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20 October 2023

Catherine Stuart
Southern Parallel Campus Limited
159 Stranges Road
RD4
ASHBURTON 7774

Dear Catherine

DETAILED SITE INVESTIGATION – 279 STRANGES ROAD, LAKE HOOD, ASHBURTON

1.0 Introduction and Background

Pattle Delamore Partners Limited (PDP) has been engaged by Southern Parallel Campus Limited to undertake a Detailed Site Investigation (DSI; soil sampling exercise) within the property located at 279 Stranges Road, Lake Hood, Ashburton (i.e., the site).

The site is currently in a rural land use setting and comprises predominantly open paddocks used for general grazing with a house, garage and sheds located in the central portion of the site. It is understood the site will be redeveloped into an equine breeding and equestrian sports facility (known as the 'Southern Parallel Equine Centre'), which will involve the construction of a new equestrian centre comprising stables, various buildings and carparking areas along with exercise areas, training areas, grazing paddocks, and polo fields.

As detailed in Section 4.0 of this letter, a Preliminary Site Investigation (PSI; site history review) was completed by Fraser Thomas Limited (Fraser Thomas) in November 2022[1], which identified several potential contamination sources/HAIL[2] activities across the site from past or present land use practises. The soil sampling as part of this DSI was based on the potential HAIL activities identified in the Fraser Thomas and comprised a site walkover by PDP and the collection and analysis of selected samples from surface soils and/or a 0.3 m depth from 13 test locations across the site.

[1] *Desktop Preliminary Site Investigation – Contamination, 279 Stranges Road, RD4, Ashburton*. Fraser Thomas Limited, November 2022.
[2] The *Hazardous Activities and Industries List* (HAIL, MfE 2011) is a compilation of activities and industries that are considered likely to cause land contamination resulting from hazardous substance use, storage or disposal. The HAIL is intended to identify most situations in New Zealand where hazardous substances could cause, and in many cases have caused, land contamination.

The objectives of the investigation were to:

- Confirm potential sources of contamination from past and present land use activities within the Investigation Area, which are listed on the MfE (2011) HAIL based on a review of the 2022 PSI and PDP's site walkover;
- Determine the nature and contamination status of the soils within the identified contamination sources/HAIL areas across the site;
- Provide a preliminary assessment for the risk to contractors during the future earthworks and for future site users/occupants associated with any soil contamination at the site; and
- Assess compliance and requirements under the NESCS[3] for the proposed redevelopment works.

This assessment has been carried out in accordance with *Contaminated Land Management Guidelines No. 1: Reporting on Contaminated Sites in New Zealand (Revised 2021)* (MfE, 2021) and *Contaminated Land Management Guidelines No. 5: Site Investigation and Analysis of Soils (Revised 2021)* (MfE, 2021a). The investigation has been certified by a suitably qualified and experienced practitioner as outlined by the NESCS. A certifying statement to this effect is attached.

2.0 Site Details and Setting

The site details are presented in Table 1 below while a plan showing the site location and current layout is presented in Figure 1 and Appendix A. General photographs of the site taken during the PDP investigation are also presented in Appendix B.

Table 1: Site Details	
Address	279 Stranges Road, Huntingdon, Ashburton 7774
Legal Description of Overall Site	Lot 1 DP 43334
Owner	Graeme Small and Elizabeth Small
Land Parcel Area of Overall Site	64.94 ha
Zoning	Rural B
Territorial Authority	Ashburton District Council
Current Land Use	Rural Residential and Pastoral
Proposed Future Land Use	Commercial and Residential (for short-term accommodation)

3.0 Proposed Redevelopment Works

It is understood the Southern Parallel Equine Centre development will comprise the construction of stables, a main administration building, a vet clinic, a selling centre and carparks while the existing dwelling in the centre of the site will be converted for use as short-term staff accommodation. The wider site will also contain exercise, training and grazing paddocks and various polo fields.

It should be noted that the various excavation depths and total volume of soil being disturbed or removed/re-used onsite is currently unknown.

[3] *Resource Management (National Environment Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011.*

A concept development plan, which is subject to change, is presented in Appendix C.

4.0 Preliminary Site Investigation Report

The Fraser Thomas PSI (November 2022) report found that the site has primarily been used for general grazing and pastoral activities with a dwelling in the central portion of the site. However, localised HAIL activities within the site from past or present land use practises were identified, which included the following:

- **HAIL Activity A8** (*Livestock dip or spray race operations*) relating to a potential sheep dip and/or foot rot troughs located in the vicinity of the historical sheep yards.
- **HAIL Activity A10** (*Persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses or spray sheds*) relating to the potential gardening and/or produce growing activity that appears to have historically occurred within the vicinity of the dwelling.
- **HAIL Activity I** (*Land subject to intentional or accidental release of hazardous substances in sufficient quantity that it could be a risk to human health or the environment*) relating to older buildings, in particular the historical dwellings located centrally within the site, constructed at times when lead paint and asbestos were commonly used, which have been shown to have been either demolished and or altered.

The Fraser Thomas Desktop PSI report, which provides details on the environmental setting, council records, interviews with the site owners along with a site plan showing the identified HAIL activities, is presented in Appendix D.

5.0 PDP Site Inspection and Interview

A PDP environmental scientist visited the site on 6 October 2023 to inspect for potential land contamination sources in addition to those previously identified in the 2022 PSI report and to interview with Catherine Stuart. Catherine Stuart is managing the proposed redevelopment and was interviewed regarding the past and present site activities on behalf of Graeme Small who is the current landowner but was not present during the PDP site visit.

5.1 Site Inspection

At the time of the investigation, the site was in the same layout as displayed from 2020 aerial photographs (within the Fraser Thomas PSI report). The investigation areas were level, surfaced with either gravels from a quarry, sandy banks of grass, vegetated paddocks or freshly unvegetated tilled soil.

The site contained a main residential dwelling in the central-eastern portion of the land parcel, with a lawn and flower garden, a garage, water tower, woodshed and some animal pens at the rear. Surrounding the property was flat, tilled land or grassy paddocks where sheep grazed. A stream bordered the property towards the north, with an adjoining storm drain channel intersecting east of the property. No remnants of fill or building debris was identified near or around the residential dwelling.

Towards the south of the main dwelling, tilled land continued to run adjacent to the storm drain channel. Some noticeable gravels where a potential sheep dip occupied the eastern-central portion of the site are presumed to be from older foundations where the dip / sheds occupied. No staining of soil or old remnant building materials were identified.

Along the south-eastern boundary, where the southern sheep dip was presumably located, only sandy grassed banks remained with some barbed wire and corrugated iron. Sheep were grazing towards the east and south. No visible evidence of ground staining, or dead vegetation was noted.

5.2 Interview

Following the site walkover, PDP conducted an interview with Catherine Stuart on behalf of Graeme Small, as he was unable to be onsite. It was confirmed that prior to Mr Small owning the site, it was owned by Mr Noel Miles for mixed cropping activities and pastoral use. Mr Small has been involved with the property for over 40 years and had a buried rubbish pit near the south-eastern corner of the site around where the potential sheep dip was located, however this material was removed with the exception of some timber posts and wire. Mrs Stuart mentioned the use for the implement shed was to store tractors and farm equipment near an old grain store.

Further information from Mr Small is included in the Fraser Thomas PSI report.

6.0 Conceptual Site Model

Based on the soil sampling investigation and analytical results, a Conceptual Site Model (CSM) has been developed. A risk to human health can only exist if there is a *hazard* (e.g., source; contaminated soil, dust or water), a *receptor* (i.e., people) and an *exposure pathway* between the hazard and the receptor. An absence of any one of these components means no risk can exist. A CSM is designed to identify the hazards, receptors, and possible links between these. The CSM relating to the primary contamination sources identified for the site is summarised in Table 2 below.

Table 2: Conceptual Site Model

SOURCE INFORMATION	
HAIL Land Use (Contaminant Source)	⁘ **HAIL Activity A8** (central and southeastern potential sheep dips). ⁘ **HAIL Activity A10** (gardening activity around the rural residential dwelling) ⁘ **HAIL Activity I** (the demolition of an older dwelling and outbuildings / sheds across the site and possible maintenance works and/or storage of vehicles and plant and machinery in the implement shed).
Potential Contaminants of Concern	⁘ Heavy metals ⁘ Organochloride pesticides (OCP) ⁘ Petroleum hydrocarbons ⁘ Asbestos
Potential Mechanism of Soil Contamination	⁘ Building demolition and/or degradation, stockpiling, gardening, livestock activity and spills or leaks from fuels/chemicals within the implement shed
PATHWAYS	
Identified Pathways	⁘ Dermal contact ⁘ Incidental ingestion of impacted materials (directly or fugitive dust) ⁘ Inhalation of fibres (asbestos)
RECEPTORS	
Identified Receptors	⁘ Earthworks contractors during earthworks (short-term) ⁘ Future users of the site

7.0 NESCS Regulatory Framework

The NESCS seeks to control activities on contaminated land to protect human health. The regulations apply to land, which is described as having, has had or is more likely than not to have had an activity or industry described in the HAIL undertaken on it. As discussed in Section 4.0, the site's past use classifies it as a HAIL site. Therefore, under regulation 5(7), the NESCS regulations must be taken into consideration for the proposed future development at the site.

The NESCS sets outs regulations for the following activities as described in sub-clauses (3) – (6) of regulation 5:

(2) An activity is removing a fuel storage system from the piece of land or replacing a fuel storage system in or on the piece of land.

(3) An activity is sampling the soil of the piece of land, which means sampling it to determine whether or not it is contaminated and, if it is, the amount and kind of contamination.

(4) An activity is disturbing the soil of the piece of land.

(5) An activity is subdividing land.

(6) An activity is changing the use of a piece of land which, means changing it to a use that, because the land is as described in sub clause (7), is reasonably likely to harm human health.

For the proposed redevelopment works at the site, the NESCS will need to be taken into consideration for soil disturbance activities associated with the development earthworks.

7.1 Soil Disturbance

Soil disturbance within the site is a permitted activity under regulation 8(3) provided that controls are put in place to minimise contact with soil during the disturbance, that the soil be reinstated to an erosion-resistant state within one month of completion of the works and that disposal of removed soil is at a facility authorised to receive such waste. The NESCS also sets limits on the volume of soil disturbance (no more than 25 m^3 per 500 m^2 is disturbed), soil removal (no more than 5 m^3 per 500 m^2 is removed from the site per year) and duration of works (no longer than two months). Based on the scale of the proposed development works, the volume of soils requiring disturbance and offsite disposal is expected to be greater than the permitted volumes.

7.2 NESCS Consenting Summary

As such, the type of consent granted by Ashburton District Council (ADC) in accordance with the NESCS (either a controlled or restricted discretionary) would depend on the findings of a DSI (i.e., intrusive investigation to determine concentrations of contaminants of concern). It should be noted that the NESCS may *not* be applicable (i.e., no consent required) if the results of any soil sampling investigations demonstrate the concentrations of contaminants of concern are at or below background concentrations.

8.0 Detailed Site Investigation

A soil sampling investigation (i.e., DSI) was undertaken to determine the contamination status of the site soils within the identified HAIL areas and to assess the applicability of the NESCS for the proposed development works. The results will also help determine the most cost effective and appropriate methodology for the management of soils during the earthworks.

8.1 Soil Sampling Strategy and Field Observations

Based on the above, a soil sampling investigation was undertaken on 6 October 2023 by a PDP Environmental Scientist. Due to the size of the site, the localised HAIL areas under investigation were divided into three separate zones. These zones were classified as below:

- **Zone A**: Residential dwelling and surrounding soils –HAIL I and A10;
- **Zone B**: Central potential sheep dip / historical implement shed – HAIL I and A8; and
- **Zone C**: South-eastern potential sheep dip / foot troughs / historical shed – HAIL I and A8

Soil samples were collected in each designated zone across 13 test locations from the surface (i.e. 0-0.1 m) or at depth (i.e. 0.3 m).

Table 3 shows soil types typically encountered in each zone as well as number of samples collected and depths. The sample locations are shown on Figures 2 to 4 in Appendix A. Figure 1A also shows the site layout and zones from a 1940s aerial photography, which helped inform sampling locations.

Table 3: Zone Soil Types	
Zone A (Residential Dwelling)	Sandy Silt, dark brown, sand, fine.
	4 samples collected (0.0 m bgl)
Zone B (Central)	Sandy Silt, with trace gravel, brown.
	5 samples collected (0.0 m bgl)
Zone C (Southeastern)	Sandy Silt, light brown, sand, fine to coarse.
	4 samples collected (0.0 – 0.3 m bgl)

No stains or odours soils were observed within the test pit and no fragments of suspected asbestos containing material (ACM), building rubble/waste or any other anthropogenic material was observed within the site soils during the soil sampling exercise.

8.2 Sample Collection and Analysis

Each soil sample was placed directly into a glass jar with a food grade plastic sealed lid for general contaminants supplied by RJ Hill Laboratories Limited (Hill Laboratories). A fresh pair of nitrile gloves was used at each sample location to prevent cross contamination of the soils and to protect the PDP site worker during sample collection.

Following collection, samples were placed immediately into chilly-bins containing frozen ice packs. The chilly-bins were sent with chain of custody documentation to Hill Laboratories in Hamilton for analysis. The sample consignments were received the following day after shipment at the laboratory.

A total of 13 selected samples were analysed for heavy metals and seven samples for OCPs. One sample from the footprint of the former implement shed was also analysed for total petroleum hydrocarbons (TPH). The testing programme was based on the identified HAIL activities field observations made during the site visit and sampling exercise.

8.3 Selected Guideline Criteria

In order to provide a context of contamination levels, reference has been given to the following:

- Ministry for the Environment (2011a). *Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health*;
- Ministry for the Environment (2011b). *Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand (Revised 2011)*; and
- National Environmental Protection Council (NEPC, 2013). Guideline on the Investigation Levels for *Soil and Groundwater.*

The soil contaminant standards (SCS) and/or guideline values for a commercial/industrial land use have been selected for comparison to the analytical results. As a conservative approach, residential guideline criteria have been adopted for the existing dwelling (i.e., Zone A) as this area is earmarked for use as short-term staff accommodation.

Reference has also been made to ECan background soil concentrations for selected trace elements in the major Canterbury soil groups (ECan, 2007) to assist with determining if contaminants are present above background levels (i.e., the applicability of the NESCS). In particular, the results have been compared with ECan Level Two background soil concentrations for the 'Regional – Recent' soil group in which the site is located.

Whilst OCP compounds are anthropogenic, it is important to note that due to their historical ubiquitous application in agriculture, parklands and turf management, they can be considered to also be present at low but detectable 'background' concentrations (MfE, 1998). While there are no official ECan background soil concentrations, ECan has recognised that some OCPs are ubiquitous in the environment and has adopted an interim 'background' level (0.431 mg/kg) for ∑DDT[4] (OCP compounds). This value was taken from the report prepared by MfE entitled '*Ambient Concentrations of Selected Organochlorines in Soils*' and dated December 1998.

8.4 Soil Sample Results and Comparison to Guideline Criteria

The soil sample test results are displayed in Table A (heavy metals and OCPs) and Table B (TPH) in Appendix E while the laboratory report and chain of custody documentation are presented in Appendix F.

A summary of the results are as follows:

- **Zone A**: Out of the four samples collected, three returned heavy metal concentrations above background levels (primarily lead), however all results were below both residential and commercial/industrial land use standards/guidelines. No OCPs were detected in the sample from Zone A.
- **Zone B**: Out of the five samples collected, all samples returned heavy metals concentrations (primarily copper) above background levels, however all results were below commercial/industrial land use standards/guidelines. There were slight detections of OCPs in samples SS01B and SS02B, however these samples were below background levels and subsequently below the commercial/industrial land use standards. In addition, sample SS07B collected from the implement shed area in Zone B contained a very low but detectable TPH concentration but was below the commercial/industrial guideline values.

[4] For this assessment, the results for DDT, DDD and DDE are summed together (∑DDT) and compared to background soil concentrations and the soil contaminant standard for DDT.

- **Zone C**: Out of the four samples collected, three returned heavy metal concentrations above background levels (Arsenic), however all results were below the commercial/industrial land use standards/guidelines. OCPS were detected within three of the samples, however these samples were below background levels and subsequently below the commercial/industrial land use standards.

9.0 Discussions and Development Considerations

9.1 Acceptability of Soil to Remain Onsite

The soil sampling results showed that soils are considered suitable to remain in-situ in the context of the respective residential and/or commercial/industrial land use and no remedial works are considered necessary. Note however that with any civil construction works, the suitability of soils to remain and be re-used onsite are subject to civil design and geotechnical requirements. Furthermore, it should be noted that while the soils around the former sheep dip area in the southern portion of the site contained heavy metals below commercial/industrial land use standards, the concentrations of arsenic were above residential land use standards. As such, any soils excavated from the southern sheep dip area (i.e. Zone C) cannot be re-used within the residential area of the site (i.e. Zone A).

9.2 Protection of Site Workers During Site Redevelopment Works

While the soil sample results showed the presence of heavy metals above background levels, the results recorded below commercial/industrial guidelines, which includes excavation and maintenance workers. Any risk to excavation workers posed by these contaminants would be expected to be managed by appropriate health and safety measures under the *Health and Safety at Work Act 2015* with the preparation of a site-specific Site Management Plan (SMP).

Contaminant exposure risks can be appropriately mitigated by contractors wearing the appropriate personal protective equipment and minimising direct and indirect contact with soil. On this basis, coupled with the expected short-term exposure/duration of works, the risk to site workers from these contaminants is considered to be acceptably low.

9.3 Offsite Disposal Options for Exavated Soils

Based on soil sampling results, a managed landfill consented to accept material containing heavy metals above background concentrations would mostly likely be required for soils excavated from the identified HAIL areas (i.e., Zones A, B and C).

PDP can assist in any consultation process for the disposal of excess generated soil (if any) to a suitable offsite location.

Note that no HAIL activities/contamination sources were identified within the wider site so there will be no restrictions on the re-use and offsite disposal of soils outside of the identified three HAIL zones.

9.4 Consideration of the NESCS

Based on contaminant concentrations above background levels but below the relevant commercial/industrial and/or residential land use standards, coupled with the possible volumes of soil disturbance in the identified HAIL areas in excess of the NESCS Permitted Activity criteria, the resource consent required for the development earthworks will be for a **controlled activity**.

In the context of a controlled activity under the NESCS, the controls will predominantly relate to the management of the excavation works and the offsite disposal of surplus soils generated during the works, which would need to be outlined in a site-specific SMP for the development

10.0 Conclusions

PDP has undertaken a DSI (soil sampling investigation) in the three separate areas (Zones A, B and C) of the rural residential/pastoral property located at 279 Stranges Road, Lake Hood where HAIL activities have been identified. It is understood the property is to be redeveloped into a commercial equine breeding and equestrian sports facility and that as part of the sale process, a resource consent is being sought from ADC to permit the future purchaser to begin redevelopment works at the site.

A PSI (a desktop site history review for potential contamination sources) report was completed by Fraser Thomas in November 2022, which showed the site has primarily been used for general grazing and pastoral activities while a dwelling, farm sheds and stock pens were also located within the site. The PSI identified several HAIL activities across the site from past or present land use practises, including:

- **HAIL Activity A10** (*Persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses or spray sheds*) relating to the potential gardening and/or produce growing activity that appears to have historically occurred within the vicinity of the dwelling.
- **HAIL Activity A8** (*Livestock dip or spray race operations*) relating to the potential sheep dips and foot rot troughs located in the vicinity of the historical sheep yards.
- **HAIL Activity I** (*Land subject to intentional or accidental release of hazardous substances in sufficient quantity that it could be a risk to human health or the environment*) relating to older buildings, in particular the historical dwellings located centrally within the site, constructed at times when lead paint and asbestos were commonly used, which have been shown to have been either demolished and or altered.

A site inspection was carried out across the site to assess if any additional contaminating activities have been undertaken on the site. No obvious signs of contamination such as chemically staining or odour, waste materials, anthropogenic material or ACM were observed during the site visit and sampling exercise.

A soil sampling investigation was undertaken within three zones to determine the contamination status of the site soils in the context of a residential land use (relating to short-term staff accommodation in Zone A) and commercial/industrial land use (relating to soil disturbance and excavation, that may cross into Zones B and C). The soil sampling comprised of manual excavation and collection of 13 soil samples and the analysis for heavy metals, OCP and TPH. In summary, while some results were above background levels, all samples had concentrations below the respective residential and/or commercial/industrial land use criteria.

On this basis, the following should be considered for the proposed redevelopment works:

- Based on the results of the soil sampling, all soils are considered suitable to remain on site subject to geotechnical requirements.
- Any soil from the identified HAIL areas (i.e. Zones A, B and C) that requires offsite disposal would need to be disposed at a managed landfill (due contaminant concentrations being measured above background levels).
- Due to the presence of soil contamination above background levels, a SMP will be required for the earthworks to provide contractors with necessary information and control measures in relation to the handling, management and offsite disposal requirements of site soils. The SMP will also include an accidental discovery protocol in the event potential contaminated soil or other contamination sources are encountered during the earthworks phase of the develpoment.

- With regard to the NESCS, the resource consent required from ADC will be for **controlled activity**. The consent conditions will be limited to management and disposal requirements of contaminated soils and associated health and safety considerations through the preparation of a SMP.

11.0 References

Environment Canterbury, 2007. *Background concentrations of selected trace elements in Canterbury soils. Addendum 1: Additional samples and Timaru specific background levels*. Environment Canterbury Report R07/1/2.

Fraser Thomas Limited, 2022. *Desktop Preliminary Site Investigation Report – Contamination 279 Stranges Road, RD4, Ashburton.* Project No. CH01556.

MfE, 1998. *Ambient Concentrations of Selected Organochlorines in Soils*. Ministry for the Environment, Wellington.

Ministry for the Environment, 2011. *Hazardous Activities and Industries List*. Ministry for the Environment, Wellington.

Ministry for the Environment, 2011a. *Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health*. Ministry for the Environment, Wellington.

Ministry for the Environment 2011b. *Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand (Revised 2011).* Ministry for the Environment, Wellington.

Ministry for the Environment, 2021. *Contaminated Land Management Guidelines No. 1: Reporting on Contaminated Sites in New Zealand (Revised 2021)*. Ministry for the Environment, Wellington.

Ministry for the Environment, 2021a. *Contaminated Land Management Guidelines No. 5: Site Investigation and Analysis of Soils (Revised 2021a).* Ministry for the Environment, Wellington

National Environment Protection Council, 2013. *Guideline on the Investigation Levels for Soil and Groundwater.* National Environment Protection Council Australia.

Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soils to Protect Human Health) Regulations 2011.

12.0 Limitations

This letter has been prepared by Pattle Delamore Partners Limited (PDP) on the basis of information provided by Southern Parallel Campus Limited and others (not directly contracted by PDP for the work). PDP has not independently verified the provided information and has relied upon it being accurate and sufficient for use by PDP in preparing the letter. PDP accepts no responsibility for errors or omissions in, or the currency or sufficiency of, the provided information.

This letter has been prepared by PDP on the specific instructions of Southern Parallel Campus Limited for the limited purposes described in the letter. PDP accepts no liability if the letter is used for a different purpose or if it is used or relied on by any other person. Any such use or reliance will be solely at their own risk.

This letter has been prepared based on: information provided to PDP (including a Preliminary Site Investigation report by Fraser Thomas), visual observations of the site vicinity and the results from laboratory analysis of 13 soil samples collected by PDP. The site conditions as described in this letter have been interpreted from, and are subject to, this information and its limitations and accordingly PDP does not represent that its interpretation accurately represents the full site conditions.

The laboratory test results provide an approximation of the concentration of analytes sampled for and are subject to the inherent limitations of the laboratory techniques used for the tests.

This investigation is limited to collection and analysis of soil samples from discrete sampling locations. Interpretations of subsurface conditions, including contaminant concentrations, are not guaranteed at distance away from the specific points of sampling.

The information contained within this letter applies to sampling undertaken on the dates stated in this letter, or if none is stated, the date of this letter. With time, the site conditions and environmental standards may change. Accordingly, the reported assessment and conclusions are not guaranteed to apply at a later date.

Yours faithfully

PATTLE DELAMORE PARTNERS LIMITED

Prepared by

Holly Eeg

Environmental Scientist

Reviewed and Approved by

Gerard Stark

Technical Director – Contaminated Land

Certifying Statements

I, Gerard Stark of Pattle Delamore Partners Limited, certify that:

1. This detailed site investigation meets the requirements of the *Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011* (the NESCS) because it has been:
   a. done by a suitably qualified and experienced practitioner, and
   b. done in accordance with the current edition of *Contaminated land management guidelines No 5 – Site investigation and analysis of soils*, and
   c. reported on in accordance with the current edition of *Contaminated land management guidelines No 1 – Reporting on contaminated sites in New Zealand*, and
   d. the report is certified by a suitably qualified and experienced practitioner.

2. This soil sampling investigation concludes that:
   a. For activities under R10 of the NESCS does exceed the applicable standard in Regulation 7 of the *Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011*.

Evidence of the qualifications and experience of the suitably qualified and experienced practitioner(s) who have done this investigation and certified this report is appended to this detailed site investigation report.

Signed:

Gerard Stark

Technical Director – Contaminated Land

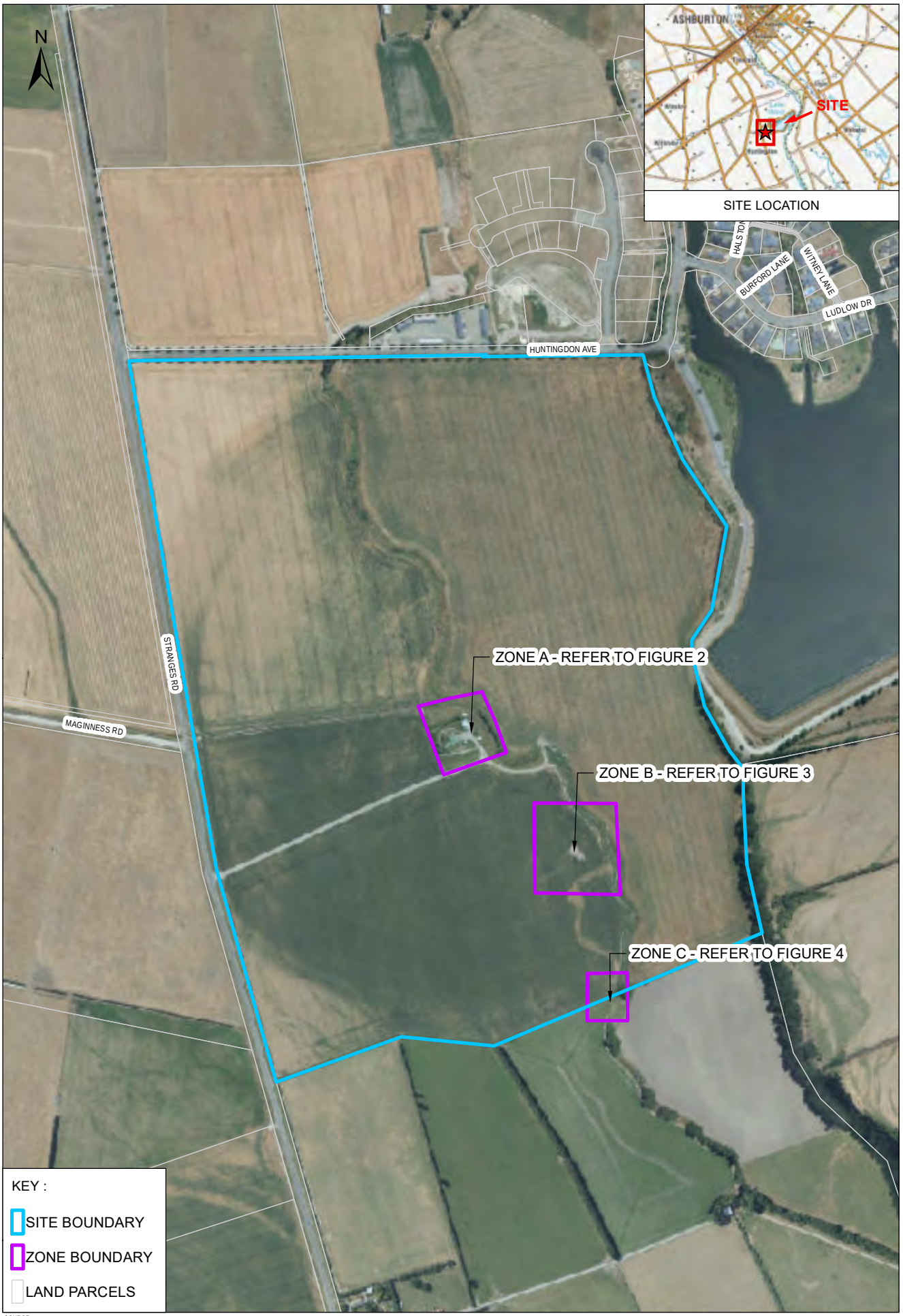
Gerard Stark – Project Director

Gerard is an environmental scientist with over 20 years of experience in undertaking environmental and contaminated land assessments. He has a BSc/BA(Hons) in Geography from the University of Canterbury. Gerard currently project manages contaminated land assessments and monitoring programmes for a diverse range of sites including commercial/industrial and residential developments, former market gardens, horticultural and timber treatment sites, landfills, asbestos contaminated sites, the petroleum industry, with experience attained over several hundred sites across New Zealand and Australia.

Gerard has experience has involved a wide range of environmental issues, across a broad range of media including soil, sediment, surface water and groundwater and for a wide range of contaminants including heavy metals, petroleum hydrocarbons and asbestos.

Gerard has familiarity with and understanding of the current contaminated land regulation and practice in New Zealand including assessments against the NESCS, and in the consenting of contaminated sites.

Appendix A - Figures



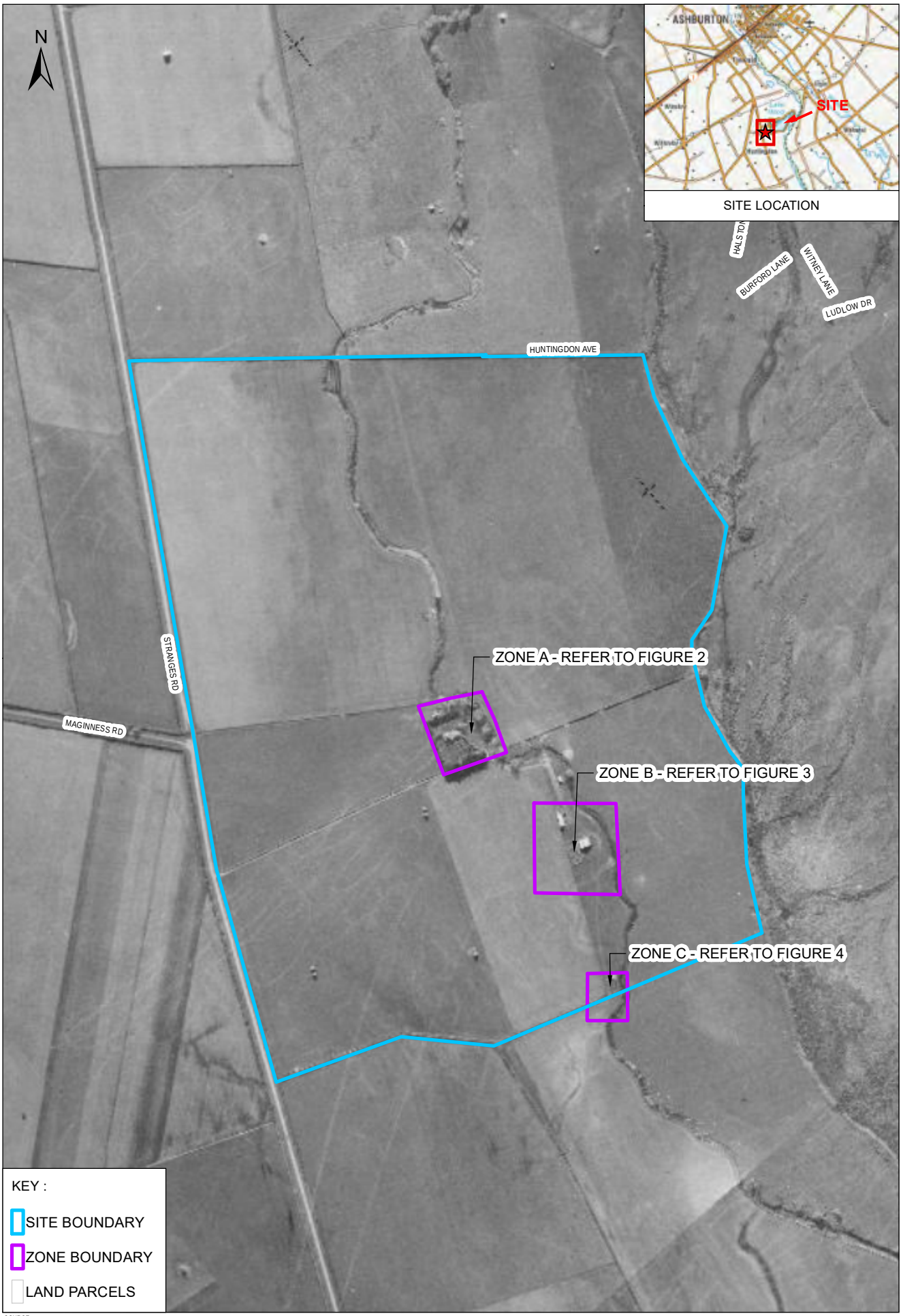
SOURCE:
1. AERIAL IMAGERY (FLOWN 2021) SOURCED FROM CANTERBURY MAP PARTNERS ADMINISTERED BY ENVIRONMENT CANTERBURY (MAY NOT BE SPATIALLY ACCURATE).
2. CADASTRAL/TOPOGRAPHICAL INFORMATION AND INSET SOURCED FROM THE LINZ DATA SERVICE https://data/linz.govt.nz/ AND LICENSED FOR RE-USE UNDER THE CREATIVE COMMONS ATTRIBUTION 4.0 INTERNATIONAL LICENSE

FIGURE 1 : SITE LOCATION AND SITE BOUNDARY

SCALE : 1:7,000 (A4)

0 50 100 200

METRES



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1. AERIAL IMAGERY (FLOWN 2021) SOURCED FROM CANTERBURY MAP PARTNERS ADMINISTERED BY ENVIRONMENT CANTERBURY (MAY NOT BE SPATIALLY ACCURATE).
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FIGURE 1A : SITE LOCATION AND SITE BOUNDARY
1940-1944

SCALE : 1:7,000 (A4)
0 50 100 200
METRES

C04965100Z001_FIGURE1A.mxd 20/10/2023 ISSUE 1

SOURCE:
1. AERIAL IMAGERY (FLOWN 2021) SOURCED FROM CANTERBURY MAP PARTNERS ADMINISTERED BY ENVIRONMENT CANTERBURY (MAY NOT BE SPATIALLY ACCURATE).
2. CADASTRAL/TOPOGRAPHICAL INFORMATION AND INSET SOURCED FROM THE LINZ DATA SERVICE https://data/linz.govt.nz/ AND LICENSED FOR RE-USE UNDER THE CREATIVE COMMONS ATTRIBUTION 4.0 INTERNATIONAL LICENSE

FIGURE 2 : ZONE A SOIL SAMPLE LOCATIONS

SCALE : 1:500 (A4)

0 5 10 20

METRES

SOURCE:
1. AERIAL IMAGERY (FLOWN 2021) SOURCED FROM CANTERBURY MAP PARTNERS ADMINISTERED BY ENVIRONMENT CANTERBURY (MAY NOT BE SPATIALLY ACCURATE).
2. CADASTRAL/TOPOGRAPHICAL INFORMATION AND INSET SOURCED FROM THE LINZ DATA SERVICE https://data/linz.govt.nz/ AND LICENSED FOR RE-USE UNDER THE CREATIVE COMMONS ATTRIBUTION 4.0 INTERNATIONAL LICENSE

FIGURE 3 : ZONE B SOIL SAMPLE LOCATIONS

SCALE : 1:800 (A4)
0 5 10 20
METRES

SOURCE:
1. AERIAL IMAGERY (FLOWN 2021) SOURCED FROM CANTERBURY MAP PARTNERS ADMINISTERED BY ENVIRONMENT CANTERBURY (MAY NOT BE SPATIALLY ACCURATE).
2. CADASTRAL/TOPOGRAPHICAL INFORMATION AND INSET SOURCED FROM THE LINZ DATA SERVICE https://data/linz.govt.nz/ AND LICENSED FOR RE-USE UNDER THE CREATIVE COMMONS ATTRIBUTION 4.0 INTERNATIONAL LICENSE

FIGURE 4 : ZONE C SOIL SAMPLE LOCATIONS

SCALE : 1:400 (A4)
0 2.5 5 10
METRES

Appendix B - Photographs

Photograph 1: View across Residential Dwelling (Zone A).

Photograph 2: View of the residential garage / shed (Zone A).

Photograph 3: View of woodshed, looking southeast outside fence of residential property.

Photograph 4: View of residence and gardens.

Photograph 5: View of residential fence line, looking north.

Photograph 6: View across Residential Dwelling western border and till field, looking north.

Photograph 7: View of animal pens at the back of the residence, looking northwest.

Photograph 8: View of northern boundary of residence, looking south.

Photograph 9: View across northern stream and paddock, looking northwest.

Photograph 10: View across the central stream, looking southeast.

Photograph 11: View of historical sheep dip / implement shed area (Zone B). Looking north towards residence.

Photograph 12: View towards eastern sheep paddock.

Photograph 13: View across tilled paddock where historical sheds used to be (Zone B), looking south.

Photograph 14: View across tilled land (Zone B), looking west towards Stranges Road.

Photograph 15: View of southern historical sheep dip area (Zone C).

Photograph 16: Close-up view of historical sheep dip area (Zone Z). Corrugated iron and fence posts remain.

Photograph 17: View along southeastern fence boundary, looking at historical sheep dip location (Zone C).

Photograph 18: View across southern sheep paddock.

Appendix C - Fraser Thomas PSI Report 2022

CHILTON + MAYNE
ARCHITECTURE

SOUTHERN PARALLEL EQUINE CENTRE

MASTER PLAN

Appendix D - Results Tables

Southern Parallel Sports Campus

Fraser Thomas
ENGINEERS • RESOURCE MANAGERS • SURVEYORS

279 STRANGES ROAD,
RD4,
ASHBURTON

DESKTOP PRELIMINARY SITE INVESTIGATION - CONTAMINATION

Southern Parallel Sports Campus

279 STRANGES ROAD,
RD4,
ASHBURTON

DESKTOP PRELIMINARY SITE INVESTIGATION - CONTAMINATION

Project No.	CH01556	Approved for Issue	
Version No.	1	Name	Sean Finnigan
Status	Final	Signature	
Authors	S Gladwin		
Reviewer	S Finnigan	Date	24 November 2022

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SOUTHERN PARALLEL SPORTS CAMPUS

DESKTOP PRELIMINARY SITE INVESTIGATION REPORT - CONTAMINATION 279 STRANGES ROAD, RD4, ASHBURTON

EXECUTIVE SUMMARY

In response to instructions from Mrs Catherine Stuart on behalf of Southern Parallel Sports Campus, Fraser Thomas Limited (FTL) has undertaken a Desktop Preliminary Site Investigation (PSI) for the subject site located at 279 Stranges Road, RD4, Ashburton (Lot 1 DP 43334; approximately 64.94 ha)('site'). The subject site is located on the eastern side of Stranges Road. Huntingdon Avenue borders the northern site boundary.

It is understood that it is proposed to develop a new 35 ha sporting campus in the northern part of the site, generally comprising two large indoor sports facilities, residential accommodation and several sports fields.

It is understood that it is also proposed to undertake future development in the southern part of the site, and that this future development will involve the construction of a new 30 ha equestrian centre, generally comprising indoor arena and support services buildings, a show jumping arena, polo fields and hotel accommodation.

It is understood that an existing residential dwelling, and several detached sheds/structures are located at the subject site. It is understood that the existing dwelling and detached sheds/structures will be demolished as part of the proposed development.

This investigation has been managed, reviewed and approved by a Suitably Qualified and Experienced Practitioner (SQEP), as defined in the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (NESCS).

This investigation has confirmed that the subject site has only been used for pastoral (sheep), cropping and minor rural residential purposes.

The NESCS governs a number of activities, including soil sampling, soil disturbance, subdivision and changes of land use on potentially contaminated land in New Zealand. In general, the rules of the NESCS apply to sites on which it is "more likely than not" that a HAIL (Hazardous Activities and Industries List) activity has occurred or is occurring (Regulation 5(7)).

In our opinion, under Regulation 5(7), the NECS does not apply to the majority of site due to no potential contamination issues being identified.

Potential HAIL activities identified during the desktop study were:

- *A8 – Livestock dip or spray race operations.* This relates to the potential sheep dip identified on the LLUR and possibly foot rot troughs located in the vicinity of the historical sheep yards, which were not able to be ruled out during this desktop investigation.
- *A10 – Persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses or spray sheds.* This relates to the potential gardening and/or produce growing activity that appears to have historically occurred within the vicinity of the dwelling.
- *Activity I: Land subject to intentional or accidental release of hazardous substances in sufficient quantity that it could be a risk to human health or the environment:* This relates to older buildings, in particular the historical dwellings located centrally within the site, constructed at times when lead paint and asbestos were commonly used, which have been shown to have been either demolished and or altered.

It should be noted that the potential HAIL activities identified during this investigation are the result of desktop investigation only. A site walkover and intrusive soil sampling investigation of the site would be required to confirm any additional potential/actual HAIL activities not identified from this desktop study and soil contamination, if any.

In summary, a Detailed Site Investigation (DSI), is required to be undertaken in order to determine the level of soil contamination, if any.

If this is done and these areas are confirmed as being free of contamination, then any future soil disturbance activities can be undertaken without having to consider contamination issues, other than accidental discovery protocols for unexpected contamination. If however, soil contamination is found to be present above background and/or guideline levels, then soil sampling, soil disturbance, subdivision and changes of land use will trigger the requirement for a resource consent as either a Controlled or Restricted Discretionary activity under the NESCS provisions. Any such consent will require the preparation of a Site Management/Remedial Plan that will set out soil disturbance management requirements.

NATIONAL ENVIRONMENTAL STANDARD FOR ASSESSING AND MANAGING CONTAMINANTS IN SOIL TO PROTECT HUMAN HEALTH

279 STRANGES ROAD, RD4, ASBURTON
DESKTOP PRELIMINARY SITE INVESTIGATION - CERTIFYING STATEMENT

I, Dr Sean Matthew Finnigan of Fraser Thomas Ltd certify that:

This Preliminary Site Investigation meets the requirements of the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health, NESCS) Regulations 2011 because it has been:

a. done by suitably qualified and experienced practitioners, and
b. reported on in accordance with the current edition of Contaminated land Management Guidelines No 1 – Reporting on Contaminated Sites in New Zealand, and
c. the report is certified by a Suitably Qualified and Experienced Practitioner;

noting however, that it is a Desktop PSI, as a site walkover has yet to be conducted.

This Preliminary Site Investigation has found:

a. The subject site has only been used for pastoral (sheep), and minor rural residential purposes.
b. The NECS does not apply to the majority of site due to no potential contamination issues being identified.
c. The NESCS may however apply to the following localized potential HAIL activities:
    - *A8 – Livestock dip or spray race operations.* This relates to the potential sheep dip identified on the LLUR and possibly foot rot troughs located in the vicinity of the historical sheep yards, which were not able to be ruled out during this desktop investigation
    - *A10 – Persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses or spray sheds.* This relates to the potential gardening and/or produce growing activity that appears to have historically occurred within the vicinity of the dwelling.
    - *Activity I: Land subject to intentional or accidental release of hazardous substances in sufficient quantity that it could be a risk to human health or the environment:* This relates to older buildings, in particular the historical dwellings located centrally within the site, constructed at times when lead paint and asbestos were commonly used, which have been shown to have been either demolished and or altered.

Evidence of the qualifications and experience of the suitably qualified and experienced practitioner(s) who have done this investigation and have certified this report can be provided on request.

Signed: Date: 24 November 2022

SOUTHERN PARALLEL SPORTS CAMPUS

DESKTOP PRELIMINARY SITE INVESTIGATION REPORT - CONTAMINATION 279 STRANGES ROAD, RD4, ASHBURTON

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SOUTHERN PARALLEL SPORTS CAMPUS

DESKTOP PRELIMINARY SITE INVESTIGATION REPORT - CONTAMINATION 279 STRANGES ROAD, RD4, ASHBURTON

1.0 INTRODUCTION

In response to instructions from Mrs Catherine Stuart on behalf of Southern Parallel Sports Campus, Fraser Thomas Limited (FTL) has undertaken a Desktop Preliminary Site Investigation (PSI) for the subject site located at 279 Stranges Road, RD4, Ashburton (Lot 1 DP 43334; approximately 64.94 ha)('site'). The subject site is located on the eastern side of Stranges Road. Huntingdon Avenue borders the northern site boundary.

It is understood that it is proposed to develop a new 35 ha sporting campus in the northern part of the site, generally comprising two large indoor sports facilities, residential accommodation and several sports fields.

It is understood that it is also proposed to undertake future development in the southern part of the site, and that this future development will involve the construction of a new 30 ha equestrian centre, generally comprising indoor arena and support services buildings, a show jumping arena, polo fields and hotel accommodation.

It is understood that an existing residential dwelling, and several detached sheds/structures are located at the subject site. It is understood that the existing dwelling and detached sheds/structures will be demolished as part of the proposed development.

This investigation involved a desktop study, and reporting associated with potential land contamination issues, and was prepared in support of a "fast track" application for resource consent under the Covid-19 Recovery (Fast-track Consenting) Act 2020.

The format of this report is as follows:

- Rationale, objectives and scope of work.
- Investigation methodology.
- Site details.
- Desktop study.
- Discussion
- Conclusions and recommendations.

Site plans and other relevant information are included in appendix form.

2.0 RATIONALE, OBJECTIVES AND SCOPE OF WORK

The main rationale and objectives for this investigation were:

- To identify the main actual or potential contamination issues due to ongoing and historic use of land within the site.
- To confirm that the site is suitable or can be made suitable for the proposed development.
- Inform sampling requirements for a Detailed Site Investigation (DSI) to investigate any potential contamination issues identified at the site.

3.0 INVESTIGATION METHODOLOGY

The methodology used for this site assessment is summarised below:

1. Desktop study involving review of existing historical information for the subject site including aerial photographs, certificates of title, Ashburton District Council property files, and interviews with persons familiar with the site such as current owners.
2. Preparation of a PSI report including the results of the desktop study, conclusions and recommendations.
3. Provision of site plans, relevant documentation and representative photographs as appendices to this report.

At this stage, a site walkover has not been done. The walkover is to be undertaken in conjunction with soil sampling, as part of a future Detailed Site Investigation (DSI). It is understood that the client wishes to wait for feedback on this report from MfE before proceeding with the DSI.

4.0 SITE DETAILS

4.1 LOCATION AND LAND USE

The subject site is located on the eastern side of Stranges Road. Huntingdon Avenue borders the northern site boundary.

The site is zoned “Rural B” under the Ashburton District Plan.

Rural properties abut the northern, eastern, southern and western site boundaries. The man-made recreational Lake Hood, also abuts approximately two-thirds of the eastern site boundary.

4.2 TOPOGRAPHY, GEOLOGY AND SOILS

A review of available Google Street View imagery indicates the topography within the subject site is generally flat and is vegetated with grass. Open drains run parallel to the northern, southern and western site boundaries.

A generally north-south trending watercourse bisects the site. It is understood that this stream is ephemeral in nature.

In assessing the geology of the site, reference has been made to the Institute of Geological & Nuclear Sciences Geological Map 15, scale 1:250,000, "Aoraki".

This map indicates that the site is likely to be underlain by "*Light brownish grey river gravel, sand and silt within abandoned river outwash plains or low to mid-level terraces*" of Late Pleistocene age.

4.3 PROPOSED DEVELOPMENT

It is understood that it is proposed to develop a new 35 ha sporting campus in the northern part of the site, generally comprising two large indoor sports facilities, residential accommodation and several sports fields.

It is understood that it is also proposed to undertake future development in the southern part of the site, and that this future development will involve the construction of a new 30 ha equestrian centre, generally comprising indoor arena and support services buildings, a show jumping arena, polo fields and hotel accommodation.

It is understood that an existing residential dwelling, and several detached sheds/structures are located at the subject site. It is understood that the existing dwelling and detached sheds/structures will be demolished as part of the proposed development.

5.0 DESKTOP STUDY AND SITE WALKOVER RESULTS

The results of the desktop study are summarised in this section and illustrated in the attached site features plan (CH01556-E-01) and aerial photographs (Appendix B). Given that no site walkover and/or soil sampling has been undertaken for this investigation, reference to specific HAIL activities (HAIL) or contaminants should essentially be read as "suspected", unless otherwise stated.

5.1 SITE IDENTIFICATION AND LAND USE

The site details and ownership history are summarized in Table 1 below.

Table 1: Site Details and Ownership History

Registered Owners	Graeme Walter John Small and Elizabeth Jane Small	
Street Address	279 Stranges Road, Huntingdon	
Legal Description	Lot 1 DP 43334	
Title	CB21F/859	
Total Area (ha)	64.94ha	
Zoning	Rural B	
Ownership History		
CTs	**From**	**Registered Owner**
CB21F/859	Mar 2003 Mar 1994 Aug 1980	Graeme Walter John Small and Elizabeth Jane Small Mary Leta Miles, Gwendoline Kay Haines, Travel Manager, and Diane Mary Adams, Clerk Noel Basil Miles, Farmer
CB596/23	Dec 1953	Noel Basil Miles, Farmer

The CTs for the property show that the site was been owned by members of the Miles family, who appeared to be famers from at least 1953 to 1994. The current owner has owned the property since 2003.

5.2 LISTED LAND USE REGISTER (LLUR)

The site is currently listed as potentially contaminated on ECan's Listed Land User Register (LLUR), which states that the subject site has been subject to HAIL activity A8 "Livestock dip or spray race operations", and that the site is "Not investigated".

The LLUR property statement for the site indicates that livestock dip or spray race operations were noted along the southern boundary of the site in 1941 and 1976 aerial photographs as part of the Ashburton District Council (ADC) 2020 HAIL identification project.

5.3 COUNCIL RECORDS

The Council property file was reviewed. The only relevant information found related to a December 1966 building permit application for a proposed new dwelling, located centrally within the site.

The 1941 aerial photography shows a dwelling and at least two detached sheds are located centrally within the site. The 1966 application states that the proposed building was to be a new build, with no mention of alteration or extension to any existing structures. It is inferred that the earlier dwelling was demolished to make way for the new dwelling.

5.4 INTERVIEWS

The following information was provided by Mr Graeme Small, the current owner of the site:

- The site was previously owned by his uncle Mr Noel Miles, and the land use comprised mixed cropping (blue peas, barley, oats) and sheep grazing.
- Mr Small purchased the site in 2003; however, he has had association with the property for approximately 45 years. He has generally kept the same land use.
- He has spoken with a neighbour, who knew his uncle well, and it is their opinion that there has not been a sheep dip located at the site.

  "Most farmers used contractors for dip and they had mobile dipping units. It would be rare to have an onsite one and I am not aware of it. The neighbour said Noel did not have one and rarely used footrot troughs of any sort."

  "The sheep breed on the farm when I worked there and prior to us buying it were footrot resistant. It was something that would have been an issue 40 plus years ago maybe. This was also the case on my fathers farm."

- The structures present at the time of purchase included the dwelling and several sheds generally comprising an implement shed, wool/shearing shed, and hay/grain storage. The sheds generally comprised timber and iron construction, and are understood to have been demolished, with the timber being burnt onsite and the metals going to a scrap dealer.
- Mr Small indicated that he had filled in a small pit in the south-eastern corner of the site. The pit was previous used to store items that could not be burned generally comprising an old truck cab and some wire. The manmade material was removed and the pit was backfilled with surrounding site soils.
- He is not aware of any onsite fuel storage. When the site was part of a larger farm, the fuel storage for tractors was located where Lake Hood now lies.

5.5 AERIAL PHOTOGRAPHS

Historical aerial photographs sourced from the Canterbury Maps and Retrolens websites were reviewed as part of the desktop study.

1941 Aerial

The site is divided into paddocks which generally appear to be used for pastoral activity.

Open drains run parallel to the southern and western site boundaries. It cannot be determined if a drain is located along the northern boundary.

A generally north to south trending watercourse bisects the site.

A residential area comprising a dwelling and at least two detached sheds are located centrally within the site along the western bank of the watercourse. It appears some gardens or possibly

produce growing areas are located within the vicinity of the dwelling. A shelter belt hedge surrounds the northern, southern and eastern side of the residential area.

Several structures, inferred to be sheds of varying sizes are located across the site, generally along the western bank of the ephemeral watercourse. A fenced off area, similar in nature to stockyards is located next to one of the sheds.

Two parallel structures, approximately 11m in length and 7m apart are located next to one of the sheds, along the southern boundary. These structures appear to be what the ADC identified as sheep dips in the LLUR entry.

A small pit, measuring approximately 15m by 10m is located in the south-eastern corner of the site.

On this aerial (flight date 1 June 1941), as viewed on Canterbury Maps historical base map layer, an approximately circular feature, can be seen located along the western bank of the ephemeral watercourse, approximately 150m to the north of the dwelling. This feature cannot be seen on aerial photographs with the same flight date retrieved from the Retrolens website, and is inferred to be an artifact introduced during scanning and uploading to Canterbury Maps.

1976 Aerial (Retrolens)

The land use at the site generally appears to be mixed use cropping and sheep grazing. As discussed in Section 5.4, information provided by the current owner indicates the cropping possibly comprised blue peas, barley and oats.

The dwelling located centrally within the site appears larger. Council records indicate that the original dwelling was demolished and replaced with a new building in 1967.The previously identified gardens or produce growing area have reduced in size. The two detached sheds previously located in the vicinity of the dwelling are no longer present.

Two new sheds, one each along the western and eastern banks of the ephemeral watercourse have been constructed.

The previously existing structures along the southern boundary, including the inferred sheep dip, appear to have been demolished.

The circular depression is no longer visible and is inferred to have been backfilled.

1987 and 1995 Aerials

No significant change.

2004-2010, 2012, 2017 and 2020 Aerials

With the exception of the dwelling and a detached shed/garage, all previously existing structures have been demolished.

The land use across the site generally appears unchanged.

6.0 DISCUSSION

6.1 SUMMARY OF KEY DESKTOP STUDY FINDINGS

The site appears to have been generally used for pastoral (sheep) purposes since at least 1941. During this time, several structures, including two dwellings, sheds and stockyards have been constructed across the site, some of which have since been demolished. A shed and two linear structures, which are inferred to relate to the sheep dip (HAIL activity A8) identified in the LLUR property statement was located along the southern boundary of the site from at least 1941, and were disused and demolished sometime before 1976. With the exception of the dwelling, all existing structures at the site appear to have been removed by the early 2010s.

This desktop investigation has not been able to confirm the location of the sheep dip identified in the LLUR. It should be noted that the current owner, and a neighbour both familiar with the site did not believe a sheep dip was present at the site, at least within the last 45 years. However, given the inferred sheep dip activity on the LLUR was identified in the 1941 aerial (i,e before possession by current and immediately previous owner), and the site's history as being used to graze sheep, it cannot be ruled out that a dip or foot trough was historically located at the site.

Inferred gardening and/or produce growing activity appears to have historically occurred within the vicinity of the dwelling. Due to the time period when this activity occurred (1941-1971), historical use of persistent pesticides, herbicides and fungicides by former owners cannot be ruled out.

The current owner has advised that infilling of a previously existing pit located in the south-eastern corner of the site was undertaken. The pit was previous used to store items that could not be burned generally comprising an old truck cab and some wire. It is understood that the manmade material was removed and the pit was backfilled with surrounding site soils.

Potential HAIL activities identified during the desktop study were:

- *A8 – Livestock dip or spray race operations.* This relates to the potential sheep dip identified on the LLUR and possibly foot rot troughs located in the vicinity of the historical sheep yards, which were not able to be ruled out during this desktop investigation.
- *A10 – Persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses or spray sheds.* This relates to the potential gardening and/or produce growing activity that appears to have historically occurred within the vicinity of the dwelling.
- *Activity I: Land subject to intentional or accidental release of hazardous substances in sufficient quantity that it could be a risk to human health or the environment:* This relates to older buildings, in particular the historical dwellings located centrally within the site, constructed at times when lead paint and asbestos were commonly used, which have been shown to have been either demolished and or altered.

6.2 CONCEPTUAL SITE MODEL

The most likely source of soil contamination, is heavy metal (particularly Arsenic) contaminated soils around the vicinity of the potential historical sheep dip. Other potential sources of contamination include the use of persistent pesticides, herbicides and fungicides on potential gardening and/or produce growing areas in the vicinity of the existing dwelling, lead paint and asbestos used on the construction of older building on site.

The following exposure pathways are considered most applicable for the areas of potential contamination identified at the subject sit:

- Direct contact with potentially contaminated soils, via inhalation and ingestion of dust, during soil disturbance.
- Contaminant leaching into groundwater and/or surface water bodies.

Potential receptors are likely to be future site users (soil disturbance, produce consumption) and ecological (aquatic organisms).

It is understood that there is a disused water supply bore beneath the existing dwelling.

It should be noted that the potential soil contamination issues identified during this investigation are the result of desktop investigation only. A site walkover and intrusive soil sampling investigation of the site would be required to confirm any soil contamination if any, and revise the CSM.

6.3 NESCS CONSENTING REQUIREMENTS

The NESCS governs a number of activities, including soil sampling, soil disturbance, subdivision and changes of land use on potentially contaminated land in New Zealand. In general, the rules of the NESCS apply to sites on which it is “more likely than not” that a HAIL (Hazardous Activities and Industries List) activity has occurred or is occurring (Regulation 5(7)).

In our opinion, under Regulation 5(7), the NECS does not apply to the majority of site due to no potential contamination issues being identified.

Potential HAIL activities identified during the desktop study were:

- *A8 – Livestock dip or spray race operations.* This relates to the potential sheep dip identified on the LLUR and possibly foot rot troughs located in the vicinity of the historical sheep yards, which were not able to be ruled out during this desktop investigation.
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- *Activity I: Land subject to intentional or accidental release of hazardous substances in sufficient quantity that it could be a risk to human health or the environment:* This relates to older buildings, in particular the historical dwellings located centrally within the site, constructed at times when lead paint and asbestos were commonly used, which have been shown to have been either demolished and or altered.

Hence, a Detailed Site Investigation (DSI), is required to be undertaken in order to determine whether the proposed development can be undertaken as a Controlled or Restricted Discretionary activity. This will include a site walkover of the entire property to check for any other potential/actual HAIL activities not identified from this desktop PSI.

7.0 CONCLUSIONS AND RECOMMENDATIONS

This investigation has confirmed that the subject site has only been used for pastoral (sheep), cropping and minor rural residential purposes.

Hence under Regulation 5(7), the NESCS does not apply to the majority of the site, except for the following localized potential HAIL activities:

- *A8 – Livestock dip or spray race operations.* This relates to the potential sheep dip identified on the LLUR and possibly foot rot troughs located in the vicinity of the historical sheep yards, which were not able to be ruled out during this desktop investigation.
- *A10 – Persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses or spray sheds.* This relates to the potential gardening and/or produce growing activity that appears to have historically occurred within the vicinity of the dwelling.
- *Activity I: Land subject to intentional or accidental release of hazardous substances in sufficient quantity that it could be a risk to human health or the environment:* This relates to older buildings, in particular the historical dwellings located centrally within the site, constructed at times when lead paint and asbestos were commonly used, which have been shown to have been either demolished and or altered.

It should be noted that the potential HAIL activities identified during this investigation are the result of desktop investigation only. A site walkover and intrusive soil sampling investigation of the site would be required to confirm any additional potential/actual HAIL activities not identified from this desktop study and soil contamination, if any.

In summary, a Detailed Site Investigation (DSI), is required to be undertaken in order to determine the level of soil contamination, if any.

If this is done and these areas are confirmed as being free of contamination, then any future soil disturbance activities can be undertaken without having to consider contamination issues, other than accidental discovery protocols for unexpected contamination. If however, soil contamination is found to be present above background and/or guideline levels, then soil sampling, soil disturbance, subdivision and changes of land use will trigger the requirement for a resource consent as either a Controlled or Restricted Discretionary activity under the NESCS provisions. Any such consent will require the preparation of a Site Management/Remedial Action Plan that will set out soil disturbance management requirements.

8.0 LIMITATIONS

We have performed our services for this project in accordance with current professional standards for an assessment of the nature and extent of any soil contamination on-site, based upon detailed site assessment investigations and current regulatory standards for site contamination. The scope of the site assessment activities was generally in accordance with the Ministry for Environment Contaminated Land Management Guideline's (Parts 1 (2021), 2 (2011) and 5 (2021)) and the NESCS (2011). Conclusions on actual or potential contamination cannot be applied to areas outside of the site investigation.

We do not assume any liability for misrepresentation or items not visible, accessible or present at the subject site during the time of the site inspection.

No liability is accepted by this firm or by any principal, or director, or any servant or agent of this firm, in respect of its use by any other person, and any other person who relies upon any matter contained in this report does so entirely at its own risk. This disclaimer shall apply notwithstanding that this report may be made available to any person by any person in connection with any application for permission or approval, or pursuant to any requirement of law.

Figures/Drawings

SURVEYED			APPROVED DATE
DESIGNED			SF
DRAWN			
CAD	GN	16/11/22	
CHECKED	SG	16/11/22	

REVISION	CHANGES	CHECKED	DATE

NOTES

1. This plan has been adopted from Canterbury maps. The location and extent of the site boundaries and existing site features are therefore considered to be approximate only.
2. The location and extent of historical structures and site features shown on this plan has been adopted from historical aerial photographs sourced from Canterbury Maps and are therefore considered approximate only.

CLIENT

SOUTHERN PARALLEL SPORTS CAMPUS

PROJECT

275 STRANGERS ROAD, RD4, ASHBURTON

TITLE

SITE PLAN

Fraser Thomas

ENGINEERS • RESOURCE MANAGERS • SURVEYORS

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SCALE 1:4000 (A3)

DRAWING No CH01556-E-01 REVISION

SHEET 1 of 1

Appendix A

Ministry for the Environment
Contaminated Site Report Checklist

SOUTHERN PARALLEL SPORTS CAMPUS

DESKTOP PRELIMINARY SITE INVESTIGATION REPORT - CONTAMINATION
279 STRANGES ROAD, RD4, ASHBURTON

SUMMARY CONTAMINATED SITES REPORT CHECKLIST

Content	Required	Required if relied on	CLMG 5 section
1. Introduction			
• investigation objectives	☑		2.1
• site identification (site name, address, legal description; site boundaries; a map reference and geographic coordinates)	☑		3.3.1
• proposed site use		☑	3.3.2
2. Site description			
• environmental setting		☑	3.3.3
• site layout	☑		3.3.4
• current site uses	☑		3.3.5
• surrounding land uses	☑		3.3.6
• geophysical surveys		☐	5.1
• site inspection		☐	3.3.8
3. Historical site use			
• summary of site history gained from:	☑		3.3.7
− review of existing investigation reports		☐	
− review of council information		☑	
− review of aerial photographs		☑	
− interviews		☑	
− review of other historical information		☐	
• preliminary sampling (if carried out)		☐	3.3.9
− description (including diagram)			
− justification for sample location and analyte selection			
− results			
− comparison of results to guidelines			
4. Risk assessment			3.3.11
• evaluate the probability that pursuant to regulation 6 (3):	☑		
• − *an activity or industry described in the HAIL is, or is not, being undertaken on the piece of land, or*			
− *an activity or industry described in the HAIL has, or has not, been undertaken on the piece of land, or*			
− *the likelihood of an activity or industry described in the HAIL being undertaken, or having been undertaken, on the piece of land*			

• evaluate the probability that pursuant to regulation 6 (3): – *the likelihood that the soil is contaminated as a result of activity or industry occurring*	☑		2.2
• description of the limitations of the data collected and the assumptions and uncertainties inherent in the data and models used	☑		7.3.1
5. Conclusions		☑	
6. Recommendations (if relevant to report purpose)		☑	
7. Report limitations		☑	
8. SQEP certification of report (refer appendix C)		☑	1.2
9. References		☐	
Appendices: relevant supporting information			

Supporting information	**Required**	**Required if relied on**
Figures		☐
Land titles		☑
Historical site information relied upon (if not included in report body)	☑	
Site photographs (if site inspection carried out)		☐
Other supporting information		☐
Statement of qualification as a SQEP	☑	

Appendix B

Aerial Photographs

1941

N

0 0.07 0.14 0.21 0.28 Kilometres

Scale: 1:5,000 @A4

Map Created by Canterbury Maps on 17/11/2022 at 9:45 AM


1976

1987

N

0 0.07 0.14 0.21 0.28 Kilometres

Scale: 1:5,000 @A4

Map Created by Canterbury Maps on 17/11/2022 at 9:46 AM

1995

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Information from this map may not be used for the purposes of any legal disputes. The user should independently verify the accuracy of any information before taking any action in reliance upon it.

N

0 0.07 0.14 0.21 0.28 Kilometres

Scale: 1:5,000 @A4

Map Created by Canterbury Maps on 17/11/2022 at 9:47 AM

2004-2010

N

0 0.07 0.14 0.21 0.28 Kilometres

Scale: 1:5,000 @A4

Map Created by Canterbury Maps on 17/11/2022 at 9:48 AM

2012

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Information from this map may not be used for the purposes of any legal disputes. The user should independently verify the accuracy of any information before taking any action in reliance upon it.

N

0 0.07 0.14 0.21 0.28 Kilometres

Scale: 1:5,000 @A4

Map Created by Canterbury Maps on 17/11/2022 at 9:48 AM

2017

N

0 0.07 0.14 0.21 0.28 Kilometres

Scale: 1:5,000 @A4

Map Created by Canterbury Maps on 17/11/2022 at 9:48 AM

canterbury maps

2020

N

0 0.07 0.14 0.21 0.28 Kilometres

Scale: 1:5,000 @A4

Map Created by Canterbury Maps on 17/11/2022 at 9:49 AM

Appendix C

Certificates of Title

RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD

Historical Search Copy

R.W. Muir
Registrar-General
of Land

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

Identifier **CB21F/859**

Land Registration District **Canterbury**

Date Issued 12 August 1980

Prior References
CB596/23

Estate Fee Simple

Area 64.9400 hectares more or less

Legal Description Lot 1 Deposited Plan 43334

Original Registered Owners

Mary Leta Miles, Gwendoline Kay Haines and Diane Mary Adams as Executors

---

Interests

845197.5 Easement Certificate specifying the following easements - Produced 21.12.1989 and entered 30.1.1990 at 9.00 am

Type	Servient Tenement	Easement Area	Dominant Tenement	Statutory Restriction
Convey water	Lot 2 Deposited Plan 54890 - CT CB32K/389	-	Lot 1 Deposited Plan 43334 - herein	

5501124.6 Surrender of the Convey water easement created by Transfer 845197.5 - 26.2.2003 at 9:00 am

5537121.1 Transfer to Graeme Walter John Small and Elizabeth Jane Small - 31.3.2003 at 9:00 am

5537121.2 Mortgage to ASB Bank Limited - 31.3.2003 at 9:00 am

REGISTER
Land and Deeds 69

No. 21F/859

References
Prior C/T 596/23

Transfer No.
N/C. Order No. T.287311/3

CERTIFICATE OF TITLE UNDER LAND TRANSFER ACT

This Certificate dated the 12th day of August one thousand nine hundred and eighty under the seal of the District Land Registrar of the Land Registration District of Canterbury

WITNESSETH that NOEL BASIL MILES of Ashburton, Farmer

is seised of an estate in fee-simple (subject to such reservations, restrictions, encumbrances, liens, and interests as are notified by memorial underwritten or endorsed hereon) in the land hereinafter described, delineated with bold black lines on the plan hereon, be the several admeasurements a little more or less, that is to say: All that parcel of land containing 64.9400 hectares or thereabouts situated in Block I of the Wakanui Survey District being Lot 1 on Deposited Plan 43334

DISTRICT LAND REGISTRAR
CANTERBURY N.Z.
for Assistant Land Registrar

No. 845197/5 Easement Certificate specifying intended easements on DP 54890

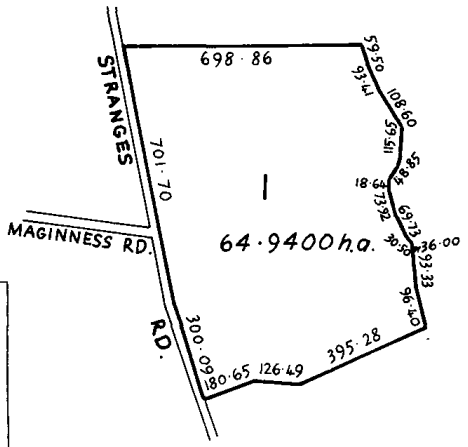
Nature	Servient Tenement	Dominant Tenement
Right to convey water	2 32K/389	1 herein

Produced 21.12.1989 and entered 30.1.1990 at 9.00am

A.L.R.

Transmission A100185/1 to Mary Leta Miles of Huntingdon, Widow, Gwendoline Kay Haines, Travel Manager and Diane Mary Adams, Clerk, both of Ashburton, as executors - 7.3.1994 at 9.03am

for A.L.R.



No. 21F/859

Measurements are Metric

CERTIFICATE OF TITLE No. /

34089J–50,000/7/79 M

CANCELLED

REGISTER

[Land and Deeds—4
FORM B.

Register-book,
Vol. 596 *., folio* 23

Reference: *Vol.* 283 *, Folio* 136, 139
Transfer No. 389372
Order for N/C No.

NEW ZEALAND

CERTIFICATE OF TITLE UNDER LAND TRANSFER ACT

This Certificate, dated the Eighth day of December, one thousand nine hundred and fifty-three under the hand and seal of the District Land Registrar of the Land Registration District of Canterbury **Witnesseth** that NOEL BASIL MILES of Ashburton Farmer

is seised of an estate in fee-simple (subject to such reservations, restrictions, encumbrances, liens, and interests as are notified by memorial under written or endorsed hereon, subject also to any existing right of the Crown to take and lay off roads under the provisions of any Act of the General Assembly of New Zealand) in the land hereinafter described, as the same is delineated by the plan hereon bordered green, be the several admeasurements a little more or less, that is to say: All that parcel of land containing FOUR HUNDRED AND TWENTY-ONE ACRES THREE ROODS AND TWENTY PERCHES or thereabouts situated in Blocks I and V of the Wakanui Survey District being Lots 4 and 5 and part of Lot 6 on Deposited Plan No.3650 and part of Lot 1 on Deposited Plan No.3649 Rural Sections 24304, 24304x, 24336, 24336x, 24336w and part of Rural Sections 6793, 6793x, 8417, 25695, 25695x, 25702 and 25702x.

CANTERBURY DISTRICT LAND REGISTRAR NEW ZEALAND

District Land Registrar.

389373 Mortgage Noel Basil Miles to The Superannuary Fund Board of the Methodist Church of New Zealand (Incorporated) and The Methodist Church of New Zealand Extraordinary Purposes Fund Board (Incorporated) 8 December 1953 at 11.55 a.m.

DISCHARGED

D.L.R.

389374 Mortgage. Noel Basil Miles to George Raymond Morse Mines Producer 8 December 1953 at 11.56 a.m.

DISCHARGED

D.L.R.

Variation of the above Mortgage 389373 produced the 31st day of October 1964 at 9.32 a.m.

DISCHARGED

A.L.R.

Mortgage 713274 to The Superannuary Fund Board of the Methodist Church of New Zealand Incorporated and The Methodist Church of New Zealand Extraordinary Purposes Fund Board (Incorporated) as shares 13.6.1967 at 12 noon

DISCHARGED

A.L.R.

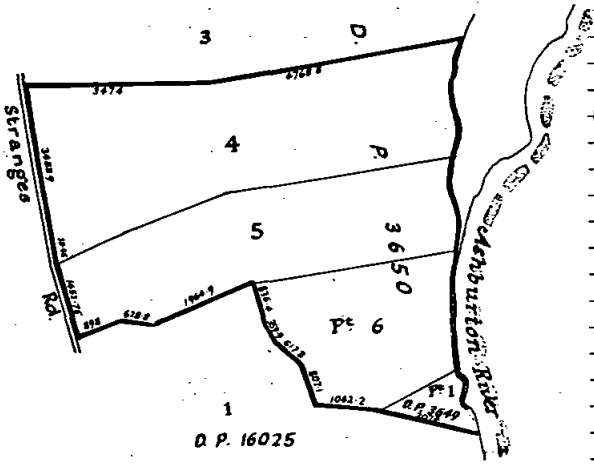
THIS REPRODUCTION (ON A REDUCED SCALE) CERTIFIED TO BE A TRUE COPY OF THE ORIGINAL REGISTER FOR THE PURPOSES OF SECTION 215A LAND TRANSFER ACT 1952.

A.L.R.

Variation of Mortgage 713274 - 6.5.1977 at 10.44 a.m.

D.L.R.

No. 235395/1 Amalgamation Correspondence



METRIC AREA:— 170.7267 ha

Area 421. 3. 20

Scale: 20 chains to an inch

OVER

PLAN No. 43334 DEPOSITED 12/8/1980

Transfer 287311/2 of Lot 3 D.P. 43334 to Rex Philip Lash and Natalie Jane Lash - 12-8-1980 at 11.20a.m.
21F/861 issued

A.L.R.

Transfer 287311/3 of Lot 2 D.P. 43334 to Malcolm James Stewart and Lynn Maree Stewart as tenants in common in equal shares - 12-8-1980 at 11.20a .m.
21F/860 issued

A.L.R.

T.287311/3) 21F/859 issued for Lot 1
12-8-1980) D.P. 43334 (Balance)

A.L.R.

CANCELLED

DUPLICATE DESTROYED

Appendix D

Listed Land Use Register (LLUR)

Environment Canterbury
Regional Council
Kaunihera Taiao ki Waitaha

Customer Services
P. 03 353 9007 or 0800 324 636

PO Box 345
Christchurch 8140

P. 03 365 3828
F. 03 365 3194
E. ecinfo@ecan.govt.nz

www.ecan.govt.nz

Dear Sir/Madam

Thank you for submitting your property enquiry from our Listed Land Use Register (LLUR). The LLUR holds information about sites that have been used or are currently used for activities which have the potential to cause contamination.

The LLUR statement shows the land parcel(s) you enquired about and provides information regarding any potential LLUR sites within a specified radius.

Please note that if a property is not currently registered on the LLUR, it does not mean that an activity with the potential to cause contamination has never occurred, or is not currently occurring there. The LLUR database is not complete, and new sites are regularly being added as we receive information and conduct our own investigations into current and historic land uses.

The LLUR only contains information held by Environment Canterbury in relation to contaminated or potentially contaminated land; additional relevant information may be held in other files (for example consent and enforcement files).

Please contact Environment Canterbury if you wish to discuss the contents of this property statement.

Yours sincerely

Contaminated Sites Team

Property Statement
from the Listed Land Use Register

Visit ecan.govt.nz/HAIL for more information or
contact Customer Services at ecan.govt.nz/contact/ and quote ENQ331643

Date generated: 07 November 2022
Land parcels: Lot 1 DP 43334

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

Sites at a glance

Sites within enquiry area

Site number	Name	Location	HAIL activity(s)	Category
278595	Lot 1 DP 43334	Lot 1 DP 43334	A8 - Livestock dip or spray race operations;	Not Investigated

More detail about the sites

Site 278595: Lot 1 DP 43334 (Intersects enquiry area.)

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

Location: Lot 1 DP 43334
Legal description(s): Lot 1 DP 43334

HAIL activity(s):

Period from	Period to	HAIL activity

1941	1987	Livestock dip or spray race operations

Notes:

5 Aug 2020	A sheep dip was noted in aerial photographs reviewed in 1941 and in a 1976 Retrolens photograph (Run/Photo Number: W/1).
5 Aug 2020	This record was created as part of the Ashburton District 2020 HAIL identification project.

Investigations:

There are no investigations associated with this site.

Disclaimer

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

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

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

Environment Canterbury Regional Council
Kaunihera Taiao ki Waitaha

Listed Land Use Register

What you need to know

Everything is connected

What is the Listed Land Use Register (LLUR)?

The LLUR is a database that Environment Canterbury uses to manage information about land that is, or has been, associated with the use, storage or disposal of hazardous substances.

Why do we need the LLUR?

Some activities and industries are hazardous and can potentially contaminate land or water. We need the LLUR to help us manage information about land which could pose a risk to your health and the environment because of its current or former land use.

Section 30 of the Resource Management Act (RMA, 1991) requires Environment Canterbury to investigate, identify and monitor contaminated land. To do this we follow national guidelines and use the LLUR to help us manage the information.

The information we collect also helps your local district or city council to fulfil its functions under the RMA. One of these is implementing the National Environmental Standard (NES) for Assessing and Managing Contaminants in Soil, which came into effect on 1 January 2012.

For information on the NES, contact your city or district council.

How does Environment Canterbury identify sites to be included on the LLUR?

We identify sites to be included on the LLUR based on a list of land uses produced by the Ministry for the Environment (MfE). This is called the Hazardous Activities and Industries List (HAIL)[1]. The HAIL has 53 different activities, and includes land uses such as fuel storage sites, orchards, timber treatment yards, landfills, sheep dips and any other activities where hazardous substances could cause land and water contamination.

We have two main ways of identifying HAIL sites:

- We are actively identifying sites in each district using historic records and aerial photographs. This project started in 2008 and is ongoing.
- We also receive information from other sources, such as environmental site investigation reports submitted to us as a requirement of the Regional Plan, and in resource consent applications.

[1] The Hazardous Activities and Industries List (HAIL) can be downloaded from MfE's website www.mfe.govt.nz, keyword search HAIL

How does Environment Canterbury classify sites on the LLUR?

Where we have identified a HAIL land use, we review all the available information, which may include investigation reports if we have them. We then assign the site a category on the LLUR. The category is intended to best describe what we know about the land use and potential contamination at the site and is signed off by a senior staff member.

Please refer to the Site Categories and Definitions factsheet for further information.

What does Environment Canterbury do with the information on the LLUR?

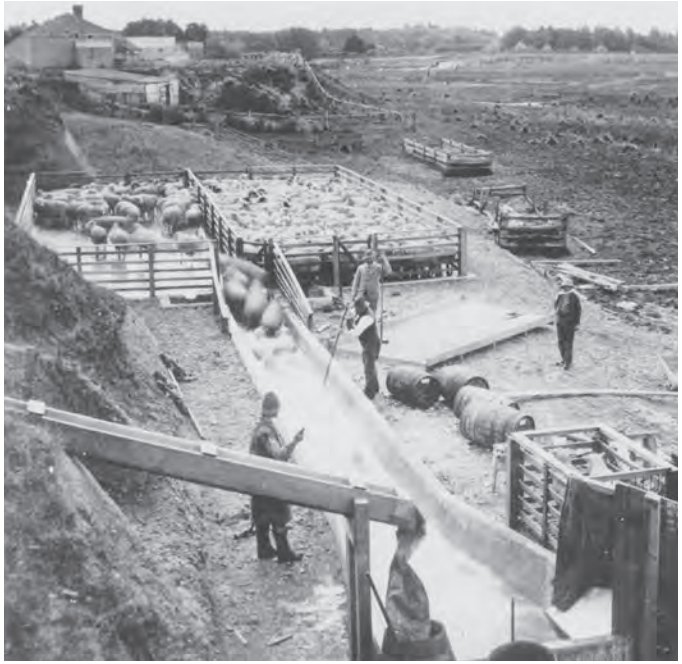
The LLUR is available online at www.llur.ecan.govt.nz. We mainly receive enquiries from potential property buyers and environmental consultants or engineers working on sites. An inquirer would typically receive a summary of any information we hold, including the category assigned to the site and a list of any investigation reports.

We may also use the information to prioritise sites for further investigation, remediation and management, to aid with planning, and to help assess resource consent applications. These are some of our other responsibilities under the RMA.

If you are conducting an environmental investigation or removing an underground storage tank at your property, you will need to comply with the rules in the Regional Plan and send us a copy of the report. This means we can keep our records accurate and up-to-date, and we can assign your property an appropriate category on the LLUR. To find out more, visit www.ecan.govt.nz/HAIL.

IMPORTANT!

The LLUR is an online database which we are continually updating. A property may not currently be registered on the LLUR, but this does not necessarily mean that it hasn't had a HAIL use in the past.



Sheep dipping (ABOVE) and gas works (TOP) are among the former land uses that have been identified as potentially hazardous. (Photo above by Wheeler & Son in 1987, courtesy of Canterbury Museum.)

My land is on the LLUR – what should I do now?

IMPORTANT! Just because your property has a land use that is deemed hazardous or is on the LLUR, it doesn't necessarily mean it's contaminated. The only way to know if land is contaminated is by carrying out a detailed site investigation, which involves collecting and testing soil samples.

You do not need to do anything if your land is on the LLUR and you have no plans to alter it in any way. It is important that you let a tenant or buyer know your land is on the Listed Land Use Register if you intend to rent or sell your property. If you are not sure what you need to tell the other party, you should seek legal advice.

You may choose to have your property further investigated for your own peace of mind, or because you want to do one of the activities covered by the National Environmental Standard for Assessing and Managing Contaminants in Soil. Your district or city council will provide further information.

If you wish to engage a suitably qualified experienced practitioner to undertake a detailed site investigation, there are criteria for choosing a practitioner on www.ecan.govt.nz/HAIL.

I think my site category is incorrect – how can I change it?

If you have an environmental investigation undertaken at your site, you must send us the report and we will review the LLUR category based on the information you provide. Similarly, if you have information that clearly shows your site has not been associated with HAIL activities (eg. a preliminary site investigation), or if other HAIL activities have occurred which we have not listed, we need to know about it so that our records are accurate.

If we have incorrectly identified that a HAIL activity has occurred at a site, it will be not be removed from the LLUR but categorised as Verified Non-HAIL. This helps us to ensure that the same site is not re-identified in the future.

Contact us

Property owners have the right to look at all the information Environment Canterbury holds about their properties.

It is free to check the information on the LLUR, online at www.llur.ecan.govt.nz.

If you don't have access to the internet, you can enquire about a specific site by phoning us on (03) 353 9007 or toll free on 0800 EC INFO (32 4636) during business hours.

Contact Environment Canterbury:

Email: ecinfo@ecan.govt.nz

Phone:
Calling from Christchurch: (03) 353 9007
Calling from any other area: 0800 EC INFO (32 4636)

Environment Canterbury Regional Council
Kaunihera Taiao ki Waitaha

Everything is connected

Promoting quality of life through balanced resource management.

www.ecan.govt.nz E13/101

Listed Land Use Register

Site categories and definitions

When Environment Canterbury identifies a Hazardous Activities and Industries List (HAIL) land use, we review the available information and assign the site a category on the Listed Land Use Register. The category is intended to best describe what we know about the land use.

If a site is categorised as **Unverified** it means it has been reported or identified as one that appears on the HAIL, but the land use has not been confirmed with the property owner.

If the land use has been confirmed but analytical information from the collection of samples is not available, and the presence or absence of contamination has therefore not been determined, the site is registered as:

Not investigated:

- A site whose past or present use has been reported and verified as one that appears on the HAIL.
- The site has not been investigated, which might typically include sampling and analysis of site soil, water and/or ambient air, and assessment of the associated analytical data.
- There is insufficient information to characterise any risks to human health or the environment from those activities undertaken on the site. Contamination may have occurred, but should not be assumed to have occurred.

If analytical information from the collection of samples is available, the site can be registered in one of six ways:

At or below background concentrations:

The site has been investigated or remediated. The investigation or post remediation validation results confirm there are no hazardous substances above local background concentrations other than those that occur naturally in the area. The investigation or validation sampling has been sufficiently detailed to characterise the site.

Below guideline values for:

The site has been investigated. Results show that there are hazardous substances present at the site but indicate that any adverse effects or risks to people and/or the environment are considered to be so low as to be acceptable. The site may have been remediated to reduce contamination to this level, and samples taken after remediation confirm this.

Environment Canterbury Regional Council
Kaunihera Taiao ki Waitaha

Managed for:

The site has been investigated. Results show that there are hazardous substances present at the site in concentrations that have the potential to cause adverse effects or risks to people and/or the environment. However, those risks are considered managed because:

- the nature of the use of the site prevents human and/or ecological exposure to the risks; and/or
- the land has been altered in some way and/or restrictions have been placed on the way it is used which prevent human and/or ecological exposure to the risks.

Partially investigated:

The site has been partially investigated. Results:

- demonstrate there are hazardous substances present at the site; however, there is insufficient information to quantify any adverse effects or risks to people or the environment; or
- do not adequately verify the presence or absence of contamination associated with all HAIL activities that are and/or have been undertaken on the site.

Significant adverse environmental effects:

The site has been investigated. Results show that sediment, groundwater or surface water contains hazardous substances that:

- have significant adverse effects on the environment; or
- are reasonably likely to have significant adverse effects on the environment.

Contaminated:

The site has been investigated. Results show that the land has a hazardous substance in or on it that:

- has significant adverse effects on human health and/or the environment; and/or
- is reasonably likely to have significant adverse effects on human health and/or the environment.

If a site has been included incorrectly on the Listed Land Use Register as having a HAIL, it will not be removed but will be registered as:

Verified non-HAIL:

Information shows that this site has never been associated with any of the specific activities or industries on the HAIL.

Please contact Environment Canterbury for further information:

(03) 353 9007 or toll free
on 0800 EC INFO (32 4636)
email ecinfo@ecan.govt.nz

Environment Canterbury Regional Council
Kaunihera Taiao ki Waitaha

E13/102

Appendix E - Laboratory Reports and Chain of Custody Documentation

Table A.1: Soil Sample Results - Heavy Metals/Organochlorine Pesticides - Zone A: Residential Dwelling - 279 Stranges Road, Lake Hood

Sample Name	SS02A@0.0m	SS03A@0.0m	SS04A@0.0m	SS05A@0.0m	Human Health Based Soil Contaminant Standard	Human Health Based Soil Contaminant Standard	Environment Canterbury Background Concentrations[3]
Sample Depth (m)	0.0	0.0	0.0	0.0			
Laboratory Reference	3382170.1	3382170.2	3382170.3	3382170.4	Residential 10% Produce	Commercial/Industrial Outdoor Worker (Unpaved)	Regional Recent
Date	6-10-23	6-10-23	6-10-23	6-10-23			
Heavy Metals							
Arsenic	5	3	4	4	20 [1]	70 [1]	12.58
Cadmium	0.17	< 0.10	0.14	0.11	3 [1,4]	1,300 [1,4]	0.19
Chromium	22	17	16	17	460 [1,5]	6,300 [1,5]	22.70
Copper	**33**	13	17	**29**	>10,000 [1]	>10,000 [1]	20.30
Lead	**179**	**66**	39	**43**	210 [1]	3,300 [1]	40.96
Nickel	14	13	12	12	400 [2]	6,000 [2]	20.70
Zinc	**191**	92	88	**106**	7,400 [2]	400,000 [2]	93.94
Organochlorine Pesticides (OCP)							
ΣDDT[8]	-	-	-	< 0.078	70 [1,6]	1,000 [1,6]	0.431 [9]
Dieldrin[8]	-	-	-	< 0.026	2.6 [1,7]	160 [1,7]	_

Table A.2: Soil Sample Results - Heavy Metals/Organochlorine Pesticides - Zone B and C: Sheep Dips - 279 Stranges Road, Lake Hood

Sample Name	SS01B@0.0m	SS02B@0.0m	SS04B@0.3m	SS05B@0.0m	SS07B@0.0m	SS01C@0.0m	SS02C@0.3m	SS03C@0.0m	SS04C@0.0m	Human Health Based Soil Contaminant Standard	Environment Canterbury Background Concentrations[3]
Sample Depth (m)	0.0	0.0	0.3	0.0	0.0	0.0	0.3	0.0	0.0		
Laboratory Reference	3382170.5	3382170.6	3382170.7	3382170.8	3382170.9	3382170.10	3382170.11	3382170.12	3382170.13	Commercial/Industrial Outdoor Worker (Unpaved)	Regional - Recent
Date	6-10-23	6-10-23	6-10-23	6-10-23	6-10-23	6-10-23	6-10-23	6-10-23	6-10-23		
Heavy Metals											
Arsenic	**16**	9	8	5	6	**29**	7	**25**	**64**	70 [1]	12.58
Cadmium	0.14	0.15	0.11	0.14	**0.52**	< 0.10	< 0.10	< 0.10	0.12	1,300 [1,4]	0.19
Chromium	16	17	17	18	18	15	18	16	16	6,300 [1,5]	22.70
Copper	**260**	**84**	**45**	**21**	**23**	13	13	13	14	>10,000 [1]	20.30
Lead	36	27	24	31	34	18.3	18.8	18.8	21	3,300 [1]	40.96
Nickel	12	12	12	13	13	11	13	12	12	6,000 [2]	20.70
Zinc	**100**	91	81	92	**161**	64	63	63	62	400,000 [2]	93.94
Organochlorine Pesticides (OCP)											
ΣDDT[8]	0.121	0.192	0.194	0.233	-	-	0.097	0.051	0.074	1,000 [1,6]	0.431 [9]
Dieldrin[8]	0.033	0.021	< 0.024	< 0.024	-	-	0.026	0.09	0.23	160 [1,7]	_

Notes:

1. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health (MfE, 2011) Commerical / Industrial and Residential 10% produce Land Use
2. Guideline on Investigation Levels for Soil and Groundwater (Assessment of Site Contamination Amendment Measure 2013) (NEPC, 2013)
3. Background concentrations of selected trace elements in Canterbury soils - Addendum 1. (ECan 2007, Report no. R07/1/2). Based on Regional Recent soil type - background concentration value based on maximum plus half inter-quartile range (excluding outliers, which are indicated in brackets).
4. Based on a default pH of 5.
5. Soil contaminant standard for Cr VI used as a conservative approach.
6. Results for DDT, DDD and DDE summed and compared to soil contaminant standard for DDT.
7. Results for Aldrin and Dieldrin summed and compared to soil contaminant standard for Dieldrin.
8. Where one or more of the compounds was below the detection limit, a value of half the detection limit was used in the sum. Where all compounds in the sum are non-detects, the overall detection limit is the sum of the detection limits.
9. Background soils concentration for DDT - Ministry for the Environment, December 1998. Ambient Concentrations of Selected Organochlorines in Soils. Ministry for the Environment, Wellington.

Results in **bold** exceed regional background levels

All results in mg/kg.

33	Concentration above reported ECan Background soil concentration.

Table B: Soil Sample Result - Total Petroleum Hydrocarbons - ALL PATHWAYS - 279 Stranges Road, Lake Hood

Soil Samples Collected at a Depth of < 1 m Below Ground Level [1]		
Sample Name	SS07B@0.0m	Tier 1 Soil Acceptance Criteria[2,3] Commercial/ Industrial Land Use ALL PATHWAYS
Laboratory Reference	3382170.9	
Sample Location	Implement Shed	
Soil Fate	Remaining	Sandy Silt
Soil Type - Field	Sandy Silt	
Soil Type - MfE (2011)	Sandy Silt	
Sample Depth (m bgl)	0.0	<1 m
PID Reading (ppmv)	-	
C_7-C_9 hydrocarbons	< 20	(500) [6,5m]
C_{10}-C_{14} hydrocarbons	< 20	(1,700) [6,5x]
C_{15}-C_{36} hydrocarbons	95	NA [4]
TPH	95	-

Note:

1. All results in mg/kg.
2. Criteria from Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand, Revised 2011 (MfE 2011).
3. Criteria assume commercial/industrial land use, 'sandy silt' soil type and contamination depth of < 1 m below ground level.
4. NA indicates contaminant is not limiting as health based criterion is significantly higher than may be encountered on site (i.e. 20,000 mg/kg for TPH, 10,000 mg/kg for other contaminants).
5. The following notes indicate the limiting pathway for each criterion: m - maintenance/excavation and x - PAH surrogate.
6. Brackets denote values exceed threshold likely to correspond to formation of residual separate phase hydrocarbons.

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Hamilton 3240 New Zealand

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Certificate of Analysis

Client:	Pattle Delamore Partners Limited	**Lab No:**	3382170	SPv1
Contact:	Gerard Stark	**Date Received:**	10-Oct-2023	
	C/- Pattle Delamore Partners Limited	**Date Reported:**	16-Oct-2023	
	PO Box 389	**Quote No:**	81087	
	Christchurch 8140	**Order No:**	C04965100	
		Client Reference:	C04965100	
		Submitted By:	Holly Eeg	

Sample Type: Soil

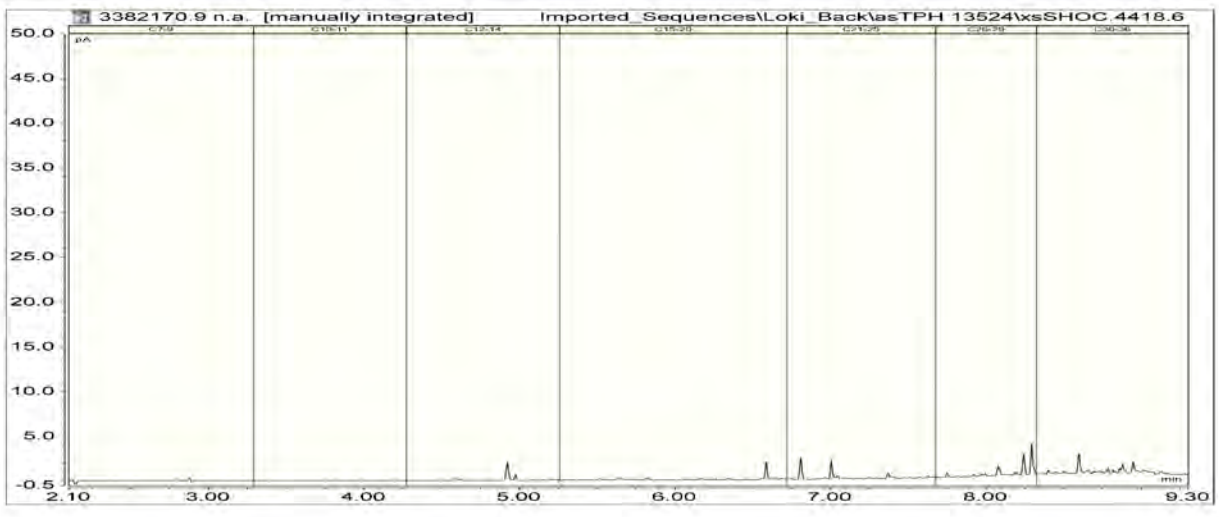
Sample Name:		South Lawn - SS02A@0.0m	South Lawn - SS03A@0.0m	North lawn - SS04A@0.0m	North lawn - SS05A@0.0m	Sheep dip North - SS01B@0.0m
Lab Number:		3382170.1	3382170.2	3382170.3	3382170.4	3382170.5
Individual Tests						
Dry Matter	g/100g as rcvd	-	-	-	74	87
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	5	3	4	4	16
Total Recoverable Cadmium	mg/kg dry wt	0.17	< 0.10	0.14	0.11	0.14
Total Recoverable Chromium	mg/kg dry wt	22	17	16	17	16
Total Recoverable Copper	mg/kg dry wt	33	13	17	29	260
Total Recoverable Lead	mg/kg dry wt	179	66	39	43	36
Total Recoverable Nickel	mg/kg dry wt	14	13	12	12	12
Total Recoverable Zinc	mg/kg dry wt	191	92	88	106	100
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	-	-	-	< 0.013	< 0.011
alpha-BHC	mg/kg dry wt	-	-	-	< 0.013	< 0.011
beta-BHC	mg/kg dry wt	-	-	-	< 0.013	< 0.011
delta-BHC	mg/kg dry wt	-	-	-	< 0.013	< 0.011
gamma-BHC (Lindane)	mg/kg dry wt	-	-	-	< 0.013	< 0.011
cis-Chlordane	mg/kg dry wt	-	-	-	< 0.013	< 0.011
trans-Chlordane	mg/kg dry wt	-	-	-	< 0.013	< 0.011
2,4'-DDD	mg/kg dry wt	-	-	-	< 0.013	< 0.011
4,4'-DDD	mg/kg dry wt	-	-	-	< 0.013	< 0.012
2,4'-DDE	mg/kg dry wt	-	-	-	< 0.013	< 0.011
4,4'-DDE	mg/kg dry wt	-	-	-	< 0.013	0.039
2,4'-DDT	mg/kg dry wt	-	-	-	< 0.013	0.012
4,4'-DDT	mg/kg dry wt	-	-	-	< 0.013	0.053
Total DDT Isomers	mg/kg dry wt	-	-	-	< 0.08	0.11
Dieldrin	mg/kg dry wt	-	-	-	< 0.013	0.033
Endosulfan I	mg/kg dry wt	-	-	-	< 0.013	< 0.011
Endosulfan II	mg/kg dry wt	-	-	-	< 0.013	< 0.011
Endosulfan sulphate	mg/kg dry wt	-	-	-	< 0.013	< 0.011
Endrin	mg/kg dry wt	-	-	-	< 0.013	< 0.011
Endrin aldehyde	mg/kg dry wt	-	-	-	< 0.013	< 0.011
Endrin ketone	mg/kg dry wt	-	-	-	< 0.013	< 0.011
Heptachlor	mg/kg dry wt	-	-	-	< 0.013	< 0.011
Heptachlor epoxide	mg/kg dry wt	-	-	-	< 0.013	< 0.011
Hexachlorobenzene	mg/kg dry wt	-	-	-	< 0.013	< 0.011
Methoxychlor	mg/kg dry wt	-	-	-	< 0.013	< 0.011

Sample Type: Soil						
Sample Name:		Sheep dip North - SS02B@0.0m	Centre sheep dip - SS04B@0.3m	Sheep dip North - SS05B@0.0m	Implement shed - SS07B@0.0m	Sheep dip South - SS01C@0.0m
Lab Number:		3382170.6	3382170.7	3382170.8	3382170.9	3382170.10
Individual Tests						
Dry Matter	g/100g as rcvd	84	82	81	86	-
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	9	8	5	6	29
Total Recoverable Cadmium	mg/kg dry wt	0.15	0.11	0.14	0.52	< 0.10
Total Recoverable Chromium	mg/kg dry wt	17	17	18	18	15
Total Recoverable Copper	mg/kg dry wt	84	45	21	23	13
Total Recoverable Lead	mg/kg dry wt	27	24	31	34	18.3
Total Recoverable Nickel	mg/kg dry wt	12	12	13	13	11
Total Recoverable Zinc	mg/kg dry wt	91	81	92	161	64
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.012	< 0.012	< 0.012	-	-
alpha-BHC	mg/kg dry wt	< 0.012	< 0.012	< 0.012	-	-
beta-BHC	mg/kg dry wt	< 0.012	< 0.012	< 0.012	-	-
delta-BHC	mg/kg dry wt	< 0.012	< 0.012	< 0.012	-	-
gamma-BHC (Lindane)	mg/kg dry wt	< 0.012	< 0.012	< 0.012	-	-
cis-Chlordane	mg/kg dry wt	< 0.012	< 0.012	< 0.012	-	-
trans-Chlordane	mg/kg dry wt	< 0.012	< 0.012	< 0.012	-	-
2,4'-DDD	mg/kg dry wt	< 0.012	< 0.012	< 0.012	-	-
4,4'-DDD	mg/kg dry wt	< 0.012	0.012	< 0.012	-	-
2,4'-DDE	mg/kg dry wt	< 0.012	< 0.012	< 0.012	-	-
4,4'-DDE	mg/kg dry wt	0.105	0.077	0.154	-	-
2,4'-DDT	mg/kg dry wt	0.013	0.014	0.012	-	-
4,4'-DDT	mg/kg dry wt	0.056	0.079	0.049	-	-
Total DDT Isomers	mg/kg dry wt	0.18	0.18	0.23	-	-
Dieldrin	mg/kg dry wt	0.015	< 0.012	< 0.012	-	-
Endosulfan I	mg/kg dry wt	< 0.012	< 0.012	< 0.012	-	-
Endosulfan II	mg/kg dry wt	< 0.012	< 0.012	< 0.012	-	-
Endosulfan sulphate	mg/kg dry wt	< 0.012	< 0.012	< 0.012	-	-
Endrin	mg/kg dry wt	< 0.012	< 0.012	< 0.012	-	-
Endrin aldehyde	mg/kg dry wt	< 0.012	< 0.012	< 0.012	-	-
Endrin ketone	mg/kg dry wt	< 0.012	< 0.012	< 0.012	-	-
Heptachlor	mg/kg dry wt	< 0.012	< 0.012	< 0.012	-	-
Heptachlor epoxide	mg/kg dry wt	< 0.012	< 0.012	< 0.012	-	-
Hexachlorobenzene	mg/kg dry wt	< 0.012	< 0.012	< 0.012	-	-
Methoxychlor	mg/kg dry wt	< 0.012	< 0.012	< 0.012	-	-
Total Petroleum Hydrocarbons in Soil						
C7 - C9	mg/kg dry wt	-	-	-	< 20	-
C10 - C14	mg/kg dry wt	-	-	-	< 20	-
C15 - C36	mg/kg dry wt	-	-	-	95	-
Total hydrocarbons (C7 - C36)	mg/kg dry wt	-	-	-	95	-

Sample Name:		Sheep dip South - SS02C@0.3m	Sheep dip South - SS03C@0.0m	Historical shed - SS04C@0.0m
Lab Number:		3382170.11	3382170.12	3382170.13
Individual Tests				
Dry Matter	g/100g as rcvd	78	83	90
Heavy Metals, Screen Level				
Total Recoverable Arsenic	mg/kg dry wt	7	25	64
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	< 0.10	0.12
Total Recoverable Chromium	mg/kg dry wt	18	16	16
Total Recoverable Copper	mg/kg dry wt	13	13	14
Total Recoverable Lead	mg/kg dry wt	18.8	18.8	21
Total Recoverable Nickel	mg/kg dry wt	13	12	12
Total Recoverable Zinc	mg/kg dry wt	63	63	62

Sample Type: Soil				
Sample Name:		Sheep dip South - SS02C@0.3m	Sheep dip South - SS03C@0.0m	Historical shed - SS04C@0.0m
Lab Number:		3382170.11	3382170.12	3382170.13
Organochlorine Pesticides Screening in Soil				
Aldrin	mg/kg dry wt	< 0.013	< 0.013	< 0.011
alpha-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.011
beta-BHC	mg/kg dry wt	< 0.013	< 0.013	0.054
delta-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.011
gamma-BHC (Lindane)	mg/kg dry wt	< 0.013	< 0.013	< 0.011
cis-Chlordane	mg/kg dry wt	< 0.013	< 0.013	< 0.011
trans-Chlordane	mg/kg dry wt	< 0.013	< 0.013	< 0.011
2,4'-DDD	mg/kg dry wt	< 0.013	< 0.013	< 0.011
4,4'-DDD	mg/kg dry wt	< 0.013	< 0.013	< 0.011
2,4'-DDE	mg/kg dry wt	< 0.013	< 0.013	< 0.011
4,4'-DDE	mg/kg dry wt	0.065	0.019	0.036
2,4'-DDT	mg/kg dry wt	< 0.013	< 0.013	< 0.011
4,4'-DDT	mg/kg dry wt	< 0.013	< 0.013	0.016
Total DDT Isomers	mg/kg dry wt	< 0.08	< 0.08	< 0.07
Dieldrin	mg/kg dry wt	0.013	0.086	0.22
Endosulfan I	mg/kg dry wt	< 0.013	< 0.013	< 0.011
Endosulfan II	mg/kg dry wt	< 0.013	< 0.013	< 0.011
Endosulfan sulphate	mg/kg dry wt	< 0.013	< 0.013	< 0.011
Endrin	mg/kg dry wt	< 0.013	< 0.013	< 0.011
Endrin aldehyde	mg/kg dry wt	< 0.013	< 0.013	< 0.011
Endrin ketone	mg/kg dry wt	< 0.013	< 0.013	< 0.011
Heptachlor	mg/kg dry wt	< 0.013	< 0.013	< 0.011
Heptachlor epoxide	mg/kg dry wt	< 0.013	< 0.013	< 0.011
Hexachlorobenzene	mg/kg dry wt	< 0.013	< 0.013	< 0.011
Methoxychlor	mg/kg dry wt	< 0.013	< 0.013	< 0.011

3382170.9
Implement shed - SS07B@0.0m
Client Chromatogram for TPH by FID



Summary of Methods

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

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Individual Tests			
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%.	-	1-13

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	4-9, 11-13
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	1-13
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	4-8, 11-13
Total Petroleum Hydrocarbons in Soil			
Client Chromatogram for TPH by FID	Small peaks associated with QC compounds may be visible in chromatograms with low TPH concentrations. QC peaks are as follows: one peak in the C12 - 14 band, the C21 - 25 band and the C30 - 36 band. All QC peaks are corrected for in the reported TPH concentrations.	-	9
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	20 mg/kg dry wt	9
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	9
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	9
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	9

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

Testing was completed between 10-Oct-2023 and 16-Oct-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

PATTLE DELAMORE PARTNERS LTD

Request for Analyses

of these samples
form and emailing to submitter.

From: Pattle Delamore Partners Ltd

To: Hill Labs

Office: ☐ Auckland ☐ Tauranga ☐ Wellington ☑ Christchurch

Quote No.:

Submitted by: Holly Eeg

Ph No.: 027 756 8867

PDP Job No.: C04695100

Job No: 338 2170

Date Recv: 10-Oct-23 07:51

Received by: Nathaniel Sue

3133821704

Chain of Custody Record

Sent:

Name: Holly Eeg

Signature:

Date and time: ~~10/10/23~~ 9/10/23

Received: ☐ Room temp. ☐ Chilled Temp.: 6.8 °C ☐ Frozen

Name:

Signature:

Date and time:

Additional Thomas

Results to: ☐ lab.samples@pdp.co.nz

☑ Email submitter: holly.eeg@pdp.co.nz @pdp.co.nz

☑ Email other: gerard.stark@pdp.co.nz @pdp.co.nz

Priority: ☑ Normal ☐ High ☐ Urgent

Results required by: / /

Invoice to: ☑ PDP ☐ Other:

Sample ID	Date	Time	Sample type	Analyses Requested	Notes
SS02A@0.0m				7e	South lawn
SS03A@0.0m				7e	South lawn
SS04A@0.0m				7e	North Lawn
SS05A@0.0m				7e, OCPs	North Lawn
SS01B@0.0m				7e, OCPs	Sheep Dip North
SS02B@0.0m				7e, OCPs	Sheep Dip North
SS04B@0.3m				7e, OCPs	center Sheep Dip
SS05B@0.0m				7e, OCPs	Sheep Dip North
SS07B@0.0m				7e, TPH	Implement Shed
SS01C@0.0				7e	Sheep Dip South
SS02C@0.3				7e, OCPs	Sheep Dip South
SS03C@0.0				7e, OCPs	Sheep Dip South
SS04C@0.0					Historical Shed

Sample type: S Soil; SED Sediment; GW Groundwater; BIO Biota; SAL Saline; WW Wastewater; FW Freshwater; P Potable; GEO Geothermal; O Other:; SW Stormwater

For physical address see www.pdp.co.nz

Note: Samples may contain dangerous or hazardous substances

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PDP Tauranga Tel: +64 7 985 6440
PDP Wellington Tel: +64 4 471 4130
PDP Christchurch Tel: +64 3 345 7100

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+64 7 858 2000
mail@hill-labs.co.nz
www.**hill-labs**.co.nz

Job Information Summary

Client:	Pattle Delamore Partners Limited	**Lab No:**	3382170
Contact:	Gerard Stark	**Date Registered:**	10-Oct-2023 1:01 pm
	C/- Pattle Delamore Partners Limited	**Priority:**	High
	PO Box 389	**Quote No:**	81087
	Christchurch 8140	**Order No:**	C04695100
		Client Reference:	C04695100
		Add. Client Ref:	
		Submitted By:	Holly Eeg
		Charge To:	Pattle Delamore Partners Limited
		Target Date:	12-Oct-2023 4:30 pm

Samples

No	Sample Name	Sample Type	Containers	Tests Requested
1	South Lawn - SS02A@0.0m	Soil	GSoil300, GSoil300	Heavy Metals, Screen Level
2	South Lawn - SS03A@0.0m	Soil	GSoil300, GSoil300	Heavy Metals, Screen Level
3	North lawn - SS04A@0.0m	Soil	GSoil300, GSoil300	Heavy Metals, Screen Level
4	North lawn - SS05A@0.0m	Soil	GSoil300, GSoil300	Heavy Metals, Screen Level; Organochlorine Pesticides Screening in Soil
5	Sheep dip North - SS01B@0.0m	Soil	GSoil300, GSoil300	Heavy Metals, Screen Level; Organochlorine Pesticides Screening in Soil
6	Sheep dip North - SS02B@0.0m	Soil	GSoil300, GSoil300	Heavy Metals, Screen Level; Organochlorine Pesticides Screening in Soil
7	Centre sheep dip - SS04B@0.3m	Soil	GSoil300, GSoil300	Heavy Metals, Screen Level; Organochlorine Pesticides Screening in Soil
8	Sheep dip North - SS05B@0.0m	Soil	GSoil300, GSoil300	Heavy Metals, Screen Level; Organochlorine Pesticides Screening in Soil
9	Implement shed - SS07B@0.0m	Soil	GSoil300, GSoil300	Heavy Metals, Screen Level; Total Petroleum Hydrocarbons in Soil
10	Sheep dip South - SS01C@0.0m	Soil	GSoil300, GSoil300	Heavy Metals, Screen Level
11	Sheep dip South - SS02C@0.3m	Soil	GSoil300, GSoil300	Heavy Metals, Screen Level; Organochlorine Pesticides Screening in Soil
12	Sheep dip South - SS03C@0.0m	Soil	GSoil300, GSoil300	Heavy Metals, Screen Level; Organochlorine Pesticides Screening in Soil
13	Historical shed - SS04C@0.0m	Soil	GSoil300, GSoil300	Heavy Metals, Screen Level; Organochlorine Pesticides Screening in Soil

Summary of Methods

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

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Individual Tests			
Environmental Solids Sample Drying	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%.	-	1-13
Dry Matter	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	4-9, 11-13
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	1-13
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	4-8, 11-13
Total Petroleum Hydrocarbons in Soil			

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Client Chromatogram for TPH by FID	Small peaks associated with QC compounds may be visible in chromatograms with low TPH concentrations. QC peaks are as follows: one peak in the C12 - 14 band, the C21 - 25 band and the C30 - 36 band. All QC peaks are corrected for in the reported TPH concentrations.	-	9
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	20 mg/kg dry wt	9
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	9
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	9
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	9