Soil Contamination Risk
Preliminary and Detailed Site Investigation Report

10/487 Weedons Road,
Rolleston, Canterbury

December 2024

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QUALITY CONTROL AND CERTIFICATION SHEET

Client: Your Section

Date of Issue: 17 December 2024

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1 Executive Summary

The subject site is a rural residential lot located at 10/487 Weedons Road, Rolleston, Canterbury. It is proposed to rezone the subject site to allow residential development. This will enable future change in land use, subdivision and disturbance of soils. Therefore, an assessment under the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 (NESCS) is required. It is also noted that Momentum Environmental Ltd (MEL) is obligated to consider the requirements of Section 10 (4) of the Health and Safety at Work (Asbestos) Regulations 2016.

The Preliminary Site Investigation (PSI) portion of this investigation identified potential sources of contamination on the subject site associated with confirmed or likely Hazardous Activities and Industries List (HAIL) activities and determined there may be a risk to human health from contaminated soils. It was recommended that a Detailed Site Investigation be undertaken on the identified risk areas. The identified potential sources of contamination were:

- Possible former livestock dip/spray race (HAIL A8).
- Possible storage of persistent pesticides within a former yard area (HAIL A10).
- Potential use of persistent pesticides on a former apple orchard (HAIL A10).
- Potential heavy metal and/or asbestos contamination from former buildings within a former yard area (HAIL I).
- Potential heavy metal contamination within current and possible former burn areas (HAIL I).

Soil sampling was undertaken on 02 December 2024. The soil sampling identified irregular arsenic contamination exceeding the 'residential 10% produce' soil guideline value (SGV) of 20mg/kg within the former yard area. The arsenic exceedances range from 22mg/kg to 192mg/kg. The arsenic concentrations were generally higher at 250mm depth than at the surface. Elevated concentrations of dieldrin are also present. The results to date have not identified dieldrin concentrations exceeding the 'residential 10% produce' SGV, however given the presence of dieldrin it is likely that a dip or spray race was present in this area, and it is possible that higher levels of dieldrin exist beyond the sampled locations.

Soil sampling also identified arsenic contamination exceeding the 'residential 10% produce' SGV within the current burn area (BP6) and one former burn area (BP9). The contaminated areas have not yet been delineated.

It is recommended that the former yard area and the contaminated burn areas be remediated prior to the change of use or development of each area. Before developing a Remediation Action Plan, further investigation should be undertaken within the former yard area to better define the contamination around the former dip area. Further investigation to delineate the extent of contamination around BP6 and BP9 could also be completed at this time. Alternatively, delineation of BP6 and BP9 could occur during remediation with the use of a portable XRF device.

The remainder of the subject site is considered suitable for residential use with no further investigations required. It is noted that surface soils contain one or more heavy metals, mainly copper, above expected background levels at the majority of sample locations across the subject site, which may impact disposal options for any excess soils requiring offsite disposal.

At the time of writing this report, the NESCS does apply to the subject site and resource consent will be required.

2 Objectives of the Investigation

This report has been prepared in general accordance with the Ministry for the Environment's (MfE) "Contaminated Land Management Guidelines No 1: Reporting on Contaminated Sites in New Zealand, revised 2021" (CLMG) and the New Zealand Guidelines for Assessing and Managing Asbestos in Soils, November 2017 (NZ GAMAS). This report includes all requirements for a Preliminary and Detailed Site Investigation Report.

The objectives of this investigation are to:

- Collect and assess information from multiple sources to understand past and current land uses.
- Describe the physical and environmental features of the subject site to understand potential pathways and receptors.
- Establish whether an activity or industry described in the Hazardous Activities and Industries List (HAIL) is being, has been, or is more likely than not to have been undertaken on the subject site.
- Assess whether there is any risk to potential receptors that would warrant further investigation.
- Collect and analyse subject site information, including soil sampling and testing, to determine the extent and type of any contamination present.
- Provide remediation or site management recommendations to the client based on the results of the investigation.

3 Scope of Work Undertaken

The scope of the work undertaken has included:

- Obtaining and review of Environment Canterbury (ECan) data from the Listed Land Use Register (LLUR).
- Search of Land Information New Zealand (LINZ) orchard database.
- Review of relevant historical aerial photographs.
- Review of relevant historical certificates of title (CTs).
- Review of Selwyn District Council (SDC) property files.
- Designing a sampling and analysis plan based on the identified contaminant risks.
- On site soil sampling and laboratory testing.
- Analysis of results against applicable soil guidelines values (SGVs).
- Preparation of this report in accordance with MfE guidelines.

4 Site Identification

The subject site is located at 10/487 Weedons Road, Rolleston, Canterbury as shown on the plan in **Figure 1** below. The subject site is legally described as Lot 6 DP 47839 and has a total area of approximately 4.3343ha.

Figure 1 – Location Plan

5 Proposed Site Use

It is proposed to rezone the subject site to allow residential development. This will enable future change in use, subdivision and potential disturbance of soils.

6 Site Description

6.1 Environmental Setting

Table 1 – Environmental Information

Topography	The subject site is generally flat land.
Geology	The ECan GIS database describes the soils at the subject site as Templeton deep silt. Nearby and onsite bore logs indicate that topsoils are underlain by layers of clay, claybound gravels, and sandy gravels.
Soil Trace Elements	According to the ECan GIS database, natural concentrations of trace elements for the site are those of the 'Regional, Recent' soil group.
Groundwater	The subject site lies over the unconfined and semiconfined gravel aquifer system. Groundwater levels recorded on nearby and on-site bore logs are between 12.8m and 14.85m deep. The direction of groundwater flow is generally south-easterly.
Surface Water	A water race runs along the opposite side of Weedons Road.

6.2 Site Layout and Current Site Uses

The subject site has a rural residential use. A dwelling with an attached garage, a detached garage/workshop and two sheds are present within the residential curtilage area. The remainder of the subject site is divided into paddocks used for grazing. A farm shed is located within the south-west most paddock.

6.3 Surrounding Land Uses

The surrounding land is similar rural residential land.

6.4 Geotechnical Investigations

At the time of writing no geotechnical investigations were made available to Momentum Environmental Ltd (MEL).

7 Historical Site Use

7.1 Previous Site Ownership and Use

Historical Certificates of Title (CTs) were reviewed with the following relevant ownership information outlined below:

03 August 1897	George Troll, farmer
26 May 1903	William McMeekan, farmer
27 March 1907	Ellen Page, spinster
06 July 1909	Walter Wright, farmer
01 July 1922	William Henry Peter Sowden, farmer
19 June 1933	Duncan Gillanders, farmer
22 November 1945	Ian Thomas Reid, farmer
11 February 1977	Ian Thomas Reid, farmer, John walker Allan, farmer and The Trustees Executors and Agency Company of New Zealand

11 September 1984	Northern Spy Orchards Ltd, Target Orchard Ltd, Green Leaf Orchard Ltd, City Side Orchard Ltd, Ellesmere Orchard Ltd, Paparua Orchard Ltd, Export Apples Ltd, Orchard Ride Ltd, Long Acre Orchard Ltd, Big Pick Orchard Ltd and Red Apple Orchard Ltd
22 October 1985	Export Apples Ltd
09 July 1999	Northwest Farm Ltd
06 August 2002	Cornelis Schaap and Vicki Anne Schaap
16 January 2007	Paul Alexander Goodwin and Tessa Jacqueline Mocatta
08 August 2008	Paul Alexander Goodwin, Tessa Jacqueline Mocatta and Templetons Trustees Limited
01 September 2010	Paul Alexander Goodwin, Tessa Jacqueline Mocatta and Landley Trustees Limited

Note that some of the older information was of poor quality and difficult to follow, therefore the accuracy of the spelling of names and dates is not guaranteed. Copies of the historical CTs are included in **Appendix A.**

7.2 District Authority Records

The subject site is currently zoned Inner Plains in the operative Selwyn District Plan and General Rural Zone in the proposed Selwyn District Plan.

Property files were provided by Selwyn District Council (SDC) on 26 November 2024. The files included the following permits and consents:

- A building permit issued on 18 February 1981 to erect a wool shed with a concrete floor and corrugated iron walls and roof. This was to be a 3-bay extension to an existing wool shed.
- A building permit issued on 18 September 1984 to erect a farm workshop/storage shed with a concrete floor and corrugated iron walls and roof.
- A building consent issued on 09 August 2002 to erect a domestic garage/workshop
- A building consent issued on 21 November 2002 to erect a domestic dwelling.
- A building consent issued on 19 June 2007 to erect a 2-bay Versatile farm building
- A building consent issued on 20 August 2007 to erect a domestic garage
- A building consent issued on 07 June 2022 for the installation of a solid fuel heater.

7.3 Regional Council Records

The subject site is listed on the Listed Land Use Register (LLUR) as part of a larger site for activities and industries as per the 'Hazardous Activities and Industries List' (HAIL). Site 118904, which includes the subject site, is listed for HAIL activity 'A10 – Persistent pesticide bulk storage or use'. An orchard was developed around 1984, with 1994 aerial photographs used to define the extent of planting. The listed site is categorised as 'Verified HAIL has not been investigated'.

Two nearby sites are also listed:

- 6/487 Weedons Road is listed as 'Site 235788', also for HAIL activity 'A10 – Persistent pesticide bulk storage or use'. This was part of the same orchard as Site 118904. However, this part of the orchard is listed as 'Yet to be reviewed' as investigations have been undertaken but not yet reviewed by ECan. Part of this site was investigated by Pattle Delamore Partners Ltd (PDP) in June 2019. This site was also investigated by MEL in March 2024. The investigations found no heavy metal or organochlorine pesticide (OCP) contamination that would pose a risk to human

health or the environment from the former orchard use. A burn area contaminated with heavy metals above 'residential 10% produce' SGVs was identified and broadly delineated. The identified contaminated area is approximately 75m south-west of the subject site.

- Reids Pit, 452 Selwyn Road is listed for HAIL activity 'G5 – Waste disposal to land'. A Preliminary Site Investigation (PSI) was completed by Malloch Environmental Ltd (now known as Momentum Environmental Ltd, MEL) in August 2014 as Selwyn District Council proposed to redevelop the site as a recreational reserve. The PSI determined the site had been used for gravel extraction from the late 1970s until the early 2000s. Following this, the site was used as a Selwyn District Council hardfill dumping site with limited general rubbish dumping. Sampling completed by MEL in 2019 showed heavy metals, organochlorine pesticides (OCP) and polycyclic aromatic hydrocarbons (PAHs) below the relevant background criteria.

The ECan GIS database shows two active bores on the subject site, used for domestic supply. The nearest, downgradient active well is M36/5916, a domestic and stockwater supply well, located approximately 105m south of the subject site.

The ECan GIS database shows an active resource consent for the subject site to discharge domestic sewage tank effluent into ground. Within a 100m radius of the subject site there are similar active resource consents to discharge domestic sewage tank effluent into ground. There are also active resource consents for Reids Pit associated with establishing a recreational park:

- to use land for earthworks and for the deposition of material onto and into land,
- to discharge contaminants onto land and into land,
- to discharge construction phase stormwater onto and into land, and
- to discharge dust to air.

7.4 LINZ Records

The LINZ Orchard layer shows there is a listed orchard on part of the subject site. There are other nearby orchards as shown in blue on the plan below.

Figure 3 – LINZ Plan

7.5 Review of Historical Aerial Photographs

A total of ten historical aerial photographs have been sourced from ECan GIS database to assess the historical use of the subject site. Copies of the aerial photographs used are included in **Appendix C.**

- The earliest available aerial photograph is from **1942** and shows the subject site is mainly in pasture. Farm sheds are present on the eastern corner of the subject site. The surrounding area is mainly similar pastoral farmland. A dwelling is present beyond the subject site to the east. A gravel pit is visible beyond the subject site to the south.
- The next available aerial photograph is from **1961.** More sheds have been added to the south-eastern side of the subject site. There are no significant changes to the surrounding land.
- The **1974** aerial photograph shows a possible livestock dip within the farm yard area of the subject site. There are no significant changes to the surrounding land.
- The **1982** aerial photograph shows no significant changes to the subject site. The gravel pit beyond the subject site to the south has increased in size.
- The **1994** aerial photograph shows an orchard has been planted on the subject site and most of the surrounding land. All the previously noted structures have been removed from the subject site. The gravel pit beyond the subject site to the south has increased in size and now extends to the boundary of the subject site.
- The **2000** aerial photograph shows the orchard has been removed from part of the subject site. There are three potential burn areas visible on this paddock. There are no significant changes to the surrounding land. The rows on the paddock to the north-east of the subject site appear to be associated with mowing hay/balage rather than horticultural activities.
- The **2005** aerial photograph shows a dwelling and two farm sheds have been constructed on the south-west end of the subject site. Three potential burn areas are visible to the south-east of the dwelling and one potential burn area is visible to the north-west of the dwelling. Rural residential development has also occurred beyond the subject site to the north-west and south-west.
- The **2012** aerial photograph shows the previously noted potential burn area to the north-west of the dwelling is a small pond. Most of the orchard trees have been removed from the central paddock on the subject site. A potential burn area is visible within this paddock. More of the surrounding orchard has been removed and developed for rural residential use.
- The latest aerial photograph is dated **2020**. It shows some of the orchard trees have been removed from the north-east end of the subject site. There are three potential burn areas in this cleared area. The gravel pit to the south is being landscaped into a recreational area.

8 Site Inspection

A site inspection was conducted on 02 December 2024 to identify any other potential sources of contamination not identified by the desktop portion of this investigation. No additional potential sources of contamination were observed.

Structures within the residential curtilage area include a dwelling with attached garage, a separate garage/workshop, a large garden shed/lean-to and shipping container, and a smaller shed/kennel. All the buildings are modern and all appear to have concrete floors. The curtilage area also includes a domestic vegetable garden and domestic greenhouse. No potential sources of contamination were observed within the residential curtilage area.

Photo 1 – Dwelling

Photo 2 – Attached garage

Photo 3 – Detached garage/workshop

Photo 4 – Shed / lean-to and shipping container

Photo 5 – Shed / kennel

Photo 6 – Domestic vegetable garden

Photo 7 – Domestic greenhouse

Beyond the residential curtilage area, the subject site is divided into paddocks used for grazing. Some apple and nut trees remain within the paddocks. The majority of these are on the north-east end of the subject site. They do not appear to be currently actively cultivated and recent use of any pesticide sprays is considered highly unlikely. A farm shed is present on the eastern corner of the south-west paddock on the subject site. A loading ramp and stock pen is located on the southern corner of this paddock. There are no other structures within the paddocks.

A burn pile including non-green waste is present within one of the central paddocks, this burn area was also observed on the aerial photographs. Soil appears to have been excavated to create a depression for burning in, with a slight mound of soils to the south. This burn area is marked BP6 on the Sample Location Plan in **Appendix D**. No remaining evidence of burning was observed at any of the other potential burn areas noted on the aerial photographs. An area of bare soils was present at one of the three potential burn areas on the north-east paddock of the subject site, but this seemed to be caused by stock feeding rather than burning as no ash or charred materials was observed. This potential burn area is marked BP7 on the Sample Location Plan in **Appendix D**.

Some storage of items is occurring along the south-east boundary of the subject site. Stored items included firewood, untreated timber pallets and farm equipment. No bulk storage of treated timber was observed. It is considered highly unlikely that this storage of items poses a risk of soil contamination.

Photo 8 – Farm shed

Photo 9 – Wooden pens & loading ramp

Photo 10 – Paddock

Photo 11 – Paddock with apple trees remaining from former orchard use

Photo 12 – Current burn area (BP6)

Photo 13 – Bare soils at BP7

Photo 14 – Minor storage of items along boundary

9 Preliminary Risk Assessment

9.1 Potential HAIL Uses

The Hazardous Activities and Industries List (HAIL) compiled by the Ministry for the Environment includes the following categories (*in italics*) that could be associated with the historical uses of the subject site, with a summary of the risk of these activities having been carried out on the subject site.

A – Chemical manufacture, application and bulk storage

8. Livestock dip or spray race operations

A stockyard was visible on the 1974 aerial photograph. A livestock dip or spray race operation may have been present within these stockyards. Contaminants of concern include heavy metals and organochlorine pesticides (OCPs).

> *10. Persistent pesticide bulk storage or use, including sport turfs, market gardens, orchards, glasshouses or spray sheds*

A yard area with farm sheds was visible on the south-east side of the subject site on aerial photographs from 1942 until 1994. Persistent pesticides may have been stored in these sheds. Given the layout of the yard area, any storage of chemicals is likely to have occurred at the north-east end of the yard. Contaminants of concern include heavy metals and organochlorine pesticides (OCPs).

The owners of the subject site between 1984 and 1999 were apple orchard companies. Aerial photographs show the subject site was planted as orchard from at least 1994. The apple orchard was progressively removed from the subject site from the early 2000's onwards. Given the era of the apple orchard, the use of organochlorine pesticides (OCPs) is considered highly unlikely, however, has been included as a contaminant of concern out of an abundance of caution. Contaminants of concern include heavy metals and OCPs.

> **H - Any land that has been subject to the migration of hazardous substances from adjacent land in sufficient quantity that it could be a risk to human health or the environment**

The orchard previously present on the subject site also extended onto adjacent land. It is considered highly unlikely that migration of contaminants to the subject site from other parts of the orchard area would be distinguishable from any contamination on the subject site from its own orchard use.

The ECan LLUR also included Reids Pit, an area of land subject to filling activities, located directly south of the subject site. Based on the previous investigations undertaken at Reids Pit, there is highly unlikely to be a risk from the migration of hazardous substances to the subject site, in sufficient quantity to pose a risk to human health or the environment.

> **I - Any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health or the environment**

The subject site had buildings sited on it within a farm yard area since at least 1942 until the late 1980s. While these buildings were likely constructed from timber and unpainted galvanised metal, the use of lead-based paints and/or asbestos containing building materials (ACM) cannot be ruled out. Any natural deterioration or intentional removal may have caused contamination of the surrounding soils. Contaminants of concern include heavy metals and asbestos.

Multiple possible burn areas were observed on aerial photographs from 2000 onwards. One burn pile was observed during the site inspection. The majority of these burn areas were likely associated with clearing areas of former orchard. As such the material burnt was most likely green waste. However, the burning of non-green waste which could have caused contamination of the underlying soils cannot be ruled out. Contaminants of concern include heavy metals.

9.2 Preliminary NESCS Assessment

In relation to the NESCS, Regulation 5(7) states that land is considered to be covered if an activity or industry described in the HAIL is being undertaken; has been undertaken; or is more likely than not to

have been undertaken on it. Regulation 6 describes the methods for determining this. Method 6(3) is to rely on a Preliminary Site Investigation. The 'NESCS Users Guide' indicates the test for 'more likely than not' is whether there is more than a 50 percent likelihood of the HAIL having occurred.

The table below states the likelihood of each HAIL identified in **Section 9.1** above:

Table 2 – Preliminary NESCS Assessment

HAIL Category	6(3)a - Is being undertaken	6(3)b – has been undertaken	6(3)c – likelihood of having been undertaken (if not confirmed)
A8 – Livestock dip or spray race	-	-	More likely than not
A10 – Persistent pesticide bulk storage or use	-	-	More likely than not
H – migration of contaminants	-	-	Highly unlikely
I – Any other land (lead paint & asbestos from old buildings)	-	-	Unlikely
I – Any other land (burn areas)	Yes	-	More likely than not

9.3 Preliminary Conceptual Site Model

The following preliminary conceptual site model (CSM) indicates potentially complete exposure pathways associated with the identified risks at the subject site. The locations of the risk areas are shown on **Figure 3** below.

Table 3 – Preliminary Conceptual Site Model

Conceptual Site Model				
Source	**Pathways**		**Receptor**	**Exposure Pathway Status**
• Possible former livestock dip/spray race. • Possible storage of persistent pesticides within former yard area. • Potential use of persistent pesticides on former apple orchard. • Potential heavy metal and/or asbestos contamination from former buildings within former yard area. • Potential heavy metal contamination within current and	**Human**	Dermal contact, ingestion and inhalation through soil contact	Current and future site occupiers and workers involved in soil disturbance activities.	Potentially complete
	Ecological	Infiltration through soils to groundwater	Groundwater is assumed to be 12.8-14.85m deep at the subject site.	Likely incomplete due to depth to groundwater.
		Surface runoff to waterways	Water race on opposite side of Weedons Road	Likely incomplete due to separation distance and shelterbelts preventing spray drift.

possible former burn areas.				

Based on the NESCS assessment and the preliminary CSM above, the NESCS does apply to the subject site. It is recommended that a Detailed Site Investigation, in terms of the Ministry for the Environments Contaminated Land Management Guidelines, be undertaken on the identified risk areas prior to development. These areas are shown on the Risk Area Plan below. Due to their small sizes, the approximate locations of the potential/known burn areas are simply marked with a yellow cross.

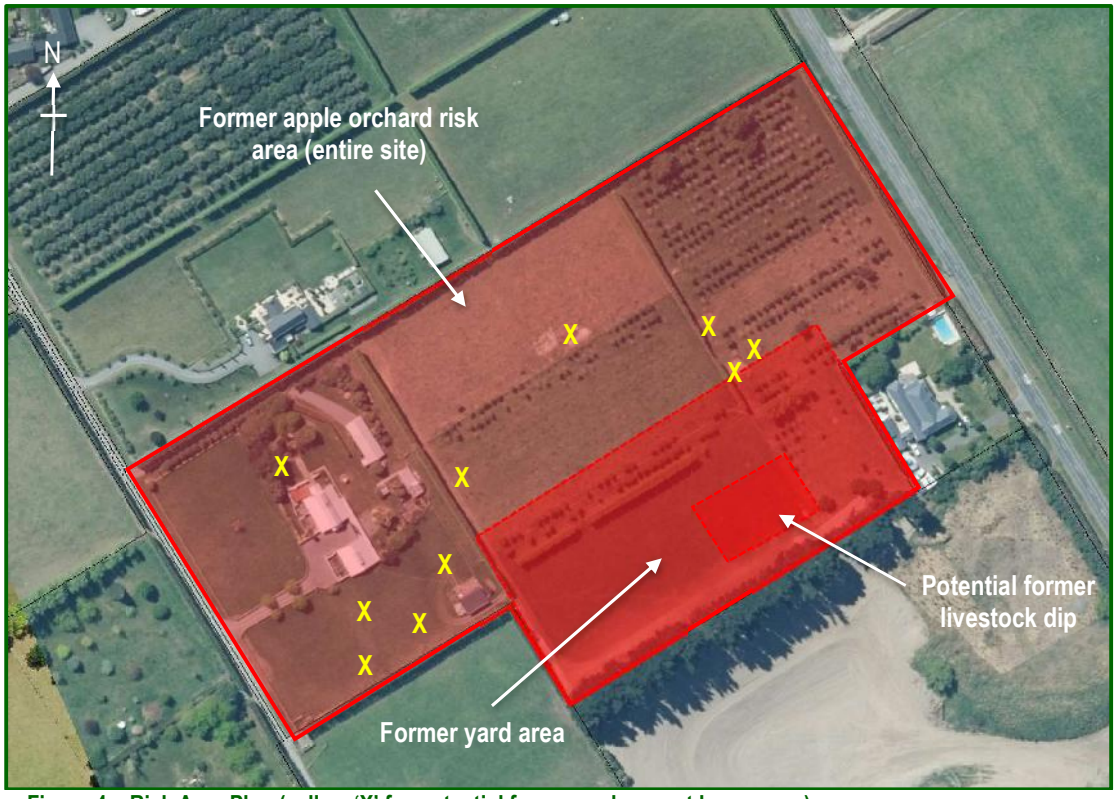


Figure 4 – Risk Area Plan (yellow 'X' for potential former and current burn areas)

10 Sampling and Analysis Plan

10.1 Sampling Design

The proposed use for the subject site is residential. For the purpose of designing a sampling plan the subject site has been considered as one exposure area with overlapping risk areas. The specifics of the sample design strategy are included in **Table 4** below.

Table 4 – Sampling Design Strategy

Contaminants of concern	**Orchard risk area** – Heavy metals, OCPs **Former yard area including potential livestock dip** – Heavy metals, OCPs and asbestos **Burn areas** – Heavy metals.
Media to be sampled	Soils

Number of sample locations	**Orchard risk area** – Contamination linked to horticultural uses is likely to be diffuse. Therefore, systematic or grid sampling of these areas is considered appropriate. A grid of twelve sample locations will be distributed across the paddocks of the subject site. **Former yard area including potential livestock dip** – the majority of the former buildings and the livestock dip are located on the north-east end of this risk area. 26 sample locations will be placed across the yard area with most of the locations placed in a grid across the north-east end. **Burn Areas** – A judgemental sampling strategy will be used with one sample location per burn area. The sample locations will be guided by XRF screening – where heavy metal contamination is detected a sample will be taken at the location with the highest XRF readings, where no contamination is detected a field composite sample will be taken with subsamples taken from each of the XRF test locations.
Depth of samples	**Orchard risk area** – Given the likely source of contamination and proposed use for the subject site, surface and near surface (250mm) samples are considered appropriate. Deeper samples may also be taken at sample locations if buried contamination is suspected based on observations during sampling. **Former yard area including potential livestock dip** – Given the likely source of contamination and proposed use for the subject site, surface and near surface (250mm) samples are considered appropriate. Further investigation including deeper samples may be required if contamination is identified, particularly around the potential dip location. **Burn Areas** – given the mode of contamination, surface samples are considered appropriate.
Testing Methodology	**Orchard risk area** – All surface samples will be analysed for seven heavy metals. All surface samples will be analysed for OCPs as laboratory composite samples. Analysis of the deeper samples and/or individual samples will occur if the initial results indicate possible contaminant concentrations of concern. **Former yard area including potential livestock dip** – All surface and 250mm depth samples will be analysed for seven heavy metals. A selection of surface samples will be analysed for OCPs as laboratory composite samples. Additional OCP analysis will be undertaken if the composite sample results indicate possible contaminant concentrations of concern are present. Asbestos analysis will only be undertaken if visual evidence of asbestos contamination is identified in the soils, such as demolition debris. **Burn Areas** – soil samples from locations where XRF screening identifies heavy metal concentrations of concern will be analysed for seven heavy metals to confirm the XRF readings. Where the XRF readings indicate no elevated heavy metals are present the soil samples will be held cold.
Field Sampling Technique	Samples to be taken by hand using a stainless-steel spade, trowel or fresh disposable nitrile gloves.
XRF Testing Procedure	3-4 XRF tests will be performed across each burn area.

10.2 Soil Guideline Values

Human health soil contaminant standards for a group of 12 priority contaminants were derived under a set of five land-use scenarios and are legally binding under The Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Health) Regulations 2011 (NESCS). These standards have been applied where applicable. The regulations describe these as Soil Contaminant Standards. For contaminants other than the 12 priority contaminants, the hierarchy as set out in the Ministry for the Environment Contaminated Land Management Guidelines No 2 has been followed. These are generally described as Soil Guideline Values. For simplicity, this report uses the terminology Soil Guideline Values (SGV) when referring to the appropriate soil contaminant standard or other derived value from the hierarchy. For soil, guideline values are predominantly risk based, in that they are typically derived using designated exposure scenarios that relate to different land uses. For each exposure scenario, selected pathways of exposure are used to derive guideline values. These pathways typically include soil ingestion, inhalation and dermal adsorption. The guideline values for the appropriate land use scenario relate to the most critical pathway.

The land-use scenario applicable for the site is 'residential 10% produce'. The 'commercial/industrial outdoor worker' land use scenario has been applied as a proxy for workers involved in disturbing soils activities.

The adopted trigger values used to determine need for assessment of ecological receptors (including stormwater disposal areas) also referred to as Ecological Guideline Values (EGVs) are the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (online) – Sediment GV-high (ANZWQ) multiplied by 3.

For comparison of site concentrations against expected background levels the following published concentrations will be used:

- Heavy metal concentrations will be assessed against the expected background levels as published in *Background Concentrations in Canterbury soils*, Tonkin and Taylor, July 2007.
- Organochlorine pesticide concentrations will be assessed against the concentrations published in *Ambient Concentrations of Selected Organochlorine in Soils*, Buckland, Ellis and Salter, 1998.

10.3 Quality Assurance and Quality Control

Field quality assurance measures as described in Section 4.3.1 of the "Contaminated Land Management Guidelines No 5: Site Investigation and Analysis of Soils, revised 2021" (CLMG) are to be followed. These include using trained staff, choosing appropriate sample containers, accurate and individual labelling and recording of locations, completing appropriate laboratory chain of custody forms, chilling of samples as appropriate and timely delivery to laboratories. All non-disposable sampling equipment should be decontaminated between samples using Decon 90 and rinsed with tap water. All samples are to be submitted to IANZ accredited laboratories. Quality control to ensure freedom from sample cross-contamination is to be measured by the appropriate use of duplicate and rinsate blank samples.

10.4 XRF Quality Assurance Measures

The current NZ XRF use guidelines (Ministry for the Environment. 2024. *Field use of X-ray fluorescence spectroscopy for investigation of contaminated soils.* Wellington) are to guide the use of the XRF for this investigation.

The XRF to be used is an Olympus Vanta M-Series with a 50KV tube. The manufacturer's instructions are to be followed in the use of the device. All users are to be trained and licensed to operate the XRF.

Standard reference materials and a blank are to be tested prior to each day's testing and compared with expected results. Blank readings are to be taken throughout the day's testing as appropriate to ensure there is no contamination of the XRF window.

It is intended that the device be used qualitatively at this site to guide sample collection and analysis.

11 Sampling Results

11.1 Summary of Works/Field Observations

Soil sampling was undertaken on 02 December 2024 in general accordance with the proposed sampling plan. Sample Location Plans showing the sampled locations is included in **Appendix D**. Paddock sample locations are labelled 'P', sample locations within the former yard area are labelled 'SS' and burn areas are labelled 'BP'. A Table of XRF Results from the XRF screening is included in **Appendix E**.

Twelve paddock sample locations were sampled at surface and 250mm depth. One location (P5) was also sampled at 450mm depth to assist with possible future offsite disposal of soils. The sampled soils were generally brown silts and brown clay.

Twenty-six sample locations were placed within the former yard risk area of the subject site. Traces of anthropogenic material including brick fragments, possible ash, concrete fragments and metal fragments were observed at 250mm depth at sample locations SS7, SS10, SS11, SS12, SS18, and SS19. No suspected asbestos containing materials or significant volumes of demolition debris were observed. Therefore, analysis of samples for asbestos was not considered necessary.

The XRF screening did not detect any heavy metal contamination likely to exceed 'residential 10% produce' SGVs at potential burn areas BP1-BP5 and BP8. All readings in these locations were less than half the relevant 'residential 10% produce' SGV.

Elevated arsenic exceeding the 'residential 10% produce' SGV of 20mg/kg was detected at BP6 (the current burn area) and BP9. This indicated that burning of non-green waste has occurred in these locations. It is noted that no visible evidence of burning remains at BP9. BP6 is the location of the current burn area and has been slightly excavated. The location of BP6 appears to have moved between the 2012 aerial photograph and the latest aerial/observed location. Three individual tests were performed to the west of the current burn area, in the location of the former possible burn area. No heavy metal contamination was detected by these tests.

The surface samples from the paddocks, all the samples from the former yard area, three burn area samples and four duplicates were submitted for seven heavy metal analysis at the laboratory. Once the initial results showed some heavy metals were elevated in the paddock surface soils the deeper samples were also submitted for heavy metal analysis to assist with any future offsite disposal of soils. A total of 84 samples including 4 duplicates were analysed for seven heavy metals. 29 surface samples were analysed for OCPs as 8 laboratory composite samples. Once initial results indicated that dieldrin was present within the yard area the samples with the highest arsenic concentrations (a common co-contaminant around livestock dips) were submitted for individual OCP analysis.

11.2 Evaluation of Results

A Table of XRF readings is included in **Appendix E**. Tables of Laboratory Results are included in **Appendix F** and copies of the Laboratory Reports are included in **Appendix G**.

Paddock Samples

There were no exceedances of 'residential 10% produce' SGVs in the paddock samples. Copper is elevated above expected background levels in the surface samples at 9 out of 12 sample locations. Cadmium is above expected background levels in two surface samples. Zinc is above expected background levels in one surface sample. All heavy metals were below expected background levels in the 250mm or deeper samples.

Traces of DDT were detected in one composite sample from the paddock area. The Total DDT concentration of 0.1mg/kg is below the accepted ambient concentration. All other OCP results for these samples were below the laboratory limit of detection.

Former Yard Area

The laboratory results show irregular arsenic contamination exceeding the 'residential 10% produce' SGV is present on the north-east end of the former yard area. The arsenic exceedances range from 22mg/kg to 192mg/kg and were generally higher at 250mm depth than in the surface soils.

One or more heavy metals are elevated above expected background levels across the former yard area. On the south-west end of the area the elevated heavy metals are limited to the surface soils. On the north-east end of this area heavy metals remain elevated above expected background levels at 250mm depth.

Traces of DDT were detected in one composite sample from this area. The Total DDT concentration of 0.1mg/kg is below the accepted ambient concentration. Traces of dieldrin were detected in two composite samples from this area. As arsenic is a common co-contaminant to dieldrin in dip areas, the two samples with the highest arsenic concentrations (SS23 and SS24) were analysed individually for OCPs. Dieldrin was detected at location SS24 at the surface and at 250mm depth. The dieldrin results to date are below the 'residential 10% produce' SGV of 2.6mg/kg.

Burn Areas

The XRF readings and laboratory results show one current and one former burn area exceed the 'residential 10% produce' SGV of 20mg/kg for arsenic. The arsenic concentration at current burn area BP6 is 26mg/kg. The arsenic concentration at former burn area BP9 is 73mg/kg.

11.3 Results of Field & Laboratory Quality Assurance and Quality Control

The Relative Percentage Differences (RPD) for each duplicate sample pair are shown in **Table 5** below. These are within acceptable ranges indicating no quality-control issues.

Table 5 – RPD results for duplicate samples

Duplicate Sample Pair	Relative Percentage Differences (RPD) Range
P5.1 & DUP1	0-15%
SS1.1 & DUP2	0-13%
SS13.1 & DUP3	0-11%
SS26.1 & DUP4	0-22%

All laboratory tested samples were submitted to Hill Laboratories for analysis. Hill Laboratories holds IANZ accreditation. As part of holding accreditation the laboratory follows appropriate testing and quality control procedures. No quality control issues were identified.

11.4 Results of XRF Quality Assurance and Quality Control

The quality assurance measures prescribed above were followed. Calibration checks and blank testing showed no quality control issues.

12 Quantified Risk Assessment

Soil sampling has identified irregular arsenic contamination exceeding the 'residential 10% produce' SGVs on the north-east end of the former yard area. The arsenic exceedances range from 22mg/kg to 192mg/kg and were generally higher at 250mm depth than in the surface soils. Elevated concentrations of dieldrin are also present. The results to date have not identified dieldrin concentrations exceeding the 'residential 10% produce' SGV, however given the presence of dieldrin it is likely that a dip or spray race was present in this area, and it is possible that higher levels of dieldrin exist beyond the sampled locations. The area has been broadly delineated by the sampling to date, the current estimated area measures approximately 2,500m^2.

Soil sampling has also identified a current burn area and one former burn area contaminated with arsenic above 'residential 10% produce' SGVs. The arsenic concentration at current burn area BP6 is 26mg/kg. The arsenic concentration at former burn area BP9 is 73mg/kg. Delineation of the contaminated areas has not yet been undertaken. The extent of each contaminated area has been estimated from the aerial photographs. It is noted that the current location of BP6 is slightly north-east of the burn area observed on the 2012 aerial. Although XRF testing of the surface soils did not detect any contamination in the original location, given the depression that is present for BP6 it is possible that buried contamination is present in this area. Therefore, this area has been included in the current estimated contaminated area of approximately 140m^2. The estimated contaminated area for BP9 measures approximately 32m^2.

The following conceptual site model assesses the risk posed by the identified contaminants:

Table 6 – Revised conceptual site model

Conceptual Site Model				
Source	**Pathways**		**Receptor**	**Risk Assessment**
Irregular arsenic contamination exceeding the 'residential 10% produce' SGV of 20mg/kg (arsenic concentrations of 22-192mg/kg) and possible dieldrin contamination in the former yard area. Arsenic contaminated	**Human**	Dermal contact, ingestion and inhalation	Future site occupiers / land users.	Moderate to high risk to human health in an uncontrolled residential use as results exceed the 'residential 10% produce' SGV.
			Workers involved in soil disturbance at the subject site.	Moderate risk to human health as some results exceed the commercial/outdoor worker SGV of 70mg/kg for arsenic. It is likely this risk can be managed by the implementation of an appropriate Site Management Plan.
	Ecological	Infiltration through soils to groundwater	Groundwater is assumed to be 12.8-14.85m deep	Low risk due to the depth to groundwater and all results were below EGVs.

burn areas with arsenic concentrations of 26-73mg/kg. No results exceed EGVs.			at the subject site.	
		Surface runoff to waterways	Water race on opposite side of Weedons Road	Low risk due to the separation distances and all results were below EGVs.

It is recommended that the former yard area and the contaminated burn areas be remediated prior to the change of use or development of each area. Before developing a Remediation Action Plan, further investigation should be undertaken within the former yard area to better define the contamination around the former dip area. Further investigation to delineate the extent of contamination around BP6 and BP9 could also be completed at this time. Alternatively, delineation of BP6 and BP9 could occur during remediation with the use of a portable XRF device.

13 Conclusion

This investigation identified potential sources of contamination on the subject site associated with confirmed or likely Hazardous Activities and Industries List (HAIL) activities, as follows:

- Possible former livestock dip/spray race (HAIL A8).
- Possible storage of persistent pesticides within a former yard area (HAIL A10).
- Potential use of persistent pesticides on a former apple orchard (HAIL A10).
- Potential heavy metal and/or asbestos contamination from former buildings within a former yard area (HAIL I).
- Potential heavy metal contamination within current and possible former burn areas (HAIL I).

Soil sampling was undertaken on the 02 December 2024. The soil sampling identified irregular arsenic contamination exceeding the 'residential 10% produce' SGV of 20mg/kg within the former yard area. Elevated concentrations of dieldrin are also present. The results to date have not identified dieldrin concentrations exceeding the 'residential 10% produce' SGV, however higher concentrations of dieldrin may exist beyond the sampled locations.

Soil sampling also identified arsenic contamination exceeding the 'residential 10% produce' SGV with the current burn area and one former burn area. The contaminated areas have not been delineated.

It is recommended that the former yard area and the contaminated burn areas be remediated prior to the change of use or development of each area. Before developing a Remediation Action Plan, further investigation should be undertaken within the former yard area to better define the dieldrin contamination around the former dip area. Further investigation to delineate the extent of contamination around BP6 and BP9 could also be completed at this time. Alternatively, delineation of BP6 and BP9 could occur during remediation with the use of a portable XRF device.

The remainder of the subject site is considered suitable for residential use with no further investigations required. It is noted that surface soils contain one or more heavy metals, mainly copper, above expected background levels at the majority of sample locations across the subject site which may impact disposal options for any excess soils requiring offsite disposal.

At the time of writing this report, the NESCS does apply to the subject site and consent will be required.

14 Limitations

Momentum Environmental Limited has performed services for this project in accordance with current professional standards for environmental site assessments, and in terms of the client's financial and technical brief for the work. Any reliance on this report by other parties shall be at such party's own risk. It does not purport to completely describe all the site characteristics and properties. Where data is supplied by the client or any third party, it has been assumed that the information is correct, unless otherwise stated. Momentum Environmental Limited accepts no responsibility for errors or omissions in the information provided. Should further information become available regarding the conditions at the site, Momentum Environmental Limited reserves the right to review the report in the context of the additional information.

Opinions and judgments expressed in this report are based on an understanding and interpretation of regulatory standards at the time of writing and should not be construed as legal opinions. As regulatory standards are constantly changing, conclusions and recommendations considered to be acceptable at the time of writing, may in the future become subject to different regulatory standards which cause them to become unacceptable. This may require further assessment and/or remediation of the site to be suitable for the existing or proposed land use activities. There is no investigation that is thorough enough to preclude the presence of materials at the site that presently or in the future may be considered hazardous.

Appendix A – Historical Certificates of Title

CANCELLED

Land and Deeds 69

No. 168/949

References
Prior C/T 207/200

Transfer No.
N/C. Order No. 77158/1

REGISTER

CERTIFICATE OF TITLE UNDER LAND TRANSFER ACT

This Certificate dated the 26th day of April one thousand nine hundred and seventy six under the seal of the District Land Registrar of the Land Registration District of CANTERBURY

WITNESSETH that IAN THOMAS REID of Springston, 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 22.6624 hectares or thereabouts situated in Block IV of the Leeston Survey District, being Rural Section 4296

DISTRICT LAND REGISTRAR CANTERBURY N.Z.

Assistant Land Registrar

Transfer 116057/1 to Ian Thomas Reid of Springston, Farmer, John Walker Allan of Dunsandel, Farmer and The Trustees Executors and Agency Company of New Zealand at Dunedin - 11.2.1977 at 9.39 a.m.

A.L.R.

Mortgage 116057/2 to Ian Thomas Reid - 11.2.1977 at 9.39 a.m.

DISCHARGED

A.L.R.

Variation of Mortgage 116057/2 - 14.12.1977 at 9.33 am.

DISCHARGED

A.L.R.

Variation of Mortgage 116057/2 - 24.10.1978 at 10.36 am.

DISCHARGED

for A.L.R.

Variation of Mortgage 116057/2 - 4.2.1980 at 9.53 am.

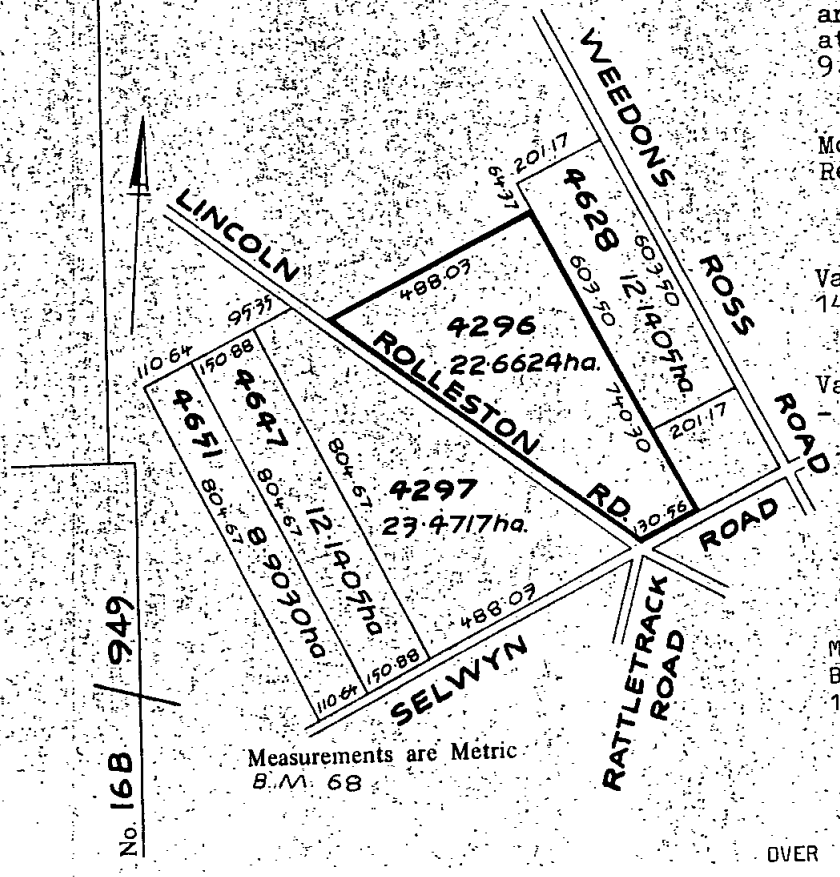
DISCHARGED

for A.L.R.

Mortgage 359857/1 to The Rural Banking and Finance Corporation - 11-12-1981 at 9.40 a.m.

DISCHARGED

for A.L.R.



Measurements are Metric
B.M. 68

No. 168/949

OVER

No. 359857/2 Memorandum of Priority Making Mortgages 384123/1 and 116057/2 first and second Mortgages respectively - 11-12-1981 at 9.40a.m.

for A.L.R.

DISCHARGED

Variation of Mortgage 116057/2 - 28-5-1982 at 9.08a.m.

for A.L.R.

DISCHARGED

Mortgage 384123/2 to The Bank of New South Wales - 28-5-1982 at 9.09a.m.

for A.L.R.

DISCHARGED

Variation of Mortgage 359857/1 - 10.12.1982 at 9.28 a.m.

for A.L.R.

DISCHARGED

Variation of Mortgage 359857/1 - 15.9.1983 at 9.20 am.

for A.LR.

PLAN No. 47504 LODGED 3/6/84 AND DEPOSITED

Northern Spy Orchards Limited, Transfer 507081/4 to Target Orchard Limited, Green Leaf Orchard Limited, City Side Orchard Limited, Ellesmere Orchard Limited, Paparua Orchard Limited, Export Apples Limited, Orchard Ride Limited, Long Acre Orchard Limited, Big Pick Orchard Limited and Red Apple Orchard Limited all at Timaru as tenants in common in equal shares - 11.9.1984 at 11.45 a.m.

for A.L.R.

Mortgage 507081/5 to Raymond Sullivan Solicitors Nominee Company Limited - 11.9.1984 at 11.45 a.m.

for A.L.R.

PLAN No. 47839 LODGED 3/10/1984
AND DEPOSITED 16/10/1984

Pursuant to Section 306 (3) of the Local Government Act 1974 Lot 19 Plan 47504 is vested in the Ellesmere County Council as Road

A.L.R.

No.502775/1 Compliance Certificate pursuant to Section 306 (1)(f)(i) Local Government Act 1974 - 15.8.1984 at 2.30pm.

A.L.R.

O.C.T.512483/2) 16.10.1984)

Cancelled and CsT.26F/951-953 issued for Lots 16-18 D.P.47504.

A.L.R.

CANCELLED
DUPLICATE DESTROYED

CANCELLED

Land and Deeds 69

No. 168 / 951

References
Prior C/T 207/200

Transfer No.
N/C. Order No. 77158/1

REGISTER

CERTIFICATE OF TITLE UNDER LAND TRANSFER ACT

This Certificate dated the 26th day of April one thousand nine hundred and seventy six under the seal of the District Land Registrar of the Land Registration District of CANTERBURY

WITNESSETH that IAN THOMAS REID of Springston, 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 12.1405 hectares or thereabouts situated in Block IV of the Leeston Survey District, being Rural Section 4628

DISTRICT LAND REGISTRAR CANTERBURY, N.Z.

Assistant Land Registrar

Transfer 116057/1 to Ian Thomas Reid, of Springston, Farmer, John Walker Allan of Dunsandel, Farmer and The Trustees Executors and Agency Company of New Zealand at Dunedin - 11.2.1977 at 9.39 a.m.

A.L.R.

Mortgage 116057/2 to Ian Thomas Reid - 11.2.1977 at 9.39 a.m.

DISCHARGED 11.12.1981 A.L.R.

A.L.R.

Variation of Mortgage 116057/2 - 14.12.1977 at 9.33 am.

DISCHARGED

for A.L.R.

Variation of Mortgage 116057/2 - 24.10.1978 at 10.36 am.

DISCHARGED

for A.L.R.

Variation of Mortgage 116057/2 - 4.2.1980 at 9.53 am.

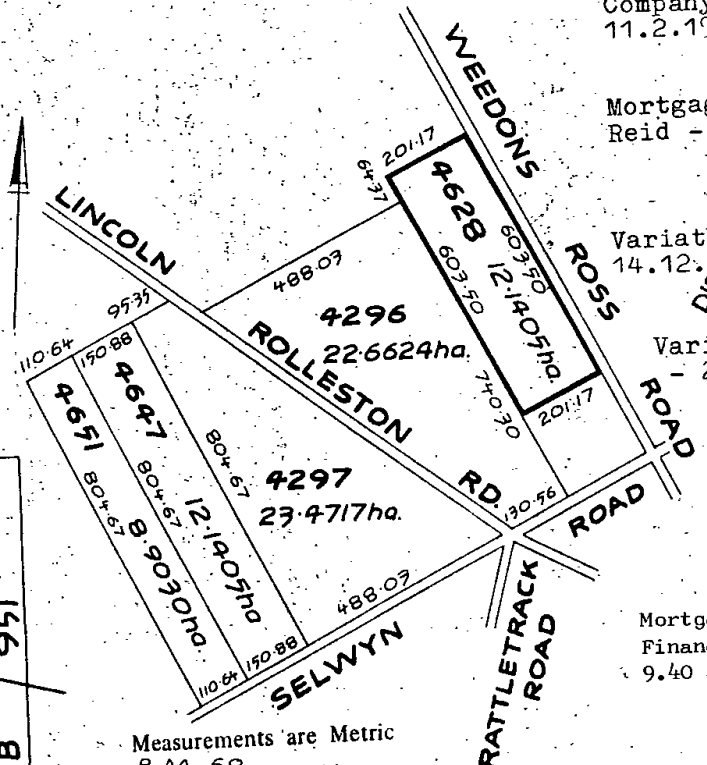
DISCHARGED

for A.L.R.

Mortgage 359857/1 to The Rural Banking and Finance Corporation - 11.12.1981 at 9.40 a.m.

DISCHARGED 11.12.1981

for A.L.R.



Measurements are Metric
B.M. 68

No. 168 / 951

OVER...

No. 359857/2 Memorandum of Priority making Mortgages 359857/1 and 116057/2 first and second mortgages respectively - 11.12.1981 at 9.40 a.m.

for A.L.R.

Variation of Mortgage 116057/2 - 28-5-1982 at 9.08a.m.

DISCHARGED

for A.L.R.

Mortgage 384123/2 to The Bank of New South Wales - 28-5-1982 at 9.09a.m.

DISCHARGED

for A.L.R.

Variation of Mortgage 359857/1 - 10.12.1982 at 9.28 a.

DISCHARGED

for A.L.R.

Variation of Mortgage 359857/1 - 15.9.1983 at 9.20 am.

DISCHARGED

for A.L.R.

PLAN No. 47504 LODGED 5/6/84

AND DEPOSITED

Northern Spy Orchards Limited, Transfer 507081/4 to Target Orchard Limited, Green Leaf Orchard Limited, City Side Orchard Limited, Ellesmere Orchard Limited, Paparua Orchard Limited, Export Apples Limited, Orchard Ride Limited, Long Acre Orchard Limited, Big Pick Orchard Limited and Red Apple Orchard Limited all at Timaru as tenants in common in equal shares - 11.9.1984 at 11.45 a.m.

for A.L.R.

Mortgage 507081/5 to Raymond Sullivan Solicitors Nominee Company Limited - 11.9.1984 at 11.45 a.m.

for A.L.R.

PLAN No. 47839 LODGED 3/10/1984

AND DEPOSITED 16/10/84

No.502775/1 Compliance Certificate pursuant to Section 306(1)(f)(i) Local Government Act 1974 - 15.8.1984 at 2.30pm.

A.L.R.

OCT 512483/2) 16.10.1984) Cancelled and CsT.26F/952 and 953 issued for Lots 17 and 18 D.P.47504.

A.L.R.

CANCELLED
DUPLICATE DESTROYED

CANCELLED

Land and Deeds 69

No. 26F/953

References
Prior C/T 16B/949,951.

Transfer No.
N/C. Order No.512483/2

REGISTER

CERTIFICATE OF TITLE UNDER LAND TRANSFER ACT

This Certificate dated the 16th day of October one thousand nine hundred and eighty four under the seal of the District Land Registrar of the Land Registration District of CANTERBURY

WITNESSETH that NORTHERN SPY ORCHARDS LIMITED, TARGET ORCHARD LIMITED, GREEN LEAF ORCHARD LIMITED, CITY SIDE ORCHARD LIMITED, ELLESMERE ORCHARD LIMITED, PAPARUA ORCHARD LIMITED, EXPORT APPLES LIMITED, ORCHARD RIDE LIMITED, LONG ACRE ORCHARD LIMITED, BIG PICK ORCHARD LIMITED AND RED APPLE ORCHARD LIMITED all at Timaru as tenants in common in equal shares -

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 26.3260 hectares or thereabouts being Lot 18 Deposited Plan 47504 --

DISTRICT LAND REGISTRAR
CANTERBURY N.Z.

for Assistant Land Registrar

Subject to:

Mortgage 507081/5 to Raymond Sutton Solicitors Nominee Company Limited - 11.9.1984 at 11.45am.

DISCHARGED 23/7/1985

for A.L.R.

Mortgage 557632/2 to Templeton Nominee Company Limited - 23.7.1985 at 10.47am

A.L.R.

Mortgage 557632/3 of Mortgage 557632/2 to Development Finance Corporation of New Zealand - 23.7.1985 at 10.47am.

A.L.R.

Plan 47839 deposited 22/10/1985

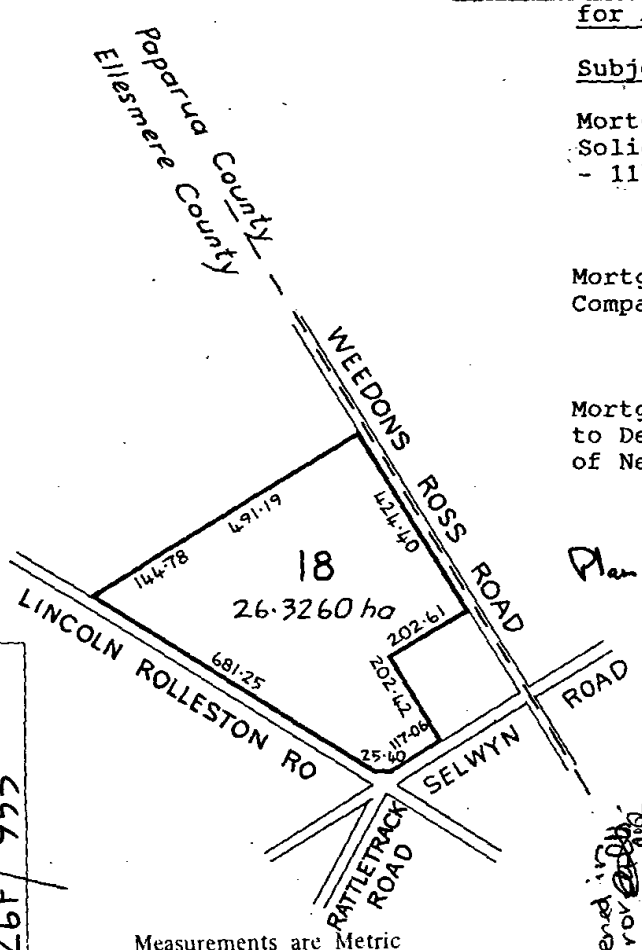
No.572825/1 Compliance Certificate pursuant to Section 306(1)(f)(i) Local Government Act 1974 - 22.10.1985 at 12.10p.m.

A.L.R.

~~No.572825/2 Resolution pursuant~~ to Section 321(3)(b) Local Government Act 1974 ~~in~~ respect of Lots 14 and ~~15~~ D.P.47839 - 22.10.1985 ~~at~~ 12.10p.m.

extend road error

A.L.R.



Measurements are Metric

No. 26F/953

OVER

OCT.572825/3) Cancelled and new
22.10.1985) CsT. issued for Lots
on D.P.47839 as follows:

1 & 1/11th share of 12,13,14,15 - 28A/416

2 & 1/11th share of 12,13,14,15 - 28A/417

3 & 1/11th share of 12,13,14,15 - 28A/418

4 & 1/11th share of 12,13,14,15 - 28A/419

5 & 1/11th share of 12,13,14,15 - 28A/420

6 & 1/11th share of 12,13,14,15 - 28A/421

7 & 1/11th share of 12,13,14,15 - 28A/422

8 & 1/11th share of 12,13,14,15 - 28A/423

9 & 1/11th share of 12,13,14,15 - 28A/424

10 & 1/11th share of 12,13,14,15 - 28A/425

11 & 1/11th share of 12,13,14,15 - 28A/426

A.L.R.

CANCELLED - DUPLICATE DESTROYED

CANCELLED

References
Prior C/T 26F/952,953

Transfer No.
N/C. Order No. 572825/3

CANCELLED

Land and Deeds 69

REGISTER

No. 28A/421

CERTIFICATE OF TITLE UNDER LAND TRANSFER ACT

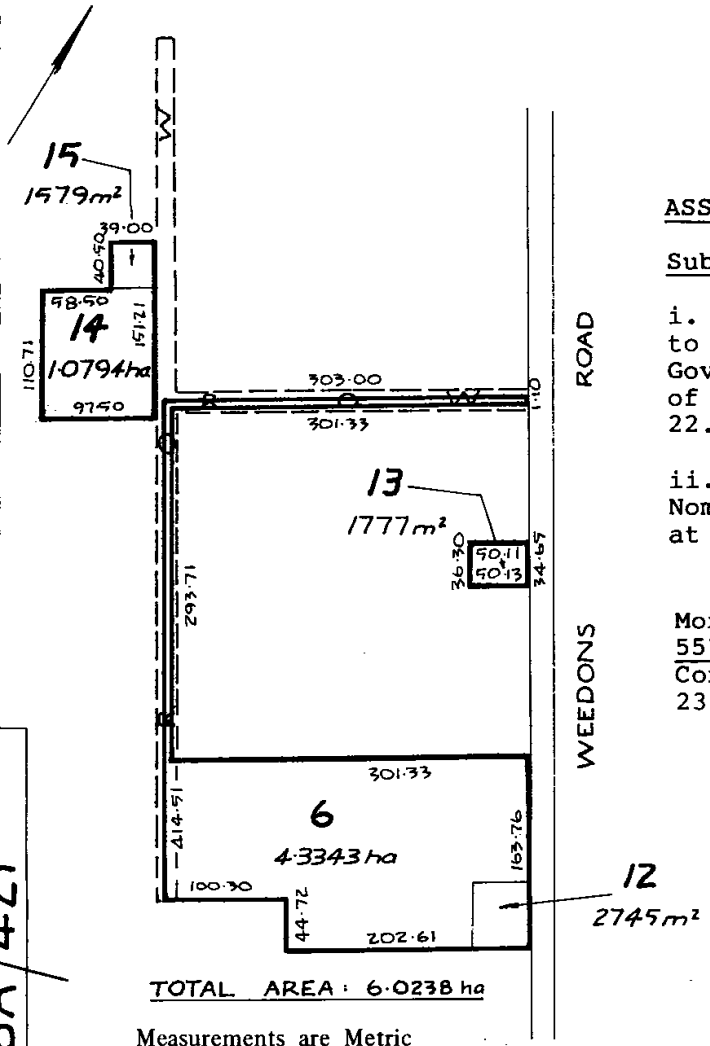
This Certificate dated the 22nd day of October one thousand nine hundred and eighty-five under the seal of the District Land Registrar of the Land Registration District of CANTERBURY

WITNESSETH that NORTHERN SPY ORCHARDS LIMITED, TARGET ORCHARD LIMITED, GREEN LEAF ORCHARD LIMITED, CITY SIDE ORCHARD LIMITED, ELLESMERE ORCHARD LIMITED, PAPARUA ORCHARD LIMITED, EXPORT APPLES LIMITED, ORCHARD RIDE LIMITED, LONG ACRE ORCHARD LIMITED, BIG PICK ORCHARD LIMITED AND RED APPLE ORCHARD LIMITED all at Timaru as tenants in common in equal shares are ------

FIRSTLY

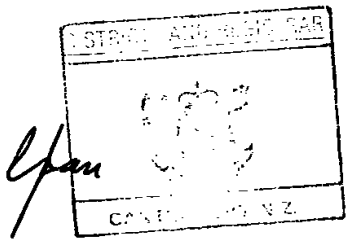
~~is~~ seised of an estate in fee-simple (subject to such reservations, restrictions, encumbrances, liens, and interests as are notified by memorial underwritten or endorsed hereon) in the land hereinafter described, delineated with bold black lines on the plan hereon, be the several admeasurements a little more or less, that is to say: All that parcel of land containing 4.3343 hectares or thereabouts being Lot 6 on Deposited Plan 47839 AND SECONDLY an estate in fee simple as to an undivided one-eleventh share in all that parcel of land containing 1.6895 hectares or thereabouts being Lots 12,13 14 and 15 on Deposited Plan 47839 ——

Ellesmere County



TOTAL AREA: 6·0238 ha

Measurements are Metric



ASSISTANT LAND REGISTRAR

Subject to:

i. No. 572825/2 Resolution pursuant to Section 321 (3)(b) Local Government Act 1974 in respect of Lots 14 and 15 herein - 22.10.1985 at 12.10 p.m.

ii. Mortgage 557632/2 to Temple Nominee Company Limited - 23.7.1985 at 10.47 a.m.

DISCHARGED 29 APR 1986 A.L.R.

Mortgage 557632/3 of Mortgage 557632/2 to Government Finance Corporation of New Zealand - 23.7.1985 at 10.47 a.m.

DISCHARGED 29 APR 1986 A.L.R.

OVER...

No. 28A/421

CERTIFICATE OF TITLE No. 28A / 421

No. 572825/4 Easement Certificate specifying intended easements on DP 47839

Nature	Servient Tenement	Dominant Tenement
Right of Way Right to drain water and sewage, right to convey electric power telephonic communications and water	6I(herein)	1-5,7-11, 14,15 (28A/416-420,422-426)
" "	1C,2B,3A, 4K,5J,7H, 8G,9F,10E, 11D	6,14 & 15

- 22.10.1985 at 12.10 p.m.

A.L.R.

The easements specified in Easement Certificate 572825/4 above, when created, will be subject to Section 309 (1)(a) Local Government Act 1974

A.L.R.

Transfer 572825/10 to Export Apples Limited at Christchurch - 22.10.1985 at 12.10p.m.

A.L.R.

CAVEAT 572825/16 BY ELLESMERE COUNTY COUNCIL - 22.10.1985 at 12.10p.m.

WITHDRAWN

A.L.R.

Mortgage 599926/24 to Tomlinson Nominee Company Limited - 29.4.1986 at 11.03a.m.

DISCHARGED 3 JUL 1992

for A.L.R.

Mortgage 599926/25 of Mortgage 599926/24 to Development Finance Corporation of New Zealand - 29.4.1986 at 11.03a.m.

DISCHARGED 3 JUL 1992

for A.L.R.

Mortgage 599926/26 to Tomlinson Nominee Company Limited - 29.4.1986 at 11.03a.m.

DISCHARGED 5/8/1992

for A.L.R.

Mortgage 599926/27 of Mortgage 599926/26 to The National Bank of New Zealand Limited - 29.4.1986 at 11.03a.m.

DISCHARGED 5/8/1992

for A.L.R.

Mortgage A2556/3 to ASB Bank Limited - 3.7.1992 at 11.35am

A.L.R.

OCT A57248/1&/7 - Cancelled and NCT 37B/612, 37B/606 issued for Lot 12 DP 47839 and the balance herein respectively 22.6.1993

A.L.R.

CANCELLED DUPLICATE DESTROYED

References
Prior C/T 28A/421

Transfer No.
N/C. Order No. A57248/7

Land and Deeds 69

REGISTER

CANCELLED

No. 37B/606

CERTIFICATE OF TITLE UNDER LAND TRANSFER ACT

This Certificate dated the 22nd day of June one thousand nine hundred and ninety three *under the seal of the District Land Registrar of the Land Registration District of* CANTERBURY

WITNESSETH that EXPORT APPLES LIMITED at Christchurch ---

Firstly
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 4.3343 hectares or thereabouts being Lot 6 Deposited Plan 47839 and Secondly an estate in fee simple as to an undivided one-eleventh share in all that parcel of land containing 1.4150 hectares or thereabouts being Lots 13,14 and 15 Deposited Plan 47839

DISTRICT LAND REGISTRAR

ASSISTANT LAND REGISTRAR

Lots 14 and 15 DP 47839 are subject to:

Certificate 572825/2 pursuant to Section 321(3)(b) Local Government Act 1974 - 22.10.1985 at 12.10pm

Subject to:

Right of Way marked I on DP 47839, right to drain water and sewage, right to convey water, electric power and telephonic communications over part herein appurtenant to Lots 1-5,7-11,14&15 on DP 47839 (37A/601-605,607-611) as specified in Easement Certificate 572825/4

The easements specified in Easement Certificate 572825/4 are subject to (now) Section 243(a) Resource Management Act 1991

Mortgage A2556/3 to ANZ Bank Limited - 3.7.1992 at 11.05am

DISCHARGED for RGL

Appurtenant hereto:

Rights of Way marked C,B,A,K,J,H,G,F,E&D respectively on DP 47839, rights to drain water and sewage and rights to convey electric power, telephonic communications and water over part Lots 1-5, 7-11 DP 47839 (37B/601-605,607-611) as specified in Easement Certificate 572825/4

The easements specified in Easement Certificate 572825/4 are subject to (now) Section 243(a) Resource Management Act 1991

A.L.R.

The within land has the benefit of a land covenant over Lot 12 DP 47839 (37B/612) contained in Transfer A69509/13 - 6.9.1993 at 11.13am

for A.L.R.

Mortgage A277254/6 to The Trustees Executors and Agency Company of New Zealand Limited

DISCHARGED for A.L.R.

No. A277254/11 Memorandum of Priority making Mortgages A277254/6 and A2556/3 first and second mortgages respectively

both on 14.1.1997 at 2.41pm

for A.L.R.

A414880.23 Transfer to Northwest Farm Limited

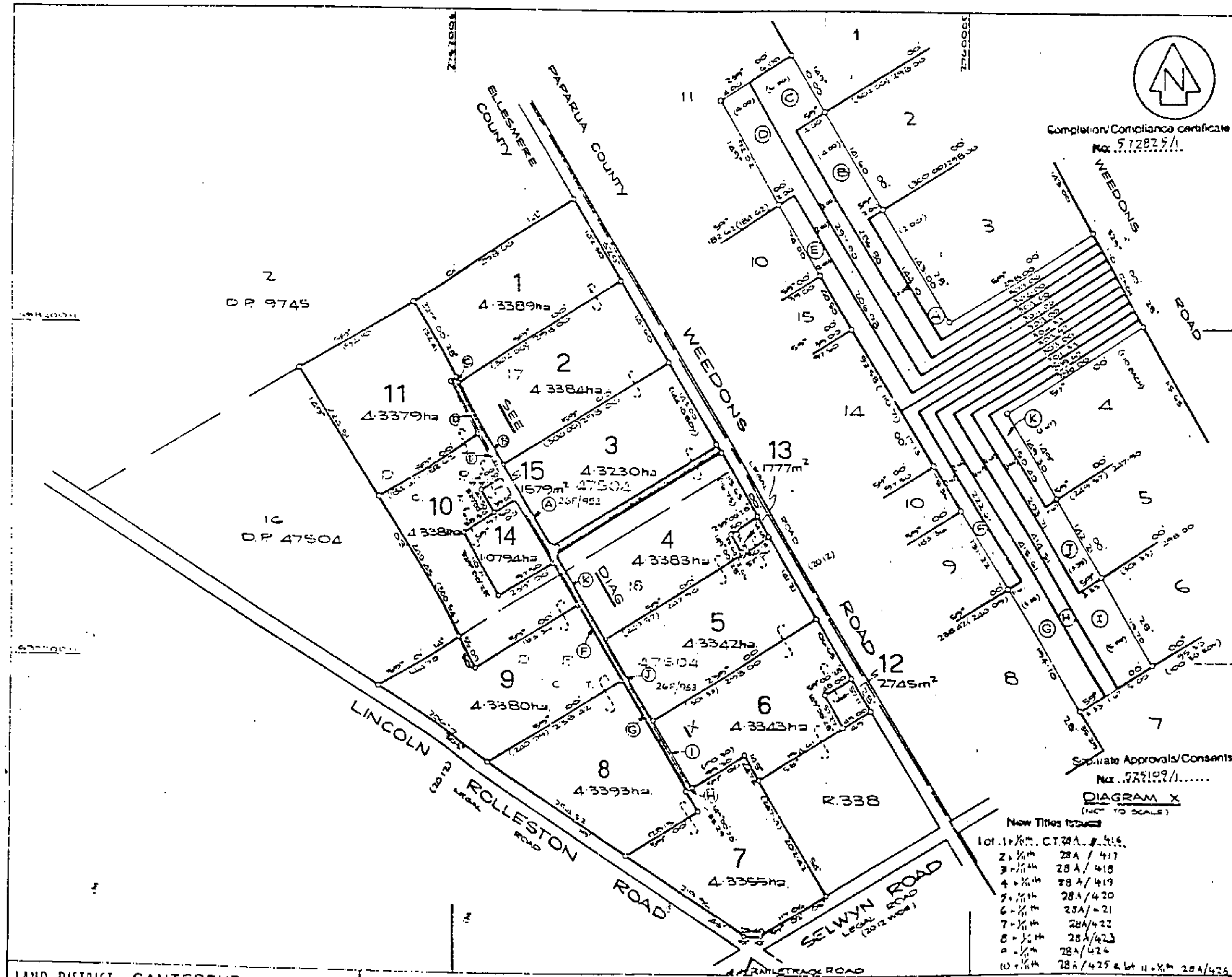
A414880.24 Mortgage to Bank of New Zealand

all 9.7.1999 at 12.34

for RGL

Measurements are Metric

No. 37B/606



New Titles Issued
Lot 1 + 1/11th C.T. 28A/416
2 + 1/11th 28A/417
3 + 1/11th 28A/418
4 + 1/11th 28A/419
5 + 1/11th 28A/420
6 + 1/11th 28A/421
7 + 1/11th 28A/422
8 + 1/11th 28A/423
9 + 1/11th 28A/424
10 + 1/11th 28A/425 & lot 11 + 1/11th 28A/426

APPROVED

Registered Proprietor

NOTE: LOTS 14 & 15 HAVE NO FRONTAGE TO A PUBLIC ROAD.

MEMORANDUM OF EASEMENTS

NATURE	SERVIENT TENEMENT LOT NO	SERVIENT TENEMENT SHOWN	DOMINANT TENEMENT
RIGHT OF WAY, RIGHT TO DRAIN WATER & SEWAGE, RIGHT TO CONVEY WATER, ELECTRIC POWER & TELEPHONIC COMMUNICATIONS	3	A	[illegible]
	2	B	[illegible]
	1	C	[illegible]
	11	D	[illegible]
	10	E	[illegible]
	9	F	[illegible]
	8	G	[illegible]
	7	H	[illegible]
	6	I	[illegible]
	5	J	[illegible]
	4	K	[illegible]

Pursuant to a resolution under Section 305 Local Government Act, 1974 dated 19th day of November, 1984, the Ellesmere County Council has approved this plan of subdivision conditional upon the granting or reserving of the easements shown in the memorandum endorsed hereon and certifies that the plan is in accordance with the requirements and provisions of the operative district scheme. The common seal of the Ellesmere County Council was affixed hereto in the presence of

Chairman

County Clerk

Total Area 49·8854ha

Comprised in C.T. 26F/952 & C.T. 26F/953

I, BRIAN ROBERT FOOTE, of CHRISTCHURCH, Registered Surveyor and holder of an annual practising certificate hereby certify that this plan has been made from Surveys executed by me or under my direction, that both plan and Survey are correct and have been made in accordance with the regulations under the Surveyors Act 1986.

Dated at CHRISTCHURCH this 24th day of Sept 1984 Signature B. R. Foote

Field Book / Traverse Book

Reference Plans DP 9745, 29901, 47504, SO 5849, 5875

Examined / Correct

Approved as to Survey

15 / 1 / 85 Chief Surveyor

Deposited this 22nd day of October 1985

District Land Registrar

DP 47839

LAND DISTRICT CANTERBURY
SURVEY BLK. & DIST. IV LEESTON
NZMS 261 SHEET No. M36 - 10000/3.1

LOTS 1–15 BEING SUBDIVISION OF LOTS 17 & 18 D.P. 47504

TERRITORIAL AUTHORITY ELLESMERE COUNTY
Surveyed by McClelland, Grantham & Associates
Scale 1:4000 Date JULY 1984

T

37B/606

A436549.1 CT 47C/33 issued for Lot 13 DP 47839 & CT 47C/35 & 39 issued for Lots 6, 14 & 15 DP 47839 - 2.12.1999 at 1.57

For RGL

CANCELLED
DUPLICATE DESTROYED

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 **CB47C/35**

Land Registration District **Canterbury**

Date Issued 02 December 1999

Prior References
CB37B/606

Estate Fee Simple

Area 4.3343 hectares more or less

Legal Description Lot 6 Deposited Plan 47839

Original Registered Owners
Northwest Farm Limited

Interests

572825.4 Easement Certificate specifying the following easements - 22.10.1985 at 12.10 pm

Type	Servient Tenement	Easement Area	Dominant Tenement	Statutory Restriction
Right of way, right to drain water and sewage, right to convey water, electric power and telephonic communications	Lot 1 Deposited Plan 47839	C DP 47839	Lot 6 Deposited Plan 47839 - herein	
Right of way, right to drain water and sewage, right to convey water, electric power and telephonic communications	Lot 2 Deposited Plan 47839	B DP 47839	Lot 6 Deposited Plan 47839 - herein	
Right of way, right to drain water and sewage, right to convey water, electric power and telephonic communications	Lot 3 Deposited Plan 47839	A DP 47839	Lot 6 Deposited Plan 47839 - herein	

Right of way, right to drain water and sewage, right to convey water, electric power and telephonic communications	Lot 4 Deposited Plan 47839	K DP 47839	Lot 6 Deposited Plan 47839 - herein
Right of way, right to drain water and sewage, right to convey water, electric power and telephonic communications	Lot 5 Deposited Plan 47839	J DP 47839	Lot 6 Deposited Plan 47839 - herein
Right of way, right to drain water and sewage, right to convey water, electric power and telephonic communications	Lot 7 Deposited Plan 47839	H DP 47839	Lot 6 Deposited Plan 47839 - herein
Right of way, right to drain water and sewage, right to convey water, electric power and telephonic communications	Lot 8 Deposited Plan 47839	G DP 47839	Lot 6 Deposited Plan 47839 - herein
Right of way, right to drain water and sewage, right to convey water, electric power and telephonic communications	Lot 9 Deposited Plan 47839	F DP 47839	Lot 6 Deposited Plan 47839 - herein
Right of way, right to drain water and sewage, right to convey water, electric power and telephonic communications	Lot 10 Deposited Plan 47839	E DP 47839	Lot 6 Deposited Plan 47839 - herein
Right of way, right to drain water and sewage, right to convey water, electric power and telephonic communications	Lot 11 Deposited Plan 47839	D DP 47839	Lot 6 Deposited Plan 47839 - herein

Right of way, right to drain water and sewage, right to convey water, electric power and telephonic communications	Lot 6 Deposited Plan 47839 - herein	I DP 47839	Lot 1 Deposited Plan 47839
Right of way, right to drain water and sewage, right to convey water, electric power and telephonic communications	Lot 6 Deposited Plan 47839 - herein	I DP 47839	Lot 2 Deposited Plan 47839
Right of way, right to drain water and sewage, right to convey water, electric power and telephonic communications	Lot 6 Deposited Plan 47839 - herein	I DP 47839	Lot 3 Deposited Plan 47839
Right of way, right to drain water and sewage, right to convey water, electric power and telephonic communications	Lot 6 Deposited Plan 47839 - herein	I DP 47839	Lot 4 Deposited Plan 47839
Right of way, right to drain water and sewage, right to convey water, electric power and telephonic communications	Lot 6 Deposited Plan 47839 - herein	I DP 47839	Lot 5 Deposited Plan 47839
Right of way, right to drain water and sewage, right to convey water, electric power and telephonic communications	Lot 6 Deposited Plan 47839 - herein	I DP 47839	Lot 7 Deposited Plan 47839
Right of way, right to drain water and sewage, right to convey water, electric power and telephonic communications	Lot 6 Deposited Plan 47839 - herein	I DP 47839	Lot 8 Deposited Plan 47839

Right of way, right to drain water and sewage, right to convey water, electric power and telephonic communications	Lot 6 Deposited Plan 47839 - herein	I DP 47839	Lot 9 Deposited Plan 47839
Right of way, right to drain water and sewage, right to convey water, electric power and telephonic communications	Lot 6 Deposited Plan 47839 - herein	I DP 47839	Lot 10 Deposited Plan 47839
Right of way, right to drain water and sewage, right to convey water, electric power and telephonic communications	Lot 6 Deposited Plan 47839 - herein	I DP 47839	Lot 11 Deposited Plan 47839
Right of way, right to drain water and sewage, right to convey water, electric power and telephonic communications	Lot 6 Deposited Plan 47839 - herein	I DP 47839	Lot 14 Deposited Plan 47839
Right of way, right to drain water and sewage, right to convey water, electric power and telephonic communications	Lot 6 Deposited Plan 47839 - herein	I DP 47839	Lot 15 Deposited Plan 47839

The easements specified in Easement Certificate 572825.4 are subject to Section 309(1)(a) Local Government Act 1974

Land Covenant in Transfer A69509.13 - 6.9.1993 at 11.13 am

Land Covenant in Transfer A436549.2 - 2.12.1999 at 1.57 pm

5306321.1 Transfer to Cornelis Schaap (1/2 share) and Vicki Anne Schaap (1/2 share) - 6.8.2002 at 12:56 pm

5306321.2 Mortgage to Bank of New Zealand - 6.8.2002 at 12:56 pm

5566683.1 Discharge of Mortgage 5306321.2 - 29.4.2003 at 9:00 am

5566683.2 Mortgage to ASB Bank Limited - 29.4.2003 at 9:00 am

7190864.1 Discharge of Mortgage 5566683.2 - 16.1.2007 at 9:00 am

7190864.2 Transfer to Paul Alexander Goodwin (1/2 share) and Tessa Jacqueline Mocatta (1/2 share) - 16.1.2007 at 9:00 am

7190864.3 Mortgage to Pioneer First Limited - 16.1.2007 at 9:00 am

7902979.1 Discharge of Mortgage 7190864.3 - 8.8.2008 at 3:51 pm

7902979.2 Transfer to Paul Alexander Goodwin, Tessa Jacqueline Mocatta and Templetons Trustees Limited (1/2 share) and Tessa Jacqueline Mocatta, Paul Alexander Goodwin and Templetons Trustees Limited (1/2 share) - 8.8.2008 at 3:51 pm

7906240.1 Mortgage to Public Trust - 13.8.2008 at 9:00 am

8576823.1 Discharge of Mortgage 7906240.1 - 1.9.2010 at 2:51 pm

8576823.2 Transfer to Paul Alexander Goodwin, Tessa Jacqueline Mocatta and Landley Trustees Limited (1/2 share) and Tessa Jacqueline Mocatta, Paul Alexander Goodwin and Landley Trustees Limited (1/2 share) - 1.9.2010 at 2:51 pm

8576823.3 Mortgage to Westpac New Zealand Limited - 1.9.2010 at 2:51 pm

10844087.1 Discharge of Mortgage 8576823.3 - 13.7.2017 at 3:02 pm

10844087.2 Mortgage to Kiwibank Limited - 13.7.2017 at 3:02 pm

13055587.1 Revocation of Land Covenant created by Transfer A436549.2 - 30.10.2024 at 2:29 pm

LT69

Reference:
Prior CT: 37B/606
Document No.: A436549.1

REGISTER

47C/35

CERTIFICATE OF TITLE UNDER LAND TRANSFER ACT 1952

This Certificate dated the 2nd day of December One Thousand Nine Hundred and Ninety Nine under the seal of the Registrar-General of Land, New Zealand, for the Land Registration District of CANTERBURY

WITNESSETH that **NORTHWEST FARM LIMITED**

is seised of an estate in **fee simple** (subject to such reservations, restrictions, encumbrances and interests as are notified by memorial endorsed hereon) in the land hereinafter described, delineated on the plan hereon, be the several admeasurements a little more or less, that is to say: All that parcel of land containing 4.3343 hectares, more or less being **LOT 6 DEPOSITED PLAN 47839**

REGISTRAR-GENERAL OF LAND NEW ZEALAND

For the Registrar-General of Land

Appurtenant hereto is a right of way, right to drain water & sewage, right to convey water, electric power & telephonic communications over part Lots 1-5, 7-11 marked C, B, A, K, J, H, G, F, E & D respectively on DP 47839 CsT 47C/30-34, 36-40 as specified in Easement Certificate 572825.4

The easements specified in Easement Certificate 572825.4 are subject to Section 309(1)(a) Local Government Act 1974

Subject to a right of way, right to drain water & sewage, right to convey water, electric power & telephonic communications over part herein marked I on DP 47839 appurtenant to Lots 1-5,7-11, 14 & 15 DP 47839 CsT 47C/30-34, 36-40 as specified in Easement Certificate 572825.4

The easements specified in Easement Certificate 572825.4 are subject to Section 309(1)(a) Local Government Act 1974

All 22.10.1985 at 12.10

Land covenant in Transfer A69509.13 - 6.9.1993 at 11.13

A414880.24 Mortgage to Bank of New Zealand - 9.7.1999 at 12.34 DISCHARGED 3.1.13 for RGL

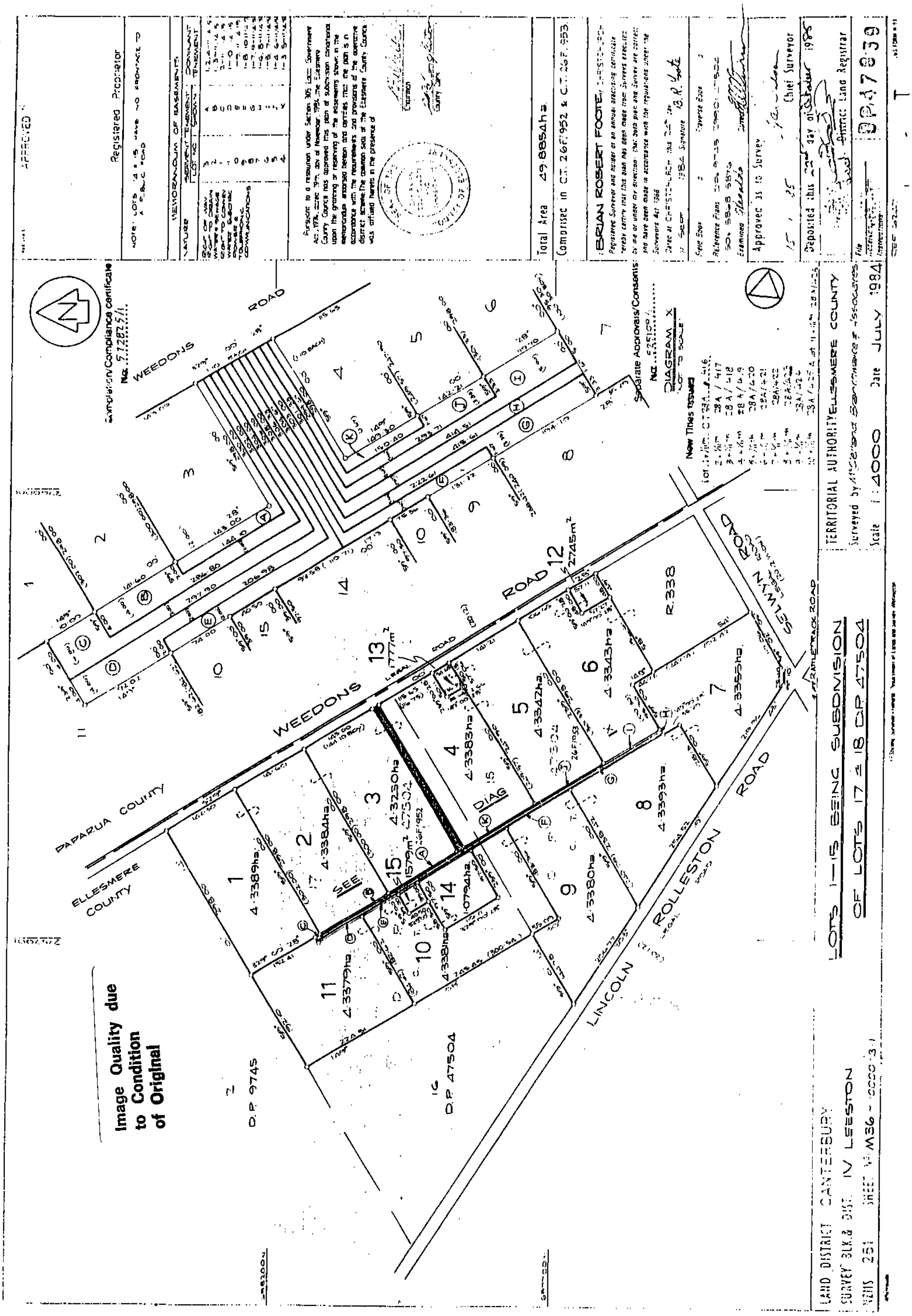
A436549.2 Transfer to Northwest Farm Limited

Land covenant in Transfer A436549.2

All 2.12.1999 at 1.57

For RGL

47C/35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LOTS 1—15 BEING SUBDIVISION OF LOTS 17 & 18 DP 47504
WEEDONS ROAD
ROLLESTON ROAD
LINCOLN
SELWYN ROAD
PAPARUA COUNTY
ELLESMERE COUNTY
D.P. 9745
D.P. 47504
DIAGRAM X
Total Area 49.8854ha
BRIAN ROBERT FOOTE
TERRITORIAL AUTHORITY ELLESMERE COUNTY
Scale 1:4000
Date JULY 1984
LAND DISTRICT CANTERBURY
DP 47839

[Form B.

174/27

NEW ZEALAND.

Reference: Vol. 2/3, folio 69/112 Substituted ~~Transfer No.~~ Application No 8074.

Register-book, Vol. 174 folio 27

[3,000/10/96—5008

CERTIFICATE OF TITLE UNDER LAND TRANSFER ACT.

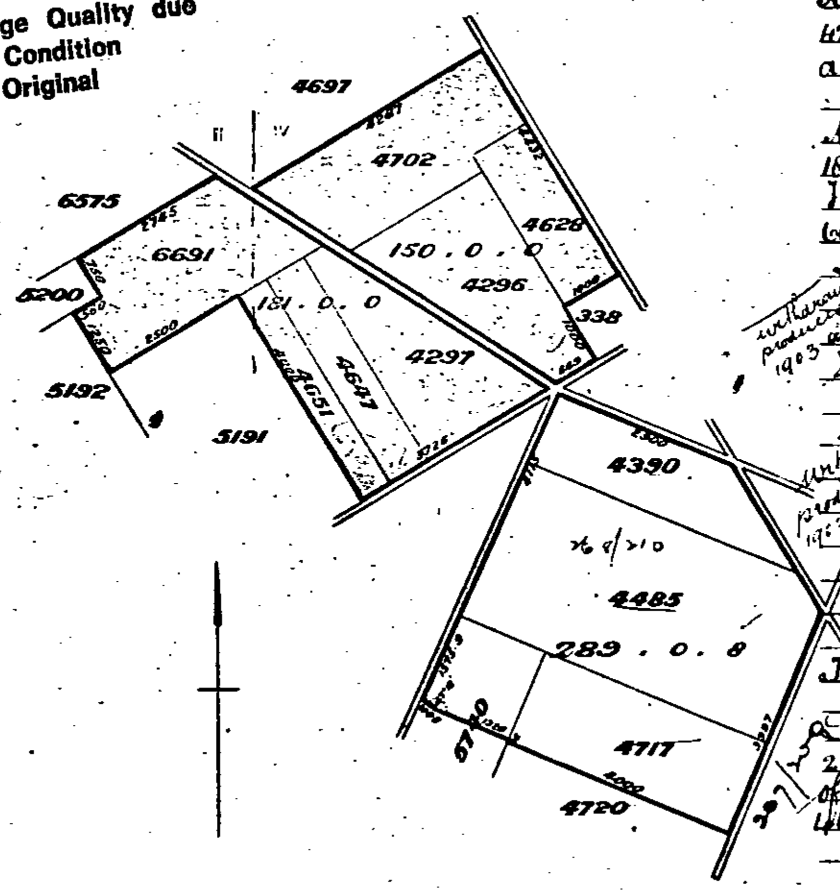
This Certificate, dated the third day of August, one thousand eight hundred and ninety-seven, under the hand and seal of the District Land Registrar of the Land Registration District of Canterbury **Witnesseth** that George Troll of Springston Farmer

is seised of an estate in fee-simple (subject to such reservations, restrictions, encumbrances, liens, and interests as are notified by memorial underwritten or indorsed 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 those parcels of land containing together six hundred and twenty acres and eight perches or thereabouts situated in Block IV of the Leeston Survey District comprising Rural Sections 4296. 4297. 4390. 4485. 4628. 4647. 4651. 4702. 4717 and 6691 and part of Rural Section 5740.

G. G. Bridges
District Land Registrar

CANCELLED
AS TO PART COLOURED RED.

Image Quality due to Condition of Original



Scale: 20 chains to an inch

Outstanding Mortgage Registered No 91547 George Troll to George Henry Moore affecting Rural Sections 4296. 4297. 4390. 4485. 4628. 4647. 4651. and 4702 and part of ...

DISCHARGED 26.5.1903. D.L.R. — G. G. Bridges D.L.R.

Mortgage 37606 produced 12th June 1897 at 2.45 pm George Troll to George Henry ... Sections 4717 and 6691.

DISCHARGED 26.5.1903. D.L.R. — G. G. Bridges D.L.R.

~~7778 produced 26 ... 1898 at 2.30 p.m. against R.S. 4296. 4297. 4628. 4647. 4651. 4702. and 6691.~~ (Withdrawal produced ... 1903)

... D.L.R.

~~12237 produced 31 May 1900 at ... against R.S. 4296. 4297. 4628. 4647. 4651. 4702 and 6691.~~ (Withdrawal produced ... 1903)

... D.L.R.

Mortgage 51269 produced 21 May 1903 at 2 pm George Troll to Annie Quayle Townend ... G. G. Bridges D.L.R.

Transfer 59776 produced 21 May 1903 at 2 p.m. George Troll to William McMeekan of Rural Sections 4296. 4297. 4628. 4647. 4651. 4702 and 6691. G. G. Bridges D.L.R.

174/27

174/27

174 / 27

Mortgage 80059 produced 5 March 1911 at 1.56 pm George Trott to Arthur Edgar Gravenor Rhodes and Arthur Llewellyn Barker and John Matthias Barker and Robert Peter Rhodes and Robert Heaton Rhodes and Arthur Edgar Gravenor Rhodes. [illegible] at [illegible]

Mortgage 80060 produced 15 March 1911 at 1.56 pm George Trott to Arthur Edgar Gravenor Rhodes [illegible] at [illegible]

DISCHARGED 2-10-1911 W.L.R.

208/310

Transfer 91775 produced 10 October 1911 at 3 pm George Trott to David Marshall of balance [illegible] [illegible]

Cancelled

CERTIFICATE OF TITLE,

Vol. , folio

174 / 27

207/200

NEW ZEALAND.

CANCELLED

[Form B.

Reference: Vol. 174, folio 27
Transfer No. 59776

Register-book,
Vol. 207, folio 200

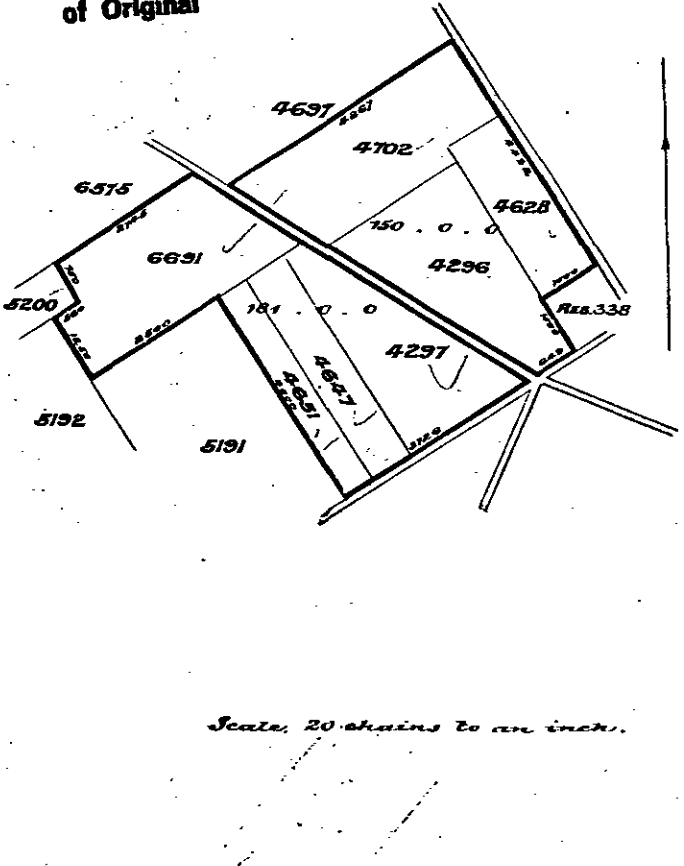
CERTIFICATE OF TITLE UNDER LAND TRANSFER ACT.

This Certificate, dated the twentysixth day of May, one thousand nine hundred and three, under the hand and seal of the District Land Registrar of the Land Registration District of Canterbury, Witnesseth that William McMeekan of Springston 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 indorsed 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 those parcels of land containing together three hundred and thirty one acres or thereabouts situated in Block IV of the Leeston Survey District comprising Rural sections 4296, 4297, 4628, 4647, 4651, 4702 and 6691

G. G. Bridges
District Land Registrar

Image Quality due to Condition of Original



Scale, 20 chains to an inch.

Mortgage 51269 produced 26 May 1903 at 2pm George Trott to Annie Quaife
DISCHARGED 31.5.1907
G. G. Bridges DLR

Mortgage 51270 produced 26 May 1903 at 2pm William McMeekan to Joseph Gould and George Gould
DISCHARGED 27.3.1907
G. G. Bridges DLR

Transfer 74002 produced 27th March 1907 at 2.52 pm William McMeekan to Ellen Page of Christchurch Spinster
DLR

Mortgage 64636 produced 31 May 1907 at 2.50pm Ellen Page to Annie Quaife
DISCHARGED
DLR

Certificate of Marriage 718 of Ellen Page with Andrew Badock of Springston Farmer at Christchurch on 19 June 1907 produced 6 August 1907 at 2.15 pm
DLR

Transfer of ... 82973 produced 6 July 1909 at 11.31am Ellen Badock to Walter Wright of Springston Farmer
DLR

Mortgage 85734 produced 17 May 1912 at 3.15pm Walter Wright to Annie Quaife ... ...
DISCHARGED
DLR

Transmission 9617 of Mortgage 85734 to Alfred Arnaud Morris McKellar, Cecil George McKellar, Norman Lindsay Macbeth and Frederick Henry Pyne. Entered 22nd March, 1915 at 11.49 am
DISCHARGED
L.R.

Over

207/200

2

207/200

Transmission 10033 of Mortgage 85724 to the above named Alfred Arnaud Norris McKellar, Cecil George McKellar and Norman Lindsay McKellar. Entered 21 December, 1915, at [illegible] p.m.

LR

DISCHARGED

Extension of Mortgage 85724 and Increase of Rate of Interest produced 21 August 1917 at 11.54 am.

DISCHARGED

Transmission No. 14451 of Mortgage No. 85724 to Cecil George McKellar and Norman Lindsay McKellar Entered 27/1/21 at 12 o'c

DISCHARGED

Transfer 146952 produced 1st July 1922 at 11.20 am Walter Wright to William Henry Peter Sowden of Springton farmer

Variation of the terms Mortgage 85724 produced 27th [illegible] 1922 at 11.25 am

DISCHARGED

Variation of the terms of Mortgage 85724 produced 30 June 1930 at [illegible] p.m.

DISCHARGED

Transmission 23446 of Mortgage 85724 to Cecil George McKellar entered 3 November 1931 at 3 p.m.

DISCHARGED

Transfer 200583 of Mortgage 85724 Cecil George McKellar to Frank Sturmer Wilding and Cecil George McKellar produced 3 December 1931 at 3 pm.

DISCHARGED

Transfer 204594 produced 19th June 1933 at 11.56 am William Henry Peter Sowden to Duncan Gillanders of Springton Farmer

Mortgage 184635 produced 19 June 1933 at 11.56 am Duncan Gillanders to Godfrey Rosamond Cracroft Wilson

DISCHARGED

Mortgage 184636 produced 19 June 1933 at 11.57 am Duncan Gillanders to William Henry Peter Sowden

DISCHARGED

Mortgage 184637 produced 19 June 1933 at 11.58 am Duncan Gillanders to Donald Gillanders

DISCHARGED

Mortgage 198705 produced 16th June 1938 at 2.20 p.m. Duncan Gillanders to Godfrey Rosamond Cracroft Wilson and [illegible] Douglas [illegible] Wanklyn and Edmund Wellesley Reeves in shares

DISCHARGED 2-11-[illegible]

DISCHARGED

Mortgage 198706 produced 16th June 1938 Duncan Gillanders to Donald Gillanders

DISCHARGED 2-11-1945

DISCHARGED

Transfer 65888 produced 22 November 1945 at 11.49 am Duncan Gillanders to Thomas Reid a member of H.M. Armed Forces

Mortgage 223001 produced [illegible] November 1945 at 11.51 am [illegible] to the State Advances Corporation of New Zealand

DISCHARGED

~~Mortgage [illegible]~~

~~[illegible] Transfer Douglas [illegible] Wanklyn and Ernest Everest England to Ida Estelle [illegible] produced 24th October 1953 at 11.27 am~~

Error

ALR

THIS REPRODUCTION (ON A REDUCED SCALE) CERTIFIED TO BE A TRUE COPY OF THE [illegible] FOR THE PURPOSES OF [illegible] LAND TRANSFER ACT 1952.

A.L.R.

OCT 77158/1 Cancelled and 26.4.1976 C.T.'s 16B/949-955 issued for R.S.'s 4296, 4297, 4628, 4647, 4651 4702 and 6691

A.L.R.

CANCELLED

DUPLICATE DESTROYED

CERTIFICATE OF TITLE,

Vol. , folio

207/200

Appendix B – LLUR Statement

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 ENQ398455

Date generated: 26 November 2024
Land parcels: Lot 6 DP 47839

The information presented in this map is specific to the area within a 100m radius of property you have selected. Information on properties outside the serach radius 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
118904	503, 1/487, 2/487, 3/487, 4/487, 6/487, 503, 7/487, 8/487, 9/487, 10/487, 11/487 Weedons Rd	503, 1/487, 2/487, 3/487, 4/487, 6/487, 503, 7/487, 8/487, 9/487, 10/487, 11/487 Weedons Rd	A10 - Persistent pesticide bulk storage or use;	Not Investigated

Please note that the above table represents a summary of sites and HAILs intersecting the area of enquiry only.

Nearby sites

Site number	Name	Location	HAIL activity(s)	Category
82092	SN82092 - Reids Pit, Selwyn Road, Rolleston, Selwyn	SN82092 - Reids Pit, Selwyn Road, Rolleston, Selwyn	G5 - Waste disposal to land;	Partially Investigated
235788	6/487 Weedons Road, Rolleston	6/487 Weedons Road, Rolleston	A10 - Persistent pesticide bulk storage or use;	Yet to be reviewed

Please note that the above table represents a summary of sites and HAILs intersecting the area of enquiry within a 100m buffer.

More detail about the sites

Site 82092: SN82092 - Reids Pit, Selwyn Road, Rolleston, Selwyn (Within 100m of enquiry area.)

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

Location: SN82092 - Reids Pit, Selwyn Road, Rolleston, Selwyn
Legal description(s): RES 338

HAIL activity(s):

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

Notes:

Investigations:

INV 225297 **Soil Contamination Risk, Preliminary Site Investigation Report, Reids Pit, 452 Selwyn Road, Rolleston**
Malloch Environmental Ltd - Preliminary Site Investigation
15 Aug 2014

INV 233400 **Soil Contamination Risk, Detailed Site Investigation Report, Reids Pit, 452 Selwyn Road, Rolleston**
Malloch Environmental Ltd - Detailed Site Investigation
4 Mar 2019

Summary of investigation(s):

Site history: According to former site operators, 452 Selwyn Road, Rolleston (Reids Pit, the site) was used for gravel extraction from the late 1970s until the early 2000s. Following this, the site was used as a Selwyn District Council hardfill dumping site with limited general rubbish dumping. Selwyn District Council are proposing to import significant quantities of cleanfill and topsoil into the site with the aim of creating a recreational reserve.

INV225297 - Soil Contamination Risk, Preliminary Site Investigation - Reids Pit, 452 Selwyn Road, Rolleston - Malloch Environmental 2014

Malloch Environmental (Malloch) were engaged to complete a preliminary site investigation (PSI) for Selwyn District Council to assess the potential for soil contamination at Reids Pit. The PSI included assessment of nearby bores, district and regional council records, historic aerial photographs, interviews with former council staff and a site visit. The consultant identified the potential for soil contamination due to landfill activities and suggested a detailed site investigation (DSI) be completed to assess the risk to human health.

INV233400 - Soil Contamination Risk, Detailed Site Investigation Report - Reids Pit, 452 Selwyn Road, Rolleston - Malloch Environmental 2019

Malloch completed a DSI report to outline the results of limited soil sampling completed in 2014. Ten test pits were excavated to 500 mm below ground level (bgl). Soil samples were collected from 100 mm and 500 mm bgl and composited to form five composite samples of four sub-samples. Composite samples were analysed for trace elements (arsenic, cadmium, chromium, copper, lead, nickel and zinc) and organochlorine pesticides. One of the composite samples was also analysed for polycyclic aromatic hydrocarbons (PAHs). Results were compared with National Environmental Standard (NES) Soil Contaminant Standards for recreational land use.

Results: Fill material encountered was predominantly hardfill and imported soil with minor traces of wood bark and road chip. Trace element results were all below local background concentrations and organochlorine pesticides were below adopted ambient concentrations. PAHs were below recreational standards.

Conclusions: The site has been categorised as partially investigated.

Justification: An insufficient number of soil samples have been collected to fully characterise the fill material onsite.

Site 118904: 503, 1/487, 2/487, 3/487, 4/487, 6/487, 503, 7/487, 8/487, 9/487, 10/487, 11/487 Weedons Rd (Intersects enquiry area.)

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

Location: 503, 1/487, 2/487, 3/487, 4/487, 6/487, 503, 7/487, 8/487, 9/487, 10/487, 11/487 Weedons Rd
Legal description(s): Lot 1 DP 427521,Lot 1 DP 47839,Lot 10 DP 47839,Lot 11 DP 47839,Lot 14 DP 47839,Lot 15 DP 47839,Lot 2 DP 427521,Lot 2 DP 47839,Lot 3 DP 47839,Lot 4 DP 47839,Lot 5 DP 47839,Lot 6 DP

47839,Lot 8 DP 47839,Lot 9 DP 47839,Part Lot 7 DP 47839

HAIL activity(s):

Period from	Period to	HAIL activity
1994	Present	Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds

Notes:

5 Nov 2014 This record was created as part of the Selwyn District Council 2015 HAIL identification project.

5 Nov 2014 Orchard developed around 1984. Extent of planting seen on Canterbury Maps historical imagery 1994

Investigations:

INV 383544 **Soil Contamination Risk Detailed Site Investigation Report & Remediation Action Plan 148, 156, 178 Lincoln Rolleston Rd & 6/487 Weedons Rd, Rolleston**
Momentum Environmental Limited - Detailed Site Investigation
26 Mar 2024

Summary of investigation(s):

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

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

This investigation has not been summarised.

Site 235788: 6/487 Weedons Road, Rolleston (Within 100m of enquiry area.)

Category: Yet to be reviewed
Definition: Investigation reports have been received for this site, but we have not yet reviewed them.

Location: 6/487 Weedons Road, Rolleston
Legal description(s): Lot 10 DP 47839

HAIL activity(s):

Period from	Period to	HAIL activity
1994	Present	Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds

Notes:

7 Jun 2019 This record was created as part of the Selwyn District Council 2015 HAIL identification project.

7 Jun 2019 Orchard developed around 1984. Extent of planting seen on Canterbury Maps historical imagery 1994

Investigations:

INV 235786 **Detailed Site Investigation - 6/487 Weedons Road, Rolleston**
Pattle Delamore Partners Ltd - Detailed Site Investigation
4 Jun 2019

Summary of investigation(s):

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

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

This investigation has not been summarised.

Nearby investigations of interest

There are no investigations associated with the area of enquiry.

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.

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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.

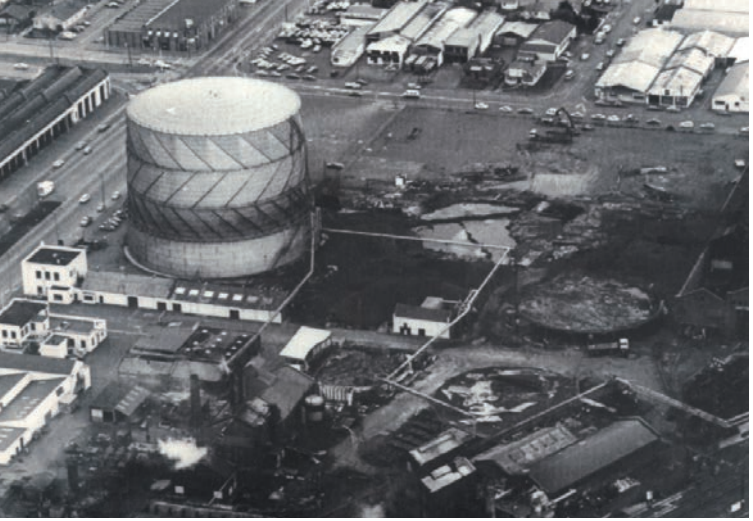
Please refer to the Site Categories and Definitions factsheet for further information.

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.

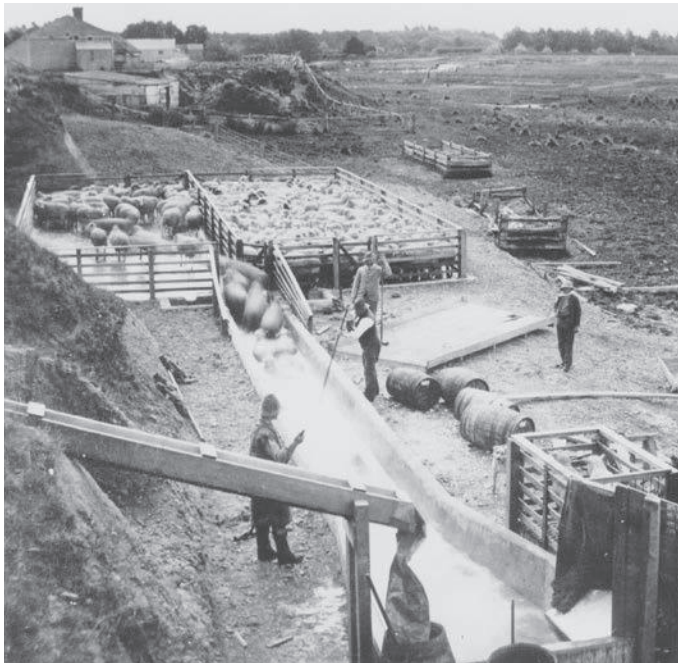
We may also use the information to prioritise sites for further investigation, remediation and management, to aid with planning, and to help assess resource consent applications. These are some of our other responsibilities under the RMA.

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)

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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.

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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 C – Historical Aerial Photographs

1942 Aerial

N

0 0 0.1 0.1 0.1 Kilometres

Scale: 1:2,500 @A4

Map Created by MEL on 27/11/2024 at 9:17 AM

1961 Aerial

N

0 0 0.1 0.1 0.1 Kilometres

Scale: 1:2,500 @A4

Map Created by MEL on 27/11/2024 at 9:18 AM

1974 Aerial

N

0 0 0.1 0.1 0.1 Kilometres

Scale: 1:2,500 @A4

Map Created by MEL on 27/11/2024 at 9:18 AM

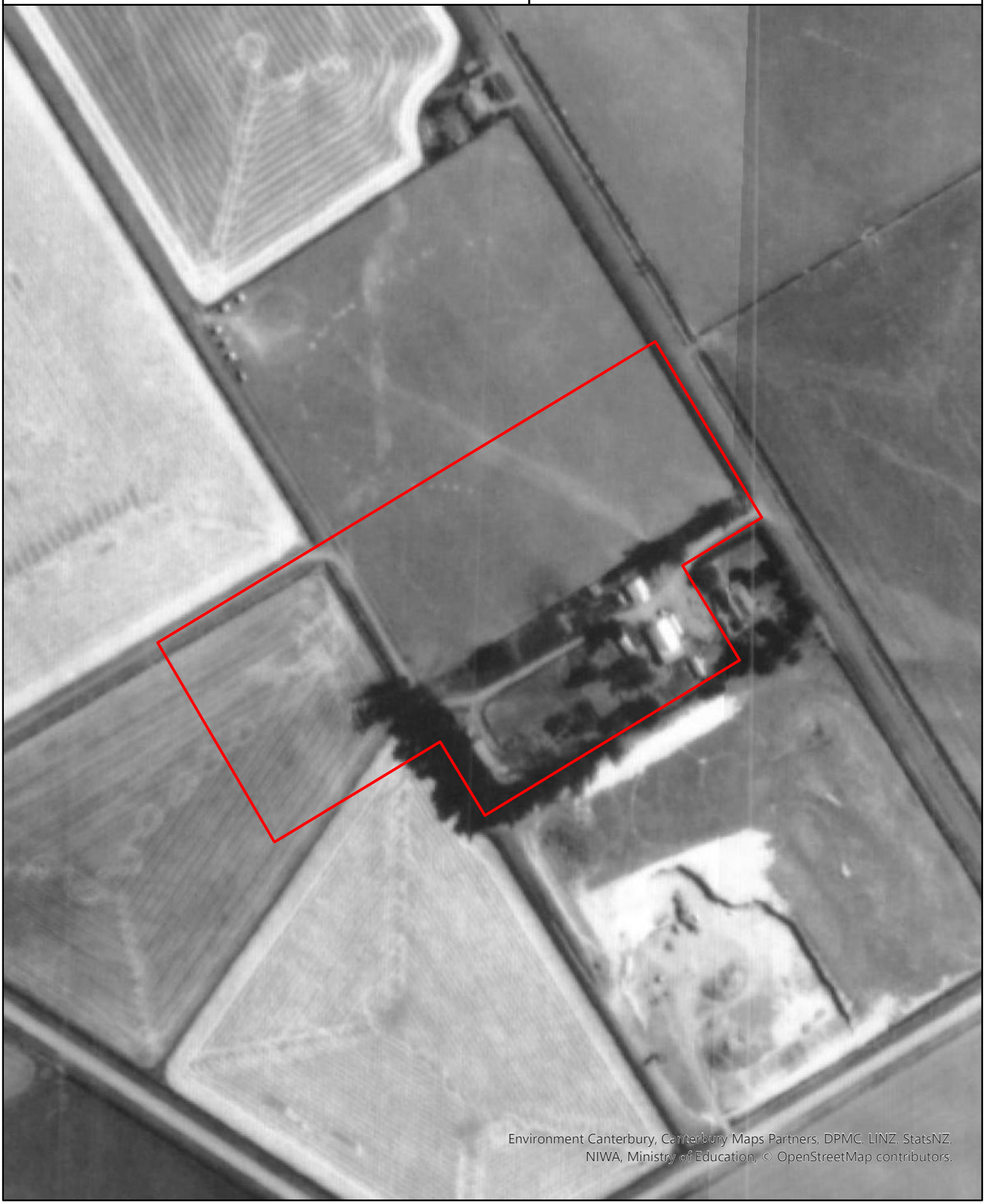
1982 Aerial

N

0 0 0.1 0.1 0.1 Kilometres

Scale: 1:2,500 @A4

Map Created by MEL on 27/11/2024 at 9:20 AM



1994 Aerial

N

0 0 0.1 0.1 0.1 Kilometres

Scale: 1:2,500 @A4

Map Created by MEL on 27/11/2024 at 9:21 AM

2000 Aerial

N

0 0 0.1 0.1 0.1 Kilometres

Scale: 1:2,500 @A4

Map Created by MEL on 27/11/2024 at 9:22 AM

2005 Aerial

N

0 0 0.1 0.1 0.1 Kilometres

Scale: 1:2,500 @A4

Map Created by MEL on 27/11/2024 at 9:22 AM

2012 Aerial

N

0 0 0.1 0.1 0.1 Kilometres

Scale: 1:2,500 @A4

Map Created by MEL on 27/11/2024 at 9:23 AM

2020 Aerial

N

0 0 0.1 0.1 0.1 Kilometres

Scale: 1:2,500 @A4

Map Created by MEL on 27/11/2024 at 9:24 AM

Appendix D – Sample Location Plans

MOMENTUM ENVIRONMENTAL LTD.

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LEGEND

• SS1	Soil sample location
• SS1	Sample location XRF tested only
• #1	Individual XRF test location
⊙ SS1	Soil sample location exceeds 'residential 10% produce' SGV for arsenic
	Composite sample groups
	Approximate area requiring remediation

PLAN MUST BE PRINTED IN COLOUR

Graphic scale is approximate only

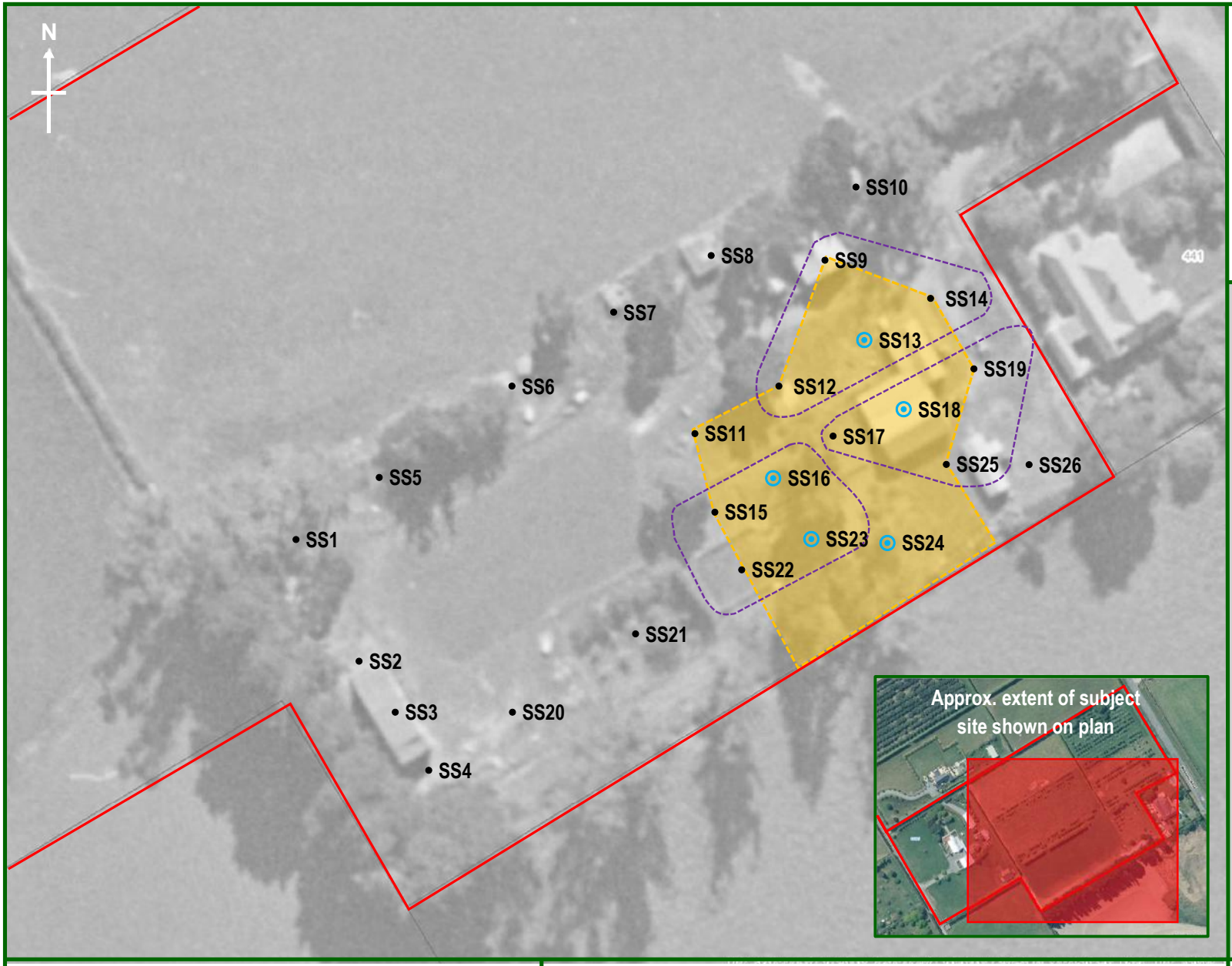
0 20 40 60 80 100m

Date: 09 December 2024 **Drawing No:** 928/1

10/487 Weedons Rd, Rolleston
Sample Location Plan

Notes:

1. This plan has been prepared for soil contamination risk assessment purposes only. No liability is accepted if the plan is used for any other purposes.
2. Any measurements taken from this plan which are not dimensioned on the electronic copy are at the risk of the user.
3. Soil sample locations are approximate only



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Specialist soil contamination experts, keeping your project moving.

www.momentumenviro.co.nz

LEGEND

- • SS1 — Soil sample location
- • SS1 — Sample location XRF tested only
- ⊙ SS1 — Soil sample location exceeds 'residential 10% produce' SGV for arsenic
- Composite sample groups
- Approximate area requiring remediation

Plan image – 1974 aerial sourced from Canterbury Maps

PLAN MUST BE PRINTED IN COLOUR

Graphic scale is approximate only

0 15 30 45 60 75m

Date: 09 December 2024 **Drawing No:** 928/2

Former Yard Area – 10/487 Weedons Rd, Rolleston

Sample Location Plan

Notes:

1. This plan has been prepared for soil contamination risk assessment purposes only. No liability is accepted if the plan is used for any other purposes.
2. Any measurements taken from this plan which are not dimensioned on the electronic copy are at the risk of the user.
3. Soil sample locations are approximate only

Appendix E – Table of XRF Results

Table of XRF Results - 10/487 Weedons Road, Rolleston

Date of testing: 02 December 2024

Units: ppm

Sample ID (Lab tested in bold)	Sample Depth (mm)	XRF Reading No	Date	Time	Test Duration (secs)	Total Recoverable Arsenic	
						Result	Error
Calibration Test	-	1	2/12/2024	8:43:31	40.0	443	4
Calibration Test	-	2	2/12/2024	8:44:24	40.0	11	1
Blank	-	3	2/12/2024	8:45:18	40.0	<LOD	3
BP1	0	4	2/12/2024	8:51:39	36.8	4	1
BP1	0	5	2/12/2024	8:52:24	30.0	5	1
BP1	0	6	2/12/2024	8:53:00	30.6	4	1
BP2	0	7	2/12/2024	9:11:00	33.2	5	1
BP2	0	8	2/12/2024	9:11:51	30.0	5	1
BP2	0	9	2/12/2024	9:12:35	30.0	4	1
BP3	0	10	2/12/2024	9:16:56	31.6	3	1
BP3	0	11	2/12/2024	9:17:39	30.0	<LOD	4
BP3	0	12	2/12/2024	9:18:18	30.7	<LOD	4
BP4	0	13	2/12/2024	9:24:55	30.0	4	1
BP4	0	14	2/12/2024	9:25:31	30.0	3	1
BP4	0	15	2/12/2024	9:26:12	30.0	3	1
BP5	0	16	2/12/2024	9:31:49	30.0	4	1
BP5	0	17	2/12/2024	9:32:31	30.0	4	1
BP5	0	18	2/12/2024	9:33:18	30.7	3	1
west of BP6	0	19	2/12/2024	9:46:24	30.0	4	1
west of BP6	0	20	2/12/2024	9:47:14	31.1	6	1
west of BP6	0	21	2/12/2024	9:48:03	30.7	5	1
BP6	0	22	2/12/2024	9:48:55	30.0	<LOD	4
BP6	50	23	2/12/2024	9:49:49	30.0	2	1
BP6	50	24	2/12/2024	9:50:56	30.0	**32**	1
BP7	0	25	2/12/2024	10:03:31	30.0	4	1
BP7	0	26	2/12/2024	10:04:11	30.0	<LOD	5
BP7	0	27	2/12/2024	10:04:48	24.4	5	1
BP8	0	28	2/12/2024	10:09:51	31.2	6	1
BP8	0	29	2/12/2024	10:10:35	31.3	5	1
BP8	0	30	2/12/2024	10:11:22	30.0	<LOD	5
BP9	0	31	2/12/2024	10:16:12	22.8	**36**	2
BP9	0	32	2/12/2024	10:17:00	23.2	**48**	2
BP9	0	33	2/12/2024	10:17:35	16.8	**123**	3
Blank	0	34	2/12/2024	10:26:44	40.0	<LOD	3
Pallets	0	35	2/12/2024	10:36:55	30.0	<LOD	2
Pallets	0	36	2/12/2024	10:37:40	30.0	<LOD	2
Blank	-	37	2/12/2024	10:43:14	40.0	<LOD	3
Soil Guideline Values	**Residential 10% Produce SGV**					20	
	Commercial/Outdoor Worker					70	
	Reference					NES	

Result exceeds 'residential 10% produce' SGV

Appendix F – Tables of Laboratory Results

Table of Laboratory Results - 10/487 Weedons Road, Rolleston

Date of sampling: 02 December 2024

PADDOCKS - SURFACE SAMPLES

	Sample Name:	P1.1	P2.1	P3.1	P4.1	P5.1	DUP1	P6.1	P7.1	P8.1	P9.1	P10.1	P11.1	P12.1	RPD	Soil Guideline Values					
Soil Results	Depth:	50	50	50	50	50	50	50	50	50	50	50	50	50	P5.1 & DUP1	Residential 10% Produce	Commercial/ Outdoor Worker	Reference	Ecological Receptors	Reference	Background$_1$
	Lab Number:	3730785.1	3730785.3	3730785.5	3730785.7	3730785.9	3730785.87	3730785.12	3730785.14	3730785.16	3730785.18	3730785.20	3730785.22	3730785.24							
Heavy Metals																					
Arsenic	mg/kg	3	2	3	3	7	7	3	6	3	3	3	3	7	0%	20	70	NES	210	ANZWQ	12.58
Cadmium	mg/kg	0.13	0.17	0.14	0.15	0.22	0.19	0.19	0.15	0.18	0.22	0.13	0.15	< 0.10	15%	3	1,300	NES	30	ANZWQ	0.19
Chromium	mg/kg	11	10	11	11	15	13	11	13	13	13	12	13	13	14%	460	6,300	NES	1110	ANZWQ	22.70
Copper	mg/kg	21	20	15	23	27	26	19	31	22	23	21	27	27	4%	>10,000	>10,000	NES	810	ANZWQ	20.30
Lead	mg/kg	10.4	11	12.1	13	13	13	13.5	18.2	15.7	13.5	17.5	12.9	21	0%	210	3,300	NES	660	ANZWQ	40.96
Nickel	mg/kg	7	7	8	8	9	9	8	9	9	9	9	9	10	0%	400	6,000	NEPM	156	ANZWQ	20.70
Zinc	mg/kg	65	62	64	76	92	88	78	84	90	101	86	83	84	4%	7,400	400,000	NEPM	1230	ANZWQ	93.94

PADDOCKS - DEEPER SAMPLES

	Sample Name:	P1.2	P2.2	P3.2	P4.2	P5.2	P5.3	P6.2	P7.2	P8.2	P9.2	P10.2	P11.2	P12.2	Soil Guideline Values					
Soil Results	Depth:	250	250	250	250	250	450	250	250	250	250	250	250	250	Residential 10% Produce	Commercial/ Outdoor Worker	Reference	Ecological Receptors	Reference	Background$_1$
	Lab Number:	3730785.2	3730785.4	3730785.6	3730785.8	3730785.10	3730785.11	3730785.13	3730785.15	3730785.17	3730785.19	3730785.21	3730785.23	3730785.25						
Heavy Metals																				
Arsenic	mg/kg	2	3	3	3	4	4	2	3	3	3	4	3	5	20	70	NES	210	ANZWQ	12.58
Cadmium	mg/kg	< 0.10	< 0.10	0.1	< 0.10	0.11	< 0.10	< 0.10	0.11	< 0.10	0.13	0.11	< 0.10	< 0.10	3	1,300	NES	30	ANZWQ	0.19
Chromium	mg/kg	10	12	13	12	14	14	11	13	15	14	13	12	14	460	6,300	NES	1110	ANZWQ	22.70
Copper	mg/kg	7	8	6	7	10	5	8	12	9	13	9	7	9	>10,000	>10,000	NES	810	ANZWQ	20.30
Lead	mg/kg	9	10	12	12.2	13.1	12.9	10.9	13.3	14.8	12.9	17.5	12.3	15.5	210	3,300	NES	660	ANZWQ	40.96
Nickel	mg/kg	8	8	8	8	10	11	8	9	11	10	10	9	10	400	6,000	NEPM	156	ANZWQ	20.70
Zinc	mg/kg	44	48	53	50	60	52	51	60	68	71	62	51	60	7,400	400,000	NEPM	1230	ANZWQ	93.94

Indicates result exceeds 'Residential 10% Produce' SGV
Indicates result exceeds Ecological Guideline Values
Indicates result exceeds Background

References:

NES - National Environmental Standard for Assessing and Managing Contaminants in Soils, MfE

NEPM - National Environmental Protection Measures 2013, Australia

ANZWQ - Australian and New Zealand - Guidelines for Fresh and Marine Water Quality (online) - 3 x Sediment GV-high

$_1$ Concentrations for 'Regional, Recent' soil group from Background concentrations in Canterbury soils, Tonkin and Taylor, July 2007

Table of Laboratory Results - 10/487 Weedons Road, Rolleston

Date of sampling: 02 December 2024

FORMER YARD AREA

	Sample Name:	SS1.1	DUP2	SS1.2	SS2.1	SS2.2	SS3.1	SS3.2	SS4.1	SS4.2	SS5.1	SS5.2	RPD	Soil Guideline Values					
Soil Results	Depth:	50	50	25	50	250	50	250	50	250	50	250	SS1.1 & DUP2	Residential 10% Produce	Commercial/ Outdoor Worker	Reference	Ecological Receptors	Reference	Background d_t
	Lab Number:	3730785.26	3730785.88	3730785.27	3730785.28	3730785.29	3730785.30	3730785.31	3730785.32	3730785.33	3730785.34	3730785.35							
Heavy Metals																			
Arsenic	mg/kg	3	3	3	4	3	3	3	4	3	3	3	0%	20	70	NES	210	ANZWQ	12.58
Cadmium	mg/kg	0.11	0.11	< 0.10	< 0.10	< 0.10	0.13	< 0.10	0.13	< 0.10	0.11	< 0.10	0%	3	1,300	NES	30	ANZWQ	0.19
Chromium	mg/kg	11	10	11	11	11	11	11	11	10	11	12	10%	460	6,300	NES	1110	ANZWQ	22.70
Copper	mg/kg	20	19	9	20	10	25	9	25	9	26	8	5%	>10,000	>10,000	NES	810	ANZWQ	20.30
Lead	mg/kg	19	18	19.3	20	16.5	23	15	25	12.5	28	13.7	5%	210	3,300	NES	660	ANZWQ	40.96
Nickel	mg/kg	8	7	8	8	8	8	8	8	8	8	9	13%	400	6,000	NEPM	156	ANZWQ	20.70
Zinc	mg/kg	81	78	57	79	54	110	62	99	58	97	70	4%	7,400	400,000	NEPM	1230	ANZWQ	93.94

	Sample Name:	SS6.1	SS6.2	SS7.1	SS7.2	SS8.1	SS8.2	SS9.1	SS9.2	SS10.1	SS10.2	SS11.1	SS11.2	Soil Guideline Values					
Soil Results	Depth:	50	250	50	250	50	250	50	250	50	250	50	250	Residential 10% Produce	Commercial/ Outdoor Worker	Reference	Ecological Receptors	Reference	Background d_t
	Lab Number:	3730785.36	3730785.37	3730785.38	3730785.39	3730785.40	3730785.41	3730785.42	3730785.43	3730785.44	3730785.45	3730785.46	3730785.47						
Heavy Metals																			
Arsenic	mg/kg	3	4	16	20	7	4	8	8	4	4	7	4	20	70	NES	210	ANZWQ	12.58
Cadmium	mg/kg	0.13	< 0.10	0.26	0.16	0.24	< 0.10	0.31	0.38	0.11	< 0.10	0.21	< 0.10	3	1,300	NES	30	ANZWQ	0.19
Chromium	mg/kg	11	13	20	18	14	13	14	15	14	13	13	14	460	6,300	NES	1110	ANZWQ	22.70
Copper	mg/kg	24	10	48	30	19	8	31	27	23	11	30	9	>10,000	>10,000	NES	810	ANZWQ	20.30
Lead	mg/kg	42	26	34	27	97	26	84	84	23	15.4	62	24	210	3,300	NES	660	ANZWQ	40.96
Nickel	mg/kg	9	9	9	10	9	9	10	11	10	9	10	10	400	6,000	NEPM	156	ANZWQ	20.70
Zinc	mg/kg	106	74	210	181	147	70	191	171	89	65	159	79	7,400	400,000	NEPM	1230	ANZWQ	93.94

	Sample Name:	SS12.1	SS12.2	SS13.1	DUP3	SS13.2	SS14.1	SS14.2	SS15.1	SS15.2	SS16.1	SS16.2	RPD	Soil Guideline Values					
Soil Results	Depth:	50	250	50	50	250	50	250	50	250	50	250	SS13.1 & DUP3	Residential 10% Produce	Commercial/ Outdoor Worker	Reference	Ecological Receptors	Reference	Background d_t
	Lab Number:	3730785.48	3730785.49	3730785.50	3730785.89	3730785.51	3730785.52	3730785.53	3730785.54	3730785.55	3730785.56	3730785.57							
Heavy Metals																			
Arsenic	mg/kg	8	5	17	16	**22**	5	6	7	7	**33**	**26**	6%	20	70	NES	210	ANZWQ	12.58
Cadmium	mg/kg	0.36	0.14	0.38	0.38	0.41	0.19	0.17	0.18	0.14	0.19	0.13	0%	3	1,300	NES	30	ANZWQ	0.19
Chromium	mg/kg	12	13	14	13	16	15	16	14	13	12	12	7%	460	6,300	NES	1110	ANZWQ	22.70
Copper	mg/kg	38	12	47	46	92	41	32	38	28	35	12	2%	>10,000	>10,000	NES	810	ANZWQ	20.30
Lead	mg/kg	78	26	117	105	113	61	57	22	24	31	26	11%	210	3,300	NES	660	ANZWQ	40.96
Nickel	mg/kg	9	9	10	9	14	9	10	9	9	8	8	11%	400	6,000	NEPM	156	ANZWQ	20.70
Zinc	mg/kg	184	90	240	230	260	130	103	118	102	136	94	4%	7,400	400,000	NEPM	1230	ANZWQ	93.94

Indicates result exceeds 'Residential 10% Produce' SGV
Indicates result exceeds Ecological Guideline Values
Indicates result exceeds Background

References:

NES - National Environmental Standard for Assessing and Managing Contaminants in Soils, MfE

NEPM - National Environmental Protection Measures 2013, Australia

ANZWQ - Australian and New Zealand - Guidelines for Fresh and Marine Water Quality (online) - 3 x Sediment GV-high

$_t$ Concentrations for 'Regional, Recent' soil group from Background concentrations in Canterbury soils, Tonkin and Taylor, July 2007

Table of Laboratory Results - 10/487 Weedons Road, Rolleston

Date of sampling: 02 December 2024

FORMER YARD AREA & BURN AREAS

	Sample Name:	SS17.1	SS17.2	SS18.1	SS18.2	SS19.1	SS19.2	SS20.1	SS20.2	SS21.1	SS21.2	SS22.1	SS22.2	Soil Guideline Values					
Soil Results	Depth:	50	250	50	250	50	250	50	250	50	250	50	250	Residential 10% Produce	Commercial/ Outdoor Worker	Reference	Ecological Receptors	Reference	Backgroun d_t
	Lab Number:	3730785.58	3730785.59	3730785.60	3730785.61	3730785.62	3730785.63	3730785.64	3730785.65	3730785.66	3730785.67	3730785.68	3730785.69						
Heavy Metals																			
Arsenic	mg/kg	11	9	**23**	**40**	8	9	4	3	5	4	6	5	20	70	NES	210	ANZWQ	12.58
Cadmium	mg/kg	0.28	0.26	0.19	0.15	0.27	0.28	0.14	< 0.10	0.18	< 0.10	0.14	< 0.10	3	1,300	NES	30	ANZWQ	0.19
Chromium	mg/kg	13	13	14	16	16	16	13	12	12	13	12	14	460	6,300	NES	1110	ANZWQ	22.70
Copper	mg/kg	43	22	42	28	41	40	25	7	29	10	25	10	>10,000	>10,000	NES	810	ANZWQ	20.30
Lead	mg/kg	55	47	63	71	56	87	18.8	13.2	17.4	14.5	17.5	14.3	210	3,300	NES	660	ANZWQ	40.96
Nickel	mg/kg	9	9	10	9	10	10	9	8	9	9	8	9	400	6,000	NEPM	156	ANZWQ	20.70
Zinc	mg/kg	220	179	139	121	149	146	107	58	101	67	100	64	7,400	400,000	NEPM	1230	ANZWQ	93.94

	Sample Name:	SS23.1	SS23.2	SS24.1	SS24.2	SS25.1	SS25.2	SS26.1	DUP4	SS26.2	BP6.1	BP7.1	BP9.1	RPD	Soil Guideline Values					
Soil Results	Depth:	50	250	50	250	50	250	50	50	250	0-50	0-50	0-50	SS26.1 & DUP4	Residential 10% Produce	Commercial/ Outdoor Worker	Reference	Ecological Receptors	Reference	Background$_t$
	Lab Number:	3730785.70	3730785.71	3730785.72	3730785.73	3730785.74	3730785.75	3730785.76	3730785.90	3730785.77	3730785.83	3730785.84	3730785.86							
Heavy Metals																				
Arsenic	mg/kg	**93**	**192**	**72**	**110**	16	19	6	6	6	**26**	3	**73**	0%	20	70	NES	210	ANZWQ	12.58
Cadmium	mg/kg	0.15	0.11	0.25	0.12	0.3	0.26	0.28	0.3	0.21	0.34	< 0.10	0.21	7%	3	1,300	NES	30	ANZWQ	0.19
Chromium	mg/kg	12	12	12	13	12	13	11	11	13	16	11	40	0%	460	6,300	NES	1110	ANZWQ	22.70
Copper	mg/kg	36	16	68	40	53	46	43	40	37	47	390	68	7%	>10,000	>10,000	NES	810	ANZWQ	20.30
Lead	mg/kg	28	19	51	47	78	80	109	87	96	20	15	62	22%	210	3,300	NES	660	ANZWQ	40.96
Nickel	mg/kg	8	8	9	9	7	8	8	9	10	6	8	9	12%	400	6,000	NEPM	156	ANZWQ	20.70
Zinc	mg/kg	132	110	144	93	200	174	190	181	156	210	430	154	5%	7,400	400,000	NEPM	1230	ANZWQ	93.94

Indicates result exceeds 'Residential 10% Produce' SGV
Indicates result exceeds Ecological Guideline Values
Indicates result exceeds Background

References:

NES - National Environmental Standard for Assessing and Managing Contaminants in Soils, MfE

NEPM - National Environmental Protection Measures 2013, Australia

ANZWQ - Australian and New Zealand - Guidelines for Fresh and Marine Water Quality (online) - 3 x Sediment GV-high

$_t$ Concentrations for 'Regional, Recent' soil group from Background concentrations in Canterbury soils, Tonkin and Taylor, July 2007

Table of Laboratory Results - 10/487 Weedons Road, Rolleston

Date of sampling: 02 December 2024

Sample Name:		Composite of P1.1, P2.1 & P3.1	Composite of P4.1, P5.1, P6.1 & P7.1	Composite of P8.1, P9.1 & P10.1	Composite of P11.1, P12.1 & SS10.1	Composite of SS9.1, SS12.1, SS13.1 & SS14.1	Composite of SS15.1, SS16.1, SS22.1 & SS23.1	Soil Guideline Values			
Soil Results	Depth	50	50	50	50	50	50	**Residential 10% Produce**	**Commercial/ Outdoor Worker**	**Reference**	**Background$_2$**
	Lab number	3730785.91	3730785.92	3730785.93	3730785.94	3730785.95	3730785.96				
Organochlorine Pesticides (OCPs) in soil											
2,4'-DDD	mg/kg dry wt	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	-	-	-	-
2,4'-DDE	mg/kg dry wt	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	-	-	-	-
2,4'-DDT	mg/kg dry wt	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	-	-	-	-
4,4'-DDD	mg/kg dry wt	0.08	< 0.011	< 0.011	< 0.011	0.039	< 0.011	-	-	-	-
4,4'-DDE	mg/kg dry wt	< 0.011	< 0.011	< 0.011	< 0.011	0.011	< 0.011	-	-	-	-
4,4'-DDT	mg/kg dry wt	0.021	< 0.011	< 0.011	< 0.011	0.051	< 0.011	-	-	-	-
Total DDT	mg/kg dry wt	0.1	< 0.07	< 0.07	< 0.07	0.1	< 0.07	70	1,000	NES	0.43 $_2$
Dieldrin	mg/kg dry wt	< 0.011	< 0.011	< 0.011	< 0.011	0.173	< 0.011	2.6	160	NES	<LOD

Sample Name:		Composite of SS15.2, SS16.2, SS22.2 & SS23.2	Composite of SS17.1, SS18.1, SS19.1 & SS25.1	SS23.1	SS23.2	SS24.1	SS24.2	Soil Guideline Values			
Soil Results	Depth	50	50	50	250	50	250	**Residential 10% Produce**	**Commercial/ Outdoor Worker**	**Reference**	**Background$_2$**
	Lab number	3730785.97	3730785.98	3730785.70	3730785.71	3730785.72	3730785.73				
Organochlorine Pesticides (OCPs) in soil											
2,4'-DDD	mg/kg dry wt	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	-	-	-	-
2,4'-DDE	mg/kg dry wt	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	-	-	-	-
2,4'-DDT	mg/kg dry wt	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	-	-	-	-
4,4'-DDD	mg/kg dry wt	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	-	-	-	-
4,4'-DDE	mg/kg dry wt	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	-	-	-	-
4,4'-DDT	mg/kg dry wt	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	-	-	-	-
Total DDT	mg/kg dry wt	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07	70	1,000	NES	0.43 $_2$
Dieldrin	mg/kg dry wt	< 0.011	0.095	< 0.011	< 0.011	0.014	0.023	2.6	160	NES	<LOD

Indicates result exceeds 'Residential 10% Produce' SGV
Indicates result exceeds Ecological Guideline Values
Indicates result exceeds Background

Notes:

This table does not represent the full analytical results, please refer to the laboratory reports for full details.

References:

NES - National Environmental Standard for Assessing and Managing Contaminants in Soils, MfE

$_2$ Concentrations for 'Christchurch Metropolitan' soils from Ambient Concentrations of selected organochlorine in soils, Buckland, Ellis and Salter 1998

Appendix G – Laboratory Reports

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Certificate of Analysis

Client:	Momentum Environmental Limited	**Lab No:**	3730785 SPv2
Contact:	Fran Hobkirk	**Date Received:**	03-Dec-2024
	C/- Momentum Environmental Limited	**Date Reported:**	11-Dec-2024 **(Amended)**
	19 Robertsons Road	**Quote No:**	72157
	Kirwee 7671	**Order No:**	
		Client Reference:	926 - 10/487 Weedons Road
		Submitted By:	Fran Hobkirk

Sample Type: Soil

Sample Name:		P1.1 02-Dec-2024 8:57 am	P1.2 02-Dec-2024 9:00 am	P2.1 02-Dec-2024 9:07 am	P2.2 02-Dec-2024 9:10 am	P3.1 02-Dec-2024 9:25 am
Lab Number:		3730785.1	3730785.2	3730785.3	3730785.4	3730785.5
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	3	2	2	3	3
Total Recoverable Cadmium	mg/kg dry wt	0.13	< 0.10	0.17	< 0.10	0.14
Total Recoverable Chromium	mg/kg dry wt	11	10	10	12	11
Total Recoverable Copper	mg/kg dry wt	21	7	20	8	15
Total Recoverable Lead	mg/kg dry wt	10.4	9.0	11.0	10.0	12.1
Total Recoverable Nickel	mg/kg dry wt	7	8	7	8	8
Total Recoverable Zinc	mg/kg dry wt	65	44	62	48	64

Sample Name:		P3.2 02-Dec-2024 9:30 am	P4.1 02-Dec-2024 10:06 am	P4.2 02-Dec-2024 10:12 am	P5.1 02-Dec-2024 10:03 am	P5.2 02-Dec-2024 10:08 am
Lab Number:		3730785.6	3730785.7	3730785.8	3730785.9	3730785.10
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	3	3	3	7	4
Total Recoverable Cadmium	mg/kg dry wt	0.10	0.15	< 0.10	0.22	0.11
Total Recoverable Chromium	mg/kg dry wt	13	11	12	15	14
Total Recoverable Copper	mg/kg dry wt	6	23	7	27	10
Total Recoverable Lead	mg/kg dry wt	11.9	13.2	12.2	13.0	13.1
Total Recoverable Nickel	mg/kg dry wt	8	8	8	9	10
Total Recoverable Zinc	mg/kg dry wt	53	76	50	92	60

Sample Name:		P5.3 02-Dec-2024 10:18 am	P6.1 02-Dec-2024 10:41 am	P6.2 02-Dec-2024 10:47 am	P7.1 02-Dec-2024 10:41 am	P7.2 02-Dec-2024 10:45 am
Lab Number:		3730785.11	3730785.12	3730785.13	3730785.14	3730785.15
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	4	3	2	6	3
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	0.19	< 0.10	0.15	0.11
Total Recoverable Chromium	mg/kg dry wt	14	11	11	13	13
Total Recoverable Copper	mg/kg dry wt	5	19	8	31	12
Total Recoverable Lead	mg/kg dry wt	12.9	13.5	10.9	18.2	13.3
Total Recoverable Nickel	mg/kg dry wt	11	8	8	9	9
Total Recoverable Zinc	mg/kg dry wt	52	78	51	84	60

Sample Name:		P8.1 02-Dec-2024 11:05 am	P8.2 02-Dec-2024 11:16 am	P9.1 02-Dec-2024 11:02 am	P9.2 02-Dec-2024 11:08 am	P10.1 02-Dec-2024 12:04 pm
Lab Number:		3730785.16	3730785.17	3730785.18	3730785.19	3730785.20

Sample Type: Soil						
Sample Name:		P8.1 02-Dec-2024 11:05 am	P8.2 02-Dec-2024 11:16 am	P9.1 02-Dec-2024 11:02 am	P9.2 02-Dec-2024 11:08 am	P10.1 02-Dec-2024 12:04 pm
Lab Number:		3730785.16	3730785.17	3730785.18	3730785.19	3730785.20
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	3	3	3	3	3
Total Recoverable Cadmium	mg/kg dry wt	0.18	< 0.10	0.22	0.13	0.13
Total Recoverable Chromium	mg/kg dry wt	13	15	13	14	12
Total Recoverable Copper	mg/kg dry wt	22	9	23	13	21
Total Recoverable Lead	mg/kg dry wt	15.7	14.8	13.5	12.9	17.5
Total Recoverable Nickel	mg/kg dry wt	9	11	9	10	9
Total Recoverable Zinc	mg/kg dry wt	90	68	101	71	86

Sample Name:		P10.2 02-Dec-2024 12:12 pm	P11.1 02-Dec-2024 11:18 am	P11.2 02-Dec-2024 11:21 am	P12.1 02-Dec-2024 11:50 am	P12.2 02-Dec-2024 11:54 am
Lab Number:		3730785.21	3730785.22	3730785.23	3730785.24	3730785.25
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	4	3	3	7	5
Total Recoverable Cadmium	mg/kg dry wt	0.11	0.15	< 0.10	< 0.10	< 0.10
Total Recoverable Chromium	mg/kg dry wt	13	13	12	13	14
Total Recoverable Copper	mg/kg dry wt	9	27	7	27	9
Total Recoverable Lead	mg/kg dry wt	17.5	12.9	12.3	21	15.5
Total Recoverable Nickel	mg/kg dry wt	10	9	9	10	10
Total Recoverable Zinc	mg/kg dry wt	62	83	51	84	60

Sample Name:		SS1.1 02-Dec-2024 11:53 am	SS1.2 02-Dec-2024 11:56 am	SS2.1 02-Dec-2024 12:00 pm	SS2.2 02-Dec-2024 12:04 pm	SS3.1 02-Dec-2024 12:39 pm
Lab Number:		3730785.26	3730785.27	3730785.28	3730785.29	3730785.30
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	3	3	4	3	3
Total Recoverable Cadmium	mg/kg dry wt	0.11	< 0.10	< 0.10	< 0.10	0.13
Total Recoverable Chromium	mg/kg dry wt	11	11	11	11	11
Total Recoverable Copper	mg/kg dry wt	20	9	20	10	25
Total Recoverable Lead	mg/kg dry wt	19.0	19.3	20	16.5	23
Total Recoverable Nickel	mg/kg dry wt	8	8	8	8	8
Total Recoverable Zinc	mg/kg dry wt	81	57	79	54	110

Sample Name:		SS3.2 02-Dec-2024 12:43 pm	SS4.1 02-Dec-2024 12:48 pm	SS4.2 02-Dec-2024 12:52 pm	SS5.1 02-Dec-2024 1:06 pm	SS5.2 02-Dec-2024 1:10 pm
Lab Number:		3730785.31	3730785.32	3730785.33	3730785.34	3730785.35
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	3	4	3	3	3
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	0.13	< 0.10	0.11	< 0.10
Total Recoverable Chromium	mg/kg dry wt	11	11	10	11	12
Total Recoverable Copper	mg/kg dry wt	9	25	9	26	8
Total Recoverable Lead	mg/kg dry wt	15.0	25	12.5	28	13.7
Total Recoverable Nickel	mg/kg dry wt	8	8	8	8	9
Total Recoverable Zinc	mg/kg dry wt	62	99	58	97	70

Sample Name:		SS6.1 02-Dec-2024 1:15 pm	SS6.2 02-Dec-2024 1:20 pm	SS7.1 02-Dec-2024 1:41 pm	SS7.2 02-Dec-2024 1:45 pm	SS8.1 02-Dec-2024 1:50 pm
Lab Number:		3730785.36	3730785.37	3730785.38	3730785.39	3730785.40
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	3	4	16	20	7
Total Recoverable Cadmium	mg/kg dry wt	0.13	< 0.10	0.26	0.16	0.24
Total Recoverable Chromium	mg/kg dry wt	11	13	20	18	14
Total Recoverable Copper	mg/kg dry wt	24	10	48	30	19
Total Recoverable Lead	mg/kg dry wt	42	26	34	27	97
Total Recoverable Nickel	mg/kg dry wt	9	9	9	10	9
Total Recoverable Zinc	mg/kg dry wt	106	74	210	181	147

Sample Type: Soil						
Sample Name:		SS8.2 02-Dec-2024 1:55 pm	SS9.1 02-Dec-2024 12:55 pm	SS9.2 02-Dec-2024 12:59 pm	SS10.1 02-Dec-2024 12:35 pm	SS10.2 02-Dec-2024 12:40 pm
Lab Number:		3730785.41	3730785.42	3730785.43	3730785.44	3730785.45
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	4	8	8	4	4
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	0.31	0.38	0.11	< 0.10
Total Recoverable Chromium	mg/kg dry wt	13	14	15	14	13
Total Recoverable Copper	mg/kg dry wt	8	31	27	23	11
Total Recoverable Lead	mg/kg dry wt	26	84	84	23	15.4
Total Recoverable Nickel	mg/kg dry wt	9	10	11	10	9
Total Recoverable Zinc	mg/kg dry wt	70	191	171	89	65

Sample Name:		SS11.1 02-Dec-2024 1:23 pm	SS11.2 02-Dec-2024 1:30 pm	SS12.1 02-Dec-2024 1:10 pm	SS12.2 02-Dec-2024 1:14 pm	SS13.1 02-Dec-2024 2:00 pm
Lab Number:		3730785.46	3730785.47	3730785.48	3730785.49	3730785.50
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	7	4	8	5	17
Total Recoverable Cadmium	mg/kg dry wt	0.21	< 0.10	0.36	0.14	0.38
Total Recoverable Chromium	mg/kg dry wt	13	14	12	13	14
Total Recoverable Copper	mg/kg dry wt	30	9	38	12	47
Total Recoverable Lead	mg/kg dry wt	62	24	78	26	117
Total Recoverable Nickel	mg/kg dry wt	10	10	9	9	10
Total Recoverable Zinc	mg/kg dry wt	159	79	184	90	240

Sample Name:		SS13.2 02-Dec-2024 2:10 pm	SS14.1 02-Dec-2024 2:15 pm	SS14.2 02-Dec-2024 2:20 pm	SS15.1 02-Dec-2024 1:37 pm	SS15.2 02-Dec-2024 1:42 pm
Lab Number:		3730785.51	3730785.52	3730785.53	3730785.54	3730785.55
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	22	5	6	7	7
Total Recoverable Cadmium	mg/kg dry wt	0.41	0.19	0.17	0.18	0.14
Total Recoverable Chromium	mg/kg dry wt	16	15	16	14	13
Total Recoverable Copper	mg/kg dry wt	92	41	32	38	28
Total Recoverable Lead	mg/kg dry wt	113	61	57	22	24
Total Recoverable Nickel	mg/kg dry wt	14	9	10	9	9
Total Recoverable Zinc	mg/kg dry wt	260	130	103	118	102

Sample Name:		SS16.1 02-Dec-2024 2:51 pm	SS16.2 02-Dec-2024 2:56 pm	SS17.1 02-Dec-2024 2:49 pm	SS17.2 02-Dec-2024 2:54 pm	SS18.1 02-Dec-2024 2:13 pm
Lab Number:		3730785.56	3730785.57	3730785.58	3730785.59	3730785.60
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	33	26	11	9	23
Total Recoverable Cadmium	mg/kg dry wt	0.19	0.13	0.28	0.26	0.19
Total Recoverable Chromium	mg/kg dry wt	12	12	13	13	14
Total Recoverable Copper	mg/kg dry wt	35	12	43	22	42
Total Recoverable Lead	mg/kg dry wt	31	26	55	47	63
Total Recoverable Nickel	mg/kg dry wt	8	8	9	9	10
Total Recoverable Zinc	mg/kg dry wt	136	94	220	179	139

Sample Name:		SS18.2 02-Dec-2024 2:22 pm	SS19.1 02-Dec-2024 2:27 pm	SS19.2 02-Dec-2024 2:36 pm	SS20.1 02-Dec-2024 2:15 pm	SS20.2 02-Dec-2024 2:20 pm
Lab Number:		3730785.61	3730785.62	3730785.63	3730785.64	3730785.65
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	40	8	9	4	3
Total Recoverable Cadmium	mg/kg dry wt	0.15	0.27	0.28	0.14	< 0.10
Total Recoverable Chromium	mg/kg dry wt	16	16	16	13	12
Total Recoverable Copper	mg/kg dry wt	28	41	40	25	7
Total Recoverable Lead	mg/kg dry wt	71	56	87	18.8	13.2
Total Recoverable Nickel	mg/kg dry wt	9	10	10	9	8
Total Recoverable Zinc	mg/kg dry wt	121	149	146	107	58

Sample Type: Soil						
Sample Name:		SS21.1 02-Dec-2024 2:01 pm	SS21.2 02-Dec-2024 2:06 pm	SS22.1 02-Dec-2024 12:52 pm	SS22.2 02-Dec-2024 1:02 pm	SS23.1 02-Dec-2024 1:20 pm
Lab Number:		3730785.66	3730785.67	3730785.68	3730785.69	3730785.70
Individual Tests						
Dry Matter	g/100g as rcvd	-	-	-	-	92
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	5	4	6	5	93
Total Recoverable Cadmium	mg/kg dry wt	0.18	< 0.10	0.14	< 0.10	0.15
Total Recoverable Chromium	mg/kg dry wt	12	13	12	14	12
Total Recoverable Copper	mg/kg dry wt	29	10	25	10	36
Total Recoverable Lead	mg/kg dry wt	17.4	14.5	17.5	14.3	28
Total Recoverable Nickel	mg/kg dry wt	9	9	8	9	8
Total Recoverable Zinc	mg/kg dry wt	101	67	100	64	132
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	-	-	-	-	< 0.011
alpha-BHC	mg/kg dry wt	-	-	-	-	< 0.011
beta-BHC	mg/kg dry wt	-	-	-	-	< 0.011
delta-BHC	mg/kg dry wt	-	-	-	-	< 0.011
gamma-BHC (Lindane)	mg/kg dry wt	-	-	-	-	< 0.011
cis-Chlordane	mg/kg dry wt	-	-	-	-	< 0.011
trans-Chlordane	mg/kg dry wt	-	-	-	-	< 0.011
2,4'-DDD	mg/kg dry wt	-	-	-	-	< 0.011
4,4'-DDD	mg/kg dry wt	-	-	-	-	< 0.011
2,4'-DDE	mg/kg dry wt	-	-	-	-	< 0.011
4,4'-DDE	mg/kg dry wt	-	-	-	-	< 0.011
2,4'-DDT	mg/kg dry wt	-	-	-	-	< 0.011
4,4'-DDT	mg/kg dry wt	-	-	-	-	< 0.011
Total DDT Isomers	mg/kg dry wt	-	-	-	-	< 0.07
Dieldrin	mg/kg dry wt	-	-	-	-	< 0.011
Endosulfan I	mg/kg dry wt	-	-	-	-	< 0.011
Endosulfan II	mg/kg dry wt	-	-	-	-	< 0.011
Endosulfan sulphate	mg/kg dry wt	-	-	-	-	< 0.011
Endrin	mg/kg dry wt	-	-	-	-	< 0.011
Endrin aldehyde	mg/kg dry wt	-	-	-	-	< 0.011
Endrin ketone	mg/kg dry wt	-	-	-	-	< 0.011
Heptachlor	mg/kg dry wt	-	-	-	-	< 0.011
Heptachlor epoxide	mg/kg dry wt	-	-	-	-	< 0.011
Hexachlorobenzene	mg/kg dry wt	-	-	-	-	< 0.011
Methoxychlor	mg/kg dry wt	-	-	-	-	< 0.011

Sample Name:		SS23.2 02-Dec-2024 1:35 pm	SS24.1 02-Dec-2024 1:57 pm	SS24.2 02-Dec-2024 2:09 pm	SS25.1 02-Dec-2024 2:24 pm	SS25.2 02-Dec-2024 2:29 pm
Lab Number:		3730785.71	3730785.72	3730785.73	3730785.74	3730785.75
Individual Tests						
Dry Matter	g/100g as rcvd	94	93	94	-	-
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	192	72	110	16	19
Total Recoverable Cadmium	mg/kg dry wt	0.11	0.25	0.12	0.30	0.26
Total Recoverable Chromium	mg/kg dry wt	12	12	13	12	13
Total Recoverable Copper	mg/kg dry wt	16	68	40	53	46
Total Recoverable Lead	mg/kg dry wt	19.4	51	47	78	80
Total Recoverable Nickel	mg/kg dry wt	8	9	9	7	8
Total Recoverable Zinc	mg/kg dry wt	110	144	93	200	174
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.011	< 0.011	< 0.011	-	-
alpha-BHC	mg/kg dry wt	< 0.011	< 0.011	< 0.011	-	-
beta-BHC	mg/kg dry wt	< 0.011	< 0.011	< 0.011	-	-
delta-BHC	mg/kg dry wt	< 0.011	< 0.011	< 0.011	-	-

Sample Type: Soil						
Sample Name:		SS23.2 02-Dec-2024 1:35 pm	SS24.1 02-Dec-2024 1:57 pm	SS24.2 02-Dec-2024 2:09 pm	SS25.1 02-Dec-2024 2:24 pm	SS25.2 02-Dec-2024 2:29 pm
Lab Number:		3730785.71	3730785.72	3730785.73	3730785.74	3730785.75
Organochlorine Pesticides Screening in Soil						
gamma-BHC (Lindane)	mg/kg dry wt	< 0.011	< 0.011	< 0.011	-	-
cis-Chlordane	mg/kg dry wt	< 0.011	< 0.011	< 0.011	-	-
trans-Chlordane	mg/kg dry wt	< 0.011	< 0.011	< 0.011	-	-
2,4'-DDD	mg/kg dry wt	< 0.011	< 0.011	< 0.011	-	-
4,4'-DDD	mg/kg dry wt	< 0.011	< 0.011	< 0.011	-	-
2,4'-DDE	mg/kg dry wt	< 0.011	< 0.011	< 0.011	-	-
4,4'-DDE	mg/kg dry wt	< 0.011	< 0.011	< 0.011	-	-
2,4'-DDT	mg/kg dry wt	< 0.011	< 0.011	< 0.011	-	-
4,4'-DDT	mg/kg dry wt	< 0.011	< 0.011	< 0.011	-	-
Total DDT Isomers	mg/kg dry wt	< 0.07	< 0.07	< 0.07	-	-
Dieldrin	mg/kg dry wt	< 0.011	0.014	0.023	-	-
Endosulfan I	mg/kg dry wt	< 0.011	< 0.011	< 0.011	-	-
Endosulfan II	mg/kg dry wt	< 0.011	< 0.011	< 0.011	-	-
Endosulfan sulphate	mg/kg dry wt	< 0.011	< 0.011	< 0.011	-	-
Endrin	mg/kg dry wt	< 0.011	< 0.011	< 0.011	-	-
Endrin aldehyde	mg/kg dry wt	< 0.011	< 0.011	< 0.011	-	-
Endrin ketone	mg/kg dry wt	< 0.011	< 0.011	< 0.011	-	-
Heptachlor	mg/kg dry wt	< 0.011	< 0.011	< 0.011	-	-
Heptachlor epoxide	mg/kg dry wt	< 0.011	< 0.011	< 0.011	-	-
Hexachlorobenzene	mg/kg dry wt	< 0.011	< 0.011	< 0.011	-	-
Methoxychlor	mg/kg dry wt	< 0.011	< 0.011	< 0.011	-	-

Sample Name:		SS26.1 02-Dec-2024 2:30 pm	SS26.2 02-Dec-2024 2:35 pm	BP6.1 02-Dec-2024 10:00 am	BP7.1 02-Dec-2024 10:12 am	BP9.1 02-Dec-2024 10:24 am
Lab Number:		3730785.76	3730785.77	3730785.83	3730785.84	3730785.86
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	6	6	26	3	73
Total Recoverable Cadmium	mg/kg dry wt	0.28	0.21	0.34	< 0.10	0.21
Total Recoverable Chromium	mg/kg dry wt	11	13	16	11	40
Total Recoverable Copper	mg/kg dry wt	43	37	47	390	68
Total Recoverable Lead	mg/kg dry wt	109	96	20	15.2	62
Total Recoverable Nickel	mg/kg dry wt	8	10	6	8	9
Total Recoverable Zinc	mg/kg dry wt	190	156	210	430	154

Sample Name:		DUP1 02-Dec-2024 10:04 am	DUP2 02-Dec-2024 11:54 am	DUP3 02-Dec-2024 2:01 pm	DUP4 02-Dec-2024 2:31 pm	Composite of P1.1, P2.1 & P3.1
Lab Number:		3730785.87	3730785.88	3730785.89	3730785.90	3730785.91
Individual Tests						
Dry Matter	g/100g as rcvd	-	-	-	-	90
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	7	3	16	6	-
Total Recoverable Cadmium	mg/kg dry wt	0.19	0.11	0.38	0.30	-
Total Recoverable Chromium	mg/kg dry wt	13	10	13	11	-
Total Recoverable Copper	mg/kg dry wt	26	19	46	40	-
Total Recoverable Lead	mg/kg dry wt	13.0	18.0	105	87	-
Total Recoverable Nickel	mg/kg dry wt	9	7	9	9	-
Total Recoverable Zinc	mg/kg dry wt	88	78	230	181	-
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	-	-	-	-	< 0.011
alpha-BHC	mg/kg dry wt	-	-	-	-	< 0.011
beta-BHC	mg/kg dry wt	-	-	-	-	< 0.011
delta-BHC	mg/kg dry wt	-	-	-	-	< 0.011
gamma-BHC (Lindane)	mg/kg dry wt	-	-	-	-	< 0.011
cis-Chlordane	mg/kg dry wt	-	-	-	-	< 0.011

Sample Type: Soil						
Sample Name:		DUP1 02-Dec-2024 10:04 am	DUP2 02-Dec-2024 11:54 am	DUP3 02-Dec-2024 2:01 pm	DUP4 02-Dec-2024 2:31 pm	Composite of P1.1, P2.1 & P3.1
Lab Number:		3730785.87	3730785.88	3730785.89	3730785.90	3730785.91
Organochlorine Pesticides Screening in Soil						
trans-Chlordane	mg/kg dry wt	-	-	-	-	< 0.011
2,4'-DDD	mg/kg dry wt	-	-	-	-	< 0.011
4,4'-DDD	mg/kg dry wt	-	-	-	-	< 0.011
2,4'-DDE	mg/kg dry wt	-	-	-	-	< 0.011
4,4'-DDE	mg/kg dry wt	-	-	-	-	0.080
2,4'-DDT	mg/kg dry wt	-	-	-	-	< 0.011
4,4'-DDT	mg/kg dry wt	-	-	-	-	0.021
Total DDT Isomers	mg/kg dry wt	-	-	-	-	0.10
Dieldrin	mg/kg dry wt	-	-	-	-	< 0.011
Endosulfan I	mg/kg dry wt	-	-	-	-	< 0.011
Endosulfan II	mg/kg dry wt	-	-	-	-	< 0.011
Endosulfan sulphate	mg/kg dry wt	-	-	-	-	< 0.011
Endrin	mg/kg dry wt	-	-	-	-	< 0.011
Endrin aldehyde	mg/kg dry wt	-	-	-	-	< 0.011
Endrin ketone	mg/kg dry wt	-	-	-	-	< 0.011
Heptachlor	mg/kg dry wt	-	-	-	-	< 0.011
Heptachlor epoxide	mg/kg dry wt	-	-	-	-	< 0.011
Hexachlorobenzene	mg/kg dry wt	-	-	-	-	< 0.011
Methoxychlor	mg/kg dry wt	-	-	-	-	< 0.011

Sample Name:		Composite of P4.1, P5.1, P6.1 & P7.1	Composite of P8.1, P9.1 & P10.1	Composite of P11.1, P12.1 & SS10.1	Composite of SS9.1, SS12.1, SS13.1 & SS14.1	Composite of SS15.1, SS16.1, SS22.1 & SS23.1
Lab Number:		3730785.92	3730785.93	3730785.94	3730785.95	3730785.96
Individual Tests						
Dry Matter	g/100g as rcvd	89	88	89	90	92
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011
alpha-BHC	mg/kg dry wt	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011
beta-BHC	mg/kg dry wt	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011
delta-BHC	mg/kg dry wt	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011
gamma-BHC (Lindane)	mg/kg dry wt	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011
cis-Chlordane	mg/kg dry wt	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011
trans-Chlordane	mg/kg dry wt	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011
2,4'-DDD	mg/kg dry wt	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011
4,4'-DDD	mg/kg dry wt	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011
2,4'-DDE	mg/kg dry wt	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011
4,4'-DDE	mg/kg dry wt	< 0.011	< 0.011	< 0.011	0.039	< 0.011
2,4'-DDT	mg/kg dry wt	< 0.011	< 0.011	< 0.011	0.011	< 0.011
4,4'-DDT	mg/kg dry wt	< 0.011	< 0.011	< 0.011	0.051	< 0.011
Total DDT Isomers	mg/kg dry wt	< 0.07	< 0.07	< 0.07	0.10	< 0.07
Dieldrin	mg/kg dry wt	< 0.011	< 0.011	< 0.011	0.173	< 0.011
Endosulfan I	mg/kg dry wt	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011
Endosulfan II	mg/kg dry wt	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011
Endosulfan sulphate	mg/kg dry wt	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011
Endrin	mg/kg dry wt	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011
Endrin aldehyde	mg/kg dry wt	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011
Endrin ketone	mg/kg dry wt	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011
Heptachlor	mg/kg dry wt	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011
Heptachlor epoxide	mg/kg dry wt	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011
Hexachlorobenzene	mg/kg dry wt	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011
Methoxychlor	mg/kg dry wt	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011

Sample Type: Soil			
Sample Name:		Composite of SS15.2, SS16.2, SS22.2 & SS23.2	Composite of SS17.1, SS18.1, SS19.1 & SS25.1
Lab Number:		3730785.97	3730785.98
Individual Tests			
Dry Matter	g/100g as rcvd	94	89
Organochlorine Pesticides Screening in Soil			
Aldrin	mg/kg dry wt	< 0.011	< 0.011
alpha-BHC	mg/kg dry wt	< 0.011	< 0.011
beta-BHC	mg/kg dry wt	< 0.011	< 0.011
delta-BHC	mg/kg dry wt	< 0.011	< 0.011
gamma-BHC (Lindane)	mg/kg dry wt	< 0.011	< 0.011
cis-Chlordane	mg/kg dry wt	< 0.011	< 0.011
trans-Chlordane	mg/kg dry wt	< 0.011	< 0.011
2,4'-DDD	mg/kg dry wt	< 0.011	< 0.011
4,4'-DDD	mg/kg dry wt	< 0.011	< 0.011
2,4'-DDE	mg/kg dry wt	< 0.011	< 0.011
4,4'-DDE	mg/kg dry wt	< 0.011	< 0.011
2,4'-DDT	mg/kg dry wt	< 0.011	< 0.011
4,4'-DDT	mg/kg dry wt	< 0.011	< 0.011
Total DDT Isomers	mg/kg dry wt	< 0.07	< 0.07
Dieldrin	mg/kg dry wt	< 0.011	0.095
Endosulfan I	mg/kg dry wt	< 0.011	< 0.011
Endosulfan II	mg/kg dry wt	< 0.011	< 0.011
Endosulfan sulphate	mg/kg dry wt	< 0.011	< 0.011
Endrin	mg/kg dry wt	< 0.011	< 0.011
Endrin aldehyde	mg/kg dry wt	< 0.011	< 0.011
Endrin ketone	mg/kg dry wt	< 0.011	< 0.011
Heptachlor	mg/kg dry wt	< 0.011	< 0.011
Heptachlor epoxide	mg/kg dry wt	< 0.011	< 0.011
Hexachlorobenzene	mg/kg dry wt	< 0.011	< 0.011
Methoxychlor	mg/kg dry wt	< 0.011	< 0.011

Analyst's Comments

Amended Report: This certificate of analysis replaces report '3730785-SPv1' issued on 06-Dec-2024 at 3:04 pm.
Reason for amendment: Additional testing has been added as per clients request.

Summary of Methods

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

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	1-77, 83-84, 86-90
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	1-77, 83-84, 86-90
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	70-73, 91-98
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	70-73, 91-98

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Composite Environmental Solid Samples*	Individual sample fractions mixed together to form a composite fraction.	-	1, 3, 5, 7, 9, 12, 14, 16, 18, 20, 22, 24, 42, 44, 48, 50, 52, 54-58, 60, 62, 68-71, 74

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

Testing was completed between 04-Dec-2024 and 11-Dec-2024. For completion dates of individual analyses please contact the laboratory.

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

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