File No.: 39630

27 January 2025

Christchurch City Council
73 Hereford Street
Christchurch Central
CHRISTCHURCH 8011

Attention: Adrian Xu

Email: Adrian.Xu@ccc.govt.nz
Cc: Monaghan@suburbanestates.co.nz

Sent via Online Service

Dear Adrian,

S127 APPLICATION TO CHANGE CONDITIONS OF CONSENT – RMA/2023/1945

This request seeks a variation to RMA/2023/1945 in accordance with Section 127(1) of the Resource Management Act 1991. RMA/2023/1945 relates to the global consent for disturbance and removal of contaminated soil in association with new dwelling construction on Lots 121 to 136, 150 to 198, and 213 to 254 (except Lots 133, 136, and 161) within Stages 3 to 5 of the Oakbridge residential subdivision.

1.1 Summary of Applicant and Proposal Details

Applicant / Owner:	Sovereign Palms Limited	
Site Address:	31 Hawkins Road, 47 Hawkins Road, 1 Selkirk Place and 11 Selkirk Place	
Legal Description / Record of Title:	Lot 4000 DP 569920	RT 1028533
	Lot 2 DP 512441 and Lot 4 DP 23089	RT 789065
	Lot 5 DP 23089	RT CB4A/99
	Lot 6 DP 23089	RT CB6A/114
Net Site Area:	7.7862 ha (Lot 4000 DP 569920) + 7.1343 ha (Lot 2 DP 512441 and Lot 4 DP 23089) + 4.0820 ha (Lot 5 DP 23089) + 4.0625 ha (Lot 6 DP 23089) = **23.065 ha**	

District Plan Zoning:	Residential New Neighbourhood
District Plan Notations:	Liquefaction Management Area Flood Management Area Highfield Park Outline Development Plan
Road Hierarchy:	Hawkins Road – Local Road

1.2 Background

The application relates to RMA/2023/1945 which is the global consent for disturbance and removal of contaminated soil in association with new dwelling construction on Lots 121 to 136, 150 to 198, and 213 to 254 (except Lots 133, 136, and 161) granted in October 2024 within Stages 3 to 5 of the subdivision originally consented under RMA/2022/927. A copy of the global consent RMA/2023/1945 is attached as **Appendix 1**.

RMA/2022/927 which is a resource consent for multiple stages of the Oakbridge residential subdivision granted in September 2022 was subsequently varied by RMA/2022/927/A in May 2023, RMA/2022/927/B in August 2023, and RMA/2022/927/C in July 2024, which sought an amendment to staging. A copy of the original approval (RMA/2022/927) is attached as **Appendix 2** and a copy of the variation (RMA/2022/927/C) is attached as **Appendix 3** to this application.

After the issuance of the global consent RMA/2023/1945, the applicant requested a re-configuration of staging originally approved under RMA/2022/927. Specifically, this involved the addition of a new sub-stage, Stage 4A, and the inclusion of four additional lots that had previously been designated for future Stage 6:

- Stage 4 - Lots 211 and 212.
- Stage 4A - Lots 209 and 210.

The applicant now seeks to amend the following condition to incorporate the additional Lots 209 to 212, which are now part of Stage 4.

1.3 Proposed Changes

The applicant now seeks to vary the following conditions in light of the Stage 4 amendments to include Lots 209 to 212. The proposed changes to the condition are outlined in **Table 1** below and highlighted in bold and underlined.

Table 1: Existing and Proposed Conditions – RMA/2023/1945	
Condition B (1)	*The development shall proceed in accordance with the information and documents submitted with the application.*
Amend Condition B (1)	*The development shall proceed in accordance with the information and documents submitted with the application* ***as varied by a s127 application RMA/2023/1945/A.***

The proposed conditions do not introduce any additional non-compliances against the District Plan provisions from that previously considered under RMA/2023/1945.

1.4 Assessment of Effects

Following the issuance of the global consent for disturbance and removal of contaminated soil in association with new dwelling construction, the subdivision plan under RMA/2022/927/C has been varied to include Lots 209 to 212 within Stage 4 of the development. As a result, the applicant is seeking the inclusion of these lots in the global consent, which covers Stages 3 to 5, to enable future landowners to commence construction of a residential dwelling.

Davis Ogilvie has prepared a topsoil investigation report, which identifies widespread, elevated copper concentrations in the topsoil. Soil samples were collected by Davis Ogilvie in April 2023 (Lots 121 – 230), November 2024 (Lots 231 – 246), and December 2024 (Lots 209 – 212). The results from the 2023 sampling were previously reported in Version 2 of this report.

The assessment of topsoil on site was conducted to evaluate the concentrations of contaminants after stripping, stockpiling, and re-spreading the soil, ensuring its suitability for residential land use. The assessment also considered potential implications under the NES regulations and soil disposal implications for future landowners. The report concludes that topsoil is suitable for residential land use and that the risk to human health is acceptable. However, as heavy metal results for copper are consistently more than background levels, the topsoil on site does not meet the definition of ‘cleanfill’. Any topsoil that leaves the site must be taken to an accredited facility authorised to receive it.

Based on the above, the proposal seeks the inclusion of Lots 209 to 212 to remove the soil from the applicable lots under the global consent RMA/2023/1945 as varied by this consent.

A site management plan (SMP) for future earthworks associated with residential development of lots within Stages 3 to 5 of the Oakbridge subdivision has been prepared in accordance with conditions of consent of RMA/2023/1945. This SMP is designed to manage the risks associated to disturbing copper impacted soil during the proposed residential development earthworks and is submitted alongside the CCC global consent application for disturbing soil. This SMP applied to all residential lots in Stages 3 to 5 (including stages 3a, 3b, 4, 4a, and 5) except for Lots 133, 136 and 161 (Stage 3).

The SMP will ensure that appropriate procedures are in place for the excavation, handling and disposal of contaminated soil. These measures will mitigate the potential for adverse effects on human health resulting from the proposed works. As such, the above measures will ensure that any adverse effects on the environment will be less than minor.

1.5 Legal Framework

Section 127 of the Resource Management Act 1991 allows the holder of a resource consent to apply to the Consent Authority for a change of any condition of that consent. In considering an application under section 127, the following matters require consideration:

(1) The holder of a resource consent may apply to a consent authority for a change or cancellation of a condition of the consent, subject to the following:

(a) the holder of a subdivision consent must apply under this section for a change or cancellation of the consent before the deposit of the survey plan (and must apply under section 221 for a variation or cancellation of a consent notice after the deposit of the survey plan); and

(b) no holder of any consent may apply for a change or cancellation of a condition on the duration of the consent.

(3) Sections 88 to 121 apply, with all necessary modifications, as if-

(a) the applications were an application for a resource consent for a discretionary activity; and

(b) the references to a resource consent and to the activity were references only to the change or cancellation of a condition and the effects of the change or cancellation respectively.

(4) For the purposes of determining who is adversely affected by the change or cancellation, the consent authority must consider, in particular, every person who;

(a) made a submission on the original application; and

(b) may be affected by the change or cancellation.

Pursuant to Section 127(3) an application for a change or cancellation of a consent condition must be assessed as a discretionary activity. For the purposes of determining if there are any adversely affected parties, the Council must consider every person who made a submission on the original application and may be affected by the change or cancellation. Under s127 only the change to the condition can be considered.

In summary, the original application was processed non-notified. It is considered the effects of the inclusion of Lots 209 to 212 are considered to be less than minor. No persons are considered affected by the proposal.

1.6 Conclusion

Overall, this variation is consistent with section 127, with the effects of the proposed change less than minor. It is considered that the variation may be duly granted.

If you have any questions regarding the above, please do not hesitate to contact the undersigned.

Yours faithfully,

DAVIS OGILVIE & PARTNERS LTD.

DAMIENNE DONALDSON
Principal Planner
BSc, PG Dip Res St, Assoc.NZPI

Email: damienne@do.nz

APPENDIX 1 - RMA/2023/1945 Decision
APPENDIX 2 - RMA/2022/927 Decision
APPENDIX 3 - RMA/2022/927/C Decision
APPENDIX 4 - Topsoil Validation Report
APPENDIX 5 - Site Management Plan

File No.: 39630

22 January 2025

Sovereign Palms Ltd.
PO BOX 13 349
CHRISTCHURCH 8141

Attention: Sean Monaghan

Email: monaghan@suburbanestates.co.nz

Dear Sean,

TOPSOIL INVESTIGATION REPORT – STAGES 3A, 3B, 4, 4A, & 5 OAKBRIDGE SUBDIVISION (SUBDIVISION OF LOT 4000 STAGE 2B RMA/2020/3053; LOT 100 RMA/2021/2570; AND LOTS 4, 5 AND 6 DP 23089) – REVISION 4

1.0 INTRODUCTION AND SCOPE

Soil sampling was undertaken within Stages 3a, 3b, 4, 4a, and 5 of the Oakbridge subdivision by Davis Ogilvie & Partners Limited (Davis Ogilvie) in July 2023 and November 2024, on behalf of Sovereign Palms Ltd. (RMA/2022/927 & varied by RMA/2022/927/A). The Oakbridge Subdivision is located on land with the previous address of 1 Selkirk Place and 47 Hawkins Road, Christchurch (herein referred to as the site). The soil sampling was completed to assess the recently placed topsoil across the site which previously contained trace elements at concentrations above background levels.

Davis Ogilvie previously completed a detailed site investigation (DSI) of the Oakbridge subdivision in 2017[1]. The DSI found concentrations of heavy metals, organochlorine pesticides (OCPs) and polycyclic aromatic hydrocarbons (PAHs) at and above the adopted background criteria were present across the site. Specifically, copper was present at concentrations exceeding background over the majority of the subdivision area. DDT, arsenic, chromium, and zinc were also detected at concentrations above background in a number of samples in different locations around the subdivision.

[1] Davis Ogilvie report dated 26 May 2017; Detailed Site Investigation Report, Oakbridge, Reference 34300.

Hotspot areas with contaminants concentrations exceeding the National Environment Standard (NES) soil contaminant standard (SCS) for residential 10% produce (NESCS) have been remediated, and a validation report has been produced which is separate to this report. The subject of this report is the widespread, elevated copper concentrations within the topsoil. Following remediation of the hotspot areas, the original topsoil across the Oakbridge subdivision was stripped, stockpiled, and later respread as the final stage of earthworks development, therefore the topsoil is considered to be well mixed. A plan showing Stages 3a, 3b, 4, 4a, and 5 of the Oakbridge subdivision is shown in Figure 1.

Figure 1: Extract from the Oakbridge Scheme Plan – Stages 3-5 (overall plan) (DWG 350/H). Not to scale.

Soil samples were collected by Davis Ogilvie in April 2023 (Lots 121 – 230), November 2024 (Lots 231 – 246) and December 2024 (Lots 209 – 212). Results of the 2023 sampling were previously reported in Version 2 of this report. The samples were taken from the upper 100 to 150 mm of topsoil. The soil sampling methodology included the collection of approximately four samples per residential lot which were analysed for a suite of heavy metals. Composite samples (a combination of the four samples per lot) were created by the laboratory, and each composite sample was then analysed by the laboratory for organochlorine pesticides (OCPs). The results were compared to the NESCS for residential 10% produce and background levels established by Environment Canterbury (ECan)[2].

[2] ECan (2007). Background concentrations of selected trace elements in Canterbury Soils. Christchurch Gley and Recent Soils, Level 2-Table 2.

1.1 Assessment Methodology

The following investigation and assessment methodology was undertaken:

- Soil sample locations evenly distributed around each residential lot to gain a suitable representation of the topsoil.
- Visual and olfactory inspection of each sample for indicators of contamination.
- Soil samples were collected directly by hand and from ground surface to a depth of 150 mm below existing ground level (EGL).
- To reduce the potential for cross contamination, each sample was collected using disposable nitrile gloves that were discarded following the collection of each sample.
- All field work and sampling were undertaken in general accordance with the procedures for the appropriate handling of potentially contaminated soils as described in the MfE Contaminated Land Management Guidelines No.5: Site Investigation and Analysis of Soils.
- All samples were placed in laboratory supplied containers, which were then sealed, labelled with a unique identifier, and placed in chilled containers prior to transportation to the laboratory.
- Approximately four individual soil samples were taken per lot. All samples on each lot were subsequently composited by the laboratory and analysis was undertaken on that composited sample.
- Samples were transported to Hill Labs under the standard chain of custody procedures for laboratory analysis of potential contaminants of concern.
- Following receipt of the samples by Hill Labs, selected soil samples were scheduled for a selection of analytes including heavy metals (As, Cd, Cr, Cu, Pb, Hg, Ni and Zn) and Organochlorine Pesticides (OCPs).
- Assessment of soil concentrations for contaminants of concern with applicable standards and soil acceptance criteria for the protection of human health and the environment.

The residential lots that were sampled are shown in Figure 2 (2023 in yellow and 2024 in green).

Figure 2: Modified extract from the Oakbridge Scheme Plan – Stages 3-5 (overall plan) (DWG 350/H) showing sampled areas as part of this investigation. Sampling was undertaken in lots shaded in green. Yellow shaded lots have previously been investigated (April 2023, first reported in July 2023).

2.0 REGULATORY FRAMEWORK AND ASSESSMENT CRITERIA

The NES for Assessing and Managing Contaminants in Soil to Protect Human Health Regulations under the Resource Management Act (1991) came into effect on 1 January 2012. The NES Regulations apply to all land where a detailed site investigation exists that demonstrates that any contaminants in or on the piece of land are above background concentrations. The Davis Ogilvie (May 2017) DSI[3] identified (summary of contaminants) to be consistently present in the topsoil across the site.

An assessment of topsoil present on site was completed to evaluate the topsoil concentrations post stripping, stockpiling, and re-spreading to ensure suitable for residential land use and to evaluate possible NES Regulation and soil disposal implications for future landowners.

[3] Davis Ogilvie report dated 26 May 2017: Detailed Site Investigation Report, Oakbridge, Reference 34300

The NES introduced 12 soil contaminant standards (SCSs) for priority contaminants for the protection of human health in a variety of land use scenarios. The NES requires that the Contaminated Land Management Guideline No.2 – Hierarchy and Application in New Zealand of Environmental Guideline Values be used where an NES SCS is not available. The 'Residential 10%' land use scenario has been adopted in this assessment.

Background levels for metal concentrations in soils in the area were obtained from ECan online GIS – Trace Level 2 concentrations. The values for the Regional GLEY and RECENT soil groups were adopted.

3.0 ANALYTICAL RESULTS

Laboratory reports are attached to this letter as are the assessment tables with results tabulated and compared against the relevant assessment criteria. The analytical results can be summarised as follows:

- The concentrations of tested heavy metals and OCPs did not exceed the National Environmental Standard for Soil Contamination (NESCS) residential guideline value (10% produce).
- Copper concentrations (18 to 104 mg/kg) frequently exceed established soil background levels for this area (20.3 mg/kg).
- Approximately a fifth of samples exceed the zinc background level of 93.94 mg/kg.
- OCP concentrations do not exceed ambient concentrations, as defined by the MfE[4]. None of the analysed OCP concentrations exceed the NESCS residential guideline value (10% produce).
- Nine topsoil samples show chromium concentrations slightly exceeding background levels with concentrations in excess are 23 mg/kg, versus a background level for this area of 22.7 mg/kg. However, only 9 of the 111 sampled lots contained chromium at a concentration of 23 mg/kg.
- Arsenic concentrations exceed background levels within 2 of the 168 samples (13 and 16 mg/kg, compared to a background level of 12.58 mg/kg), however the majority of lots across the subdivision contain arsenic concentrations below background levels (12.58 mg/kg).
- Composite sample results for Lots 133, 136 and 161 showed heavy metal and OCP concentrations below the background levels, and therefore topsoil on these lots can be considered as 'cleanfill'.

Canterbury Maps shows a boundary between two different background levels crossing the subdivision: these are 'GLEY' and 'RECENT'. The background levels for these two soil types are provided in the ECan 2007 background concentrations report[5]. Both GLEY (n = 6) and RECENT (n = 18) background levels are shown on Table 1. However, since all topsoil on site has been stockpiled, respread, and therefore mixed, it is not appropriate to compare the results spatially and the results have been compared to the highest background level RECENT.

[4] MfE (1998) Ambient concentrations of selected organochlorines in soils.
[5] ECan (2007). Background concentrations of selected trace elements in Canterbury Soils. Christchurch Gley Recent Soils, Level 2-Table 2.

3.1 Quality Assurance and Quality Control

The quality assurance / quality control (QA / QC) procedures undertaken during the works included:

- All fieldwork was managed by a Suitably Qualified and Experienced Practitioner (SQEP) and this report has been reviewed by a SQEP, as required by the National Environmental Standard for Soil Contamination (NESCS).
- The use of standard sample registers and chain of custody records for all samples.
- Each soil sample was given a unique identification number, which consisted of a project number, lot number location and sample identifier (e.g., 231_1 to 4, denoting lot number and sample number per lot). In addition, the sample date was also included. Each composite sample was named with the lot number the samples were obtained from.
- All analysis was completed by Hill Laboratories who are an International Accredited New Zealand (IANZ) laboratory.

4.0 CONCLUSIONS

On the basis of the topsoil sampling results across Stages 3a, 3b, 4, 4a, and 5, it is considered that the topsoil is suitable for residential land use and that the risk to human health is acceptable. However, as heavy metal results for copper are consistently in excess of background levels, the topsoil on site does not meet the definition of ‘cleanfill’. Topsoil that leaves site must be taken to an accredited facility authorised to receive it.

According to the NES Regulations (8.3), the expected soil disturbance / removal volumes associated with the residential development of each lot is likely to exceed the criteria for a permitted activity and a resource consent is required to do so.

A Global consent (RMA/2023/1945) for the removal of contaminated soil has been obtained by Suburban Estates from CCC to remove the soil from the applicable lots. The site management plan required as a condition of this global resource consent should be followed when soil disturbance and / or removal volumes exceed the permitted activity allowance.

5.0 CLOSURE

Please contact the undersigned should you have any questions.

Yours faithfully,

DAVIS OGILVIE & PARTNERS LTD.

Prepared By:
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MSci (Hons)

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Reviewed By:
GARETH ODDY
Technical Director - Environmental Scientist
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Enclosed:

Oakbridge Stages 3 - 5: Soil Analytical Results - Tables 1 - 9
Laboratory Results

Limitations

This report has been prepared on the specific instructions of Sovereign Palms Ltd. Only Sovereign Palms Ltd. and the Local and Regional Territorial Authorities are entitled to rely upon this report. Davis Ogilvie & Partners Ltd. accepts no liability to anyone other than Sovereign Palms Ltd. in any way in relation to this report and the content of it and any direct or indirect effect this report may have. No warranty is included—either expressed or implied—that the actual conditions will conform to the assessments contained in this report. Davis Ogilvie & Partners Ltd. does not consider anyone else relying on this report or that it will be used for any other purpose.

Table 1: Oakbridge Stages 3 to 5: Soil Analytical Results (Heavy Metals) - 39630

Composite samples for Lot	Depth (m)	Hills Laboratory No.	Sample description	Sample date	Heavy Metals (mg/kg dry weight)							
					Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
Background Concentrations (Gley, n=6)[1]					11	0.28	19.3	16.425	19.3	0.07	16.1	77.1
Background Concentrations (Recent, n=18)					12.58	0.19	22.7	20.3	40.96	0.11	20.7	93.94
NES:CS SCS for Residential (10% Produce) Land Use Scenario					20	3	460	>10 000	210	310	400	7400
Australian and New Zealand Guidelines for Fresh and Marine Water Quality - GV-high (mg/kg)[6]					70	10	370	270	220	NA	52	410
121	**0.0-0.15**	3260600.257	Topsoil	Apr-23	9	0.13	19	**37**	25	< 0.10	15	76
122	**0.0-0.15**	3260600.258	Topsoil	Apr-23	9	0.11	19	**35**	25	< 0.10	15	75
123	**0.0-0.15**	3260600.259	Topsoil	Apr-23	10	< 0.10	18	**39**	24	< 0.10	14	67
124	**0.0-0.15**	3260600.260	Topsoil	Apr-23	8	< 0.10	18	**40**	23	< 0.10	14	65
125	**0.0-0.15**	3260600.261	Topsoil	Apr-23	11	0.14	21	**40**	29	< 0.10	17	**116**
126	**0.0-0.15**	3260600.262	Topsoil	Apr-23	10	0.13	22	**33**	27	< 0.10	18	85
127	**0.0-0.15**	3260600.263	Topsoil	Apr-23	9	< 0.10	19	**21**	24	< 0.10	16	76
128	**0.0-0.15**	3260600.264	Topsoil	Apr-23	8	< 0.10	18	**21**	21	< 0.10	16	70
129	**0.0-0.15**	3260600.265	Topsoil	Apr-23	11	0.11	22	**24**	31	< 0.10	20	91
130	**0.0-0.15**	3260600.266	Topsoil	Apr-23	11	< 0.10	22	**23**	28	< 0.10	19	86
131	**0.0-0.15**	3260600.267	Topsoil	Apr-23	**16**	0.19	**23**	**57**	28	< 0.10	18	**128**
132	**0.0-0.15**	3260600.268	Topsoil	Apr-23	10	< 0.10	20	**32**	24	< 0.10	16	82
133	**0.0-0.15**	3260600.269	Topsoil	Apr-23	7	< 0.10	17	20	19	< 0.10	14	61
134	**0.0-0.15**	3260600.270	Topsoil	Apr-23	6	< 0.10	16	**23**	18	< 0.10	14	64
135	**0.0-0.15**	3260600.271	Topsoil	Apr-23	11	0.12	22	**26**	29	< 0.10	20	92
136	**0.0-0.15**	3260600.272	Topsoil	Apr-23	9	< 0.10	20	18	25	< 0.10	17	77
150	**0.0-0.15**	3260600.273	Topsoil	Apr-23	10	0.13	20	**38**	31	< 0.10	17	**108**
151	**0.0-0.15**	3260600.274	Topsoil	Apr-23	11	0.11	22	**31**	29	< 0.10	18	**98**
152	**0.0-0.15**	3260600.275	Topsoil	Apr-23	10	0.12	21	**35**	29	< 0.10	18	**99**
153	**0.0-0.15**	3260600.276	Topsoil	Apr-23	9	0.1	20	**29**	25	< 0.10	17	86
154	**0.0-0.15**	3340778.250	Topsoil	Aug-23	11	0.12	20	**44**	26	< 0.10	16	76
155	**0.0-0.15**	3340778.260	Topsoil	Aug-23	10	0.21	18	**34**	23	< 0.10	14	71
156	**0.0-0.15**	3340778.270	Topsoil	Aug-23	10	0.14	18	**43**	23	< 0.10	14	72
157	**0.0-0.15**	3340778.280	Topsoil	Aug-23	11	0.11	19	**34**	24	< 0.10	15	72
158	**0.0-0.15**	3340778.290	Topsoil	Aug-23	10	0.13	19	**49**	25	< 0.10	15	76
159	**0.0-0.15**	3340778.300	Topsoil	Aug-23	10	0.12	19	**43**	25	< 0.10	15	78
160	**0.0-0.15**	3260600.277	Topsoil	Apr-23	10	< 0.10	22	**22**	28	< 0.10	19	88
161	**0.0-0.15**	3260600.278	Topsoil	Apr-23	10	< 0.10	21	18	27	< 0.10	18	82
162	**0.0-0.15**	3260600.279	Topsoil	Apr-23	10	< 0.10	22	**21**	28	< 0.10	19	88
163	**0.0-0.15**	3260600.280	Topsoil	Apr-23	10	0.13	22	**42**	29	< 0.10	19	92
164	**0.0-0.15**	3260600.281	Topsoil	Apr-23	11	0.13	**23**	**27**	31	< 0.10	20	**94**
165	**0.0-0.15**	3260600.282	Topsoil	Apr-23	11	0.11	22	**24**	30	< 0.10	20	90
166	**0.0-0.15**	3260600.283	Topsoil	Apr-23	12	0.13	**23**	**26**	31	< 0.10	20	**96**
167	**0.0-0.15**	3260600.284	Topsoil	Apr-23	10	0.12	22	**30**	29	< 0.10	19	**95**
168	**0.0-0.15**	3260600.285	Topsoil	Apr-23	10	0.12	22	**32**	29	< 0.10	19	**94**
169	**0.0-0.15**	3260600.286	Topsoil	Apr-23	10	0.17	22	**38**	32	< 0.10	19	**116**
170	**0.0-0.15**	3260600.287	Topsoil	Apr-23	11	0.12	**23**	**26**	29	< 0.10	20	89
171	**0.0-0.15**	3260600.288	Topsoil	Apr-23	10	0.12	19	**24**	25	< 0.10	17	93
172	**0.0-0.15**	3260600.289	Topsoil	Apr-23	11	0.11	20	**23**	27	< 0.10	18	92
173	**0.0-0.15**	3260600.290	Topsoil	Apr-23	9	0.12	19	**22**	26	< 0.10	17	87
174	**0.0-0.15**	3260600.291	Topsoil	Apr-23	10	0.12	21	**25**	28	< 0.10	18	85
175	**0.0-0.15**	3260600.292	Topsoil	Apr-23	11	0.12	21	**25**	28	< 0.10	19	89
176	**0.0-0.15**	3260600.293	Topsoil	Apr-23	10	< 0.10	22	**22**	28	< 0.10	18	85
177	**0.0-0.15**	3260600.294	Topsoil	Apr-23	8	0.13	19	**32**	23	< 0.10	15	82
178	**0.0-0.15**	3260600.295	Topsoil	Apr-23	10	0.13	21	**39**	27	< 0.10	17	92
179	**0.0-0.15**	3260600.296	Topsoil	Apr-23	9	0.13	20	**38**	26	< 0.10	16	93
180	**0.0-0.15**	3260600.297	Topsoil	Apr-23	10	0.12	21	**39**	28	< 0.10	18	**99**
181	**0.0-0.15**	3260600.298	Topsoil	Apr-23	7	0.12	18	**34**	28	< 0.10	15	**110**
182	**0.0-0.15**	3260600.299	Topsoil	Apr-23	6	0.12	17	**40**	33	**0.150**	13	**115**
183	**0.0-0.15**	3260600.300	Topsoil	Apr-23	10	0.1	21	**24**	28	< 0.10	17	89
184	**0.0-0.15**	3260600.301	Topsoil	Apr-23	9	0.12	19	**50**	26	< 0.10	16	92
185	**0.0-0.15**	3260600.302	Topsoil	Apr-23	10	0.12	21	**25**	29	< 0.10	18	91
186	**0.0-0.15**	3260600.303	Topsoil	Apr-23	11	0.11	22	**24**	28	< 0.10	19	**95**
187	**0.0-0.15**	3260600.304	Topsoil	Apr-23	11	0.13	22	**30**	31	< 0.10	19	**99**
188	**0.0-0.15**	3260600.305	Topsoil	Apr-23	11	0.13	22	**28**	30	< 0.10	19	**96**
189	**0.0-0.15**	3260600.306	Topsoil	Apr-23	10	0.13	**23**	**28**	30	< 0.10	19	**102**
190	**0.0-0.15**	3260600.307	Topsoil	Apr-23	10	0.11	22	**27**	28	< 0.10	18	92
191	**0.0-0.15**	3260600.308	Topsoil	Apr-23	9	0.12	21	**32**	28	< 0.10	18	91
192	**0.0-0.15**	3260600.309	Topsoil	Apr-23	10	0.11	22	**33**	29	< 0.10	19	92
193	**0.0-0.15**	3260600.310	Topsoil	Apr-23	11	0.12	**23**	**25**	28	< 0.10	19	92
194	**0.0-0.15**	3260600.311	Topsoil	Apr-23	11	0.12	22	**25**	27	< 0.10	18	87
195	**0.0-0.15**	3260600.312	Topsoil	Apr-23	**13**	0.12	**23**	**24**	29	< 0.10	19	89
196	**0.0-0.15**	3260600.313	Topsoil	Apr-23	12	0.14	**23**	**29**	27	< 0.10	19	**94**
197	**0.0-0.15**	3260600.314	Topsoil	Apr-23	10	0.11	22	**28**	27	< 0.10	18	91
198	**0.0-0.15**	3260600.315	Topsoil	Apr-23	11	0.13	22	**27**	34	< 0.10	18	**99**
209_1	**0.0-0.15**	3744918.100	Topsoil	Dec-24	9	< 0.10	21	16	25	-	18	77
209_2	**0.0-0.15**	3744918.200	Topsoil	Dec-24	8	< 0.10	18	18	23	-	16	73
209_3	**0.0-0.15**	3744918.300	Topsoil	Dec-24	7	0.12	17	**21**	21	-	15	71
209_4	**0.0-0.15**	3744918.400	Topsoil	Dec-24	8	< 0.10	18	18	21	-	16	73
210_1	**0.0-0.15**	3744918.500	Topsoil	Dec-24	8	< 0.10	18	17	22	-	16	71
210_2	**0.0-0.15**	3744918.600	Topsoil	Dec-24	6	< 0.10	15	17	18.6	-	14	64
210_3	**0.0-0.15**	3744918.700	Topsoil	Dec-24	6	< 0.10	19	18	19.1	-	15	65
210_4	**0.0-0.15**	3744918.800	Topsoil	Dec-24	9	< 0.10	20	**26**	25	-	17	86
211_1	**0.0-0.15**	3744918.900	Topsoil	Dec-24	9	0.11	19	**23**	25	-	16	84
211_2	**0.0-0.15**	3744918.100	Topsoil	Dec-24	9	0.11	19	**26**	24	-	16	83
211_3	**0.0-0.15**	3744918.110	Topsoil	Dec-24	10	0.15	21	**35**	28	-	17	**101**
211_4	**0.0-0.15**	3744918.120	Topsoil	Dec-24	9	< 0.10	19	**27**	25	-	16	83
212_1	**0.0-0.15**	3744918.130	Topsoil	Dec-24	9	< 0.10	20	**26**	25	-	18	83
212_2	**0.0-0.15**	3744918.140	Topsoil	Dec-24	11	0.13	**23**	**26**	31	-	19	**96**
212_3	**0.0-0.15**	3744918.150	Topsoil	Dec-24	12	0.14	20	**35**	28	-	17	**101**
212_4	**0.0-0.15**	3744918.160	Topsoil	Dec-24	10	0.13	22	**26**	29	-	19	91
213	**0.0-0.15**	3260600.316	Topsoil	Apr-23	10	0.12	21	**25**	28	< 0.10	17	89
214	**0.0-0.15**	3260600.317	Topsoil	Apr-23	10	0.12	20	**24**	28	< 0.10	18	**97**
215	**0.0-0.15**	3260600.318	Topsoil	Apr-23	10	0.15	19	**55**	26	< 0.10	16	89
216	**0.0-0.15**	3260600.319	Topsoil	Apr-23	10	< 0.10	18	**31**	24	< 0.10	15	82
217	**0.0-0.15**	3260600.320	Topsoil	Apr-23	9	0.1	19	**26**	26	< 0.10	16	85
218	**0.0-0.15**	3256371.550	Topsoil	Apr-23	10	0.11	21	**26**	26	< 0.10	16	83
219	**0.0-0.15**	3256371.490	Topsoil	Apr-23	9	0.1	19	**33**	22	< 0.10	15	75
220	**0.0-0.15**	3256371.590	Topsoil	Apr-23	8	0.1	18	**41**	22	< 0.10	15	74
221	**0.0-0.15**	3256371.500	Topsoil	Apr-23	11	0.17	19	**66**	26	< 0.10	16	**96**
222	**0.0-0.15**	3256371.600	Topsoil	Apr-23	7	0.1	17	**56**	20	< 0.10	14	73
223	**0.0-0.15**	3256371.540	Topsoil	Apr-23	10	0.13	19	**50**	27	< 0.10	17	88
224	**0.0-0.15**	3256371.530	Topsoil	Apr-23	9	0.12	21	**81**	28	< 0.10	17	90
225	**0.0-0.15**	3256371.520	Topsoil	Apr-23	8	0.13	19	**104**	24	< 0.10	15	**98**
228	**0.0-0.15**	3256371.610	Topsoil	Apr-23	8	0.14	18	**44**	26	< 0.10	15	93
229	**0.0-0.15**	3256371.630	Topsoil	Apr-23	10	0.1	21	**28**	28	< 0.10	17	89
230	**0.0-0.15**	3256371.510	Topsoil	Apr-23	11	0.11	21	**27**	28	< 0.10	18	90
231_1	**0.0-0.15**	3719366.100	Topsoil	Nov-24	8	< 0.10	19	**29**	26	-	16	82
231_2	**0.0-0.15**	3719366.200	Topsoil	Nov-24	8	0.11	18	**25**	25	-	16	77
231_3	**0.0-0.15**	3719366.300	Topsoil	Nov-24	7	0.12	18	**27**	25	-	16	80
231_4	**0.0-0.15**	3719366.400	Topsoil	Nov-24	10	0.11	20	**52**	26	-	18	93
232_1	**0.0-0.15**	3719366.500	Topsoil	Nov-24	9	0.12	20	**33**	28	-	17	90
232_2	**0.0-0.15**	3719366.600	Topsoil	Nov-24	7	< 0.10	19	18	22	-	16	72
232_3	**0.0-0.15**	3719366.700	Topsoil	Nov-24	8	< 0.10	19	20	25	-	16	73
232_4	**0.0-0.15**	3719366.800	Topsoil	Nov-24	7	< 0.10	19	**22**	24	-	16	77
233_1	**0.0-0.15**	3719366.900	Topsoil	Nov-24	9	0.11	20	**39**	31	-	18	93
233_2	**0.0-0.15**	3719366.100	Topsoil	Nov-24	8	< 0.10	19	20	23	-	16	76
233_3	**0.0-0.15**	3719366.110	Topsoil	Nov-24	9	< 0.10	20	**34**	26	-	17	84
233_4	**0.0-0.15**	3719366.120	Topsoil	Nov-24	8	0.11	18	**25**	24	-	16	79
234_1	**0.0-0.15**	3719366.130	Topsoil	Nov-24	9	0.12	21	**46**	33	-	**19**	96
234_2	**0.0-0.15**	3719366.140	Topsoil	Nov-24	7	0.1	19	**26**	24	-	16	79
234_3	**0.0-0.15**	3719366.150	Topsoil	Nov-24	9	0.11	21	**29**	26	-	17	87
234_4	**0.0-0.15**	3719366.160	Topsoil	Nov-24	8	0.1	20	**35**	25	-	18	87
235_1	**0.0-0.15**	3719366.170	Topsoil	Nov-24	9	< 0.10	20	**40**	24	-	18	82
235_2	**0.0-0.15**	3719366.180	Topsoil	Nov-24	9	0.11	20	**45**	29	-	17	86
235_3	**0.0-0.15**	3719366.190	Topsoil	Nov-24	8	< 0.10	18	**39**	24	-	16	76
235_4	**0.0-0.15**	3719366.200	Topsoil	Nov-24	9	< 0.10	20	**48**	25	-	17	86
236_1	**0.0-0.15**	3719366.210	Topsoil	Nov-24	8	0.12	18	**39**	26	-	16	80
236_2	**0.0-0.15**	3719366.220	Topsoil	Nov-24	8	< 0.10	19	**46**	23	-	16	76
236_3	**0.0-0.15**	3719366.230	Topsoil	Nov-24	9	0.12	20	**40**	27	-	18	86
236_4	**0.0-0.15**	3719366.240	Topsoil	Nov-24	9	0.11	20	**34**	26	-	17	84
237_1	**0.0-0.15**	3719366.250	Topsoil	Nov-24	9	0.11	20	**32**	26	-	17	82
237_2	**0.0-0.15**	3719366.260	Topsoil	Nov-24	9	0.11	19	**35**	25	-	16	80
237_3	**0.0-0.15**	3719366.270	Topsoil	Nov-24	9	< 0.10	20	**31**	26	-	18	83
237_4	**0.0-0.15**	3719366.280	Topsoil	Nov-24	9	< 0.10	19	**45**	26	-	17	84
238_1	**0.0-0.15**	3719366.290	Topsoil	Nov-24	8	< 0.10	19	**26**	26	-	16	80
238_2	**0.0-0.15**	3719366.300	Topsoil	Nov-24	8	0.11	19	**42**	24	-	16	80
238_3	**0.0-0.15**	3719366.310	Topsoil	Nov-24	8	0.1	19	**39**	26	-	16	81
238_4	**0.0-0.15**	3719366.320	Topsoil	Nov-24	8	0.14	19	**79**	25	-	17	86
239_1	**0.0-0.15**	3719366.330	Topsoil	Nov-24	9	0.12	20	**39**	25	-	16	85
239_2	**0.0-0.15**	3719366.340	Topsoil	Nov-24	9	0.11	19	**37**	27	-	16	82
239_3	**0.0-0.15**	3719366.350	Topsoil	Nov-24	9	0.12	20	**59**	28	-	17	91
239_4	**0.0-0.15**	3719366.360	Topsoil	Nov-24	9	0.12	20	**46**	27	-	16	88
240_1	**0.0-0.15**	3719366.370	Topsoil	Nov-24	9	0.13	20	**37**	27	-	17	89
240_2	**0.0-0.15**	3719366.380	Topsoil	Nov-24	8	0.14	19	**36**	25	-	15	80
240_3	**0.0-0.15**	3719366.390	Topsoil	Nov-24	9	0.11	19	**42**	27	-	17	86
240_4	**0.0-0.15**	3719366.400	Topsoil	Nov-24	6	0.12	15	**32**	20	-	14	69
241_1	**0.0-0.15**	3719366.800	Topsoil	Nov-24	11	0.11	21	**37**	28	-	17	90
241_2	**0.0-0.15**	3719366.410	Topsoil	Nov-24	10	0.12	19	**38**	26	-	16	86
241_3	**0.0-0.15**	3719366.420	Topsoil	Nov-24	9	0.12	19	**37**	25	-	17	85
241_4	**0.0-0.15**	3719366.430	Topsoil	Nov-24	9	0.13	19	**38**	24	-	16	85
242_1	**0.0-0.15**	3719366.440	Topsoil	Nov-24	8	0.11	18	**32**	23	-	15	77
242_2	**0.0-0.15**	3719366.450	Topsoil	Nov-24	11	0.14	19	**33**	26	-	16	82
242_3	**0.0-0.15**	3719366.460	Topsoil	Nov-24	9	0.12	20	**37**	26	-	17	87
242_4	**0.0-0.15**	3719366.470	Topsoil	Nov-24	9	0.12	19	**36**	26	-	16	83
243_1	**0.0-0.15**	3719366.480	Topsoil	Nov-24	9	0.11	20	**35**	27	-	17	83
243_2	**0.0-0.15**	3719366.490	Topsoil	Nov-24	9	0.15	20	**61**	29	-	18	93
243_3	**0.0-0.15**	3719366.500	Topsoil	Nov-24	10	0.13	20	**39**	27	-	17	86
243_4	**0.0-0.15**	3719366.510	Topsoil	Nov-24	8	0.12	19	**44**	27	-	16	84
244_1	**0.0-0.15**	3719366.520	Topsoil	Nov-24	8	< 0.10	20	**28**	26	-	18	85
244_2	**0.0-0.15**	3719366.530	Topsoil	Nov-24	8	0.1	19	**38**	25	-	16	82
244_3	**0.0-0.15**	3719366.540	Topsoil	Nov-24	9	0.13	20	**38**	27	-	16	84
244_4	**0.0-0.15**	3719366.550	Topsoil	Nov-24	8	0.11	18	**34**	25	-	15	79
245_1	**0.0-0.15**	3719366.560	Topsoil	Nov-24	8	0.11	19	**36**	25	-	16	82
245_2	**0.0-0.15**	3719366.570	Topsoil	Nov-24	8	0.11	19	**31**	25	-	16	79
245_3	**0.0-0.15**	3719366.580	Topsoil	Nov-24	8	0.11	19	**30**	26	-	16	82
245_4	**0.0-0.15**	3719366.590	Topsoil	Nov-24	9	0.11	20	**35**	27	-	17	86
246_1	**0.0-0.15**	3719366.600	Topsoil	Nov-24	8	0.1	18	**26**	23	-	16	74
246_2	**0.0-0.15**	3719366.610	Topsoil	Nov-24	8	0.12	17	**33**	25	-	16	77
246_3	**0.0-0.15**	3719366.620	Topsoil	Nov-24	8	0.11	18	**26**	25	-	17	77
246_4	**0.0-0.15**	3719366.630	Topsoil	Nov-24	9	0.11	19	**35**	27	-	17	83
247	**0.0-0.15**	3256371.580	Topsoil	Apr-23	10	0.11	20	**43**	27	< 0.10	18	87
248	**0.0-0.15**	3256371.640	Topsoil	Apr-23	8	0.13	20	**43**	25	< 0.10	16	88
249	**0.0-0.15**	3256371.480	Topsoil	Apr-23	9	0.15	20	**75**	39	< 0.10	17	**114**
250	**0.0-0.15**	3256371.620	Topsoil	Apr-23	9	0.15	20	**40**	26	< 0.10	17	93
251	**0.0-0.15**	3256371.560	Topsoil	Apr-23	6	0.14	16	**24**	23	< 0.10	13	**112**
252	**0.0-0.15**	3256371.570	Topsoil	Apr-23	6	0.15	16	**30**	26	< 0.10	14	**110**
254 -3	**0.0-0.15**	3256371.230	Topsoil	Apr-23	10	0.15	21	**30**	29	< 0.10	18	**98**

1. ECan (2007). Background concentrations of selected trace elements in Canterbury Soils. Christchurch Gley Recent Soils, Level 2-Table 2.
2. Resouce Management (National Environmental Standard for Assessing and managing Contaminants in Soil to Protect Human Health) Regulation 2012 (NES:CS) - Soil contaminant standards (SCS) applicable to residential (10% produce) have been selected.
3. National Environment Protection Council (NEPC) (2013). National Environmental Protection Measure (Assessment of Site Contamination) as ammeded in 2013 Schedule B1, Health Investigation Levels (HIL) for soil contaminants based on Residential land use. Table 1A (1).
4. Assumes soil pH of 5.
5. Criteria for Chromium VI were conservatively selected.
6. Australian and New Zealand Guidelines for Fresh and Marine Water Quality Guidelines. Recommended default guideline values for toxicants in sediment. Guideline values - High.

BOLD Value exceeds the adopted background concentration
BOLD: Value exceeds the ANZG-GV-high criteria/adopted backgroud concentration
ND Not detected
- Not analysed

Table 2: Oakbridge Stages 3 to 5: Soil Analytical Results (Organochlorine Pesticides) - 39630																	
Lot No.	**Ambient Concentrations[1]**	**NES:CS SCS for Residential (10%) Land Use Scenario**	**121**	**122**	**123**	**124**	**125**	**126**	**127**	**128**	**129**	**130**	**131**	**132**	**133**	**134**	**135**
Sample Depth (m)			**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**
Sample Date			Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23
Laboratory sample number			3260600.257	3260600.258	3260600.259	3260600.26	3260600.261	3260600.262	3260600.263	3260600.264	3260600.265	3260600.266	3260600.267	3260600.268	3260600.269	3260600.27	3260600.271
Organochlorine Pesticides in Soil (mg/kg dry wt)																	
Aldrin	-	0.029[7]	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013
alpha-BHC	-	-	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013
beta-BHC	-	-	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013
delta-BHC	-	-	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013
gamma-BHC (Lindane)	-	-	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013
cis-Chlordane	-	-	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013
trans-Chlordane	-	-	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013
2,4'-DDD	-	-	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013
4,4'-DDD	-	-	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013
2,4'-DDE	-	-	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013
4,4'-DDE	0.23	-	< 0.013	< 0.013	< 0.013	< 0.012	0.017	0.03	0.03	0.02	0.018	0.028	0.02	0.02	< 0.012	< 0.012	0.02
2,4'-DDT	0.0235	-	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013
4,4'-DDT	0.172	-	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.012	0.02
Total DDT Isomers	0.431	70	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Dieldrin	0.00131	2.6	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013
Endosulfan I	-	-	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013
Endosulfan II	-	-	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013
Endosulfan sulphate	-	-	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013
Endrin	-	18[7]	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013
Endrin aldehyde	-	-	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013
Endrin ketone	-	-	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013
Heptachlor	-	0.10[8]	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013
Heptachlor epoxide	-	0.05[7]	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013
Hexachlorobenzene	-	0.3[7]	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013
Methoxychlor	-	310[7]	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013

1. MfE (1998) Ambient concentrations of selected organochlorines in soils.

2. Resouce Management (National Environmental Standard for Assessing and managing Contaminants in Soil to Protect Human Health) Regulation 2012 (NES:CS) - Soil contaminant standards (SCS) applicable to residential land use have been selected.

3. National Environment Protection Council (NEPC) (2013). National Environmental Protection Measure (Assessment of Site Contamination) as ammeded in 2013 Schedule B1, Health Investigation Levels (HIL) for soil contaminants based on Residential land use. Table 1A (1).

4. Assumes soil pH of 5.

5. Criteria for Chromium VI were conservatively selected.

6. Ministry for the Environment, 1999 revised 2011. Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand. Module 4 - Tier 1 Soil Screening Critieria. Commercial/industrial land use, sand soil type, surface (<1 m) contamination.

7. Regional Screening Levels for Chemical Contaminants at Superfund Sites (US EPA regions 3, 6 and 9 (accessed Oct 2012)

8. Supplemental Guidance for Developing Soil Screening Levels at Superfund Sites (US EPA, 2021)

BOLD	Value exceeds the adopted ambient concentration
<	Value below the laboratory limit of detection
-	Value Not Available

Table 3: Oakbridge Stages 3 to 5: Soil Analytical Results (Organochlorine Pesticides) - 39630																	
Lot No.	**Ambient Concentrations[1]**	**NES:CS SCS for Residential (10%) Land Use Scenario**	**136**	**150**	**151**	**152**	**153**	**160**	**161**	**162**	**163**	**164**	**165**	**166**	**167**	**168**	**169**
Sample Depth (m)			**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**
Sample Date			Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23
Laboratory sample number			3260600.272	3260600.273	3260600.274	3260600.275	3260600.276	3260600.277	3260600.278	3260600.279	3260600.28	3260600.281	3260600.282	3260600.283	3260600.284	3260600.285	3260600.286
Organochlorine Pesticides in Soil (mg/kg dry wt)																	
Aldrin	-	0.029[7]	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.014
alpha-BHC	-	-	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.014
beta-BHC	-	-	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.014
delta-BHC	-	-	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.014
gamma-BHC (Lindane)	-	-	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.014
cis-Chlordane	-	-	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.014
trans-Chlordane	-	-	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.014
2,4'-DDD	-	-	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.014
4,4'-DDD	-	-	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.014
2,4'-DDE	-	-	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.014
4,4'-DDE	0.23	-	< 0.013	0.023	0.019	< 0.013	< 0.013	0.01	0.03	0.02	0.03	0.019	0.015	0.03	0.03	0.02	0.016
2,4'-DDT	0.0235	-	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.014
4,4'-DDT	0.172	-	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	0.025	< 0.013	< 0.013	< 0.014	< 0.014
Total DDT Isomers	0.431	70	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Dieldrin	0.00131	2.6	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.014
Endosulfan I	-	-	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.014
Endosulfan II	-	-	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.014
Endosulfan sulphate	-	-	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.014
Endrin	-	18[7]	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.014
Endrin aldehyde	-	-	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.014
Endrin ketone	-	-	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.014
Heptachlor	-	0.10[8]	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.014
Heptachlor epoxide	-	0.05[7]	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.014
Hexachlorobenzene	-	0.3[7]	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.014
Methoxychlor	-	310[7]	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.014

1. MfE (1998) Ambient concentrations of selected organochlorines in soils.

2. Resouce Management (National Environmental Standard for Assessing and managing Contaminants in Soil to Protect Human Health) Regulation 2012 (NES:CS) - Soil contaminant standards (SCS) applicable to residential land use have been selected.

3. National Environment Protection Council (NEPC) (2013). National Environmental Protection Measure (Assessment of Site Contamination) as ammeded in 2013 Schedule B1, Health Investigation Levels (HIL) for soil contaminants based on Residential land use. Table 1A (1).

4. Assumes soil pH of 5.

5. Criteria for Chromium VI were conservatively selected.

6. Ministry for the Environment, 1999 revised 2011. Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand. Module 4 - Tier 1 Soil Screening Critieria. Commercial/industrial land use, sand soil type, surface (<1 m) contamination.

BOLD Value exceeds the adopted ambient concentration

< Value below the laboratory limit of detection

- Value Not Available

Table 4: Oakbridge Stages 3 to 5: Soil Analytical Results (Organochlorine Pesticides) - 39630																	
Lot No.	**Ambient Concentrations[1]**	**NES:CS SCS for Residential (10%) Land Use Scenario**	**170**	**171**	**172**	**173**	**174**	**175**	**176**	**177**	**178**	**179**	**180**	**181**	**182**	**183**	**184**
Sample Depth (m)			**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**
Sample Date			Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23
Laboratory sample number			3260600.287	3260600.288	3260600.289	3260600.29	3260600.291	3260600.292	3260600.293	3260600.294	3260600.295	3260600.296	3260600.297	3260600.298	3260600.299	3260600.3	3260600.301
Organochlorine Pesticides in Soil (mg/kg dry wt)																	
Aldrin	-	0.029[7]	< 0.013	< 0.013	< 0.011	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013	< 0.014
alpha-BHC	-	-	< 0.013	< 0.013	< 0.011	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013	< 0.014
beta-BHC	-	-	< 0.013	< 0.013	< 0.011	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013	< 0.014
delta-BHC	-	-	< 0.013	< 0.013	< 0.011	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013	< 0.014
gamma-BHC (Lindane)	-	-	< 0.013	< 0.013	< 0.011	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013	< 0.014
cis-Chlordane	-	-	< 0.013	< 0.013	< 0.011	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013	< 0.014
trans-Chlordane	-	-	< 0.013	< 0.013	< 0.011	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013	< 0.014
2,4'-DDD	-	-	< 0.013	< 0.013	< 0.011	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013	< 0.014
4,4'-DDD	-	-	< 0.013	< 0.013	< 0.011	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013	< 0.014
2,4'-DDE	-	-	< 0.013	< 0.013	< 0.011	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013	< 0.014
4,4'-DDE	0.23	-	0.014	0.018	0.017	< 0.013	0.017	0.022	0.013	0.016	< 0.013	0.023	0.015	0.015	0.018	< 0.013	< 0.014
2,4'-DDT	0.0235	-	< 0.013	< 0.013	< 0.011	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013	< 0.014
4,4'-DDT	0.172	-	< 0.013	< 0.013	0.016	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	0.014	< 0.014	< 0.013	0.015	< 0.013	< 0.014
Total DDT Isomers	0.431	70	< 0.08	< 0.08	< 0.07	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Dieldrin	0.00131	2.6	< 0.013	< 0.013	< 0.011	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013	< 0.014
Endosulfan I	-	-	< 0.013	< 0.013	< 0.011	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013	< 0.014
Endosulfan II	-	-	< 0.013	< 0.013	< 0.011	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013	< 0.014
Endosulfan sulphate	-	-	< 0.013	< 0.013	< 0.011	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013	< 0.014
Endrin	-	18[7]	< 0.013	< 0.013	< 0.011	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013	< 0.014
Endrin aldehyde	-	-	< 0.013	< 0.013	< 0.011	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013	< 0.014
Endrin ketone	-	-	< 0.013	< 0.013	< 0.011	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013	< 0.014
Heptachlor	-	0.10[8]	< 0.013	< 0.013	< 0.011	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013	< 0.014
Heptachlor epoxide	-	0.05[7]	< 0.013	< 0.013	< 0.011	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013	< 0.014
Hexachlorobenzene	-	0.3[7]	< 0.013	< 0.013	< 0.011	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013	< 0.014
Methoxychlor	-	310[7]	< 0.013	< 0.013	< 0.011	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013	< 0.014

1. MfE (1998) Ambient concentrations of selected organochlorines in soils.

2. Resouce Management (National Environmental Standard for Assessing and managing Contaminants in Soil to Protect Human Health) Regulation 2012 (NES:CS) - Soil contaminant standards (SCS) applicable to residential land use have been selected.

3. National Environment Protection Council (NEPC) (2013). National Environmental Protection Measure (Assessment of Site Contamination) as ammeded in 2013 Schedule B1, Health Investigation Levels (HIL) for soil contaminants based on Residential land use. Table 1A (1).

4. Assumes soil pH of 5.

5. Criteria for Chromium VI were conservatively selected.

6. Ministry for the Environment, 1999 revised 2011. Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand. Module 4 - Tier 1 Soil Screening Critieria. Commercial/industrial land use, sand soil type, surface (<1 m) contamination.

BOLD Value exceeds the adopted ambient concentration

< Value below the laboratory limit of detection

- Value Not Available

Table 5: Oakbridge Stages 3 to 5: Soil Analytical Results (Organochlorine Pesticides) - 39630																	
Lot No.	**Ambient Concentrations[1]**	**NES:CS SCS for Residential (10%) Land Use Scenario**	**185**	**186**	**187**	**188**	**189**	**190**	**191**	**192**	**193**	**194**	**195**	**196**	**197**	**198**	**213**
Sample Depth (m)			**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**
Sample Date			Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23
Laboratory sample number			3260600.302	3260600.303	3260600.304	3260600.305	3260600.306	3260600.307	3260600.308	3260600.309	3260600.31	3260600.311	3260600.312	3260600.313	3260600.314	3260600.315	3260600.316
Organochlorine Pesticides in Soil (mg/kg dry wt)																	
Aldrin	-	0.029[7]	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
alpha-BHC	-	-	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
beta-BHC	-	-	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
delta-BHC	-	-	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
gamma-BHC (Lindane)	-	-	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
cis-Chlordane	-	-	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
trans-Chlordane	-	-	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
2,4'-DDD	-	-	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
4,4'-DDD	-	-	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
2,4'-DDE	-	-	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
4,4'-DDE	0.23	-	0.027	< 0.013	0.016	0.018	0.029	0.014	0.044	0.017	0.018	0.044	0.014	0.03	0.019	0.017	0.025
2,4'-DDT	0.0235	-	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
4,4'-DDT	0.172	-	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013	< 0.013	0.017	< 0.012	< 0.013	0.018	< 0.013	0.02	0.013	< 0.013	< 0.013
Total DDT Isomers	0.431	70	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Dieldrin	0.00131	2.6	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Endosulfan I	-	-	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Endosulfan II	-	-	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Endosulfan sulphate	-	-	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Endrin	-	18[7]	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Endrin aldehyde	-	-	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Endrin ketone	-	-	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Heptachlor	-	0.10[8]	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Heptachlor epoxide	-	0.05[7]	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Hexachlorobenzene	-	0.3[7]	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Methoxychlor	-	310[7]	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013

1. MfE (1998) Ambient concentrations of selected organochlorines in soils.

2. Resouce Management (National Environmental Standard for Assessing and managing Contaminants in Soil to Protect Human Health) Regulation 2012 (NES:CS) - Soil contaminant standards (SCS) applicable to residential land use have been selected.

3. National Environment Protection Council (NEPC) (2013). National Environmental Protection Measure (Assessment of Site Contamination) as ammeded in 2013 Schedule B1, Health Investigation Levels (HIL) for soil contaminants based on Residential land use. Table 1A (1).

4. Assumes soil pH of 5.

5. Criteria for Chromium VI were conservatively selected.

6. Ministry for the Environment, 1999 revised 2011. Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand. Module 4 - Tier 1 Soil Screening Critieria. Commercial/industrial land use, sand soil type, surface (<1 m) contamination.

BOLD Value exceeds the adopted ambient concentration

< Value below the laboratory limit of detection

- Value Not Available

Table 6: Oakbridge Stages 3 to 5: Soil Analytical Results (Organochlorine Pesticides) - 39630																	
Lot No.	**Ambient Concentrations[1]**	**NES:CS SCS for Residential (10%) Land Use Scenario**	**214**	**215**	**216**	**217**	**218**	**219**	**220**	**221**	**222**	**223**	**224**	**225**	**228**	**229**	**230**
Sample Depth (m)			**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**
Sample Date			Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23
Laboratory sample number			3260600.317	3260600.318	3260600.319	3260600.32	3256371.550	3256371.490	3256371.59	3256371.500	3256371.6	3256371.540	3256371.530	3256371.520	3256371.61	3256371.63	3256371.510
Organochlorine Pesticides in Soil (mg/kg dry wt)																	
Aldrin	-	0.029[7]	< 0.014	< 0.013	< 0.013	< 0.014	< 0.014	< 0.013	< 0.018	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
alpha-BHC	-	-	< 0.014	< 0.013	< 0.013	< 0.014	< 0.014	< 0.013	< 0.018	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
beta-BHC	-	-	< 0.014	< 0.013	< 0.013	< 0.014	< 0.014	< 0.013	< 0.018	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
delta-BHC	-	-	< 0.014	< 0.013	< 0.013	< 0.014	< 0.014	< 0.013	< 0.018	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
gamma-BHC (Lindane)	-	-	< 0.014	< 0.013	< 0.013	< 0.014	< 0.014	< 0.013	< 0.018	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
cis-Chlordane	-	-	< 0.014	< 0.013	< 0.013	< 0.014	< 0.014	< 0.013	< 0.018	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
trans-Chlordane	-	-	< 0.014	< 0.013	< 0.013	< 0.014	< 0.014	< 0.013	< 0.018	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
2,4'-DDD	-	-	< 0.014	< 0.013	< 0.013	< 0.014	< 0.014	< 0.013	< 0.018	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
4,4'-DDD	-	-	< 0.014	< 0.013	< 0.013	< 0.014	< 0.014	< 0.013	< 0.018	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
2,4'-DDE	-	-	< 0.014	< 0.013	< 0.013	< 0.014	< 0.014	< 0.013	< 0.018	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
4,4'-DDE	0.23	-	0.016	0.017	0.017	0.031	0.04	0.026	0.025	0.03	0.016	0.015	0.032	0.022	0.028	0.019	0.017
2,4'-DDT	0.0235	-	< 0.014	< 0.013	< 0.013	< 0.014	< 0.014	< 0.013	< 0.018	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
4,4'-DDT	0.172	-	< 0.014	< 0.013	0.021	0.023	0.017	< 0.013	< 0.018	0.014	< 0.013	< 0.012	0.015	< 0.013	< 0.013	< 0.013	< 0.013
Total DDT Isomers	0.431	70	< 0.08	< 0.08	< 0.08	< 0.08	< 0.09	< 0.08	< 0.11	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Dieldrin	0.00131	2.6	< 0.014	< 0.013	< 0.013	< 0.014	< 0.014	< 0.013	< 0.018	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Endosulfan I	-	-	< 0.014	< 0.013	< 0.013	< 0.014	< 0.014	< 0.013	< 0.018	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Endosulfan II	-	-	< 0.014	< 0.013	< 0.013	< 0.014	< 0.014	< 0.013	< 0.018	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Endosulfan sulphate	-	-	< 0.014	< 0.013	< 0.013	< 0.014	< 0.014	< 0.013	< 0.018	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Endrin	-	18[7]	< 0.014	< 0.013	< 0.013	< 0.014	< 0.014	< 0.013	< 0.018	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Endrin aldehyde	-	-	< 0.014	< 0.013	< 0.013	< 0.014	< 0.014	< 0.013	< 0.018	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Endrin ketone	-	-	< 0.014	< 0.013	< 0.013	< 0.014	< 0.014	< 0.013	< 0.018	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Heptachlor	-	0.10[8]	< 0.014	< 0.013	< 0.013	< 0.014	< 0.014	< 0.013	< 0.018	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Heptachlor epoxide	-	0.05[7]	< 0.014	< 0.013	< 0.013	< 0.014	< 0.014	< 0.013	< 0.018	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Hexachlorobenzene	-	0.3[7]	< 0.014	< 0.013	< 0.013	< 0.014	< 0.014	< 0.013	< 0.018	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Methoxychlor	-	310[7]	< 0.014	< 0.013	< 0.013	< 0.014	< 0.014	< 0.013	< 0.018	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013

1. MfE (1998) Ambient concentrations of selected organochlorines in soils.

2. Resouce Management (National Environmental Standard for Assessing and managing Contaminants in Soil to Protect Human Health) Regulation 2012 (NES:CS) - Soil contaminant standards (SCS) applicable to residential land use have been selected.

3. National Environment Protection Council (NEPC) (2013). National Environmental Protection Measure (Assessment of Site Contamination) as ammeded in 2013 Schedule B1, Health Investigation Levels (HIL) for soil contaminants based on Residential land use. Table 1A (1).

4. Assumes soil pH of 5.

5. Criteria for Chromium VI were conservatively selected.

6. Ministry for the Environment, 1999 revised 2011. Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand. Module 4 - Tier 1 Soil Screening Critieria. Commercial/industrial land use, sand soil type, surface (<1 m) contamination.

BOLD Value below the laboratory limit of detection

< Value below the laboratory limit of detection

- Value Not Available

Table 7: Oakbridge Stages 3 to 5: Soil Analytical Results (Organochlorine Pesticides) - 39630															
Lot No.	**Ambient Concentrations[1]**	**NES:CS SCS for Residential (10%) Land Use Scenario**	**247**	**248**	**249**	**250**	**251**	**252**	**254 -3**	**154**	**155**	**156**	**157**	**158**	**159**
Sample Depth (m)			**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**
Sample Date			Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Apr-23	Aug-23	Aug-23	Aug-23	Aug-23	Aug-23	Aug-23
Laboratory sample number			3256371.58	3256371.64	3256371.480	3256371.62	3256371.560	3256371.570	3256371.230	3340778.25	3340778.26	3340778.270	3340778.28	3340778.290	3340778.300
Organochlorine Pesticides in Soil (mg/kg dry wt)															
Aldrin	-	0.029[7]	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013
alpha-BHC	-	-	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013
beta-BHC	-	-	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013
delta-BHC	-	-	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013
gamma-BHC (Lindane)	-	-	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013
cis-Chlordane	-	-	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013
trans-Chlordane	-	-	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013
2,4'-DDD	-	-	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013
4,4'-DDD	-	-	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013
2,4'-DDE	-	-	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013
4,4'-DDE	0.23	-	0.032	0.04	0.03	0.036	0.025	0.047	0.015	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013
2,4'-DDT	0.0235	-	< 0.013	< 0.013	< 0.013	**0.03**	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013
4,4'-DDT	0.172	-	< 0.013	0.013	0.013	0.132	0.014	0.019	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013
Total DDT Isomers	0.431	70	< 0.08	< 0.08	< 0.08	0.21	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.09	< 0.08	< 0.08
Dieldrin	0.00131	2.6	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013
Endosulfan I	-	-	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013
Endosulfan II	-	-	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013
Endosulfan sulphate	-	-	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013
Endrin	-	18[7]	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013
Endrin aldehyde	-	-	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013
Endrin ketone	-	-	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013
Heptachlor	-	0.10[8]	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013
Heptachlor epoxide	-	0.05[7]	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013
Hexachlorobenzene	-	0.3[7]	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013
Methoxychlor	-	310[7]	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013

1. MfE (1998) Ambient concentrations of selected organochlorines in soils.

2. Resouce Management (National Environmental Standard for Assessing and managing Contaminants in Soil to Protect Human Health) Regulation 2012 (NES:CS) - Soil contaminant standards (SCS) applicable to residential land use have been selected.

3. National Environment Protection Council (NEPC) (2013). National Environmental Protection Measure (Assessment of Site Contamination) as ammeded in 2013 Schedule B1, Health Investigation Levels (HIL) for soil contaminants based on Residential land use. Table 1A (1).

4. Assumes soil pH of 5.

5. Criteria for Chromium VI were conservatively selected.

6. Ministry for the Environment, 1999 revised 2011. Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand. Module 4 - Tier 1 Soil Screening Critieria. Commercial/industrial land use, sand soil type, surface (<1 m) contamination.

BOLD Value exceeds the adopted ambient concentration

< Value below the laboratory limit of detection

- Value Not Available

Table 8: Oakbridge Stages 3 to 5: Soil Analytical Results (Organochlorine Pesticides) - 39630																		
Lot No.	**Ambient Concentrations[1]**	**NES:CS SCS for Residential (10%) Land Use Scenario**	**231**	**232**	**233**	**234**	**235**	**236**	**237**	**238**	**239**	**240**	**241**	**242**	**243**	**244**	**245**	**246**
Sample Depth (m)			**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**
Sample Date			Nov-24	Nov-24	Nov-24	Nov-24	Nov-24	Nov-24	Nov-24	Nov-24	Nov-24	Nov-24	Nov-24	Nov-24	Nov-24	Nov-24	Nov-24	Nov-24
Laboratory sample number			3719366.64	3719366.65	3719366.66	3719366.67	3719366.68	3719366.69	3719366.7	3719366.71	3719366.72	3719366.73	3719366.74	3719366.75	3719366.76	3719366.77	3719366.78	3719366.79
Organochlorine Pesticides in Soil (mg/kg dry wt)																		
Aldrin	-	0.029[7]	< 0.011	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011	< 0.012	< 0.011	< 0.011	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
alpha-BHC	-	-	< 0.011	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011	< 0.012	< 0.011	< 0.011	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
beta-BHC	-	-	< 0.011	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011	< 0.012	< 0.011	< 0.011	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
delta-BHC	-	-	< 0.011	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011	< 0.012	< 0.011	< 0.011	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
gamma-BHC (Lindane)	-	-	< 0.011	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011	< 0.012	< 0.011	< 0.011	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
cis-Chlordane	-	-	< 0.011	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011	< 0.012	< 0.011	< 0.011	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
trans-Chlordane	-	-	< 0.011	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011	< 0.012	< 0.011	< 0.011	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
2,4'-DDD	-	-	< 0.011	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011	< 0.012	< 0.011	< 0.011	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
4,4'-DDD	-	-	< 0.011	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011	< 0.012	< 0.011	< 0.011	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
2,4'-DDE	-	-	< 0.011	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011	< 0.012	< 0.011	< 0.011	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
4,4'-DDE	0.23	-	0.029	0.018	0.024	0.017	0.021	0.04	0.02	0.02	0.022	0.024	0.03	0.042	0.03	0.028	0.03	0.05
2,4'-DDT	0.0235	-	< 0.011	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011	< 0.012	< 0.011	< 0.011	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
4,4'-DDT	0.172	-	0.014	< 0.011	0.013	< 0.011	< 0.012	< 0.011	< 0.011	0.02	0.013	0.014	0.02	0.021	0.02	0.015	0.02	0.04
Total DDT Isomers	0.431	70	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07	0.07	< 0.07	< 0.07	< 0.07	0.08
Dieldrin	0.0031	2.6	< 0.011	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011	< 0.012	< 0.011	< 0.011	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Endosulfan I	-	-	< 0.011	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011	< 0.012	< 0.011	< 0.011	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Endosulfan II	-	-	< 0.011	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011	< 0.012	< 0.011	< 0.011	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Endosulfan sulphate	-	-	< 0.011	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011	< 0.012	< 0.011	< 0.011	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Endrin	-	18[7]	< 0.011	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011	< 0.012	< 0.011	< 0.011	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Endrin aldehyde	-	-	< 0.011	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011	< 0.012	< 0.011	< 0.011	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Endrin ketone	-	-	< 0.011	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011	< 0.012	< 0.011	< 0.011	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Heptachlor	-	0.10[8]	< 0.011	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011	< 0.012	< 0.011	< 0.011	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Heptachlor epoxide	-	0.05[7]	< 0.011	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011	< 0.012	< 0.011	< 0.011	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Hexachlorobenzene	-	0.3[7]	< 0.011	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011	< 0.012	< 0.011	< 0.011	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
Methoxychlor	-	310[7]	< 0.011	< 0.011	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011	< 0.012	< 0.011	< 0.011	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012

1. MfE (1998) Ambient concentrations of selected organochlorines in soils.

2. Resouce Management (National Environmental Standard for Assessing and managing Contaminants in Soil to Protect Human Health) Regulation 2012 (NES:CS) - Soil contaminant standards (SCS) applicable to commercial or industrial land use have been selected.

3. National Environment Protection Council (NEPC) (2013). National Environmental Protection Measure (Assessment of Site Contamination) as ammeded in 2013 Schedule B1, Health Investigation Levels (HIL) for soil contaminants based on Commercial/Industrial (D) land use. Table 1A (1).

4. Assumes soil pH of 5.

5. Criteria for Chromium VI were conservatively selected.

6. Ministry for the Environment, 1999 revised 2011. Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand. Module 4 - Tier 1 Soil Screening Critieria. Commercial/industrial land use, sand soil type, surface (<1 m) contamination.

7. Regional Screening Levels for Chemical Contaminants at Superfund Sites (US EPA regions 3, 6 and 9 (accessed Oct 2012)

8. Supplemental Guidance for Developing Soil Screening Levels at Superfund Sites (US EPA, 2021)

BOLD	Value exceeds the adopted background concentration
<	Value below the laboratory limit of detection
-	Value Not Available

Table 9: Oakbridge Stages 3 to 5: Soil Analytical Results (Organochlorine Pesticides) - 39630						
Lot No.	**Ambient Concentrations[1]**	**NES:CS SCS for Residential (10%) Land Use Scenario**	**209**	**210**	**211**	**212**
Sample Depth (m)			**0.0-0.15**	**0.0-0.15**	**0.0-0.15**	**0.0-0.15**
Sample Date			Dec-24	Dec-24	Dec-24	Dec-24
Laboratory sample number			3744918.17	3744918.18	3744918.19	3744918.2
Organochlorine Pesticides in Soil (mg/kg dry wt)						
Aldrin	-	0.029[7]	< 0.012	< 0.012	< 0.012	< 0.012
alpha-BHC	-	-	< 0.012	< 0.012	< 0.012	< 0.012
beta-BHC	-	-	< 0.012	< 0.012	< 0.012	< 0.012
delta-BHC	-	-	< 0.012	< 0.012	< 0.012	< 0.012
gamma-BHC (Lindane)	-	-	< 0.012	< 0.012	< 0.012	< 0.012
cis-Chlordane	-	-	< 0.012	< 0.012	< 0.012	< 0.012
trans-Chlordane	-	-	< 0.012	< 0.012	< 0.012	< 0.012
2,4'-DDD	-	-	< 0.012	< 0.012	< 0.012	< 0.012
4,4'-DDD	-	-	< 0.012	< 0.012	< 0.012	< 0.012
2,4'-DDE	-	-	< 0.012	< 0.012	< 0.012	< 0.012
4,4'-DDE	0.23	-	0.031	0.04	0.037	0.043
2,4'-DDT	0.0235	-	< 0.012	< 0.012	< 0.012	< 0.012
4,4'-DDT	0.172	-	0.012	0.016	0.015	0.015
Total DDT Isomers	0.431	70	< 0.07	< 0.07	< 0.07	< 0.07
Dieldrin	0.0031	2.6	< 0.012	< 0.012	< 0.012	< 0.012
Endosulfan I	-	-	< 0.012	< 0.012	< 0.012	< 0.012
Endosulfan II	-	-	< 0.012	< 0.012	< 0.012	< 0.012
Endosulfan sulphate	-	-	< 0.012	< 0.012	< 0.012	< 0.012
Endrin	-	18[7]	< 0.012	< 0.012	< 0.012	< 0.012
Endrin aldehyde	-	-	< 0.012	< 0.012	< 0.012	< 0.012
Endrin ketone	-	-	< 0.012	< 0.012	< 0.012	< 0.012
Heptachlor	-	0.10[8]	< 0.012	< 0.012	< 0.012	< 0.012
Heptachlor epoxide	-	0.05[7]	< 0.012	< 0.012	< 0.012	< 0.012
Hexachlorobenzene	-	0.3[7]	< 0.012	< 0.012	< 0.012	< 0.012
Methoxychlor	-	310[7]	< 0.012	< 0.012	< 0.012	< 0.012

1. MfE (1998) Ambient concentrations of selected organochlorines in soils.

2. Resouce Management (National Environmental Standard for Assessing and managing Contaminants in Soil to Protect Human Health) Regulation 2012 (NES:CS) - Soil contaminant standards (SCS) applicable to commercial or industrial land use have been selected.

3. National Environment Protection Council (NEPC) (2013). National Environmental Protection Measure (Assessment of Site Contamination) as ammeded in 2013 Schedule B1, Health Investigation Levels (HIL) for soil contaminants based on Commercial/Industrial (D) land use. Table 1A (1).

4. Assumes soil pH of 5.

5. Criteria for Chromium VI were conservatively selected.

6. Ministry for the Environment, 1999 revised 2011. Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand. Module 4 - Tier 1 Soil Screening Critieria. Commercial/industrial land use, sand soil type, surface (<1 m) contamination.

7. Regional Screening Levels for Chemical Contaminants at Superfund Sites (US EPA regions 3, 6 and 9 (accessed Oct 2012)

8. Supplemental Guidance for Developing Soil Screening Levels at Superfund Sites (US EPA, 2021)

BOLD	Value exceeds the adopted background concentration
<	Value below the laboratory limit of detection
-	Value Not Available

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Certificate of Analysis

Client:	Davis Ogilvie & Partners Limited	**Lab No:**	3256371 SPv1
Contact:	Gareth Oddy	**Date Received:**	26-Apr-2023
	C/- Davis Ogilvie & Partners Limited	**Date Reported:**	22-May-2023
	PO Box 589	**Quote No:**	123490
	Addington	**Order No:**	
	Christchurch 8140	**Client Reference:**	39630
		Add. Client Ref:	Stage 5B
		Submitted By:	Gareth Oddy

Sample Type: Soil

Sample Name:		39630 254-3 20-Apr-2023	Composite of 39630 249-1, 249-2, 249-4[A] and 249[B]	Composite of 39630 219-1, 219-2, 219-3 and 219-4	Composite of 39630 221-1, 221-2 and 221-4	Composite of 39630 230-1, 230-3 and 230-4
Lab Number:		3256371.23	3256371.48	3256371.49	3256371.50	3256371.51
Individual Tests						
Dry Matter	g/100g as rcvd	74	78	81	78	78
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	10	9	9	11	11
Total Recoverable Cadmium	mg/kg dry wt	0.15	0.15	0.10	0.17	0.11
Total Recoverable Chromium	mg/kg dry wt	21	20	19	19	21
Total Recoverable Copper	mg/kg dry wt	30	75	33	66	27
Total Recoverable Lead	mg/kg dry wt	29	39	22	26	28
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Nickel	mg/kg dry wt	18	17	15	16	18
Total Recoverable Zinc	mg/kg dry wt	98	114	75	96	90
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
alpha-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
beta-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
delta-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
gamma-BHC (Lindane)	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
cis-Chlordane	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
trans-Chlordane	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
2,4'-DDD	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
4,4'-DDD	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
2,4'-DDE	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
4,4'-DDE	mg/kg dry wt	0.015	0.030	0.026	0.030	0.017
2,4'-DDT	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
4,4'-DDT	mg/kg dry wt	< 0.013	< 0.013	< 0.013	0.014	< 0.013
Total DDT Isomers	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Dieldrin	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Endosulfan I	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Endosulfan II	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Endosulfan sulphate	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Endrin	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Endrin aldehyde	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Endrin ketone	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Heptachlor	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Heptachlor epoxide	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Hexachlorobenzene	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013

Sample Type: Soil						
Sample Name:		39630 254-3 20-Apr-2023	Composite of 39630 249-1, 249-2, 249-4[A] and 249[B]	Composite of 39630 219-1, 219-2, 219-3 and 219-4	Composite of 39630 221-1, 221-2 and 221-4	Composite of 39630 230-1, 230-3 and 230-4
Lab Number:		3256371.23	3256371.48	3256371.49	3256371.50	3256371.51
Organochlorine Pesticides Screening in Soil						
Methoxychlor	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013

Sample Name:		Composite of 39630 225-2 and 225-4	Composite of 39630 224-1 and 224-3	Composite of 39630 223-2, 223-3 and 223-4	Composite of 39630 218-2 and 218-4	Composite of 39630 251-2, 251-3 and 251-4
Lab Number:		3256371.52	3256371.53	3256371.54	3256371.55	3256371.56
Individual Tests						
Dry Matter	g/100g as rcvd	78	78	80	71	81
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	8	9	10	10	6
Total Recoverable Cadmium	mg/kg dry wt	0.13	0.12	0.13	0.11	0.14
Total Recoverable Chromium	mg/kg dry wt	19	21	19	21	16
Total Recoverable Copper	mg/kg dry wt	104	81	50	26	24
Total Recoverable Lead	mg/kg dry wt	24	28	27	26	23
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Nickel	mg/kg dry wt	15	17	17	16	13
Total Recoverable Zinc	mg/kg dry wt	98	90	88	83	112
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.014	< 0.013
alpha-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.014	< 0.013
beta-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.014	< 0.013
delta-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.014	< 0.013
gamma-BHC (Lindane)	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.014	< 0.013
cis-Chlordane	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.014	< 0.013
trans-Chlordane	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.014	< 0.013
2,4'-DDD	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.014	< 0.013
4,4'-DDD	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.014	< 0.013
2,4'-DDE	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.014	< 0.013
4,4'-DDE	mg/kg dry wt	0.022	0.032	0.015	0.040	0.025
2,4'-DDT	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.014	< 0.013
4,4'-DDT	mg/kg dry wt	< 0.013	0.015	< 0.012	0.017	0.014
Total DDT Isomers	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.09	< 0.08
Dieldrin	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.014	< 0.013
Endosulfan I	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.014	< 0.013
Endosulfan II	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.014	< 0.013
Endosulfan sulphate	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.014	< 0.013
Endrin	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.014	< 0.013
Endrin aldehyde	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.014	< 0.013
Endrin ketone	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.014	< 0.013
Heptachlor	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.014	< 0.013
Heptachlor epoxide	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.014	< 0.013
Hexachlorobenzene	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.014	< 0.013
Methoxychlor	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.014	< 0.013

Sample Name:		Composite of 39630 252-2 and 252-4	Composite of 39630 247-1 and 247-2	Composite of 39630 220-1, 220-2, 220-3 and 220-4	Composite of 39630 222-2, 222-3 and 222-4	Composite of 39630 228-2, 228-3 and 228-4
Lab Number:		3256371.57	3256371.58	3256371.59	3256371.60	3256371.61
Individual Tests						
Dry Matter	g/100g as rcvd	79	79	56	80	80
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	6	10	8	7	8
Total Recoverable Cadmium	mg/kg dry wt	0.15	0.11	0.10	0.10	0.14
Total Recoverable Chromium	mg/kg dry wt	16	20	18	17	18

Sample Type: Soil						
Sample Name:		Composite of 39630 252-2 and 252-4	Composite of 39630 247-1 and 247-2	Composite of 39630 220-1, 220-2, 220-3 and 220-4	Composite of 39630 222-2, 222-3 and 222-4	Composite of 39630 228-2, 228-3 and 228-4
Lab Number:		3256371.57	3256371.58	3256371.59	3256371.60	3256371.61
Heavy Metals with Mercury, Screen Level						
Total Recoverable Copper	mg/kg dry wt	30	43	41	56	44
Total Recoverable Lead	mg/kg dry wt	26	27	22	20	26
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Nickel	mg/kg dry wt	14	18	15	14	15
Total Recoverable Zinc	mg/kg dry wt	110	87	74	73	93
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.013	< 0.013	< 0.018	< 0.013	< 0.013
alpha-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.018	< 0.013	< 0.013
beta-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.018	< 0.013	< 0.013
delta-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.018	< 0.013	< 0.013
gamma-BHC (Lindane)	mg/kg dry wt	< 0.013	< 0.013	< 0.018	< 0.013	< 0.013
cis-Chlordane	mg/kg dry wt	< 0.013	< 0.013	< 0.018	< 0.013	< 0.013
trans-Chlordane	mg/kg dry wt	< 0.013	< 0.013	< 0.018	< 0.013	< 0.013
2,4'-DDD	mg/kg dry wt	< 0.013	< 0.013	< 0.018	< 0.013	< 0.013
4,4'-DDD	mg/kg dry wt	< 0.013	< 0.013	< 0.018	< 0.013	< 0.013
2,4'-DDE	mg/kg dry wt	< 0.013	< 0.013	< 0.018	< 0.013	< 0.013
4,4'-DDE	mg/kg dry wt	0.047	0.032	0.025	0.016	0.028
2,4'-DDT	mg/kg dry wt	< 0.013	< 0.013	< 0.018	< 0.013	< 0.013
4,4'-DDT	mg/kg dry wt	0.019	< 0.013	< 0.018	< 0.013	< 0.013
Total DDT Isomers	mg/kg dry wt	< 0.08	< 0.08	< 0.11	< 0.08	< 0.08
Dieldrin	mg/kg dry wt	< 0.013	< 0.013	< 0.018	< 0.013	< 0.013
Endosulfan I	mg/kg dry wt	< 0.013	< 0.013	< 0.018	< 0.013	< 0.013
Endosulfan II	mg/kg dry wt	< 0.013	< 0.013	< 0.018	< 0.013	< 0.013
Endosulfan sulphate	mg/kg dry wt	< 0.013	< 0.013	< 0.018	< 0.013	< 0.013
Endrin	mg/kg dry wt	< 0.013	< 0.013	< 0.018	< 0.013	< 0.013
Endrin aldehyde	mg/kg dry wt	< 0.013	< 0.013	< 0.018	< 0.013	< 0.013
Endrin ketone	mg/kg dry wt	< 0.013	< 0.013	< 0.018	< 0.013	< 0.013
Heptachlor	mg/kg dry wt	< 0.013	< 0.013	< 0.018	< 0.013	< 0.013
Heptachlor epoxide	mg/kg dry wt	< 0.013	< 0.013	< 0.018	< 0.013	< 0.013
Hexachlorobenzene	mg/kg dry wt	< 0.013	< 0.013	< 0.018	< 0.013	< 0.013
Methoxychlor	mg/kg dry wt	< 0.013	< 0.013	< 0.018	< 0.013	< 0.013

Sample Name:		Composite of 39630 250-1 and 250-3	Composite of 39630 229-1 and 229-3	Composite of 39630 248-3 and 248-4
Lab Number:		3256371.62	3256371.63	3256371.64
Individual Tests				
Dry Matter	g/100g as rcvd	78	76	78
Heavy Metals with Mercury, Screen Level				
Total Recoverable Arsenic	mg/kg dry wt	9	10	8
Total Recoverable Cadmium	mg/kg dry wt	0.15	0.10	0.13
Total Recoverable Chromium	mg/kg dry wt	20	21	20
Total Recoverable Copper	mg/kg dry wt	40	28	43
Total Recoverable Lead	mg/kg dry wt	26	28	25
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	< 0.10
Total Recoverable Nickel	mg/kg dry wt	17	17	16
Total Recoverable Zinc	mg/kg dry wt	93	89	88
Organochlorine Pesticides Screening in Soil				
Aldrin	mg/kg dry wt	< 0.013	< 0.013	< 0.013
alpha-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.013
beta-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.013
delta-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.013
gamma-BHC (Lindane)	mg/kg dry wt	< 0.013	< 0.013	< 0.013
cis-Chlordane	mg/kg dry wt	< 0.013	< 0.013	< 0.013
trans-Chlordane	mg/kg dry wt	< 0.013	< 0.013	< 0.013

Sample Type: Soil				
Sample Name:		Composite of 39630 250-1 and 250-3	Composite of 39630 229-1 and 229-3	Composite of 39630 248-3 and 248-4
Lab Number:		3256371.62	3256371.63	3256371.64
Organochlorine Pesticides Screening in Soil				
2,4'-DDD	mg/kg dry wt	< 0.013	< 0.013	< 0.013
4,4'-DDD	mg/kg dry wt	< 0.013	< 0.013	< 0.013
2,4'-DDE	mg/kg dry wt	< 0.013	< 0.013	< 0.013
4,4'-DDE	mg/kg dry wt	0.036	0.019	0.040
2,4'-DDT	mg/kg dry wt	0.030	< 0.013	< 0.013
4,4'-DDT	mg/kg dry wt	0.132	< 0.013	0.013
Total DDT Isomers	mg/kg dry wt	0.21	< 0.08	< 0.08
Dieldrin	mg/kg dry wt	< 0.013	< 0.013	< 0.013
Endosulfan I	mg/kg dry wt	< 0.013	< 0.013	< 0.013
Endosulfan II	mg/kg dry wt	< 0.013	< 0.013	< 0.013
Endosulfan sulphate	mg/kg dry wt	< 0.013	< 0.013	< 0.013
Endrin	mg/kg dry wt	< 0.013	< 0.013	< 0.013
Endrin aldehyde	mg/kg dry wt	< 0.013	< 0.013	< 0.013
Endrin ketone	mg/kg dry wt	< 0.013	< 0.013	< 0.013
Heptachlor	mg/kg dry wt	< 0.013	< 0.013	< 0.013
Heptachlor epoxide	mg/kg dry wt	< 0.013	< 0.013	< 0.013
Hexachlorobenzene	mg/kg dry wt	< 0.013	< 0.013	< 0.013
Methoxychlor	mg/kg dry wt	< 0.013	< 0.013	< 0.013

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%.	-	23, 48-64
Heavy Metals with Mercury, 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	23, 48-64
Organochlorine Pesticides Screening in Soil	Sonication extraction, GC-ECD analysis. Tested on as received sample. In-house based on US EPA 8081.	0.010 - 0.06 mg/kg dry wt	23, 48-64
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	23, 48-64
Composite Environmental Solid Samples*	Individual sample fractions mixed together to form a composite fraction.	-	1-22, 24-47

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

Testing was completed between 16-May-2023 and 22-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.

Ara Heron BSc (Tech)
Client Services Manager - Environmental

Hill Laboratories
TRIED, TESTED AND TRUSTED

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Certificate of Analysis

Client:	Davis Ogilvie & Partners Limited	**Lab No:**	3260600 SPv3
Contact:	Gareth Oddy	**Date Received:**	29-Apr-2023
	C/- Davis Ogilvie & Partners Limited	**Date Reported:**	12-May-2023
	PO Box 589	**Quote No:**	123490
	Addington	**Order No:**	
	Christchurch 8140	**Client Reference:**	39630
		Submitted By:	Chavvah Freeman

Sample Type: Soil

Sample Name:		Composite of 39630 121-1, 121-2, 121-3 and 121-4	Composite of 39630 122-2, 122-3 and 122-4	Composite of 39630 123-1, 123-2, 123-3 and 123-4	Composite of 39630 124-1, 124-2, 124-3 and 124-4	Composite of 39630 125-1, 125-2, 125-3 and 125-4
Lab Number:		3260600.257	3260600.258	3260600.259	3260600.260	3260600.261
Individual Tests						
Dry Matter	g/100g as rcvd	77	78	79	80	77
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	9	9	10	8	11
Total Recoverable Cadmium	mg/kg dry wt	0.13	0.11	< 0.10	< 0.10	0.14
Total Recoverable Chromium	mg/kg dry wt	19	19	18	18	21
Total Recoverable Copper	mg/kg dry wt	37	35	39	40	40
Total Recoverable Lead	mg/kg dry wt	25	25	24	23	29
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Nickel	mg/kg dry wt	15	15	14	14	17
Total Recoverable Zinc	mg/kg dry wt	76	75	67	65	116
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013
alpha-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013
beta-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013
delta-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013
gamma-BHC (Lindane)	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013
cis-Chlordane	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013
trans-Chlordane	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013
2,4'-DDD	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013
4,4'-DDD	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013
2,4'-DDE	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013
4,4'-DDE	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	0.017
2,4'-DDT	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013
4,4'-DDT	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013
Total DDT Isomers	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Dieldrin	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013
Endosulfan I	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013
Endosulfan II	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013
Endosulfan sulphate	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013
Endrin	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013
Endrin aldehyde	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013
Endrin ketone	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013
Heptachlor	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013
Heptachlor epoxide	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013
Hexachlorobenzene	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013
Methoxychlor	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.012	< 0.013

Sample Type: Soil						
Sample Name:		Composite of 39630 126-1, 126-2, 126-3 and 126-4	Composite of 39630 127-1, 127-2, 127-3 and 127-4	Composite of 39630 128-1, 128-2, 128-3 and 128-4	Composite of 39630 129-1, 129-2, 129-3 and 129-4	Composite of 39630 130-1, 130-2, 130-3 and 130-4
Lab Number:		3260600.262	3260600.263	3260600.264	3260600.265	3260600.266
Individual Tests						
Dry Matter	g/100g as rcvd	77	79	80	77	78
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	10	9	8	11	11
Total Recoverable Cadmium	mg/kg dry wt	0.13	< 0.10	< 0.10	0.11	< 0.10
Total Recoverable Chromium	mg/kg dry wt	22	19	18	22	22
Total Recoverable Copper	mg/kg dry wt	33	21	21	24	23
Total Recoverable Lead	mg/kg dry wt	27	24	21	31	28
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Nickel	mg/kg dry wt	18	16	16	20	19
Total Recoverable Zinc	mg/kg dry wt	85	76	70	91	86
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
alpha-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
beta-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
delta-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
gamma-BHC (Lindane)	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
cis-Chlordane	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
trans-Chlordane	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
2,4'-DDD	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
4,4'-DDD	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
2,4'-DDE	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
4,4'-DDE	mg/kg dry wt	0.025	0.025	0.024	0.018	0.028
2,4'-DDT	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
4,4'-DDT	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Total DDT Isomers	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Dieldrin	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Endosulfan I	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Endosulfan II	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Endosulfan sulphate	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Endrin	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Endrin aldehyde	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Endrin ketone	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Heptachlor	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Heptachlor epoxide	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Hexachlorobenzene	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Methoxychlor	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013

Sample Name:		Composite of 39630 131-1, 131-2, 131-3 and 131-4	Composite of 39630 132-1, 132-2, 132-3 and 132-4	Composite of 39630 133-1, 133-2, 133-3 and 133-4	Composite of 39630 134-1, 134-2, 134-3 and 134-4	Composite of 39630 135-1, 135-2, 135-3 and 135-4
Lab Number:		3260600.267	3260600.268	3260600.269	3260600.270	3260600.271
Individual Tests						
Dry Matter	g/100g as rcvd	77	78	82	83	77
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	16	10	7	6	11
Total Recoverable Cadmium	mg/kg dry wt	0.19	< 0.10	< 0.10	< 0.10	0.12
Total Recoverable Chromium	mg/kg dry wt	23	20	17	16	22
Total Recoverable Copper	mg/kg dry wt	57	32	20	23	26
Total Recoverable Lead	mg/kg dry wt	28	24	18.9	18.2	29
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Nickel	mg/kg dry wt	18	16	14	14	20
Total Recoverable Zinc	mg/kg dry wt	128	82	61	64	92

Sample Type: Soil						
Sample Name:		Composite of 39630 131-1, 131-2, 131-3 and 131-4	Composite of 39630 132-1, 132-2, 132-3 and 132-4	Composite of 39630 133-1, 133-2, 133-3 and 133-4	Composite of 39630 134-1, 134-2, 134-3 and 134-4	Composite of 39630 135-1, 135-2, 135-3 and 135-4
Lab Number:		3260600.267	3260600.268	3260600.269	3260600.270	3260600.271
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013
alpha-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013
beta-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013
delta-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013
gamma-BHC (Lindane)	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013
cis-Chlordane	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013
trans-Chlordane	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013
2,4'-DDD	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013
4,4'-DDD	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013
2,4'-DDE	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013
4,4'-DDE	mg/kg dry wt	0.016	0.020	< 0.012	< 0.012	0.018
2,4'-DDT	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013
4,4'-DDT	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.012	0.022
Total DDT Isomers	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Dieldrin	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013
Endosulfan I	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013
Endosulfan II	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013
Endosulfan sulphate	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013
Endrin	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013
Endrin aldehyde	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013
Endrin ketone	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013
Heptachlor	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013
Heptachlor epoxide	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013
Hexachlorobenzene	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013
Methoxychlor	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013

Sample Name:		Composite of 39630 136-1, 136-2, 136-3 and 136-4	Composite of 39630 150-1, 150-2, 150-3 and 150-4	Composite of 39630 151-1, 151-2, 151-3 and 151-4	Composite of 39630 152-1, 152-2, 152-3 and 152-4	Composite of 39630 153-1, 153-2, 153-3 and 153-4
Lab Number:		3260600.272	3260600.273	3260600.274	3260600.275	3260600.276
Individual Tests						
Dry Matter	g/100g as rcvd	78	79	77	76	76
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	9	10	11	10	9
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	0.13	0.11	0.12	0.10
Total Recoverable Chromium	mg/kg dry wt	20	20	22	21	20
Total Recoverable Copper	mg/kg dry wt	18	38	31	35	29
Total Recoverable Lead	mg/kg dry wt	25	31	29	29	25
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Nickel	mg/kg dry wt	17	17	18	18	17
Total Recoverable Zinc	mg/kg dry wt	77	108	98	99	86
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
alpha-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
beta-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
delta-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
gamma-BHC (Lindane)	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
cis-Chlordane	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
trans-Chlordane	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
2,4'-DDD	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
4,4'-DDD	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
2,4'-DDE	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
4,4'-DDE	mg/kg dry wt	< 0.013	0.023	0.019	< 0.013	< 0.013

Sample Type: Soil						
Sample Name:		Composite of 39630 136-1, 136-2, 136-3 and 136-4	Composite of 39630 150-1, 150-2, 150-3 and 150-4	Composite of 39630 151-1, 151-2, 151-3 and 151-4	Composite of 39630 152-1, 152-2, 152-3 and 152-4	Composite of 39630 153-1, 153-2, 153-3 and 153-4
Lab Number:		3260600.272	3260600.273	3260600.274	3260600.275	3260600.276
Organochlorine Pesticides Screening in Soil						
2,4'-DDT	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
4,4'-DDT	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Total DDT Isomers	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Dieldrin	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Endosulfan I	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Endosulfan II	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Endosulfan sulphate	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Endrin	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Endrin aldehyde	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Endrin ketone	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Heptachlor	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Heptachlor epoxide	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Hexachlorobenzene	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Methoxychlor	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013

Sample Name:		Composite of 39630 160-1, 160-2, 160-3 and 160-4	Composite of 39630 161-1, 161-2, 161-3 and 161-4	Composite of 39630 162-1, 162-2, 162-3 and 162-4	Composite of 39630 163-1, 163-2, 163-3 and 163-4	Composite of 39630 164-1, 164-2, 164-3 and 164-4
Lab Number:		3260600.277	3260600.278	3260600.279	3260600.280	3260600.281
Individual Tests						
Dry Matter	g/100g as rcvd	81	79	79	79	76
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	10	10	10	10	11
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	< 0.10	< 0.10	0.13	0.13
Total Recoverable Chromium	mg/kg dry wt	22	21	22	22	23
Total Recoverable Copper	mg/kg dry wt	22	18	21	42	27
Total Recoverable Lead	mg/kg dry wt	28	27	28	29	31
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Nickel	mg/kg dry wt	19	18	19	19	20
Total Recoverable Zinc	mg/kg dry wt	88	82	88	92	94
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013
alpha-BHC	mg/kg dry wt	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013
beta-BHC	mg/kg dry wt	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013
delta-BHC	mg/kg dry wt	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013
gamma-BHC (Lindane)	mg/kg dry wt	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013
cis-Chlordane	mg/kg dry wt	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013
trans-Chlordane	mg/kg dry wt	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013
2,4'-DDD	mg/kg dry wt	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013
4,4'-DDD	mg/kg dry wt	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013
2,4'-DDE	mg/kg dry wt	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013
4,4'-DDE	mg/kg dry wt	0.013	0.027	0.017	0.028	0.019
2,4'-DDT	mg/kg dry wt	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013
4,4'-DDT	mg/kg dry wt	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013
Total DDT Isomers	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Dieldrin	mg/kg dry wt	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013
Endosulfan I	mg/kg dry wt	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013
Endosulfan II	mg/kg dry wt	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013
Endosulfan sulphate	mg/kg dry wt	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013
Endrin	mg/kg dry wt	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013
Endrin aldehyde	mg/kg dry wt	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013
Endrin ketone	mg/kg dry wt	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013
Heptachlor	mg/kg dry wt	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013

Sample Type: Soil						
Sample Name:		Composite of 39630 160-1, 160-2, 160-3 and 160-4	Composite of 39630 161-1, 161-2, 161-3 and 161-4	Composite of 39630 162-1, 162-2, 162-3 and 162-4	Composite of 39630 163-1, 163-2, 163-3 and 163-4	Composite of 39630 164-1, 164-2, 164-3 and 164-4
Lab Number:		3260600.277	3260600.278	3260600.279	3260600.280	3260600.281
Organochlorine Pesticides Screening in Soil						
Heptachlor epoxide	mg/kg dry wt	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013
Hexachlorobenzene	mg/kg dry wt	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013
Methoxychlor	mg/kg dry wt	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013

Sample Name:		Composite of 39630 165-1, 165-2, 165-3 and 165-4	Composite of 39630 166-1, 166-2, 166-3 and 166-4	Composite of 39630 167-1, 167-2, 167-3 and 167-4	Composite of 39630 168-1, 168-2, 168-3 and 168-4	Composite of 39630 169-1, 169-2, 169-3 and 169-4
Lab Number:		3260600.282	3260600.283	3260600.284	3260600.285	3260600.286
Individual Tests						
Dry Matter	g/100g as rcvd	75	77	75	76	74
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	11	12	10	10	10
Total Recoverable Cadmium	mg/kg dry wt	0.11	0.13	0.12	0.12	0.17
Total Recoverable Chromium	mg/kg dry wt	22	23	22	22	22
Total Recoverable Copper	mg/kg dry wt	24	26	30	32	38
Total Recoverable Lead	mg/kg dry wt	30	31	29	29	32
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Nickel	mg/kg dry wt	20	20	19	19	19
Total Recoverable Zinc	mg/kg dry wt	90	96	95	94	116
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.014
alpha-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.014
beta-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.014
delta-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.014
gamma-BHC (Lindane)	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.014
cis-Chlordane	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.014
trans-Chlordane	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.014
2,4'-DDD	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.014
4,4'-DDD	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.014
2,4'-DDE	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.014
4,4'-DDE	mg/kg dry wt	0.015	0.034	0.030	0.020	0.016
2,4'-DDT	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.014
4,4'-DDT	mg/kg dry wt	0.025	< 0.013	< 0.013	< 0.014	< 0.014
Total DDT Isomers	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Dieldrin	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.014
Endosulfan I	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.014
Endosulfan II	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.014
Endosulfan sulphate	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.014
Endrin	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.014
Endrin aldehyde	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.014
Endrin ketone	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.014
Heptachlor	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.014
Heptachlor epoxide	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.014
Hexachlorobenzene	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.014
Methoxychlor	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.014

Sample Name:		Composite of 39630 170-1, 170-2, 170-3 and 170-4	Composite of 39630 171-1, 171-2, 171-3 and 171-4	Composite of 39630 172-1, 172-2, 172-3 and 172-4	Composite of 39630 173-1, 173-2, 173-3 and 173-4	Composite of 39630 174-1, 174-2, 174-3 and 174-4
Lab Number:		3260600.287	3260600.288	3260600.289	3260600.290	3260600.291
Individual Tests						
Dry Matter	g/100g as rcvd	77	77	93	75	77

Sample Type: Soil						
Sample Name:		Composite of 39630 170-1, 170-2, 170-3 and 170-4	Composite of 39630 171-1, 171-2, 171-3 and 171-4	Composite of 39630 172-1, 172-2, 172-3 and 172-4	Composite of 39630 173-1, 173-2, 173-3 and 173-4	Composite of 39630 174-1, 174-2, 174-3 and 174-4
Lab Number:		3260600.287	3260600.288	3260600.289	3260600.290	3260600.291
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	11	10	11	9	10
Total Recoverable Cadmium	mg/kg dry wt	0.12	0.12	0.11	0.12	0.12
Total Recoverable Chromium	mg/kg dry wt	23	19	20	19	21
Total Recoverable Copper	mg/kg dry wt	26	24	23	22	25
Total Recoverable Lead	mg/kg dry wt	29	25	27	26	28
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Nickel	mg/kg dry wt	20	17	18	17	18
Total Recoverable Zinc	mg/kg dry wt	89	93	92	87	85
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.013	< 0.013	< 0.011	< 0.013	< 0.013
alpha-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.011	< 0.013	< 0.013
beta-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.011	< 0.013	< 0.013
delta-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.011	< 0.013	< 0.013
gamma-BHC (Lindane)	mg/kg dry wt	< 0.013	< 0.013	< 0.011	< 0.013	< 0.013
cis-Chlordane	mg/kg dry wt	< 0.013	< 0.013	< 0.011	< 0.013	< 0.013
trans-Chlordane	mg/kg dry wt	< 0.013	< 0.013	< 0.011	< 0.013	< 0.013
2,4'-DDD	mg/kg dry wt	< 0.013	< 0.013	< 0.011	< 0.013	< 0.013
4,4'-DDD	mg/kg dry wt	< 0.013	< 0.013	< 0.011	< 0.013	< 0.013
2,4'-DDE	mg/kg dry wt	< 0.013	< 0.013	< 0.011	< 0.013	< 0.013
4,4'-DDE	mg/kg dry wt	0.014	0.018	0.017	< 0.013	0.017
2,4'-DDT	mg/kg dry wt	< 0.013	< 0.013	< 0.011	< 0.013	< 0.013
4,4'-DDT	mg/kg dry wt	< 0.013	< 0.013	0.016	< 0.013	< 0.013
Total DDT Isomers	mg/kg dry wt	< 0.08	< 0.08	< 0.07	< 0.08	< 0.08
Dieldrin	mg/kg dry wt	< 0.013	< 0.013	< 0.011	< 0.013	< 0.013
Endosulfan I	mg/kg dry wt	< 0.013	< 0.013	< 0.011	< 0.013	< 0.013
Endosulfan II	mg/kg dry wt	< 0.013	< 0.013	< 0.011	< 0.013	< 0.013
Endosulfan sulphate	mg/kg dry wt	< 0.013	< 0.013	< 0.011	< 0.013	< 0.013
Endrin	mg/kg dry wt	< 0.013	< 0.013	< 0.011	< 0.013	< 0.013
Endrin aldehyde	mg/kg dry wt	< 0.013	< 0.013	< 0.011	< 0.013	< 0.013
Endrin ketone	mg/kg dry wt	< 0.013	< 0.013	< 0.011	< 0.013	< 0.013
Heptachlor	mg/kg dry wt	< 0.013	< 0.013	< 0.011	< 0.013	< 0.013
Heptachlor epoxide	mg/kg dry wt	< 0.013	< 0.013	< 0.011	< 0.013	< 0.013
Hexachlorobenzene	mg/kg dry wt	< 0.013	< 0.013	< 0.011	< 0.013	< 0.013
Methoxychlor	mg/kg dry wt	< 0.013	< 0.013	< 0.011	< 0.013	< 0.013

Sample Name:		Composite of 39630 175-1, 175-2, 175-3 and 175-4	Composite of 39630 176-1, 176-2, 176-3 and 176-4	Composite of 39630 177-1, 177-2, 177-3 and 177-4	Composite of 39630 178-1, 178-2, 178-3 and 178-4	Composite of 39630 179-1, 179-2, 179-3 and 179-4
Lab Number:		3260600.292	3260600.293	3260600.294	3260600.295	3260600.296
Individual Tests						
Dry Matter	g/100g as rcvd	77	78	80	77	79
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	11	10	8	10	9
Total Recoverable Cadmium	mg/kg dry wt	0.12	< 0.10	0.13	0.13	0.13
Total Recoverable Chromium	mg/kg dry wt	21	22	19	21	20
Total Recoverable Copper	mg/kg dry wt	25	22	32	39	38
Total Recoverable Lead	mg/kg dry wt	28	28	23	27	26
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Nickel	mg/kg dry wt	19	18	15	17	16
Total Recoverable Zinc	mg/kg dry wt	89	85	82	92	93
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
alpha-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013

Sample Type: Soil						
Sample Name:		Composite of 39630 175-1, 175-2, 175-3 and 175-4	Composite of 39630 176-1, 176-2, 176-3 and 176-4	Composite of 39630 177-1, 177-2, 177-3 and 177-4	Composite of 39630 178-1, 178-2, 178-3 and 178-4	Composite of 39630 179-1, 179-2, 179-3 and 179-4
Lab Number:		3260600.292	3260600.293	3260600.294	3260600.295	3260600.296
Organochlorine Pesticides Screening in Soil						
beta-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
delta-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
gamma-BHC (Lindane)	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
cis-Chlordane	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
trans-Chlordane	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
2,4'-DDD	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
4,4'-DDD	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
2,4'-DDE	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
4,4'-DDE	mg/kg dry wt	0.022	0.013	0.016	< 0.013	0.023
2,4'-DDT	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
4,4'-DDT	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	0.014
Total DDT Isomers	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Dieldrin	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Endosulfan I	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Endosulfan II	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Endosulfan sulphate	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Endrin	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Endrin aldehyde	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Endrin ketone	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Heptachlor	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Heptachlor epoxide	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Hexachlorobenzene	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Methoxychlor	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013

Sample Name:		Composite of 39630 180-1, 180-2, 180-3 and 180-4	Composite of 39630 181-1, 181-2, 181-3 and 181-4	Composite of 39630 182-1, 182-2, 182-3 and 182-4	Composite of 39630 183-1, 183-2, 183-3 and 183-4	Composite of 39630 184-1, 184-2, 184-3 and 184-4
Lab Number:		3260600.297	3260600.298	3260600.299	3260600.300	3260600.301
Individual Tests						
Dry Matter	g/100g as rcvd	76	80	79	77	76
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	10	7	6	10	9
Total Recoverable Cadmium	mg/kg dry wt	0.12	0.12	0.12	0.10	0.12
Total Recoverable Chromium	mg/kg dry wt	21	18	17	21	19
Total Recoverable Copper	mg/kg dry wt	39	34	40	24	50
Total Recoverable Lead	mg/kg dry wt	28	28	33	28	26
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	0.15	< 0.10	< 0.10
Total Recoverable Nickel	mg/kg dry wt	18	15	13	17	16
Total Recoverable Zinc	mg/kg dry wt	99	110	115	89	92
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.014
alpha-BHC	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.014
beta-BHC	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.014
delta-BHC	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.014
gamma-BHC (Lindane)	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.014
cis-Chlordane	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.014
trans-Chlordane	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.014
2,4'-DDD	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.014
4,4'-DDD	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.014
2,4'-DDE	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.014
4,4'-DDE	mg/kg dry wt	0.015	0.015	0.018	< 0.013	< 0.014
2,4'-DDT	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.014
4,4'-DDT	mg/kg dry wt	< 0.014	< 0.013	0.015	< 0.013	< 0.014

Sample Type: Soil						
Sample Name:		Composite of 39630 180-1, 180-2, 180-3 and 180-4	Composite of 39630 181-1, 181-2, 181-3 and 181-4	Composite of 39630 182-1, 182-2, 182-3 and 182-4	Composite of 39630 183-1, 183-2, 183-3 and 183-4	Composite of 39630 184-1, 184-2, 184-3 and 184-4
Lab Number:		3260600.297	3260600.298	3260600.299	3260600.300	3260600.301
Organochlorine Pesticides Screening in Soil						
Total DDT Isomers	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Dieldrin	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.014
Endosulfan I	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.014
Endosulfan II	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.014
Endosulfan sulphate	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.014
Endrin	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.014
Endrin aldehyde	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.014
Endrin ketone	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.014
Heptachlor	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.014
Heptachlor epoxide	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.014
Hexachlorobenzene	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.014
Methoxychlor	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.013	< 0.014

Sample Name:		Composite of 39630 185-1, 185-2, 185-3 and 185-4	Composite of 39630 186-1, 186-2, 186-3 and 186-4	Composite of 39630 187-1, 187-2, 187-3 and 187-4	Composite of 39630 188-1, 188-2, and 188-4	Composite of 39630 189-1, 189-2, 189-3 and 189-4
Lab Number:		3260600.302	3260600.303	3260600.304	3260600.305	3260600.306
Individual Tests						
Dry Matter	g/100g as rcvd	76	76	75	74	75
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	10	11	11	11	10
Total Recoverable Cadmium	mg/kg dry wt	0.12	0.11	0.13	0.13	0.13
Total Recoverable Chromium	mg/kg dry wt	21	22	22	22	23
Total Recoverable Copper	mg/kg dry wt	25	24	30	28	28
Total Recoverable Lead	mg/kg dry wt	29	28	31	30	30
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Nickel	mg/kg dry wt	18	19	19	19	19
Total Recoverable Zinc	mg/kg dry wt	91	95	99	96	102
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
alpha-BHC	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
beta-BHC	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
delta-BHC	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
gamma-BHC (Lindane)	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
cis-Chlordane	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
trans-Chlordane	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
2,4'-DDD	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
4,4'-DDD	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
2,4'-DDE	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
4,4'-DDE	mg/kg dry wt	0.027	< 0.013	0.016	0.018	0.029
2,4'-DDT	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
4,4'-DDT	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
Total DDT Isomers	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Dieldrin	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
Endosulfan I	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
Endosulfan II	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
Endosulfan sulphate	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
Endrin	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
Endrin aldehyde	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
Endrin ketone	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
Heptachlor	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
Heptachlor epoxide	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
Hexachlorobenzene	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013

Sample Type: Soil						
Sample Name:		Composite of 39630 185-1, 185-2, 185-3 and 185-4	Composite of 39630 186-1, 186-2, 186-3 and 186-4	Composite of 39630 187-1, 187-2, 187-3 and 187-4	Composite of 39630 188-1, 188-2, and 188-4	Composite of 39630 189-1, 189-2, 189-3 and 189-4
Lab Number:		3260600.302	3260600.303	3260600.304	3260600.305	3260600.306
Organochlorine Pesticides Screening in Soil						
Methoxychlor	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013

Sample Name:		Composite of 39630 190-1, 190-2, 190-3 and 190-4	Composite of 39630 191-1, 191-2, 191-3 and 191-4	Composite of 39630 192-1, 192-2, 192-3 and 192-4	Composite of 39630 193-1, 193-2, 193-3 and 193-4	Composite of 39630 194-1, 194-2, 194-3 and 194-4
Lab Number:		3260600.307	3260600.308	3260600.309	3260600.310	3260600.311
Individual Tests						
Dry Matter	g/100g as rcvd	79	78	80	81	82
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	10	9	10	11	11
Total Recoverable Cadmium	mg/kg dry wt	0.11	0.12	0.11	0.12	0.12
Total Recoverable Chromium	mg/kg dry wt	22	21	22	23	22
Total Recoverable Copper	mg/kg dry wt	27	32	33	25	25
Total Recoverable Lead	mg/kg dry wt	28	28	29	28	27
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Nickel	mg/kg dry wt	18	18	19	19	18
Total Recoverable Zinc	mg/kg dry wt	92	91	92	92	87
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013
alpha-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013
beta-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013
delta-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013
gamma-BHC (Lindane)	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013
cis-Chlordane	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013
trans-Chlordane	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013
2,4'-DDD	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013
4,4'-DDD	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013
2,4'-DDE	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013
4,4'-DDE	mg/kg dry wt	0.014	0.044	0.017	0.018	0.044
2,4'-DDT	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013
4,4'-DDT	mg/kg dry wt	< 0.013	0.017	< 0.012	< 0.013	0.018
Total DDT Isomers	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Dieldrin	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013
Endosulfan I	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013
Endosulfan II	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013
Endosulfan sulphate	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013
Endrin	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013
Endrin aldehyde	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013
Endrin ketone	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013
Heptachlor	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013
Heptachlor epoxide	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013
Hexachlorobenzene	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013
Methoxychlor	mg/kg dry wt	< 0.013	< 0.013	< 0.012	< 0.013	< 0.013

Sample Name:		Composite of 39630 195-1, 195-2, 195-3 and 195-4	Composite of 39630 196-1, 196-2, 196-3 and 196-4	Composite of 39630 197-1, 197-2, 197-3 and 197-4	Composite of 39630 198-1, 198-2, 198-3 and 198-4	Composite of 39630 213-1, 213-2, 213-3 and 213-4
Lab Number:		3260600.312	3260600.313	3260600.314	3260600.315	3260600.316
Individual Tests						
Dry Matter	g/100g as rcvd	80	79	79	77	77
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	13	12	10	11	10
Total Recoverable Cadmium	mg/kg dry wt	0.12	0.14	0.11	0.13	0.12
Total Recoverable Chromium	mg/kg dry wt	23	23	22	22	21

Sample Type: Soil						
Sample Name:		Composite of 39630 195-1, 195-2, 195-3 and 195-4	Composite of 39630 196-1, 196-2, 196-3 and 196-4	Composite of 39630 197-1, 197-2, 197-3 and 197-4	Composite of 39630 198-1, 198-2, 198-3 and 198-4	Composite of 39630 213-1, 213-2, 213-3 and 213-4
Lab Number:		3260600.312	3260600.313	3260600.314	3260600.315	3260600.316
Heavy Metals with Mercury, Screen Level						
Total Recoverable Copper	mg/kg dry wt	24	29	28	27	25
Total Recoverable Lead	mg/kg dry wt	29	27	27	34	28
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Nickel	mg/kg dry wt	19	19	18	18	17
Total Recoverable Zinc	mg/kg dry wt	89	94	91	99	89
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
alpha-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
beta-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
delta-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
gamma-BHC (Lindane)	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
cis-Chlordane	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
trans-Chlordane	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
2,4'-DDD	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
4,4'-DDD	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
2,4'-DDE	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
4,4'-DDE	mg/kg dry wt	0.014	0.030	0.019	0.017	0.025
2,4'-DDT	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
4,4'-DDT	mg/kg dry wt	< 0.013	0.020	0.013	< 0.013	< 0.013
Total DDT Isomers	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Dieldrin	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Endosulfan I	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Endosulfan II	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Endosulfan sulphate	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Endrin	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Endrin aldehyde	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Endrin ketone	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Heptachlor	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Heptachlor epoxide	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Hexachlorobenzene	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Methoxychlor	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013

Sample Name:		Composite of 39630 214-1, 214-2, 214-3 and 214-4	Composite of 39630 215-1, 215-2, 215-3 and 215-4	Composite of 39630 216-1, 216-2, 216-3 and 216-4	Composite of 39630 217-1, 217-2, 217-3 and 217-4
Lab Number:		3260600.317	3260600.318	3260600.319	3260600.320
Individual Tests					
Dry Matter	g/100g as rcvd	75	76	76	76
Heavy Metals with Mercury, Screen Level					
Total Recoverable Arsenic	mg/kg dry wt	10	10	10	9
Total Recoverable Cadmium	mg/kg dry wt	0.12	0.15	< 0.10	0.10
Total Recoverable Chromium	mg/kg dry wt	20	19	18	19
Total Recoverable Copper	mg/kg dry wt	24	55	31	26
Total Recoverable Lead	mg/kg dry wt	28	26	24	26
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Nickel	mg/kg dry wt	18	16	15	16
Total Recoverable Zinc	mg/kg dry wt	97	89	82	85
Organochlorine Pesticides Screening in Soil					
Aldrin	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.014
alpha-BHC	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.014
beta-BHC	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.014
delta-BHC	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.014
gamma-BHC (Lindane)	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.014
cis-Chlordane	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.014

Sample Type: Soil					
Sample Name:		Composite of 39630 214-1, 214-2, 214-3 and 214-4	Composite of 39630 215-1, 215-2, 215-3 and 215-4	Composite of 39630 216-1, 216-2, 216-3 and 216-4	Composite of 39630 217-1, 217-2, 217-3 and 217-4
Lab Number:		3260600.317	3260600.318	3260600.319	3260600.320
Organochlorine Pesticides Screening in Soil					
trans-Chlordane	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.014
2,4'-DDD	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.014
4,4'-DDD	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.014
2,4'-DDE	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.014
4,4'-DDE	mg/kg dry wt	0.016	0.017	0.017	0.031
2,4'-DDT	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.014
4,4'-DDT	mg/kg dry wt	< 0.014	< 0.013	0.021	0.023
Total DDT Isomers	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08
Dieldrin	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.014
Endosulfan I	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.014
Endosulfan II	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.014
Endosulfan sulphate	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.014
Endrin	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.014
Endrin aldehyde	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.014
Endrin ketone	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.014
Heptachlor	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.014
Heptachlor epoxide	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.014
Hexachlorobenzene	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.014
Methoxychlor	mg/kg dry wt	< 0.014	< 0.013	< 0.013	< 0.014

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%.	-	257-320
Heavy Metals with Mercury, 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	257-320
Organochlorine Pesticides Screening in Soil	Sonication extraction, GC-ECD analysis. Tested on as received sample. In-house based on US EPA 8081.	0.010 - 0.06 mg/kg dry wt	257-320
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	257-320
Composite Environmental Solid Samples*	Individual sample fractions mixed together to form a composite fraction.	-	1-4, 6-194, 196-256, 323

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

Testing was completed between 29-Apr-2023 and 11-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.

Kim Harrison MSc
Client Services Manager - Environmental

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Certificate of Analysis

Client:	Davis Ogilvie & Partners Limited	**Lab No:**	3340778 SPv1
Contact:	Gareth Oddy	**Date Received:**	11-Aug-2023
	C/- Davis Ogilvie & Partners Limited	**Date Reported:**	16-Aug-2023
	PO Box 589	**Quote No:**	82763
	Addington	**Order No:**	39630
	Christchurch 8140	**Client Reference:**	
		Submitted By:	Andy Bunce

Sample Type: Soil

Sample Name:		Composite of 39630 154-1, 39630 154-2, 39630 154-3 and 39630 154-4	Composite of 39630 155-1, 39630 155-2, 39630 155-3 and 39630 155-4	Composite of 39630 156-1, 39630 156-2, 39630 156-3 and 39630 156-4	Composite of 39630 157-1, 39630 157-2, 39630 157-3 and 39630 157-4	Composite of 39630 158-1, 39630 158-2, 39630 158-3 and 39630 158-4
Lab Number:		3340778.25	3340778.26	3340778.27	3340778.28	3340778.29
Individual Tests						
Dry Matter	g/100g as rcvd	75	77	77	73	76
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	11	10	10	11	10
Total Recoverable Cadmium	mg/kg dry wt	0.12	0.21	0.14	0.11	0.13
Total Recoverable Chromium	mg/kg dry wt	20	18	18	19	19
Total Recoverable Copper	mg/kg dry wt	44	34	43	34	49
Total Recoverable Lead	mg/kg dry wt	26	23	23	24	25
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Nickel	mg/kg dry wt	16	14	14	15	15
Total Recoverable Zinc	mg/kg dry wt	76	71	72	72	76
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013
alpha-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013
beta-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013
delta-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013
gamma-BHC (Lindane)	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013
cis-Chlordane	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013
trans-Chlordane	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013
2,4'-DDD	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013
4,4'-DDD	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013
2,4'-DDE	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013
4,4'-DDE	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013
2,4'-DDT	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013
4,4'-DDT	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013
Total DDT Isomers	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.09	< 0.08
Dieldrin	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013
Endosulfan I	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013
Endosulfan II	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013
Endosulfan sulphate	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013
Endrin	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013
Endrin aldehyde	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013
Endrin ketone	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013
Heptachlor	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013
Heptachlor epoxide	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013
Hexachlorobenzene	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013

Sample Type: Soil						
Sample Name:		Composite of 39630 154-1, 39630 154-2, 39630 154-3 and 39630 154-4	Composite of 39630 155-1, 39630 155-2, 39630 155-3 and 39630 155-4	Composite of 39630 156-1, 39630 156-2, 39630 156-3 and 39630 156-4	Composite of 39630 157-1, 39630 157-2, 39630 157-3 and 39630 157-4	Composite of 39630 158-1, 39630 158-2, 39630 158-3 and 39630 158-4
Lab Number:		3340778.25	3340778.26	3340778.27	3340778.28	3340778.29
Organochlorine Pesticides Screening in Soil						
Methoxychlor	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013

Sample Name:		Composite of 39630 159-1, 39630 159-2, 39630 159-3 and 39630 159-4
Lab Number:		3340778.30
Individual Tests		
Dry Matter	g/100g as rcvd	75
Heavy Metals with Mercury, Screen Level		
Total Recoverable Arsenic	mg/kg dry wt	10
Total Recoverable Cadmium	mg/kg dry wt	0.12
Total Recoverable Chromium	mg/kg dry wt	19
Total Recoverable Copper	mg/kg dry wt	43
Total Recoverable Lead	mg/kg dry wt	25
Total Recoverable Mercury	mg/kg dry wt	< 0.10
Total Recoverable Nickel	mg/kg dry wt	15
Total Recoverable Zinc	mg/kg dry wt	78
Organochlorine Pesticides Screening in Soil		
Aldrin	mg/kg dry wt	< 0.013
alpha-BHC	mg/kg dry wt	< 0.013
beta-BHC	mg/kg dry wt	< 0.013
delta-BHC	mg/kg dry wt	< 0.013
gamma-BHC (Lindane)	mg/kg dry wt	< 0.013
cis-Chlordane	mg/kg dry wt	< 0.013
trans-Chlordane	mg/kg dry wt	< 0.013
2,4'-DDD	mg/kg dry wt	< 0.013
4,4'-DDD	mg/kg dry wt	< 0.013
2,4'-DDE	mg/kg dry wt	< 0.013
4,4'-DDE	mg/kg dry wt	< 0.013
2,4'-DDT	mg/kg dry wt	< 0.013
4,4'-DDT	mg/kg dry wt	< 0.013
Total DDT Isomers	mg/kg dry wt	< 0.08
Dieldrin	mg/kg dry wt	< 0.013
Endosulfan I	mg/kg dry wt	< 0.013
Endosulfan II	mg/kg dry wt	< 0.013
Endosulfan sulphate	mg/kg dry wt	< 0.013
Endrin	mg/kg dry wt	< 0.013
Endrin aldehyde	mg/kg dry wt	< 0.013
Endrin ketone	mg/kg dry wt	< 0.013
Heptachlor	mg/kg dry wt	< 0.013
Heptachlor epoxide	mg/kg dry wt	< 0.013
Hexachlorobenzene	mg/kg dry wt	< 0.013
Methoxychlor	mg/kg dry wt	< 0.013

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request.
Unless otherwise indicated, analyses were performed at Hill Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%.	-	25-30

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Heavy Metals with Mercury, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion 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	25-30
Organochlorine Pesticides Screening in Soil	Sonication extraction, GC-ECD analysis. Tested on as received sample. In-house based on US EPA 8081.	0.010 - 0.06 mg/kg dry wt	25-30
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	25-30
Composite Environmental Solid Samples*	Individual sample fractions mixed together to form a composite fraction.	-	1-24

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

Testing was completed between 11-Aug-2023 and 16-Aug-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.

Kim Harrison MSc
Client Services Manager - Environmental

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Certificate of Analysis

Client:	Davis Ogilvie & Partners Limited	**Lab No:**	3719366	SPv2
Contact:	Andy Bunce	**Date Received:**	19-Nov-2024	
	C/- Davis Ogilvie & Partners Limited	**Date Reported:**	26-Nov-2024	**(Amended)**
	PO Box 589	**Quote No:**	82763	
	Addington	**Order No:**		
	Christchurch 8140	**Client Reference:**	39630	
		Submitted By:	Andy Bunce	

Sample Type: Soil

	Sample Name:	39630_231_1 19-Nov-2024	39630_231_2 19-Nov-2024	39630_231_3 19-Nov-2024	39630_231_4 19-Nov-2024	39630_232_1 19-Nov-2024
	Lab Number:	3719366.1	3719366.2	3719366.3	3719366.4	3719366.5
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	8	8	7	10	9
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	0.11	0.12	0.11	0.12
Total Recoverable Chromium	mg/kg dry wt	19	18	18	20	20
Total Recoverable Copper	mg/kg dry wt	29	25	27	52	33
Total Recoverable Lead	mg/kg dry wt	26	25	25	26	28
Total Recoverable Nickel	mg/kg dry wt	16	16	16	18	17
Total Recoverable Zinc	mg/kg dry wt	82	77	80	93	90

	Sample Name:	39630_232_2 19-Nov-2024	39630_232_3 19-Nov-2024	39630_232_4 19-Nov-2024	39630_233_1 19-Nov-2024	39630_233_2 19-Nov-2024
	Lab Number:	3719366.6	3719366.7	3719366.8	3719366.9	3719366.10
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	7	8	7	9	8
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	< 0.10	< 0.10	0.11	< 0.10
Total Recoverable Chromium	mg/kg dry wt	19	19	19	20	19
Total Recoverable Copper	mg/kg dry wt	18	20	22	39	20
Total Recoverable Lead	mg/kg dry wt	22	25	24	31	23
Total Recoverable Nickel	mg/kg dry wt	16	16	16	18	16
Total Recoverable Zinc	mg/kg dry wt	72	73	77	93	76

	Sample Name:	39630_233_3 19-Nov-2024	39630_233_4 19-Nov-2024	39630_234_1 19-Nov-2024	39630_234_2 19-Nov-2024	39630_234_3 19-Nov-2024
	Lab Number:	3719366.11	3719366.12	3719366.13	3719366.14	3719366.15
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	9	8	9	7	9
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	0.11	0.12	0.10	0.11
Total Recoverable Chromium	mg/kg dry wt	20	18	21	19	21
Total Recoverable Copper	mg/kg dry wt	34	25	46	26	29
Total Recoverable Lead	mg/kg dry wt	26	24	33	24	26
Total Recoverable Nickel	mg/kg dry wt	17	16	19	16	17
Total Recoverable Zinc	mg/kg dry wt	84	79	96	79	87

	Sample Name:	39630_234_4 19-Nov-2024	39630_235_1 19-Nov-2024	39630_235_2 19-Nov-2024	39630_235_3 19-Nov-2024	39630_235_4 19-Nov-2024
	Lab Number:	3719366.16	3719366.17	3719366.18	3719366.19	3719366.20
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	8	9	9	8	9
Total Recoverable Cadmium	mg/kg dry wt	0.10	< 0.10	0.11	< 0.10	< 0.10
Total Recoverable Chromium	mg/kg dry wt	20	20	20	18	20
Total Recoverable Copper	mg/kg dry wt	35	40	45	39	48
Total Recoverable Lead	mg/kg dry wt	25	24	29	24	25

This Laboratory is accredited by International Accreditation New Zealand (IANZ), which represents New Zealand in the International Laboratory Accreditation Cooperation (ILAC). Through the ILAC Mutual Recognition Arrangement (ILAC-MRA) this accreditation is internationally recognised.
The tests reported herein have been performed in accordance with the terms of accreditation, with the exception of tests marked * or any comments and interpretations, which are not accredited.

Sample Type: Soil						
Sample Name:		39630_234_4 19-Nov-2024	39630_235_1 19-Nov-2024	39630_235_2 19-Nov-2024	39630_235_3 19-Nov-2024	39630_235_4 19-Nov-2024
Lab Number:		3719366.16	3719366.17	3719366.18	3719366.19	3719366.20
Heavy Metals, Screen Level						
Total Recoverable Nickel	mg/kg dry wt	18	18	17	16	17
Total Recoverable Zinc	mg/kg dry wt	87	82	86	76	86

Sample Name:		39630_236_1 19-Nov-2024	39630_236_2 19-Nov-2024	39630_236_3 19-Nov-2024	39630_236_4 19-Nov-2024	39630_237_1 19-Nov-2024
Lab Number:		3719366.21	3719366.22	3719366.23	3719366.24	3719366.25
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	8	8	9	9	9
Total Recoverable Cadmium	mg/kg dry wt	0.12	< 0.10	0.12	0.11	0.11
Total Recoverable Chromium	mg/kg dry wt	18	19	20	20	20
Total Recoverable Copper	mg/kg dry wt	39	46	40	34	32
Total Recoverable Lead	mg/kg dry wt	26	23	27	26	26
Total Recoverable Nickel	mg/kg dry wt	16	16	18	17	17
Total Recoverable Zinc	mg/kg dry wt	80	76	86	84	82

Sample Name:		39630_237_2 19-Nov-2024	39630_237_3 19-Nov-2024	39630_237_4 19-Nov-2024	39630_238_1 19-Nov-2024	39630_238_2 19-Nov-2024
Lab Number:		3719366.26	3719366.27	3719366.28	3719366.29	3719366.30
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	9	9	9	8	8
Total Recoverable Cadmium	mg/kg dry wt	0.11	< 0.10	< 0.10	< 0.10	0.11
Total Recoverable Chromium	mg/kg dry wt	19	20	19	19	19
Total Recoverable Copper	mg/kg dry wt	35	31	45	26	42
Total Recoverable Lead	mg/kg dry wt	25	26	26	26	24
Total Recoverable Nickel	mg/kg dry wt	16	18	17	16	16
Total Recoverable Zinc	mg/kg dry wt	80	83	84	80	80

Sample Name:		39630_238_3 19-Nov-2024	39630_238_4 19-Nov-2024	39630_239_1 19-Nov-2024	39630_239_2 19-Nov-2024	39630_239_3 19-Nov-2024
Lab Number:		3719366.31	3719366.32	3719366.33	3719366.34	3719366.35
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	8	8	9	9	9
Total Recoverable Cadmium	mg/kg dry wt	0.10	0.14	0.12	0.11	0.12
Total Recoverable Chromium	mg/kg dry wt	19	19	20	19	20
Total Recoverable Copper	mg/kg dry wt	39	79	39	37	59
Total Recoverable Lead	mg/kg dry wt	26	25	25	27	28
Total Recoverable Nickel	mg/kg dry wt	16	17	16	16	17
Total Recoverable Zinc	mg/kg dry wt	81	86	85	82	91

Sample Name:		39630_239_4 19-Nov-2024	39630_240_1 19-Nov-2024	39630_240_2 19-Nov-2024	39630_240_3 19-Nov-2024	39630_240_4 19-Nov-2024
Lab Number:		3719366.36	3719366.37	3719366.38	3719366.39	3719366.40
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	9	9	8	9	6
Total Recoverable Cadmium	mg/kg dry wt	0.12	0.13	0.14	0.11	0.12
Total Recoverable Chromium	mg/kg dry wt	20	20	19	19	15
Total Recoverable Copper	mg/kg dry wt	46	37	36	42	32
Total Recoverable Lead	mg/kg dry wt	27	27	25	27	20
Total Recoverable Nickel	mg/kg dry wt	16	17	15	17	14
Total Recoverable Zinc	mg/kg dry wt	88	89	80	86	69

Sample Name:		39630_241_2 19-Nov-2024	39630_241_3 19-Nov-2024	39630_241_4 19-Nov-2024	39630_242_1 19-Nov-2024	39630_242_2 19-Nov-2024
Lab Number:		3719366.41	3719366.42	3719366.43	3719366.44	3719366.45
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	10	9	9	8	11
Total Recoverable Cadmium	mg/kg dry wt	0.12	0.12	0.13	0.11	0.14
Total Recoverable Chromium	mg/kg dry wt	19	19	19	18	19
Total Recoverable Copper	mg/kg dry wt	38	37	38	32	33

Sample Type: Soil						
Sample Name:		39630_241_2 19-Nov-2024	39630_241_3 19-Nov-2024	39630_241_4 19-Nov-2024	39630_242_1 19-Nov-2024	39630_242_2 19-Nov-2024
Lab Number:		3719366.41	3719366.42	3719366.43	3719366.44	3719366.45
Heavy Metals, Screen Level						
Total Recoverable Lead	mg/kg dry wt	26	25	24	23	26
Total Recoverable Nickel	mg/kg dry wt	16	17	16	15	16
Total Recoverable Zinc	mg/kg dry wt	86	85	85	77	82

Sample Name:		39630_242_3 19-Nov-2024	39630_242_4 19-Nov-2024	39630_243_1 19-Nov-2024	39630_243_2 19-Nov-2024	39630_243_3 19-Nov-2024
Lab Number:		3719366.46	3719366.47	3719366.48	3719366.49	3719366.50
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	9	9	9	9	10
Total Recoverable Cadmium	mg/kg dry wt	0.12	0.12	0.11	0.15	0.13
Total Recoverable Chromium	mg/kg dry wt	20	19	20	20	20
Total Recoverable Copper	mg/kg dry wt	37	36	35	61	39
Total Recoverable Lead	mg/kg dry wt	26	26	27	29	27
Total Recoverable Nickel	mg/kg dry wt	17	16	17	18	17
Total Recoverable Zinc	mg/kg dry wt	87	83	83	93	86

Sample Name:		39630_243_4 19-Nov-2024	39630_244_1 19-Nov-2024	39630_244_2 19-Nov-2024	39630_244_3 19-Nov-2024	39630_244_4 19-Nov-2024
Lab Number:		3719366.51	3719366.52	3719366.53	3719366.54	3719366.55
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	8	8	8	9	8
Total Recoverable Cadmium	mg/kg dry wt	0.12	< 0.10	0.10	0.13	0.11
Total Recoverable Chromium	mg/kg dry wt	19	20	19	20	18
Total Recoverable Copper	mg/kg dry wt	44	28	38	38	34
Total Recoverable Lead	mg/kg dry wt	27	26	25	27	25
Total Recoverable Nickel	mg/kg dry wt	16	18	16	16	15
Total Recoverable Zinc	mg/kg dry wt	84	85	82	84	79

Sample Name:		39630_245_1 19-Nov-2024	39630_245_2 19-Nov-2024	39630_245_3 19-Nov-2024	39630_245_4 19-Nov-2024	39630_246_1 19-Nov-2024
Lab Number:		3719366.56	3719366.57	3719366.58	3719366.59	3719366.60
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	8	8	8	9	8
Total Recoverable Cadmium	mg/kg dry wt	0.11	0.11	0.11	0.11	0.10
Total Recoverable Chromium	mg/kg dry wt	19	19	19	20	18
Total Recoverable Copper	mg/kg dry wt	36	31	30	35	26
Total Recoverable Lead	mg/kg dry wt	25	25	26	27	23
Total Recoverable Nickel	mg/kg dry wt	16	16	16	17	16
Total Recoverable Zinc	mg/kg dry wt	82	79	82	86	74

Sample Name:		39630_246_2 19-Nov-2024	39630_246_3 19-Nov-2024	39630_246_4 19-Nov-2024	Composite of 39630_231_1-4 19-Nov-2024	Composite of 39630_232_1-4 19-Nov-2024
Lab Number:		3719366.61	3719366.62	3719366.63	3719366.64	3719366.65
Individual Tests						
Dry Matter	g/100g as rcvd	-	-	-	90	90
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	8	8	9	-	-
Total Recoverable Cadmium	mg/kg dry wt	0.12	0.11	0.11	-	-
Total Recoverable Chromium	mg/kg dry wt	17	18	19	-	-
Total Recoverable Copper	mg/kg dry wt	33	26	35	-	-
Total Recoverable Lead	mg/kg dry wt	25	25	27	-	-
Total Recoverable Nickel	mg/kg dry wt	16	17	17	-	-
Total Recoverable Zinc	mg/kg dry wt	77	77	83	-	-
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	-	-	-	< 0.011	< 0.011
alpha-BHC	mg/kg dry wt	-	-	-	< 0.011	< 0.011
beta-BHC	mg/kg dry wt	-	-	-	< 0.011	< 0.011

Sample Type: Soil						
Sample Name:		39630_246_2 19-Nov-2024	39630_246_3 19-Nov-2024	39630_246_4 19-Nov-2024	Composite of 39630_231_1-4 19-Nov-2024	Composite of 39630_232_1-4 19-Nov-2024
Lab Number:		3719366.61	3719366.62	3719366.63	3719366.64	3719366.65
Organochlorine Pesticides Screening in Soil						
delta-BHC	mg/kg dry wt	-	-	-	< 0.011	< 0.011
gamma-BHC (Lindane)	mg/kg dry wt	-	-	-	< 0.011	< 0.011
cis-Chlordane	mg/kg dry wt	-	-	-	< 0.011	< 0.011
trans-Chlordane	mg/kg dry wt	-	-	-	< 0.011	< 0.011
2,4'-DDD	mg/kg dry wt	-	-	-	< 0.011	< 0.011
4,4'-DDD	mg/kg dry wt	-	-	-	< 0.011	< 0.011
2,4'-DDE	mg/kg dry wt	-	-	-	< 0.011	< 0.011
4,4'-DDE	mg/kg dry wt	-	-	-	0.029	0.018
2,4'-DDT	mg/kg dry wt	-	-	-	< 0.011	< 0.011
4,4'-DDT	mg/kg dry wt	-	-	-	0.014	< 0.011
Total DDT Isomers	mg/kg dry wt	-	-	-	< 0.07	< 0.07
Dieldrin	mg/kg dry wt	-	-	-	< 0.011	< 0.011
Endosulfan I	mg/kg dry wt	-	-	-	< 0.011	< 0.011
Endosulfan II	mg/kg dry wt	-	-	-	< 0.011	< 0.011
Endosulfan sulphate	mg/kg dry wt	-	-	-	< 0.011	< 0.011
Endrin	mg/kg dry wt	-	-	-	< 0.011	< 0.011
Endrin aldehyde	mg/kg dry wt	-	-	-	< 0.011	< 0.011
Endrin ketone	mg/kg dry wt	-	-	-	< 0.011	< 0.011
Heptachlor	mg/kg dry wt	-	-	-	< 0.011	< 0.011
Heptachlor epoxide	mg/kg dry wt	-	-	-	< 0.011	< 0.011
Hexachlorobenzene	mg/kg dry wt	-	-	-	< 0.011	< 0.011
Methoxychlor	mg/kg dry wt	-	-	-	< 0.011	< 0.011

Sample Name:		Composite of 39630_233_1-4 19-Nov-2024	Composite of 39630_234_1-4 19-Nov-2024	Composite of 39630_235_1-4 19-Nov-2024	Composite of 39630_236_1-4 19-Nov-2024	Composite of 39630_237_1-4 19-Nov-2024
Lab Number:		3719366.66	3719366.67	3719366.68	3719366.69	3719366.70
Individual Tests						
Dry Matter	g/100g as rcvd	87	88	86	90	88
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011
alpha-BHC	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011
beta-BHC	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011
delta-BHC	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011
gamma-BHC (Lindane)	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011
cis-Chlordane	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011
trans-Chlordane	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011
2,4'-DDD	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011
4,4'-DDD	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011
2,4'-DDE	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011
4,4'-DDE	mg/kg dry wt	0.024	0.017	0.021	0.038	0.017
2,4'-DDT	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011
4,4'-DDT	mg/kg dry wt	0.013	< 0.011	< 0.012	< 0.011	< 0.011
Total DDT Isomers	mg/kg dry wt	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07
Dieldrin	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011
Endosulfan I	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011
Endosulfan II	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011
Endosulfan sulphate	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011
Endrin	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011
Endrin aldehyde	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011
Endrin ketone	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011
Heptachlor	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011
Heptachlor epoxide	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011
Hexachlorobenzene	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011
Methoxychlor	mg/kg dry wt	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011

Sample Type: Soil						
Sample Name:		Composite of 39630_238_1-4 19-Nov-2024	Composite of 39630_239_1-4 19-Nov-2024	Composite of 39630_240_1-4 19-Nov-2024	Composite of 39630_241_1-4 19-Nov-2024	Composite of 39630_242_1-4 19-Nov-2024
Lab Number:		3719366.71	3719366.72	3719366.73	3719366.74	3719366.75
Individual Tests						
Dry Matter	g/100g as rcvd	88	89	89	87	87
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.012	< 0.011	< 0.011	< 0.012	< 0.012
alpha-BHC	mg/kg dry wt	< 0.012	< 0.011	< 0.011	< 0.012	< 0.012
beta-BHC	mg/kg dry wt	< 0.012	< 0.011	< 0.011	< 0.012	< 0.012
delta-BHC	mg/kg dry wt	< 0.012	< 0.011	< 0.011	< 0.012	< 0.012
gamma-BHC (Lindane)	mg/kg dry wt	< 0.012	< 0.011	< 0.011	< 0.012	< 0.012
cis-Chlordane	mg/kg dry wt	< 0.012	< 0.011	< 0.011	< 0.012	< 0.012
trans-Chlordane	mg/kg dry wt	< 0.012	< 0.011	< 0.011	< 0.012	< 0.012
2,4'-DDD	mg/kg dry wt	< 0.012	< 0.011	< 0.011	< 0.012	< 0.012
4,4'-DDD	mg/kg dry wt	< 0.012	< 0.011	< 0.011	< 0.012	< 0.012
2,4'-DDE	mg/kg dry wt	< 0.012	< 0.011	< 0.011	< 0.012	< 0.012
4,4'-DDE	mg/kg dry wt	0.022	0.022	0.024	0.026	0.042
2,4'-DDT	mg/kg dry wt	< 0.012	< 0.011	< 0.011	< 0.012	< 0.012
4,4'-DDT	mg/kg dry wt	0.015	0.013	0.014	0.016	0.021
Total DDT Isomers	mg/kg dry wt	< 0.07	< 0.07	< 0.07	< 0.07	0.07
Dieldrin	mg/kg dry wt	< 0.012	< 0.011	< 0.011	< 0.012	< 0.012
Endosulfan I	mg/kg dry wt	< 0.012	< 0.011	< 0.011	< 0.012	< 0.012
Endosulfan II	mg/kg dry wt	< 0.012	< 0.011	< 0.011	< 0.012	< 0.012
Endosulfan sulphate	mg/kg dry wt	< 0.012	< 0.011	< 0.011	< 0.012	< 0.012
Endrin	mg/kg dry wt	< 0.012	< 0.011	< 0.011	< 0.012	< 0.012
Endrin aldehyde	mg/kg dry wt	< 0.012	< 0.011	< 0.011	< 0.012	< 0.012
Endrin ketone	mg/kg dry wt	< 0.012	< 0.011	< 0.011	< 0.012	< 0.012
Heptachlor	mg/kg dry wt	< 0.012	< 0.011	< 0.011	< 0.012	< 0.012
Heptachlor epoxide	mg/kg dry wt	< 0.012	< 0.011	< 0.011	< 0.012	< 0.012
Hexachlorobenzene	mg/kg dry wt	< 0.012	< 0.011	< 0.011	< 0.012	< 0.012
Methoxychlor	mg/kg dry wt	< 0.012	< 0.011	< 0.011	< 0.012	< 0.012

Sample Name:		Composite of 39630_243_1-4 19-Nov-2024	Composite of 39630_244_1-4 19-Nov-2024	Composite of 39630_245_1-4 19-Nov-2024	Composite of 39630_246_1-4 19-Nov-2024	39630_241_1 19-Nov-2024
Lab Number:		3719366.76	3719366.77	3719366.78	3719366.79	3719366.80
Individual Tests						
Dry Matter	g/100g as rcvd	87	86	87	87	-
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	-	-	-	-	11
Total Recoverable Cadmium	mg/kg dry wt	-	-	-	-	0.11
Total Recoverable Chromium	mg/kg dry wt	-	-	-	-	21
Total Recoverable Copper	mg/kg dry wt	-	-	-	-	37
Total Recoverable Lead	mg/kg dry wt	-	-	-	-	28
Total Recoverable Nickel	mg/kg dry wt	-	-	-	-	17
Total Recoverable Zinc	mg/kg dry wt	-	-	-	-	90
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	-
alpha-BHC	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	-
beta-BHC	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	-
delta-BHC	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	-
gamma-BHC (Lindane)	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	-
cis-Chlordane	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	-
trans-Chlordane	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	-
2,4'-DDD	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	-
4,4'-DDD	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	-
2,4'-DDE	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	-
4,4'-DDE	mg/kg dry wt	0.031	0.028	0.032	0.046	-
2,4'-DDT	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	-

Sample Type: Soil						
Sample Name:		Composite of 39630_243_1-4 19-Nov-2024	Composite of 39630_244_1-4 19-Nov-2024	Composite of 39630_245_1-4 19-Nov-2024	Composite of 39630_246_1-4 19-Nov-2024	39630_241_1 19-Nov-2024
Lab Number:		3719366.76	3719366.77	3719366.78	3719366.79	3719366.80
Organochlorine Pesticides Screening in Soil						
4,4'-DDT	mg/kg dry wt	0.015	0.015	0.017	0.036	-
Total DDT Isomers	mg/kg dry wt	< 0.07	< 0.07	< 0.07	0.08	-
Dieldrin	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	-
Endosulfan I	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	-
Endosulfan II	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	-
Endosulfan sulphate	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	-
Endrin	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	-
Endrin aldehyde	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	-
Endrin ketone	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	-
Heptachlor	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	-
Heptachlor epoxide	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	-
Hexachlorobenzene	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	-
Methoxychlor	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.012	-

Analyst's Comments

Amended Report: This certificate of analysis replaces report '3719366-SPv1' issued on 26-Nov-2024 at 4:13 pm.
Reason for amendment: Composite IDs shortened for ESDat.

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request.
Unless otherwise indicated, analyses were performed at Hill Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	1-63, 80
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	1-63, 80
Organochlorine Pesticides Screening in Soil	Sonication extraction, GC-ECD analysis. Tested on as received sample. In-house based on US EPA 8081.	0.010 - 0.06 mg/kg dry wt	64-79
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	64-79
Composite Environmental Solid Samples*	Individual sample fractions mixed together to form a composite fraction.	-	1-63, 80

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

Testing was completed between 19-Nov-2024 and 26-Nov-2024. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

Kim Harrison MSc
Client Services Manager - Environmental

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

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

Certificate of Analysis

Client:	Davis Ogilvie & Partners Limited	**Lab No:**	3744918	SPv1
Contact:	Andy Bunce	**Date Received:**	19-Dec-2024	
	C/- Davis Ogilvie & Partners Limited	**Date Reported:**	27-Dec-2024	
	PO Box 589	**Quote No:**	82763	
	Addington	**Order No:**		
	Christchurch 8140	**Client Reference:**	39630	
		Submitted By:	Andy Bunce	

Sample Type: Soil

	Sample Name:	39630_209_1 19-Dec-2024 12:00 pm	39630_209_2 19-Dec-2024 12:00 pm	39630_209_3 19-Dec-2024 12:00 pm	39630_209_4 19-Dec-2024 12:00 pm	39630_210_1 19-Dec-2024 12:00 pm
	Lab Number:	3744918.1	3744918.2	3744918.3	3744918.4	3744918.5
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	9	8	7	8	8
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	< 0.10	0.12	< 0.10	< 0.10
Total Recoverable Chromium	mg/kg dry wt	21	18	17	18	18
Total Recoverable Copper	mg/kg dry wt	16	18	21	18	17
Total Recoverable Lead	mg/kg dry wt	25	23	21	21	22
Total Recoverable Nickel	mg/kg dry wt	18	16	15	16	16
Total Recoverable Zinc	mg/kg dry wt	77	73	71	73	71

	Sample Name:	39630_210_2 19-Dec-2024 12:00 pm	39630_210_3 19-Dec-2024 12:00 pm	39630_210_4 19-Dec-2024 12:00 pm	39630_211_1 19-Dec-2024 12:00 pm	39630_211_2 19-Dec-2024 12:00 pm
	Lab Number:	3744918.6	3744918.7	3744918.8	3744918.9	3744918.10
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	6	6	9	9	9
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	< 0.10	< 0.10	0.11	0.11
Total Recoverable Chromium	mg/kg dry wt	15	19	20	19	19
Total Recoverable Copper	mg/kg dry wt	17	18	26	23	26
Total Recoverable Lead	mg/kg dry wt	18.6	19.1	25	25	24
Total Recoverable Nickel	mg/kg dry wt	14	15	17	16	16
Total Recoverable Zinc	mg/kg dry wt	64	65	86	84	83

	Sample Name:	39630_211_3 19-Dec-2024 12:00 pm	39630_211_4 19-Dec-2024 12:00 pm	39630_212_1 19-Dec-2024 12:00 pm	39630_212_2 19-Dec-2024 12:00 pm	39630_212_3 19-Dec-2024 12:00 pm
	Lab Number:	3744918.11	3744918.12	3744918.13	3744918.14	3744918.15
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	10	9	9	11	12
Total Recoverable Cadmium	mg/kg dry wt	0.15	< 0.10	< 0.10	0.13	0.14
Total Recoverable Chromium	mg/kg dry wt	21	19	20	23	20
Total Recoverable Copper	mg/kg dry wt	35	27	26	26	35
Total Recoverable Lead	mg/kg dry wt	28	25	25	31	28
Total Recoverable Nickel	mg/kg dry wt	17	16	18	19	17
Total Recoverable Zinc	mg/kg dry wt	101	83	83	96	101

Sample Type: Soil						
Sample Name:		39630_212_4 19-Dec-2024 12:00 pm	Composite of 39630_209_1, 39630_209_2, 39630_209_3 & 39630_209_4 19-Dec-2024 12:00 pm	Composite of 39630_210_1, 39630_210_2, 39630_210_3 & 39630_210_4 19-Dec-2024 12:00 pm	Composite of 39630_211_1, 39630_211_2, 39630_211_3 & 39630_211_4 19-Dec-2024 12:00 pm	Composite of 39630_212_1, 39630_212_2, 39630_212_3 & 39630_212_4 19-Dec-2024 12:00 pm
Lab Number:		3744918.16	3744918.17	3744918.18	3744918.19	3744918.20
Individual Tests						
Dry Matter	g/100g as rcvd	-	86	89	86	87
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	10	-	-	-	-
Total Recoverable Cadmium	mg/kg dry wt	0.13	-	-	-	-
Total Recoverable Chromium	mg/kg dry wt	22	-	-	-	-
Total Recoverable Copper	mg/kg dry wt	26	-	-	-	-
Total Recoverable Lead	mg/kg dry wt	29	-	-	-	-
Total Recoverable Nickel	mg/kg dry wt	19	-	-	-	-
Total Recoverable Zinc	mg/kg dry wt	91	-	-	-	-
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	-	< 0.012	< 0.012	< 0.012	< 0.012
alpha-BHC	mg/kg dry wt	-	< 0.012	< 0.012	< 0.012	< 0.012
beta-BHC	mg/kg dry wt	-	< 0.012	< 0.012	< 0.012	< 0.012
delta-BHC	mg/kg dry wt	-	< 0.012	< 0.012	< 0.012	< 0.012
gamma-BHC (Lindane)	mg/kg dry wt	-	< 0.012	< 0.012	< 0.012	< 0.012
cis-Chlordane	mg/kg dry wt	-	< 0.012	< 0.012	< 0.012	< 0.012
trans-Chlordane	mg/kg dry wt	-	< 0.012	< 0.012	< 0.012	< 0.012
2,4'-DDD	mg/kg dry wt	-	< 0.012	< 0.012	< 0.012	< 0.012
4,4'-DDD	mg/kg dry wt	-	< 0.012	< 0.012	< 0.012	< 0.012
2,4'-DDE	mg/kg dry wt	-	< 0.012	< 0.012	< 0.012	< 0.012
4,4'-DDE	mg/kg dry wt	-	0.031	0.040	0.037	0.043
2,4'-DDT	mg/kg dry wt	-	< 0.012	< 0.012	< 0.012	< 0.012
4,4'-DDT	mg/kg dry wt	-	0.012	0.016	0.015	0.015
Total DDT Isomers	mg/kg dry wt	-	< 0.07	< 0.07	< 0.07	< 0.07
Dieldrin	mg/kg dry wt	-	< 0.012	< 0.012	< 0.012	< 0.012
Endosulfan I	mg/kg dry wt	-	< 0.012	< 0.012	< 0.012	< 0.012
Endosulfan II	mg/kg dry wt	-	< 0.012	< 0.012	< 0.012	< 0.012
Endosulfan sulphate	mg/kg dry wt	-	< 0.012	< 0.012	< 0.012	< 0.012
Endrin	mg/kg dry wt	-	< 0.012	< 0.012	< 0.012	< 0.012
Endrin aldehyde	mg/kg dry wt	-	< 0.012	< 0.012	< 0.012	< 0.012
Endrin ketone	mg/kg dry wt	-	< 0.012	< 0.012	< 0.012	< 0.012
Heptachlor	mg/kg dry wt	-	< 0.012	< 0.012	< 0.012	< 0.012
Heptachlor epoxide	mg/kg dry wt	-	< 0.012	< 0.012	< 0.012	< 0.012
Hexachlorobenzene	mg/kg dry wt	-	< 0.012	< 0.012	< 0.012	< 0.012
Methoxychlor	mg/kg dry wt	-	< 0.012	< 0.012	< 0.012	< 0.012

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request.
Unless otherwise indicated, analyses were performed at Hill Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	1-16
Heavy Metals, 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	1-16
Organochlorine Pesticides Screening in Soil	Sonication extraction, GC-ECD analysis. Tested on as received sample. In-house based on US EPA 8081.	0.010 - 0.06 mg/kg dry wt	17-20

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Dry Matter	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	17-20
Composite Environmental Solid Samples*	Individual sample fractions mixed together to form a composite fraction.	-	1-16

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

Testing was completed between 20-Dec-2024 and 24-Dec-2024. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

Kim Harrison MSc
Client Services Manager - Environmental

DAVIS OGILVIE
ENGINEERS / SURVEYORS / PLANNERS

SITE MANAGEMENT PLAN

39630 / STAGES 3-5 OAKBRIDGE SUBDIVISION, CHRISTCHURCH / SOVEREIGN PALMS LTD.

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Davis Ogilvie & Partners Ltd

QUALITY ASSURANCE

Title:	Site Management Plan – Stages 3 To 5 Oakbridge Subdivision (Subdivision of Lot 4000 Stage 2B RMA/2020/3053; Lot 100 RMA/2021/2570; and Lots 4, 5 and 6 DP 23089)
Client:	Sovereign Palms Ltd.
File Location:	\\chsvr\jobdata\projects\39s\39630 - Oakbridge - Balance\Environmental Science\004 Report\Topsoil\for consent\SMP\V3\241217.ab.39630.SMP.V3.docx
Version:	3
Date:	22 January 2025
Project No.:	39630

Prepared By:	**Andy Bunce** Engineering Geologist MSci (Hons)	**Signature:** 
Authorised By:	**Gareth Oddy** Technical Director – Environmental Science CEnvP SC, BSc, MSc, IP402/405	**Signature:** 

DISCLAIMER

This Site Management Plan has been prepared at the specific instruction of Sovereign Palms Ltd. It is designed to manage the risks related to disturbing copper impacted soil during development earthworks within each lot at Stages 3 to 5 of the Oakbridge Subdivision (Subdivision of Lot 4000 Stage 2B RMA/2020/3053 and Lots 4, 5 and 6 DP 23089).

Davis Ogilvie & Partners Ltd. (Davis Ogilvie) did not perform a complete assessment of all possible conditions or circumstances that may exist at the site. Conditions may exist which were undetectable given the limited investigation of the site and have not been taken into account in the report.

Davis Ogilvie's opinions are based upon information that existed at the time of the production of this document. Assessments made in this report are based on the conditions found onsite and published sources detailing the recommended investigation methodologies described. No warranty is included—either expressed or implied—that the actual conditions will conform to the assessments contained in this report.

Davis Ogilvie has provided an opinion based on observations, site investigations, and analysis methodologies current at the time of reporting. The report cannot be used by any third party without the written approval of Davis Ogilvie. The report cannot be used if there are changes in the referenced guidelines, analysis methodologies, laws, or regulations.

Only Sovereign Palms Ltd. and the Local and Regional Territorial Authorities are entitled to rely upon this engineering report. Davis Ogilvie & Partners Ltd. accepts no liability to anyone other Sovereign Palms Ltd. in any way in relation to this report and the content of it and any direct or indirect effect this engineering report may have. Davis Ogilvie & Partners Ltd. does not contemplate anyone else relying on this report or that it will be used for any other purpose.

Should anyone wish to discuss the content of this report with Davis Ogilvie & Partners Ltd, they are welcome to contact us on (03) 366 1653 or at Level 1, 24 Moorhouse Ave, Addington, Christchurch.

TABLE OF CONTENTS

1.0 INTRODUCTION

Davis Ogilvie & Partners Ltd. (Davis Ogilvie) was engaged by Sovereign Palms Ltd. to produce a site management plan (SMP) for future earthworks associated with residential development of lots within Stages 3 to 5 of the Oakbridge subdivision, Christchurch (herein referred to as 'the site'). The Oakbridge Subdivision was previously Lot 4000 Stage 2B RMA/2020/3053 and Lots 4, 5 and 6 DP 23089. The purpose of this report is to outline recommended procedures and management options for the handling, re-use or disposal of copper impacted soils identified at the site. The recommended procedures are to allow for the proper handling and disposal of impacted soil and to minimise discharges of contaminants to stormwater receptors.

This SMP is designed to manage the risks related to disturbing copper impacted soil during the proposed residential development earthworks described in Section 3.0 and to accompany the CCC global consent application for disturbing soil. This SMP is for every residential lot in Stages 3 to 5 (including stages 3a, 3b, 4, 4a, and 5) with the exception of Lots 133, 136 and 161 (Stage 3). In addition to this SMP, additional health and safety considerations related to earthworks and construction sites will need to be considered by the principal contractor and controls applied where applicable.

This SMP although providing details on recommended erosion and sediment control procedures does not constitute as an erosion sediment and control plan (ESCP) and a site specific ESCP is likely to be required by CCC / ECan as part of any building consent application.

This SMP has been prepared and supervised by a suitably qualified and experienced practitioner (SQEP) in accordance with the NES Regulations (2011) and MfE guidance document CLMG No.1: Reporting on Contaminated Sites in New Zealand.

1.1 Objectives

The objectives of this site management plan are to provide procedures for the proposed handling and potential re-use or disposal of the copper impacted soils.

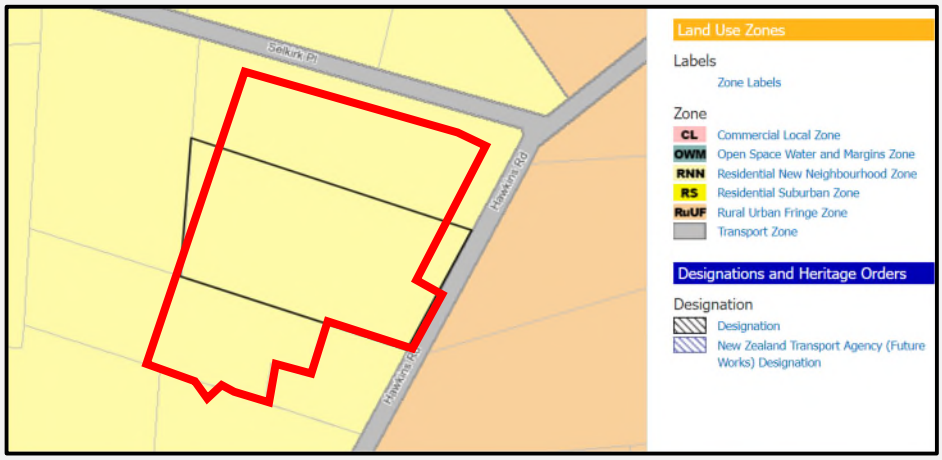
The scope of the plan is to provide procedures for managing the following:

- Earthworks and controls to manage exposure to the impacted soil;
- Temporary soil stockpiling procedures and controls, if required;
- Soil disposal waste acceptance criteria and requirements;
- Recommended erosion and sediment controls; and
- Environmental monitoring requirements during the works.

2.0 SITE IDENTIFICATION

The Oakbridge Subdivision is located approximately 6.6 km north of Christchurch CBD and located between Selkirk Place and Hawkins Road, in the suburb of Marshland (as shown in Figure 1). Access to the site is via Hawkins Road. Site information is presented in Table 1.

Figure 1: Extract from the Oakbridge Scheme Plan – Stages 3-5 (overall plan) (DWG 350/H). Not to scale.

Table 1: Site Information	
Item	**Description**
Location	Stages 3 to 5 Oakbridge Subdivision, Marshland, Christchurch (previous address of 1 Selkirk Place and 47 Hawkins Road, Christchurch)
Legal Description	Lot 4000 Stage 2B RMA/2020/3053; Lot 100 RMA/2021/2570; and Lots 4, 5 and 6 DP 23089
Land Use	Rural to Residential (existing lot boundary shown in black, approximate location of Stages 3 to 5 shown in Red) 
Site Area	Approximately 76, 020 m^2
Territorial Authority	Christchurch City Council

3.0 PROPOSED ACTIVITY

Stages 3 to 5 of the Oakbridge subdivision have undergone earthworks and construction for a new residential development. Due to the previous land use, Davis Ogilvie completed a preliminary and detailed site investigation (DSI) in 2017 to evaluate the potential for soil contaminants to be present. Elevated concentrations of copper and zinc above background concentrations were identified in the DSI and the subsequent topsoil investigations in 2023 and 2024 within proposed lots in Stages 3 to 5.

Soil disturbance and / or removal of soil containing contaminants above background concentrations is regulated by the National Environmental Standards (NES) for Assessing and Managing Contaminants in Soil to Protect Human Health. We understand a global land use resource consent application – RMA/2023/1945 has been submitted to Christchurch City Council and the need for a SMP has been triggered. Residential lots generally range in size between 300 m^2 and 600 m^2.

At the time of writing, the majority of lots have been constructed and topsoil has been placed, but no structures have been built.

4.0 CONTAMINATION CHARACTERISATION

4.1 Site History and LLUR

The site history of the Oakbridge subdivision is outlined in the 2017 Detailed Site Investigation by Davis Ogilvie. The area currently occupied by the Oakbridge Subdivision has previously been historically host to an orchard and market gardening. Rural-residential properties were also located on the site. HAIL activities identified on the ECan LLUR include A10 – Persistent pesticide bulk storage or use.

4.2 Summary of previous Site Investigation Works

A detailed site investigation (DSI) was carried out over the wider Oakbridge development area over the period December 2016 to May 2017 and is described in a Davis Ogilvie report dated 26 May 2017: Detailed Site Investigation Report, Oakbridge, Reference 34300. The report identified that most of the sites sampled had concentrations of predominately copper and occasionally arsenic, copper and zinc in excess of background levels but typically below human health tier 1 assessment criteria. Several isolated areas were identified that required remediation. These areas within Stages 3 to 5 have been remediated and the contaminated soil disposed at appropriate facilities[1]. The topsoil containing elevated copper and zinc concentrations exceeding natural background levels was stripped as part of the subdivision earthworks, stockpiled, and respread on site and therefore remains on site.

4.3 Topsoil Investigation

Davis Ogilvie undertook a post-construction soil investigations in 2023 and 2024, which involved the sampling of topsoil placed following earthworks.

Laboratory results from soil samples collected during the Davis Ogilvie topsoil site investigation indicated that the site topsoil in the majority of lots sampled within Stages 3 to 5 contained elevated copper that exceeded the established background levels but did not exceed the NES SCS values for residential (10% Produce) land use. In addition, several lots also contained elevated zinc above background, while eight lots contained concentrations of chromium at background (23 mg/kg) and two lots contained concentrations of arsenic also above background but below residential SCS.

The elevated copper concentrations were encountered on every lot with the exception of Lots 133, 136 and 161, which contained heavy metal and OCP concentrations below background level. Surplus topsoil generated from earthworks at Lots 133, 136 and 161 can therefore considered to be cleanfill.

[1] Davis Ogilvie & Partners Ltd. (July 2023) Site Validation Report - Version 2: 1 Selkirk Place And 47 Hawkins Road Stages 3 - 6 Oakbridge Subdivision (Lots 4 and 5 DP 23089 and Lot 4000 DP 575457)

On the basis of the topsoil sampling results it was considered that the topsoil is suitable for residential land use and that the risk to human health is acceptable. However, as copper results consistently exceed background levels, the topsoil on site does not meet background concentrations nor the definition of 'cleanfill' and is therefore considered a piece of land as defined by the NES.

According to the NES Regulations (8.3), the expected soil disturbance / removal volumes associated with the residential development of each lot is likely to exceed the criteria for a permitted activity and therefore required an NES land use resource consent to authorise it. Topsoil that leaves site must also be taken to an accredited facility authorised to receive it.

4.4 Contaminant Properties

According to the Ministry of Environment[2], copper is an essential element however adverse effects on human health can occur from copper deficiencies and excess copper and is therefore a potential soil contaminant. Inhalation is anticipated to be a negligible route of exposure as copper is not volatile and the amount of dust considered to be inhaled typically represents a very small fraction of exposure. Dermal exposure to copper is also considered to be negligible. Gastrointestinal effects are the primary manifestations of toxicity arising from excess copper intake, although these effects are reversible (WHO, 1998; IOM, 2001). Liver damage is the critical endpoint for intake of high levels of copper in animal and human studies (WHO, 1998; IOM, 2001). The NES:CS SCS for copper for a residential land use is 10,000 mg/kg, while concentrations identified on site within stages 3-5 range between 16 – 104 mg/kg with the average being 34 mg/kg. Background copper concentrations for the two soil types on site are 16.4 and 20.3 mg/kg.

According to the Australian Government Department of Climate Change, Energy, the Environment and Water[3], Zinc is an essential trace element in the diet of all living organisms from bacteria to humans. Zinc is relatively abundant and natural levels of zinc are found in rocks, soil, air, waters, plants, animals, and humans. It is present in all foods. Either too little zinc or too much zinc can be harmful, causing health problems. The severity of health effects will depend on how much zinc a person has been exposed to, for how long, the nature of the zinc compound(s), and current state of health. A human body (70 kg) contains about two grams of zinc. The toxicity of zinc and many zinc compounds to plants and animals is generally low compared with the significance of zinc deficiency.

Reported background zinc concentrations in the two soil types on site range between 77.1 – 94 mg/kg while the range identified in soil samples analysed was between 61 – 128 mg/kg. The adopted human health soil guideline value for a residential site is 7,400 mg/kg.

[2] Ministry for the Environment. 2011. Toxicological Intake Values for Priority Contaminants in Soil. Wellington: Ministry for the Environment.
[3] https://www.dcceew.gov.au/environment/protection/npi/substances/fact-sheets/zinc-and-compounds

5.0 SITE MANAGEMENT PRACTICES

5.1 Introduction

Based on the soil contamination identified within the topsoil across the residential lots, a site management plan is required for the disturbance and removal of soil at the site. This site management plan is intended to assist the site owner, and their appointed contractors manage the soil appropriately during the proposed earthworks and construction. The below sections describe recommended procedures for soil disposal, imported fill, site wide controls, chemical hazard controls and health and safety management.

5.2 Site Disturbance

The existing topsoil onsite contains elevated heavy metals, predominantly copper and zinc, which exceed natural background levels. Heavy metal concentrations do not exceed SCS guideline values for residential land use (10% produce) and therefore the risk to human health is acceptable. Soil disturbance exceeding volumes of 25 m^3 / 500 m^2 / year and soil removal exceeding 5 m^3 / 500 m^2 / year will be a controlled activity and require consent from CCC. Soil disturbance under these volumes may be considered as a permitted activity by CCC and not require consent.

5.3 Soil Disposal / Re-use

Soil may be reused on site where it can be done in a manner that does not lead to one or more of the following:

- a significant risk to the health of site occupants; and
- a significant risk to the health of neighbouring residents; and
- lead to erosion and sediment loss from the site that could cause a nuisance to surrounding land users or negatively affect identified environmental receptors at and beyond the site.

The relevant soil assessment criteria used to establish the appropriate destination for surplus soil is summarised in Table 2.

Table 2: Stages 3-5, Oakbridge Subdivision SMP; Soil Assessment Criteria

Contaminants of concern	Soil Assessment Criteria (mg/kg)				Disposal Options		
	Heavy Metal Concentrations in Topsoil*	(NES SCS Residential)	Background **	ANZG Sediment GV-high	Burwood Landfill Screening criteria (mg/kg)	Hororata Landfill Screening criteria (mg/kg)	Wheatsheaf Landfill Screening criteria (mg/kg)
Arsenic	6 - 16	20	11 - 12.58	70	80	140	17
Cadmium	<0.10 - 0.19	10	0.19 - 0.28	10	400	55	0.8
Chromium (IV)	15 - 23	370	19.3 - 22.7	370	2,700	375	290
Copper	16 - 104	270	16.43 - 20.3	270	> 10,000	500	> 10,000
Lead	18 - 39	220	19.3 - 40.96	220	880	500	160
Mercury	<0.10 - 0.15	NA	0.07 - 0.11	NA	1,800	0.2	200
Nickel	13 - 20	52	16.1 - 20.7	52	400	2,000	400
Zinc	61 - 128	410	77.1 - 93.94	410	7400	1,800	7400

* Lab testing of individual stockpiles may be undertaking to confirm the expected heavy metal concentrations. Should heavy metal concentrations be below background level, they may be considered as 'clean fill', subject to approval by the receiving site.

** Two background levels apply to the Oakbridge subdivision – GLEY and RECENT.

Surplus topsoil generated from earthworks are to remain onsite (on the individual lot the material was derived) and either taken directly to a facility authorized to accept it or reused on the residential lot site. The topsoil must not be taken to a cleanfill site or re-used on any other land without the express permission of Sovereign Palms. Inorganic soils underlying the topsoil should be segregated from the topsoil and placed in separate stockpiles. Non-topsoil material is likely to meet background concentrations and may be considered as cleanfill, subject to stockpile sampling and the conditions of acceptance from the receiving site.

It should be noted that the Contractor shall obtain the necessary approvals / permits from the landfill prior to transportation of any materials off-site.

5.4 Environmental Control (Air, Land and Water)

A site log of the weather and earthworks completed should be recorded using the site log (**Appendix A**) or similar. To minimise the potential for adverse effects resulting from site works, a series of protective measures should be put in place during any soil disturbance activities:

5.4.1 Minimising off-site tracking

Site vehicles accessing and leaving the site should pass over rubble strips to dislodge soil from the tires prior to them leaving and entering the road network.

- Trucks shall have their wheels either swept down or washed before they leave site.
- Trucks shall have their loads covered during transport of material to the approved disposal site.

- Each truck should have a tracking document signed out onsite and collected at the landfill / disposal facility to track each load of material.
- All weighbridge soil disposal dockets shall be retained by the contractor and provided to Sovereign Palms at the completion of all earthworks including house foundation through to landscaping works on the residential lot.

5.4.2 Dust Control

Site works shall be carried out so that they do not result in any airborne and deposited dust beyond the property boundary of the site that is determined to be objectionable, or a nuisance. Generation of dust shall be appropriately managed by employing standard dust suppression techniques which at a minimum should include the following:

- Don't complete earthworks during or when wind speeds over 10 km/h are expected / occurring.
- Dampening down exposed soil using water sprays such as a sprinkler system.
- Where stockpiling is necessary, the material will be kept damp to avoid dust generation and covered if left for a prolonged length of time.
- Dust netting on site boundaries if appropriate.
- Reducing drop heights from the excavator bucket to the truck or other location.
- Tracking over loose or exposed soil to compact at the end of the workday.
- Additional relevant dust mitigation measures such as those described in the Ministry for the Environment (2016) Good Practice Guide for Assessing and Managing Dust should be followed as applicable.

5.4.3 Sediment and Erosion

Earthworks shall be undertaken in accordance with the Environment Canterbury Publication - Erosion and Sediment Control Guidelines for Small Sites (2007) and Erosion & Sediment Control Toolbox for Canterbury. CCC may require a lot specific erosion and sediment control plan be produced and submitted with the building consent application. As a minimum the following control measures related to the trace elements identified in soil are recommended to be undertaken:

- Effort shall be made to undertake the excavation works in a period of dry weather to minimise the risks of stormwater entering the excavations or sediment contaminated water escaping from the excavations.
- Erosion and sediment controls shall be put in place around the site boundary as necessary to inhibit soil / sediment from being transported away from the area.
- Trucks used to transport impacted soil (if any) must be covered, and as reasonable, any loose contaminated material on the side of the trucks or on the wheels shall be removed before the truck leaves the site.

- The site shall be sealed with aggregate / hardstanding as soon as possible to minimise the amount of time soils are exposed.
- Stockpiles shall be covered, and run-off controlled when rainfall is anticipated.
- Loose soil shall be left in an erosion resistant state.
- Frequent checks should be made on any stormwater leaving the earthworks site to ensure it is clear and does not contain significant amounts of sediment (>50 mg/L Total Suspended Solids (TSS)).

6.0 CHEMICAL HAZARD CONTROLS

6.1 Potential Exposure Routes

As the topsoil on site contains heavy metal and OCP concentrations that are below the NES SCS Residential standards and adopted guideline values, the heavy metal concentrations are considered sufficiently low to pose an exposure hazard to temporary or long-term site users, or the environment. Copper and zinc are both naturally occurring elements in soil and biology as described in Section 4.4.

7.0 SITE MONITORING

As works on site, primarily residential development, will generate surplus soils, waste characterisation of underlying inorganic soil may be required by disposal locations. Additionally, should owners wish to undertake additional sampling of a topsoil stockpile, this should be completed by a SQEP and provided to CCC.

On-going monitoring during the earthworks by a SQEP will not be required.

8.0 REPORTING

A post construction completion report is not required to be completed. Waste disposal dockets are required to be provided to Christchurch City Council following completion of the earthworks.

APPENDIX A

Site Conditions Log

Site Conditions Log

Date	Weather Conditions	Site Conditions	Progress/Problems associated with site works	No. of personnel on site	Record of Soil taken Offsite	Record of Soil Imported Onsite	Environmental non-compliances	Complaints and Corrective Measures	Comments