Hons), PhD MNZIC
General Manager

Hill Laboratories

R J Hill Laboratories Limited

Address:
1 Clyde Street,
Private Bag 3205,
Hamilton, New Zealand

Telephone:
+64 (7) 858-2000
Facsimile:
+64 (7) 858-2001

Email:
mail@hill-labs.co.nz
Internet:
www.hill-labs.co.nz



Client: Pattle Delamore Partners Ltd
Address: P O Box 389,
CHRISTCHURCH
Contact: Ele Newton

Laboratory No: 380854
Date Registered: 14/06/2005
Date Completed: 27/06/2005
Page Number: 1 of 4

Client's Reference: C01692100

The results for the analyses you requested are as follows:

Sample Type: Environmental Solids, Soil

Sample Name	L1-SP1 08/08/05
Lab No	380854/1
Dry Matter (g/100g as rcvd)	87.2
Total Recoverable Arsenic (mg/kg dry wt)	4
Total Recoverable Cadmium (mg/kg dry wt)	0.1
Total Recoverable Chromium (mg/kg dry wt)	17
Total Recoverable Copper (mg/kg dry wt)	14
Total Recoverable Nickel (mg/kg dry wt)	12
Total Recoverable Lead (mg/kg dry wt)	42.3
Total Recoverable Zinc (mg/kg dry wt)	108

Organonitrogen & Organophosphorus Pesticides

Sample Name	L1-SP1 08/08/05
Lab No	380854/1
Units	(mg/kg dry wt)
Acephate	< 0.2
Acetochlor	< 0.2
Alachlor	< 0.1
Atrazine	< 0.06
Atrazine-desethyl	< 0.06
Atrazine-desisopropyl	< 0.06
Azinphos-methyl	< 0.1
Benalaxyl	< 0.3
Bifertanol	< 0.1
Bromacil	< 0.06
Bromopropylate	< 0.06
Captan	< 0.06
Carbaryl	< 0.3
Carbofuran	< 0.06
Chlorfluazuron	< 0.06



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Sample Name	L1-SP1 08/06/05
Lab No	380854/1
Units	(mg/kg dry wt)
Chlortoluron	< 0.2
Chlorpyrifos	< 0.06
Chlorpyrifos-methyl	< 0.06
Cyanazine	< 0.06
Cyfluthrin	< 0.1
Cyhalothrin	< 0.1
Cypermethrin	< 0.1
Deltamethrin	< 0.06
Diazinon	< 0.06
Diuron	< 0.06
Dichlofluanid	< 0.2
Dicloran	< 0.1
Dichlorvos	< 0.06
Difenoconazole	< 0.3
Diphenylamine	< 0.3
Fenprolmorph	< 0.1
Fluometuron	< 0.3
Furalaxyl	< 0.06
Flusilazole	< 0.3
Fluazifop-p-butyl	< 0.3
Haloxifop-p-methyl	< 0.3
Hexazinone	< 0.06
Iprodione	< 0.06
Kresoxim-methyl	< 0.06
Linuron	< 0.3
Malathion	< 0.06
Metaxyl	< 0.3
Metolachlor	< 0.06
Metribuzin	< 0.1
Myclobutanil	< 0.06
Norflurazon	< 0.1
Oxadiazon	< 0.3
Oxyfluorfen	< 0.06
Paclobutrazol	< 0.3
Parathion-ethyl	< 0.06
Parathion-methyl	< 0.06
Pendimethalin	< 0.06
Permethrin	< 0.1
Pirimicarb	< 0.2
Pirimiphos methyl	< 0.06
Prochloraz	< 0.06
Procymidone	< 0.06
Prometryne	< 0.1
Propachlor	< 0.06
Propazine	< 0.06

Sample Name	L1-SP1 08/06/05
Lab No	380854/1
Units	(mg/kg dry wt)
Propiconazole	< 0.1
Quizalofop-p-ethyl	< 0.3
Simazine	< 0.06
Terbacil	< 0.1
Tebuconazole	< 0.06
Terbumeton	< 0.1
Terbuthylazine	< 0.06
Terbuthylazine desethyl	< 0.06
Tolyfluanid	< 0.06
Triazophos	< 0.1
Trifluralin	< 0.06
Vinclozolin	< 0.06

Organochlorine pesticides, screening

Sample Name	L1-SP1 08/06/05
Lab No	380854/1
Units	(mg/kg dry wt)
2,4'-DDD	< 0.01
2,4'-DDE	< 0.01
2,4'-DDT	0.01
4,4'-DDD	< 0.01
4,4'-DDE	0.09
4,4'-DDT	0.08
Aldrin	< 0.01
Alpha-BHC	< 0.01
Beta-BHC	< 0.01
Delta-BHC	< 0.01
Gamma-BHC (Lindane)	< 0.01
Cis-Chlordane	< 0.01
Trans-Chlordane	< 0.01
Total Chlordane ((cis+trans)*100/42)	< 0.05
Dieldrin	< 0.01
Endosulphan I	< 0.01
Endosulphan II	< 0.01
Endosulphan sulphate	< 0.01
Endrin	< 0.01
Endrin aldehyde	< 0.01
Heptachlor	< 0.01
Heptachlor epoxide	< 0.01
Hexachlorobenzene	< 0.01
Methoxychlor	< 0.01

Sample Containers

The following table shows the sample containers that were associated with this job.

Container Description	Container Size (mL)	Number of Containers
Glass Jar (Soils)	300	2

Details of sample bottle preparation procedures are available upon request.

Summary of Methods Used and Detection Limits

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 clean 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.

Substance Type: Environmental Solids

Parameter	Method Used	Detection Limit
Dry and sieve sample	Air dry (35°C), sieved to pass 2mm.	N/A
Total Recoverable digest	Nitric / hydrochloric acid digestion. US EPA 200.2	N/A
Dry Matter	Dried at 103°C, gravimetric (removes 3-5% more water than air drying at 35°C)	0.1 g/100g as rcvd
Total Recoverable Arsenic	Nitric / hydrochloric acid digestion, ICP-MS. US EPA 200.2	2 mg/kg dry wt
Total Recoverable Cadmium	Nitric / hydrochloric acid digestion, ICP-MS. US EPA 200.2	0.1 mg/kg dry wt
Total Recoverable Chromium	Nitric / hydrochloric acid digestion, ICP-MS. US EPA 200.2	2 mg/kg dry wt
Total Recoverable Copper	Nitric / hydrochloric acid digestion, ICP-MS. US EPA 200.2	2 mg/kg dry wt
Total Recoverable Nickel	Nitric / hydrochloric acid digestion, ICP-MS. US EPA 200.2	2 mg/kg dry wt
Total Recoverable Lead	Nitric / hydrochloric acid digestion, ICP-MS. US EPA 200.2	0.4 mg/kg dry wt
Total Recoverable Zinc	Nitric / hydrochloric acid digestion, ICP-MS. US EPA 200.2	4 mg/kg dry wt
Organochlorine pesticides, screening	Sonication extraction, GC-ECD	N/A
Organonitrogen & Organophosphorus Pesticides	ONOP screen method, soil: Sonication extraction, GC-MS. In-house	N/A

Analyst's Comments:

These samples were collected by yourselves and analysed as received at the laboratory.

Samples are held at the laboratory after reporting for a length of time depending on the preservation used and the stability of the analytes being tested. Once the storage period is completed the samples are discarded unless otherwise advised by the submitter.

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Peter Robinson, MSc(Hons), PhD FNZIC
Environmental Division Manager

T.P. Cooney
Terry Cooney, MSc(Hons), PhD MNZIC
General Manager



Appendix B: Contracting Company

CONTRACTORS FORMAL AGREEMENT - CLEANFILL ACCEPTANCE CRITERIA

APPLIES TO: Portlink - Kennaway Rd Woolston.

Agreement Purpose: This agreement has been developed to ensure compliance with CCL Construction Contracting Ltd. Requirements and all clean filling requirements of Local Authority Bylaws.

CCL requires that no contractors, or their sub-contractors shall deposit cleanfill at Portlink Site Kennaway Rd without having signed a formal agreement, within the previous 24 months, and that the deposited cleanfill will meet the outlined acceptance criteria.

Cleanfill Acceptance Criteria: Material deposited shall be restricted to clean inert fill derived from roading or demolition operations, including:

- Uncontaminated, rock, gravels, sand, clay and other inorganic inert natural materials;
- Dry asphalt (cured);
- Bricks;
- Concrete, un-reinforced (including dried slurry concrete);
- Reinforced concrete is acceptable providing protruding reinforcing steel is cut off at the concrete face
- Masonry blocks;

No material will be accepted that has been identified on Environment Canterbury's Listed Land Use Register (LLUR) as originating from a site where hazardous activities and industries have been located (HAIL). This excludes any site where a detailed site investigation has been completed and reported which demonstrates that any contaminants in or on the site or the material to be deposited from that site, are at or below, background concentrations for the site at which the material is being deposited .

All other material shall be excluded from the site, including but not limited to those materials defined as unacceptable in the document titled "A Guide to the Management of Cleanfills", Ministry for Environment 2002.

If it is found that a contractor has deposited contaminated material at Portlink, all costs incurred to extract the material will be at the contractor's expense. Removal of the material to an acceptable site will be the contractor's responsibility.

By signing this agreement, your business is confirming that the material being deposited as cleanfill meets the outlined acceptance criteria.

The agreement is valid for a period of 12 months from the date of signing upon which a new agreement must be signed.

CCL reserve the right to close the Portlink site without notice due to adverse weather conditions.

Signed by (please print):

Position held:

On behalf of:

Signature:

Date



Certificate of Analysis

Client:	Construction Contracting NZ Limited	Lab No:	2588542	SPV1
Contact:	Clive Baddeley C/- Construction Contracting NZ Limited PO Box 16444 Hornby Christchurch 8441	Date Received:	19-Apr-2021	
		Date Reported:	27-Apr-2021	
		Quote No:		
		Order No:		
		Client Reference:		
		Submitted By:	Clive Baddeley	

Sample Type: Soil

Sample Name:	Topsoil 1	Topsoil 2			
	19-Apr-2021 8:00 am	19-Apr-2021 8:00 am			
Lab Number:	2588542.1	2588542.2			
Heavy Metals, Screen Level					
Total Recoverable Arsenic	mg/kg dry wt	3	3	-	-
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	< 0.10	-	-
Total Recoverable Chromium	mg/kg dry wt	10	10	-	-
Total Recoverable Copper	mg/kg dry wt	5	5	-	-
Total Recoverable Lead	mg/kg dry wt	10.6	11.0	-	-
Total Recoverable Nickel	mg/kg dry wt	6	7	-	-
Total Recoverable Zinc	mg/kg dry wt	33	38	-	-

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 Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

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%.	-	1-2
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	1-2

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

Testing was completed on 27-Apr-2021. 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

Page 1 of 2

Client:	Construction Contracting NZ Limited	Lab No:	2904321	SPV1
Contact:	Clive Baddeley C/- Construction Contracting NZ Limited PO Box 16444 Hornby Christchurch 8441	Date Received:	03-Mar-2022	
		Date Reported:	09-Mar-2022	
		Quote No:	116713	
		Order No:	1211	
		Client Reference:		
		Submitted By:	Clive Baddeley	

Sample Type: Soil					
Sample Name:	Area 1	Area 2	Area 3	Area 3 West	Area 3 Dup
Lab Number:	2904321.1	2904321.2	2904321.3	2904321.4	2904321.5
Heavy Metals, Screen Level					
Total Recoverable Arsenic	mg/kg dry wt	5	5	5	6
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	< 0.10	< 0.10	0.10
Total Recoverable Chromium	mg/kg dry wt	14	14	22	24
Total Recoverable Copper	mg/kg dry wt	10	10	9	11
Total Recoverable Lead	mg/kg dry wt	24	25	28	34
Total Recoverable Nickel	mg/kg dry wt	11	12	11	12
Total Recoverable Zinc	mg/kg dry wt	71	59	68	74

Sample Name:	Area 3 West Dup				
Lab Number:	2904321.6				
Heavy Metals, Screen Level					
Total Recoverable Arsenic	mg/kg dry wt	6	-	-	-
Total Recoverable Cadmium	mg/kg dry wt	0.10	-	-	-
Total Recoverable Chromium	mg/kg dry wt	25	-	-	-
Total Recoverable Copper	mg/kg dry wt	11	-	-	-
Total Recoverable Lead	mg/kg dry wt	33	-	-	-
Total Recoverable Nickel	mg/kg dry wt	12	-	-	-
Total Recoverable Zinc	mg/kg dry wt	74	-	-	-

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 Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	Method Description	Default Detection Limit	Sample No
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%.	-	1-6
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	1-6



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Certificate of Analysis

Page 1 of 2

Client:	Construction Contracting NZ Limited	Lab No:	2588193	A2Pv1
Contact:	Clive Baddeley C/- Construction Contracting NZ Limited PO Box 16444 Hornby Christchurch 8441	Date Received:	19-Apr-2021	
		Date Reported:	21-Apr-2021	
		Quote No:		
		Order No:		
		Client Reference:		
		Submitted By:	Clive Baddeley	

Sample Type: Soil

Sample Name	Lab Number	As Received Weight (g)	Dry Weight (g)	<2mm Subsample Weight (g dry wt)	Asbestos Presence / Absence	Description of Asbestos Form
Topsoil 1	2588193.1	265.4	235.2	56.4	Asbestos NOT detected.	-
Topsoil 2	2588193.2	269.1	243.9	51.4	Asbestos NOT detected.	-

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.

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 Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	Method Description	Default Detection Limit	Sample No
Asbestos in Soil			
As Received Weight	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	1-2
Dry Weight	Sample dried at 100 to 105°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	1-2
<2mm Subsample Weight	Sample dried at 100 to 105°C, weight of <2mm sample fraction taken for asbestos identification if less than entire fraction. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	-	1-2
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0.01%	1-2
Description of Asbestos Form	Description of asbestos form and/or shape if present.	-	1-2



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Certificate of Analysis

Page 1 of 2

Client:	Construction Contracting NZ Limited	Lab No:	3073007	A2Pv1
Contact:	Kane Spinks C/- Construction Contracting NZ Limited PO Box 16444 Hornby Christchurch 8441	Date Received:	09-Sep-2022	
		Date Reported:	14-Sep-2022	
		Quote No:	119788	
		Order No:	203193	
		Client Reference:		
		Submitted By:	Kane Spinks	

Sample Type: Soil						
Sample Name	Lab Number	As Received Weight (g)	Dry Weight (g)	<2mm Subsample Weight (g dry wt)	Asbestos Presence / Absence	Description of Asbestos Form
Portlink Top Soil	3073007.1	108.5	101.8	55.6	Asbestos NOT detected.	-
Portlink Top Soil	3073007.2	133.1	127.2	58.0	Asbestos NOT detected.	-
Portlink Top Soil	3073007.3	122.5	119.5	52.0	Asbestos NOT detected.	-
Portlink Top Soil	3073007.4	134.4	125.6	52.2	Asbestos NOT detected.	-

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.

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 Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	Method Description	Default Detection Limit	Sample No
Asbestos in Soil			
As Received Weight	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	1-4
Dry Weight	Sample dried at 100 to 105°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	1-4
<2mm Subsample Weight	Sample dried at 100 to 105°C, weight of <2mm sample fraction taken for asbestos identification if less than entire fraction. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	-	1-4
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0.01%	1-4
Description of Asbestos Form	Description of asbestos form and/or shape if present.	-	1-4



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Certificate of Analysis

Page 1 of 2

Client:	Construction Contracting NZ Limited	Lab No:	3087804	A2Pv1
Contact:	Kane Spinks C/- Construction Contracting NZ Limited PO Box 16444 Hornby Christchurch 8441	Date Received:	03-Oct-2022	
		Date Reported:	04-Oct-2022	
		Quote No:	119788	
		Order No:	203193	
		Client Reference:		
		Submitted By:	Kane Spinks	

Sample Type: Soil

Sample Name	Lab Number	As Received Weight (g)	Dry Weight (g)	<2mm Subsample Weight (g dry wt)	Asbestos Presence / Absence	Description of Asbestos Form
#9 Portlink Top Soil	3087804.1	85.1	76.6	54.8	Asbestos NOT detected.	-
#10 Portlink Top Soil	3087804.2	95.1	84.7	52.5	Asbestos NOT detected.	-
#11 Portlink Top Soil	3087804.3	110.0	97.5	50.9	Asbestos NOT detected.	-
#12 Portlink Top Soil	3087804.4	104.5	93.0	53.8	Asbestos NOT detected.	-

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.

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 Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	Method Description	Default Detection Limit	Sample No
Asbestos in Soil			
As Received Weight	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	1-4
Dry Weight	Sample dried at 100 to 105°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	1-4
<2mm Subsample Weight	Sample dried at 100 to 105°C, weight of <2mm sample fraction taken for asbestos identification if less than entire fraction. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	-	1-4
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0.01%	1-4
Description of Asbestos Form	Description of asbestos form and/or shape if present.	-	1-4



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Certificate of Analysis

Client:	Construction Contracting NZ Limited	Lab No:	3096520	A2Pv1
Contact:	Kane Spinks C/- Construction Contracting NZ Limited PO Box 16444 Hornby Christchurch 8441	Date Received:	14-Oct-2022	
		Date Reported:	18-Oct-2022	
		Quote No:	119788	
		Order No:	203193	
		Client Reference:		
		Submitted By:	Kane Spinks	

Sample Type: Soil

Sample Name	Lab Number	As Received Weight (g)	Dry Weight (g)	<2mm Subsample Weight (g dry wt)	Asbestos Presence / Absence	Description of Asbestos Form
Springs Road Top Soil #1	3096520.1	100.9	97.7	54.6	Asbestos NOT detected.	-
Springs Road Top Soil #2	3096520.2	134.6	132.0	56.4	Asbestos NOT detected.	-
Springs Road Top Soil #3	3096520.3	110.3	106.7	57.1	Asbestos NOT detected.	-
Springs Road Top Soil #4	3096520.4	122.0	102.1	54.9	Asbestos NOT detected.	-
Springs Road Top Soil #5	3096520.5	112.7	94.3	55.3	Asbestos NOT detected.	-
Springs Road Top Soil #6	3096520.6	150.7	144.5	59.2	Asbestos NOT detected.	-
Springs Road Top Soil #7	3096520.7	131.6	128.9	50.5	Asbestos NOT detected.	-
Springs Road Top Soil #8	3096520.8	133.1	113.5	54.4	Asbestos NOT detected.	-
Springs Road Top Soil #9	3096520.9	127.1	109.8	50.8	Asbestos NOT detected.	-
Springs Road Top Soil #10	3096520.10	142.3	137.5	53.5	Asbestos NOT detected.	-

Glossary of Terms

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 - 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.

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 Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Test	Method Description	Default Detection Limit	Sample No
Asbestos in Soil			
As Received Weight	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	1-10
Dry Weight	Sample dried at 100 to 105°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	1-10



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Certificate of Analysis

Client:	Construction Contracting NZ Limited	Lab No:	2903982	A2Pv1
Contact:	Clive Baddeley C/- Construction Contracting NZ Limited PO Box 16444 Hornby Christchurch 8441	Date Received:	03-Mar-2022	
		Date Reported:	09-Mar-2022	
		Quote No:	116713	
		Order No:		
		Client Reference:		
		Submitted By:	Clive Baddeley	

Sample Type: Soil

Sample Name	Lab Number	As Received Weight (g)	Dry Weight (g)	<2mm Subsample Weight (g dry wt)	Asbestos Presence / Absence	Description of Asbestos Form
Area 1	2903982.1	241.2	211.7	55.3	Asbestos NOT detected.	-
Area 2	2903982.2	304.0	278.5	53.6	Asbestos NOT detected.	-
Area 3 West	2903982.3	248.3	203.9	53.4	Asbestos NOT detected.	-
Area 3	2903982.4	199.4	162.6	52.5	Asbestos NOT detected.	-
Area 3 DUP	2903982.5	226.8	187.4	54.0	Asbestos NOT detected.	-
Area 3 West DUP	2903982.6	275.7	230.4	53.7	Asbestos NOT detected.	-

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.

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 Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Test	Method Description	Default Detection Limit	Sample No
Asbestos in Soil			
As Received Weight	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	1-6
Dry Weight	Sample dried at 100 to 105°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	1-6
<2mm Subsample Weight	Sample dried at 100 to 105°C, weight of <2mm sample fraction taken for asbestos identification if less than entire fraction. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	-	1-6
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0.01%	1-6
Description of Asbestos Form	Description of asbestos form and/or shape if present.	-	1-6



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Certificate of Analysis

Page 1 of 2

Client:	Construction Contracting NZ Limited	Lab No:	2518964	A2Pv1
Contact:	Construction Contracting NZ Limited PO Box 16444 Hornby Christchurch 8441	Date Received:	01-Feb-2021	
		Date Reported:	11-Feb-2021	
		Quote No:		
		Order No:		
		Client Reference:	Chriss or Clive	
		Submitted By:	Construction Contracting NZ Limited	

Sample Type: Soil

Sample Name	Lab Number	As Received Weight (g)	Dry Weight (g)	<2mm Subsample Weight (g dry wt)	Asbestos Presence / Absence	Description of Asbestos Form
Crushed Concrete 1	2518964.1	234.4	229.4	22.0	Asbestos NOT detected.	-
Crushed Concrete 2	2518964.2	290.8	276.1	59.2	Asbestos NOT detected.	-

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.

Analyst's Comments

Sub-sample taken from large bags

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 Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	Method Description	Default Detection Limit	Sample No
Asbestos in Soil			
As Received Weight	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	1-2
Dry Weight	Sample dried at 100 to 105°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	1-2
<2mm Subsample Weight	Sample dried at 100 to 105°C, weight of <2mm sample fraction taken for asbestos identification if less than entire fraction. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	-	1-2
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0.01%	1-2
Description of Asbestos Form	Description of asbestos form and/or shape if present.	-	1-2



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Certificate of Analysis

Client:	Construction Contracting NZ Limited	Lab No:	3082761	A2Pv1
Contact:	Kane Spinks C/- Construction Contracting NZ Limited PO Box 16444 Hornby Christchurch 8441	Date Received:	23-Sep-2022	
		Date Reported:	27-Sep-2022	
		Quote No:	119788	
		Order No:	203193	
		Client Reference:		
		Submitted By:	Kane Spinks	

Sample Type: Soil

Sample Name	Lab Number	As Received Weight (g)	Dry Weight (g)	<2mm Subsample Weight (g dry wt)	Asbestos Presence / Absence	Description of Asbestos Form
#5 Top Soil	3082761.1	126.9	110.5	50.2	Asbestos NOT detected.	-
#6 Top Soil	3082761.2	99.4	87.0	58.7	Asbestos NOT detected.	-
#7 Top Soil	3082761.3	110.2	94.6	59.4	Asbestos NOT detected.	-
#8 Top Soil	3082761.4	117.9	101.6	57.0	Asbestos NOT detected.	-

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.

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 Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Test	Method Description	Default Detection Limit	Sample No
Sample Type: Soil			
Asbestos in Soil			
As Received Weight	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	1-4
Dry Weight	Sample dried at 100 to 105°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	1-4
<2mm Subsample Weight	Sample dried at 100 to 105°C, weight of <2mm sample fraction taken for asbestos identification if less than entire fraction. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	-	1-4
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0.01%	1-4
Description of Asbestos Form	Description of asbestos form and/or shape if present.	-	1-4

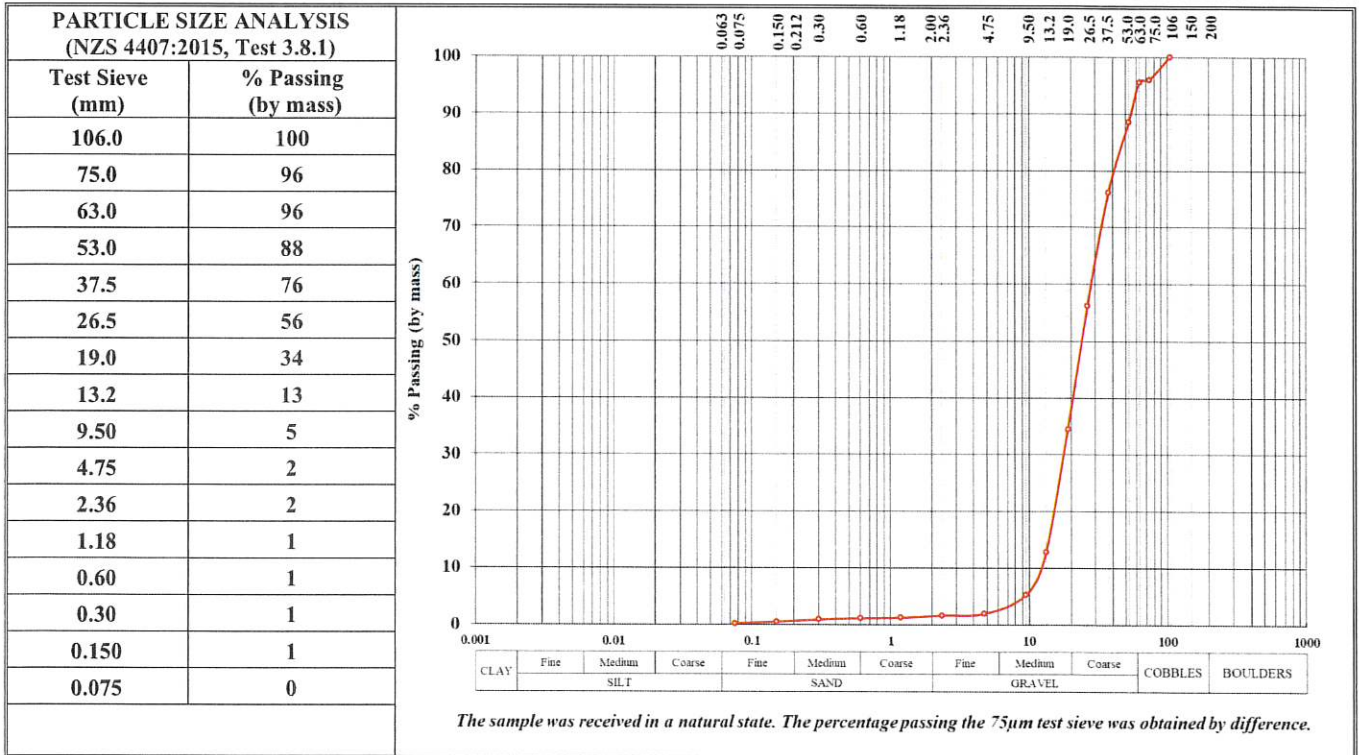


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TEST REPORT – RECYCLED CRUSHED CONCRETE

Client Details:	CCL Construction Contracting, P.O. Box 16-444, Hornby, Christchurch	Attention:	C. Baddeley
Job Description:	CCL Construction Contracting Quality Assurance Testing		
Sample Description:	Recycled Crushed Concrete	Client Order No:	1122
Sample Source: (cs)	Portlink	Sample Label No:	N/A
Date & Time Sampled:	Unknown	Sampled By:	Unknown
Sample Method:	Unknown	Date Received:	5-Jul-21



PLASTICITY INDEX RESULTS (NZS 4402:1986, Test 2.2, 2.3 & 2.4)		FOREIGN MATERIALS - Not IANZ Accredited (NSW RTA T276)	
Test Description	Sample Result	Foreign Material Type	% Foreign Material
Liquid Limit: (LL)	Not Applicable	Type 1 - Metal, Glass, Asphalt, Ceramics and Slag (other than blast furnace slag):	0.1
Plastic Limit: (PL)	Non - Plastic	Type 2 - Plaster, Clay Lumps and other Friable Material:	0.0
Plasticity Index: (PI)	Non - Plastic	Type 3 - Rubber, Plastic, Bitumen, Paper, Cloth, Paint, Wood & other Vegetable Matter:	0.3
<i>Note: The sample was received in a natural state. The plasticity index material tested was the fraction passing the 425 µm test sieve.</i>		Total Foreign Material:	0.4
		<i>Note: The fraction tested was 4.75mm to 106.0mm</i>	

Notes:

- Information contained in this report which is Not IANZ Accredited relates to the client supplied information (cs), the foreign materials test and sampling.
- This report may not be reproduced except in full.

Tested By: L.T. Smith, A.P. Julius & K. Hipkins

Date: 6 to 8-Jul-21

Checked By:

Approved Signatory

A.P. Julius
 Laboratory Manager

Specialist Quality Assurance Service in Aggregate, Concrete and Soils Testing

Central Testing Services operates as a trading trust through Central Testing Services Limited as the sole trustee.



Test results indicated as not accredited are outside the scope of the laboratory's accreditation



Appendix C: CCL – email

From: Ben Owen <ben@peeblesgroup.co.nz>
Date: 16 March 2023 at 12:49:39 PM NZDT
To: tim@novogroup.co.nz
Subject: Fwd: Book1.xlsx

Begin forwarded message:

From: Clive Baddeley <clive@cclnz.com>
Date: 14 March 2023 at 1:38:04 PM NZDT
To: Ben Owen <ben@peeblesgroup.co.nz>
Subject: RE: Book1.xlsx

Background

The Original Contract was based on the on the use of crushed concrete foundation layer with a final surface layer of asphalt millings.

The site was open to other contractors for the disposal of uncontaminated concrete which was then processed and crushed on site.

Random sampling was taken of the crushed concrete and tested for the presence of asbestos, testing and reporting was done by Hill Laboratories in Christchurch and further testing by Central Testing Services in Alexandra.

No Asbestos was detected in any testing.

Copies of sample test reports attached.

Only half the area 1 was constructed with a foundation of 380mm of crushed concrete followed by an 80mm layer of Asphalt millings, this was subsequently uplifted following a re-design for the current container storage facilities and replaced by and AP 65 Subbase, AP 40 Base course and a polymer modified asphalt layer of either 85mm or 110mm due to significantly high axle loadings required.

The unused concrete, processed concrete and crushed concrete was then used as the core of the Northern bund to Areas 2 and 3 running East-West parallel to the Heathcote River, this core was then topped off with a minimum layer of 300mm of topsoil and grass seeded for stabilisation.

The Bunds in the reserve area and those running North – South along the Western site boundary parallel to the Heathcote were constructed with surplus topsoil.

Topsoil.

The overall Pointlink site was originally farmland with a covering of topsoil for approximately 10.606Ha.

Of this only 2.01 Ha required to have topsoil replaced being the swales, reserve and pond area, this left a substantial amount of topsoil used on site.

This topsoil was used in the following areas.

- Landscaping along the river margin to the Western Boundary.
- Construction of the bunding along the Western Boundary (behind Area 5- Champion Freight and Area 4 the log yard)
- Topping off the bund along the Northern Boundary (Areas 2 and 3)

The topsoil was regularly sampled and tested by Hill Laboratories.

- For the presence of Asbestos – No asbestos detected in any samples.
- For Heavy metals.

Copies of the following are attached.

- Contractor declaration – Cleanfill Acceptance Criteria.
- Hill Laboratories Crushed Concrete sampling for Asbestos
- Hill Laboratories Topsoil sampling for asbestos
- Hill Laboratories Topsoil sampling for Heavy Metals
- Centra Testing Services Recycled crushed concrete - Foreign material presence

Hope this is sufficient for your needs.

Kind Regards,

Clive Baddeley
Construction Manager



Appendix D Land Listed Use Register (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 ENQ343970

Date generated: 04 May 2023
Land parcels: Lot 305 DP 525615
Lot 302 DP 473298



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
122022	Kennaway Farm	Tunnel Road, Christchurch	A10 - Persistent pesticide bulk storage or use;	Partially Investigated

More detail about the sites

Site 122022: Kennaway Farm (Intersects enquiry area.)

Category: Partially Investigated
Definition: Verified HAIL has been partially investigated.

Location: Tunnel Road, Christchurch
Legal description(s): Lot 10 DP 473298, Lot 102 DP 473298, Lot 11 DP 473298, Lot 12 DP 473298, Lot 200 DP 463785, Lot 202

HAIL activity(s):

Period from	Period to	HAIL activity
Before 1946	After 2004	Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds

Notes:



Investigations:

INV 11783

Kennaway Farm, Tunnel Road, Ferrymead, Christchurch - Preliminary Environmental Site Investigation - INV11783

Pattle Delamore Partners Ltd - Detailed Site Investigation
6 Jul 2005

Summary of investigation(s):

Site history: Review of aerial photographs from 1941, 1946, 1955, 1965, 1973, 1984, 1994, 2004 and 2011 (by Sephira Environmental) shows an area in the southwestern portion of the site apparently subject to filling at the time of the 1941 photo, but fully covered and grassed by the 1946 photo. Otherwise the property used for paddocks and market gardening following 1946. Between 2004 and 2015, Google Earth images show surface filling prior to construction of commercial/industrial buildings. It is assumed that the filling would have been completed under a building consent from the Christchurch City Council, with appropriate controls for imported fill. The Environment Canterbury GIS database, which includes Christchurch City Council storage tank records, shows no indication of former above ground or underground storage tanks on the property.

Title of report: Kennaway Farm, Tunnel Road, Ferrymead, Christchurch - Preliminary Environmental Site Investigation - INV11783, July 2012

Investigation objective: To provide preliminary information on the surface soils over the site and to provide an assessment as to the potential environmental and human health risks that the soils may pose under a commercial/industrial land use setting.

Results: Elevated lead, arsenic, copper and zinc were detected in surface soil above typical background conditions. Dieldrin and polyaromatic hydrocarbons were detected at trace levels. All metals, pesticides and polyaromatic hydrocarbons in surface soils were below the NES soil contaminant standards for commercial/industrial land use. No intrusive investigations were undertaken in the area thought to have former landfilling.

Conclusions: The proposed category is Partially Investigated.

Justification for proposed category: Since one of the HAIL activities, historic landfilling, was not investigated, the land is considered partially investigated. As the area has been sealed with commercial/industrial buildings and car parks, the risk is likely low for exposure to contaminant however an investigation for landfill gas and the development of a site management plan would be necessary to change the category to Below Environmental Guideline Values – Commercial/Industrial or to Managed – Commercial/Industrial.

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 E R J Hill Laboratories Analysis Results



Certificate of Analysis

Client: KPES Limited	Lab No: 3274713	A2PV1
Contact: Klaus Prusas	Date Received: 12-May-2023	
C/- KPES Limited	Date Reported: 23-May-2023	
25 Kaka Road	Quote No: 124003	
South Bay	Order No:	
Kaikoura 7300	Client Reference: Cumnor	
	Submitted By: Klaus Prusas	

Sample Type: Soil

Sample Name:	C1 12-May-2023 12:00 pm	C2 12-May-2023 12:10 pm	C3 12-May-2023 12:30 pm	C4 12-May-2023 12:55 pm	C5 12-May-2023 1:05 pm
Lab Number:	3274713.1	3274713.2	3274713.3	3274713.4	3274713.5
Asbestos Presence / Absence	Asbestos NOT detected.	Asbestos NOT detected.	Chrysotile (White Asbestos) detected.	Asbestos NOT detected.	Asbestos NOT detected.
Description of Asbestos Form	-	-	Loose fibres	-	-
Asbestos in ACM as % of Total Sample*	% w/w < 0.001	% w/w < 0.001	% w/w < 0.001	% w/w < 0.001	% w/w < 0.001
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	% w/w < 0.001	% w/w < 0.001	% w/w < 0.001	% w/w < 0.001	% w/w < 0.001
Asbestos as Fibrous Asbestos as % of Total Sample*	% w/w < 0.001	% w/w < 0.001	% w/w < 0.001	% w/w < 0.001	% w/w < 0.001
Asbestos as Asbestos Fines as % of Total Sample*	% w/w < 0.001	% w/w < 0.001	% w/w < 0.001	% w/w < 0.001	% w/w < 0.001
As Received Weight	g 728.7	g 749.2	g 704.7	g 632.3	g 659.7
Dry Weight	g 659.1	g 694.6	g 585.0	g 582.1	g 541.6
Moisture*	% 10	% 7	% 17	% 8	% 18
Sample Fraction >10mm	g dry wt 194.9	g dry wt 32.2	g dry wt 95.1	g dry wt 107.4	g dry wt 35.8
Sample Fraction <10mm to >2mm	g dry wt 240.9	g dry wt 187.2	g dry wt 168.6	g dry wt 148.7	g dry wt 200.0
Sample Fraction <2mm	g dry wt 222.5	g dry wt 472.3	g dry wt 318.7	g dry wt 321.0	g dry wt 304.5
<2mm Subsample Weight	g dry wt 57.6	g dry wt 55.2	g dry wt 54.3	g dry wt 54.8	g dry wt 56.8
Weight of Asbestos in ACM (Non-Friable)	g dry wt < 0.00001	g dry wt < 0.00001	g dry wt < 0.00001	g dry wt < 0.00001	g dry wt < 0.00001
Weight of Asbestos as Fibrous Asbestos (Friable)	g dry wt < 0.00001	g dry wt < 0.00001	g dry wt < 0.00001	g dry wt < 0.00001	g dry wt < 0.00001
Weight of Asbestos as Asbestos Fines (Friable)*	g dry wt < 0.00001	g dry wt < 0.00001	g dry wt 0.00005	g dry wt < 0.00001	g dry wt < 0.00001

Sample Name:	C6 12-May-2023 1:25 pm	C7 12-May-2023 2:25 pm	C8 12-May-2023 2:45 pm	C9 12-May-2023 2:50 pm	C10 12-May-2023 3:10 pm
Lab Number:	3274713.6	3274713.7	3274713.8	3274713.9	3274713.10
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	% w/w < 0.001	% w/w < 0.001	% w/w < 0.001	% w/w < 0.001
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	% w/w < 0.001	% w/w < 0.001	% w/w < 0.001	% w/w < 0.001	% w/w < 0.001
Asbestos as Fibrous Asbestos as % of Total Sample*	% w/w < 0.001	% w/w < 0.001	% w/w < 0.001	% w/w < 0.001	% w/w < 0.001
Asbestos as Asbestos Fines as % of Total Sample*	% w/w < 0.001	% w/w < 0.001	% w/w < 0.001	% w/w < 0.001	% w/w < 0.001
As Received Weight	g 573.7	g 747.1	g 828.4	g 773.8	g 653.1
Dry Weight	g 507.9	g 667.2	g 748.7	g 638.7	g 533.1
Moisture*	% 11	% 11	% 10	% 17	% 18



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Sample Type: Soil						
Sample Name:	C6 12-May-2023 1:25 pm	C7 12-May-2023 2:25 pm	C8 12-May-2023 2:45 pm	C9 12-May-2023 2:50 pm	C10 12-May-2023 3:10 pm	
Lab Number:	3274713.6	3274713.7	3274713.8	3274713.9	3274713.10	
Sample Fraction >10mm	g dry wt	126.9	85.1	174.8	113.9	57.0
Sample Fraction <10mm to >2mm	g dry wt	138.9	129.0	276.0	169.5	139.8
Sample Fraction <2mm	g dry wt	241.2	451.1	297.1	353.8	334.9
<2mm Subsample Weight	g dry wt	54.2	50.5	50.2	56.0	54.8
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

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) give 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 Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	Method Description	Default Detection Limit	Sample No
Individual Tests			
Weight of Asbestos as Asbestos Fines in <10mm >2mm Fraction*	Measurement on analytical balance, from the <10mm >2mm Fraction. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.00001 g dry wt	1-10
New Zealand Guidelines Semi Quantitative Asbestos in Soil			
As Received Weight	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	1-10
Dry Weight	Sample dried at 100 to 105°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, 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; 101c Waterloo Road, 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; 101c Waterloo Road, 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; 101c Waterloo Road, 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; 101c Waterloo Road, 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; 101c Waterloo Road, 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; 101c Waterloo Road, 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; 101c Waterloo Road, 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 between 22-May-2023 and 23-May-2023. 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.

Rhodri Williams BSc (Hons)
Technical Manager - Asbestos



Certificate of Analysis

Client:	KPES Limited	Lab No:	3274711	SPV1
Contact:	Klaus Prusas C/- KPES Limited 25 Kaka Road South Bay Kaikoura 7300	Date Received:	12-May-2023	
		Date Reported:	23-May-2023	
		Quote No:	124003	
		Order No:		
		Client Reference:	Cumnor	
		Submitted By:	Klaus Prusas	

Sample Type: Soil

Sample Name:	C1-12:00-150 12-May-2023	C2-12:10-200 12-May-2023	C2/1-12:15-700 12-May-2023	C3-12:30-200 12-May-2023	C4-12:55-200 12-May-2023
Lab Number:	3274711.1	3274711.2	3274711.3	3274711.4	3274711.5

Individual Tests

Dry Matter	g/100g as rcvd	90	91	92	83	90
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Heavy Metals, Screen Level

Total Recoverable Arsenic	mg/kg dry wt	6	5	6	5	5
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	0.11	0.13	0.10	0.11
Total Recoverable Chromium	mg/kg dry wt	17	16	17	18	22
Total Recoverable Copper	mg/kg dry wt	11	11	10	13	12
Total Recoverable Lead	mg/kg dry wt	32	34	30	33	43
Total Recoverable Nickel	mg/kg dry wt	11	11	12	12	11
Total Recoverable Zinc	mg/kg dry wt	72	80	81	86	86

Organonitro&phosphorus Pesticides Screen in Soil by GCMS

Acetochlor	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Alachlor	mg/kg dry wt	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Atrazine	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Atrazine-desethyl	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Atrazine-desisopropyl	mg/kg dry wt	< 0.11	< 0.11	< 0.11	< 0.12	< 0.11
Azaconazole	mg/kg dry wt	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Azinphos-methyl	mg/kg dry wt	< 0.11	< 0.11	< 0.11	< 0.12	< 0.11
Benalaxyl	mg/kg dry wt	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Bitertanol	mg/kg dry wt	< 0.11	< 0.11	< 0.11	< 0.12	< 0.11
Bromacil	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Bromopropylate	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Butachlor	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Captan	mg/kg dry wt	< 0.11	< 0.11	< 0.11	< 0.12	< 0.11
Carbaryl	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Carbofuran	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Chlorfluazuron	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Chlorothalonil	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Chlorpyrifos	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Chlorpyrifos-methyl	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Chlortoluron	mg/kg dry wt	< 0.11	< 0.11	< 0.11	< 0.12	< 0.11
Cyanazine	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Cyfluthrin	mg/kg dry wt	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07
Cyhalothrin	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Cypermethrin	mg/kg dry wt	< 0.13	< 0.13	< 0.13	< 0.14	< 0.13
Deltamethrin (including Tralomethrin)	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Diazinon	mg/kg dry wt	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Dichlofluanid	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06



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Sample Type: Soil						
Sample Name:	C1-12:00-150 12-May-2023	C2-12:10-200 12-May-2023	C2/1-12:15-700 12-May-2023	C3-12:30-200 12-May-2023	C4-12:55-200 12-May-2023	
Lab Number:	3274711.1	3274711.2	3274711.3	3274711.4	3274711.5	
Organonitro&phosphorus Pesticides Screen in Soil by GCMS						
Dichloran	mg/kg dry wt	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Dichlorvos	mg/kg dry wt	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09
Difenoconazole	mg/kg dry wt	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09
Dimethoate	mg/kg dry wt	< 0.11	< 0.11	< 0.11	< 0.12	< 0.11
Diphenylamine	mg/kg dry wt	< 0.11	< 0.11	< 0.11	< 0.12	< 0.11
Diuron	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Fenpropimorph	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Fluazifop-butyl	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Fluometuron	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Flusilazole	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Fluvalinate	mg/kg dry wt	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Furalaxyl	mg/kg dry wt	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Haloxfop-methyl	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Hexaconazole	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Hexazinone	mg/kg dry wt	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
IPBC (3-Iodo-2-propynyl-n-butylcarbamate)	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Kresoxim-methyl	mg/kg dry wt	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Linuron	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Malathion	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Metalaxyl	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Methamidophos	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Metolachlor	mg/kg dry wt	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Metribuzin	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Molinate	mg/kg dry wt	< 0.11	< 0.11	< 0.11	< 0.12	< 0.11
Myclobutanil	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Naled	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Norflurazon	mg/kg dry wt	< 0.11	< 0.11	< 0.11	< 0.12	< 0.11
Oxadiazon	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Oxyfluorfen	mg/kg dry wt	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Paclobutrazol	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Parathion-ethyl	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Parathion-methyl	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Pendimethalin	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Permethrin	mg/kg dry wt	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Pirimicarb	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Pirimiphos-methyl	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Prochloraz	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Procymidone	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Prometryn	mg/kg dry wt	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Propachlor	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Propanil	mg/kg dry wt	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Propazine	mg/kg dry wt	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Propiconazole	mg/kg dry wt	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Pyriproxyfen	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Quizalofop-ethyl	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Simazine	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Simetryn	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Sulfentrazone	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
TCMTB [2-(thiocyanomethylthio)benzothiazole, Busan]	mg/kg dry wt	< 0.11	< 0.11	< 0.11	< 0.12	< 0.11
Tebuconazole	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Terbacil	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Terbumeton	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Terbutylazine	mg/kg dry wt	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03

Sample Type: Soil						
Sample Name:	C1-12:00-150 12-May-2023	C2-12:10-200 12-May-2023	C2/1-12:15-700 12-May-2023	C3-12:30-200 12-May-2023	C4-12:55-200 12-May-2023	
Lab Number:	3274711.1	3274711.2	3274711.3	3274711.4	3274711.5	
Organonitro&phosphorus Pesticides Screen in Soil by GCMS						
Terbutylazine-desethyl	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Terbutryn	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Thiabendazole	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Thiobencarb	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Tolylfluanid	mg/kg dry wt	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Triazophos	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Trifluralin	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Vinclozolin	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Total of Reported PAHs in Soil	mg/kg dry wt	2.4	0.7	0.5	1.9	2.8
1-Methylnaphthalene	mg/kg dry wt	< 0.012	< 0.011	< 0.011	< 0.012	< 0.011
2-Methylnaphthalene	mg/kg dry wt	< 0.012	< 0.011	< 0.011	< 0.012	0.011
Acenaphthylene	mg/kg dry wt	0.051	< 0.011	< 0.011	0.020	0.036
Acenaphthene	mg/kg dry wt	< 0.012	< 0.011	< 0.011	< 0.012	< 0.011
Anthracene	mg/kg dry wt	0.059	< 0.011	< 0.011	0.039	0.060
Benzo[a]anthracene	mg/kg dry wt	0.153	0.041	0.031	0.123	0.197
Benzo[a]pyrene (BAP)	mg/kg dry wt	0.25	0.062	0.052	0.169	0.25
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	0.36	0.091	0.074	0.25	0.38
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	0.36	0.090	0.073	0.25	0.37
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	0.25	0.071	0.059	0.193	0.29
Benzo[e]pyrene	mg/kg dry wt	0.147	0.042	0.034	0.114	0.158
Benzo[g,h,i]perylene	mg/kg dry wt	0.171	0.045	0.037	0.133	0.178
Benzo[k]fluoranthene	mg/kg dry wt	0.101	0.027	0.023	0.077	0.114
Chrysene	mg/kg dry wt	0.162	0.049	0.042	0.139	0.21
Dibenzo[a,h]anthracene	mg/kg dry wt	0.036	< 0.011	< 0.011	0.024	0.037
Fluoranthene	mg/kg dry wt	0.29	0.095	0.078	0.27	0.38
Fluorene	mg/kg dry wt	0.018	< 0.011	< 0.011	< 0.012	0.016
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	0.167	0.046	0.035	0.126	0.186
Naphthalene	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Perylene	mg/kg dry wt	0.057	0.013	0.011	0.040	0.054
Phenanthrene	mg/kg dry wt	0.147	0.035	0.033	0.111	0.21
Pyrene	mg/kg dry wt	0.30	0.097	0.080	0.28	0.38
Sample Name:	C5-1:05-200 12-May-2023	C5/1-1:15-700 12-May-2023	C6-1:25-200 12-May-2023	C7-2:25-200 12-May-2023	C7-12:30-700 12-May-2023	
Lab Number:	3274711.6	3274711.7	3274711.8	3274711.9	3274711.10	
Individual Tests						
Dry Matter	g/100g as rcvd	81	81	85	86	93
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	6	6	5	7	6
Total Recoverable Cadmium	mg/kg dry wt	0.13	0.11	0.11	0.12	0.11
Total Recoverable Chromium	mg/kg dry wt	22	21	20	20	20
Total Recoverable Copper	mg/kg dry wt	15	14	13	15	17
Total Recoverable Lead	mg/kg dry wt	43	42	39	49	45
Total Recoverable Nickel	mg/kg dry wt	12	12	12	14	12
Total Recoverable Zinc	mg/kg dry wt	89	84	83	96	93
Organonitro&phosphorus Pesticides Screen in Soil by GCMS						
Acetochlor	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Alachlor	mg/kg dry wt	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Atrazine	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Atrazine-desethyl	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Atrazine-desisopropyl	mg/kg dry wt	< 0.12	< 0.12	< 0.11	< 0.11	< 0.10
Azaconazole	mg/kg dry wt	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03

Sample Type: Soil						
Sample Name:	C5-1:05-200 12-May-2023	C5/1-1:15-700 12-May-2023	C6-1:25-200 12-May-2023	C7-2:25-200 12-May-2023	C7-12:30-700 12-May-2023	
Lab Number:	3274711.6	3274711.7	3274711.8	3274711.9	3274711.10	
Organonitro&phosphorus Pesticides Screen in Soil by GCMS						
Azinphos-methyl	mg/kg dry wt	< 0.12	< 0.12	< 0.11	< 0.11	< 0.10
Benalaxyl	mg/kg dry wt	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Bitertanol	mg/kg dry wt	< 0.12	< 0.12	< 0.11	< 0.11	< 0.10
Bromacil	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Bromopropylate	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Butachlor	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Captan	mg/kg dry wt	< 0.12	< 0.12	< 0.11	< 0.11	< 0.10
Carbaryl	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Carbofuran	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Chlorfluazuron	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Chlorothalonil	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Chlorpyrifos	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Chlorpyrifos-methyl	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Chlortoluron	mg/kg dry wt	< 0.12	< 0.12	< 0.11	< 0.11	< 0.10
Cyanazine	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Cyfluthrin	mg/kg dry wt	< 0.08	< 0.07	< 0.07	< 0.07	< 0.07
Cyhalothrin	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Cypermethrin	mg/kg dry wt	< 0.15	< 0.14	< 0.14	< 0.14	< 0.13
Deltamethrin (including Tralomethrin)	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Diazinon	mg/kg dry wt	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Dichlofluanid	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Dichloran	mg/kg dry wt	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Dichlorvos	mg/kg dry wt	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09
Difenoconazole	mg/kg dry wt	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09
Dimethoate	mg/kg dry wt	< 0.12	< 0.12	< 0.11	< 0.11	< 0.10
Diphenylamine	mg/kg dry wt	< 0.12	< 0.12	< 0.11	< 0.11	< 0.10
Diuron	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Fenpropimorph	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Fluazifop-butyl	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Fluometuron	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Flusilazole	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Fluvalinate	mg/kg dry wt	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Furalaxyl	mg/kg dry wt	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Haloxifop-methyl	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Hexaconazole	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Hexazinone	mg/kg dry wt	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
IPBC (3-Iodo-2-propynyl-n-butylcarbamate)	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Kresoxim-methyl	mg/kg dry wt	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Linuron	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Malathion	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Metalaxyl	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Methamidophos	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Metolachlor	mg/kg dry wt	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Metribuzin	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Molinate	mg/kg dry wt	< 0.12	< 0.12	< 0.11	< 0.11	< 0.10
Myclobutanil	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Naled	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Norflurazon	mg/kg dry wt	< 0.12	< 0.12	< 0.11	< 0.11	< 0.10
Oxadiazon	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Oxyfluorfen	mg/kg dry wt	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Paclobutrazol	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Parathion-ethyl	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Parathion-methyl	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05

Sample Type: Soil

Sample Name:		C5-1:05-200 12-May-2023	C5/1-1:15-700 12-May-2023	C6-1:25-200 12-May-2023	C7-2:25-200 12-May-2023	C7-12:30-700 12-May-2023
Lab Number:		3274711.6	3274711.7	3274711.8	3274711.9	3274711.10
Organonitro&phosphorus Pesticides Screen in Soil by GCMS						
Pendimethalin	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Permethrin	mg/kg dry wt	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Pirimicarb	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Pirimiphos-methyl	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Prochloraz	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Procymidone	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Prometryn	mg/kg dry wt	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Propachlor	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Propanil	mg/kg dry wt	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Propazine	mg/kg dry wt	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Propiconazole	mg/kg dry wt	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Pyriproxyfen	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Quizalofop-ethyl	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Simazine	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Simetryn	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Sulfentrazone	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
TCMTB [2-(thiocyanomethylthio)benzothiazole, Busan]	mg/kg dry wt	< 0.12	< 0.12	< 0.11	< 0.11	< 0.10
Tebuconazole	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Terbacil	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Terbutometon	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Terbutylazine	mg/kg dry wt	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Terbutylazine-desethyl	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Terbutryn	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Thiabendazole	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Thiobencarb	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Tolyfluanid	mg/kg dry wt	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Triazophos	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Trifluralin	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Vinclozolin	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.05
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Total of Reported PAHs in Soil	mg/kg dry wt	1.7	3.5	2.6	2.0	2.8
1-Methylnaphthalene	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.011
2-Methylnaphthalene	mg/kg dry wt	< 0.012	0.012	0.012	< 0.012	0.012
Acenaphthylene	mg/kg dry wt	0.022	0.041	0.035	0.024	0.033
Acenaphthene	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.011
Anthracene	mg/kg dry wt	0.027	0.057	0.046	0.035	0.046
Benzo[a]anthracene	mg/kg dry wt	0.105	0.25	0.161	0.128	0.187
Benzo[a]pyrene (BAP)	mg/kg dry wt	0.168	0.34	0.25	0.187	0.27
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	0.25	0.50	0.37	0.27	0.40
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	0.24	0.49	0.37	0.27	0.40
Benzo[b]fluoranthene + Benzo[j]fluoranthene	mg/kg dry wt	0.192	0.37	0.29	0.21	0.30
Benzo[e]pyrene	mg/kg dry wt	0.112	0.21	0.162	0.122	0.171
Benzo[g,h,i]perylene	mg/kg dry wt	0.134	0.24	0.195	0.143	0.20
Benzo[k]fluoranthene	mg/kg dry wt	0.078	0.151	0.116	0.087	0.120
Chrysene	mg/kg dry wt	0.122	0.25	0.180	0.140	0.199
Dibenzo[a,h]anthracene	mg/kg dry wt	0.025	0.049	0.037	0.027	0.039
Fluoranthene	mg/kg dry wt	0.21	0.50	0.32	0.26	0.39
Fluorene	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	< 0.011
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	0.129	0.25	0.195	0.136	0.198
Naphthalene	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Perylene	mg/kg dry wt	0.038	0.077	0.056	0.042	0.060
Phenanthrene	mg/kg dry wt	0.078	0.168	0.139	0.117	0.144

Sample Type: Soil						
Sample Name:	C5-1:05-200 12-May-2023	C5/1-1:15-700 12-May-2023	C6-1:25-200 12-May-2023	C7-2:25-200 12-May-2023	C7-12:30-700 12-May-2023	
Lab Number:	3274711.6	3274711.7	3274711.8	3274711.9	3274711.10	
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Pyrene	mg/kg dry wt	0.22	0.52	0.34	0.28	0.41
Sample Name:	C8-2:45-300 12-May-2023		C9-2:55-300 12-May-2023		C10-3:10-200 12-May-2023	
Lab Number:	3274711.11		3274711.12		3274711.13	
Individual Tests						
Dry Matter	g/100g as rcvd	88		80		79
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	6		7		6
Total Recoverable Cadmium	mg/kg dry wt	0.12		0.12		0.11
Total Recoverable Chromium	mg/kg dry wt	19		19		17
Total Recoverable Copper	mg/kg dry wt	13		15		13
Total Recoverable Lead	mg/kg dry wt	36		39		31
Total Recoverable Nickel	mg/kg dry wt	12		12		12
Total Recoverable Zinc	mg/kg dry wt	94		92		85
Organonitro&phosphorus Pesticides Screen in Soil by GCMS						
Acetochlor	mg/kg dry wt	< 0.06		< 0.06		< 0.06
Alachlor	mg/kg dry wt	< 0.05		< 0.05		< 0.05
Atrazine	mg/kg dry wt	< 0.06		< 0.06		< 0.06
Atrazine-desethyl	mg/kg dry wt	< 0.06		< 0.06		< 0.06
Atrazine-desisopropyl	mg/kg dry wt	< 0.11		< 0.12		< 0.12
Azaconazole	mg/kg dry wt	< 0.03		< 0.03		< 0.03
Azinphos-methyl	mg/kg dry wt	< 0.11		< 0.12		< 0.12
Benalaxyl	mg/kg dry wt	< 0.03		< 0.03		< 0.03
Bitertanol	mg/kg dry wt	< 0.11		< 0.12		< 0.12
Bromacil	mg/kg dry wt	< 0.06		< 0.06		< 0.06
Bromopropylate	mg/kg dry wt	< 0.06		< 0.06		< 0.06
Butachlor	mg/kg dry wt	< 0.06		< 0.06		< 0.06
Captan	mg/kg dry wt	< 0.11		< 0.12		< 0.12
Carbaryl	mg/kg dry wt	< 0.06		< 0.06		< 0.06
Carbofuran	mg/kg dry wt	< 0.06		< 0.06		< 0.06
Chlorfluazuron	mg/kg dry wt	< 0.06		< 0.06		< 0.06
Chlorothalonil	mg/kg dry wt	< 0.06		< 0.06		< 0.06
Chlorpyrifos	mg/kg dry wt	< 0.06		< 0.06		< 0.06
Chlorpyrifos-methyl	mg/kg dry wt	< 0.06		< 0.06		< 0.06
Chlortoluron	mg/kg dry wt	< 0.11		< 0.12		< 0.12
Cyanazine	mg/kg dry wt	< 0.06		< 0.06		< 0.06
Cyfluthrin	mg/kg dry wt	< 0.07		< 0.08		< 0.08
Cyhalothrin	mg/kg dry wt	< 0.06		< 0.06		< 0.06
Cypermethrin	mg/kg dry wt	< 0.13		< 0.15		< 0.15
Deltamethrin (including Tralomethrin)	mg/kg dry wt	< 0.06		< 0.06		< 0.06
Diazinon	mg/kg dry wt	< 0.03		< 0.03		< 0.03
Dichlofluanid	mg/kg dry wt	< 0.06		< 0.06		< 0.06
Dichloran	mg/kg dry wt	< 0.2		< 0.2		< 0.2
Dichlorvos	mg/kg dry wt	< 0.09		< 0.09		< 0.09
Difenoconazole	mg/kg dry wt	< 0.09		< 0.09		< 0.09
Dimethoate	mg/kg dry wt	< 0.11		< 0.12		< 0.12
Diphenylamine	mg/kg dry wt	< 0.11		< 0.12		< 0.12
Diuron	mg/kg dry wt	< 0.06		< 0.06		< 0.06
Fenpropimorph	mg/kg dry wt	< 0.06		< 0.06		< 0.06
Fluazifop-butyl	mg/kg dry wt	< 0.06		< 0.06		< 0.06
Fluometuron	mg/kg dry wt	< 0.06		< 0.06		< 0.06
Flusilazole	mg/kg dry wt	< 0.06		< 0.06		< 0.06
Fluvalinate	mg/kg dry wt	< 0.05		< 0.05		< 0.05
Furalaxyl	mg/kg dry wt	< 0.03		< 0.03		< 0.03

Sample Type: Soil

Sample Name:		C8-2:45-300 12-May-2023	C9-2:55-300 12-May-2023	C10-3:10-200 12-May-2023
Lab Number:		3274711.11	3274711.12	3274711.13
Organonitro&phosphorus Pesticides Screen in Soil by GCMS				
Haloxypop-methyl	mg/kg dry wt	< 0.06	< 0.06	< 0.06
Hexaconazole	mg/kg dry wt	< 0.06	< 0.06	< 0.06
Hexazinone	mg/kg dry wt	< 0.03	< 0.03	< 0.03
IPBC (3-Iodo-2-propynyl-n-butylcarbamate)	mg/kg dry wt	< 0.3	< 0.3	< 0.3
Kresoxim-methyl	mg/kg dry wt	< 0.03	< 0.03	< 0.03
Linuron	mg/kg dry wt	< 0.06	< 0.06	< 0.06
Malathion	mg/kg dry wt	< 0.06	< 0.06	< 0.06
Metalaxyl	mg/kg dry wt	< 0.06	< 0.06	< 0.06
Methamidophos	mg/kg dry wt	< 0.3	< 0.3	< 0.3
Metolachlor	mg/kg dry wt	< 0.05	< 0.05	< 0.05
Metribuzin	mg/kg dry wt	< 0.06	< 0.06	< 0.06
Molinate	mg/kg dry wt	< 0.11	< 0.12	< 0.12
Myclobutanil	mg/kg dry wt	< 0.06	< 0.06	< 0.06
Naled	mg/kg dry wt	< 0.3	< 0.3	< 0.3
Norflurazon	mg/kg dry wt	< 0.11	< 0.12	< 0.12
Oxadiazon	mg/kg dry wt	< 0.06	< 0.06	< 0.06
Oxyfluorfen	mg/kg dry wt	< 0.03	< 0.03	< 0.03
Paclobutrazol	mg/kg dry wt	< 0.06	< 0.06	< 0.06
Parathion-ethyl	mg/kg dry wt	< 0.06	< 0.06	< 0.06
Parathion-methyl	mg/kg dry wt	< 0.06	< 0.06	< 0.06
Pendimethalin	mg/kg dry wt	< 0.06	< 0.06	< 0.06
Permethrin	mg/kg dry wt	< 0.03	< 0.03	< 0.03
Pirimicarb	mg/kg dry wt	< 0.06	< 0.06	< 0.06
Pirimiphos-methyl	mg/kg dry wt	< 0.06	< 0.06	< 0.06
Prochloraz	mg/kg dry wt	< 0.3	< 0.3	< 0.3
Procymidone	mg/kg dry wt	< 0.06	< 0.06	< 0.06
Prometryn	mg/kg dry wt	< 0.03	< 0.03	< 0.03
Propachlor	mg/kg dry wt	< 0.06	< 0.06	< 0.06
Propanil	mg/kg dry wt	< 0.2	< 0.2	< 0.2
Propazine	mg/kg dry wt	< 0.03	< 0.03	< 0.03
Propiconazole	mg/kg dry wt	< 0.05	< 0.05	< 0.05
Pyriproxyfen	mg/kg dry wt	< 0.06	< 0.06	< 0.06
Quizalofop-ethyl	mg/kg dry wt	< 0.06	< 0.06	< 0.06
Simazine	mg/kg dry wt	< 0.06	< 0.06	< 0.06
Simetryn	mg/kg dry wt	< 0.06	< 0.06	< 0.06
Sulfentrazone	mg/kg dry wt	< 0.3	< 0.3	< 0.3
TCMTB [2-(thiocyanomethylthio)benzothiazole, Busan]	mg/kg dry wt	< 0.11	< 0.12	< 0.12
Tebuconazole	mg/kg dry wt	< 0.06	< 0.06	< 0.06
Terbacil	mg/kg dry wt	< 0.06	< 0.06	< 0.06
Terbumeton	mg/kg dry wt	< 0.06	< 0.06	< 0.06
Terbutylazine	mg/kg dry wt	< 0.03	< 0.03	< 0.03
Terbutylazine-desethyl	mg/kg dry wt	< 0.06	< 0.06	< 0.06
Terbutryn	mg/kg dry wt	< 0.06	< 0.06	< 0.06
Thiabendazole	mg/kg dry wt	< 0.3	< 0.3	< 0.3
Thiobencarb	mg/kg dry wt	< 0.06	< 0.06	< 0.06
Tolyfluanid	mg/kg dry wt	< 0.03	< 0.03	< 0.03
Triazophos	mg/kg dry wt	< 0.06	< 0.06	< 0.06
Trifluralin	mg/kg dry wt	< 0.06	< 0.06	< 0.06
Vinclozolin	mg/kg dry wt	< 0.06	< 0.06	< 0.06
Polycyclic Aromatic Hydrocarbons Screening in Soil*				
Total of Reported PAHs in Soil	mg/kg dry wt	1.9	1.6	2.5
1-Methylnaphthalene	mg/kg dry wt	< 0.012	< 0.013	0.025
2-Methylnaphthalene	mg/kg dry wt	< 0.012	< 0.013	0.031
Acenaphthylene	mg/kg dry wt	0.022	0.019	0.025

Sample Type: Soil				
Sample Name:		C8-2:45-300 12-May-2023	C9-2:55-300 12-May-2023	C10-3:10-200 12-May-2023
Lab Number:		3274711.11	3274711.12	3274711.13
Polycyclic Aromatic Hydrocarbons Screening in Soil*				
Acenaphthene	mg/kg dry wt	< 0.012	< 0.013	< 0.013
Anthracene	mg/kg dry wt	0.043	0.019	0.073
Benzo[a]anthracene	mg/kg dry wt	0.125	0.112	0.172
Benzo[a]pyrene (BAP)	mg/kg dry wt	0.174	0.166	0.21
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	0.25	0.24	0.30
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	0.25	0.24	0.30
Benzo[b]fluoranthene + Benzo[j]fluoranthene	mg/kg dry wt	0.192	0.179	0.22
Benzo[e]pyrene	mg/kg dry wt	0.110	0.104	0.126
Benzo[g,h,i]perylene	mg/kg dry wt	0.128	0.121	0.139
Benzo[k]fluoranthene	mg/kg dry wt	0.076	0.075	0.090
Chrysene	mg/kg dry wt	0.134	0.113	0.174
Dibenzo[a,h]anthracene	mg/kg dry wt	0.024	0.024	0.029
Fluoranthene	mg/kg dry wt	0.26	0.21	0.40
Fluorene	mg/kg dry wt	< 0.012	< 0.013	< 0.013
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	0.126	0.118	0.138
Naphthalene	mg/kg dry wt	< 0.06	< 0.07	< 0.07
Perylene	mg/kg dry wt	0.039	0.036	0.046
Phenanthrene	mg/kg dry wt	0.120	0.094	0.146
Pyrene	mg/kg dry wt	0.27	0.22	0.41

Analyst's Comments

It has been noted that the System Monitoring Compounds 1-methylnaphthalene-d10, Fluoranthene-d10 and Benzo[a]pyrene-d12 in the PAH analysis on sample 3274711.9, had lower than expected recoveries at 49%, 51% and 46% 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 Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	Method Description	Default Detection Limit	Sample No
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%.	-	1-13
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	1-13
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	1-13
Organonitro&phosphorus Pesticides Screen in Soil by GCMS	Sonication extraction, GC-MS analysis. Tested on as received sample. In-house based on US EPA 8270.	0.02 - 0.2 mg/kg dry wt	1-13
Polycyclic Aromatic Hydrocarbons Screening in Soil*	Sonication extraction, GC-MS/MS analysis. Tested on as received sample. In-house based on US EPA 8270.	0.010 - 0.05 mg/kg dry wt	1-13
Dry Matter	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	1-13
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	1-13

Sample Type: Soil			
Test	Method Description	Default Detection Limit	Sample No
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	1-13

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

Testing was completed between 18-May-2023 and 23-May-2023. 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