

Before the Hearing Panel
Appointed by the Waimakariri District Council

Under the Resource Management Act 1991

In the matter of a hearing on submissions on the proposed Waimakariri District
Plan

Hearing Stream 12: Rezoning

Rachel Claire Hobson and Bernard Whimp

Submission: 179 / Further submission: 90

Evidence of Philippe Dumont

5 March 2024

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**anderson
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Introduction

- 1 My name is Philippe Dumont.
- 2 I have completed the Certified Environmental Practitioner certification (BAGSc(Hons) MSc).
- 3 I am employed by Eliot Sinclair and have held this position since October 2022.
- 4 My previous work experience includes eighteen (18) years of experience in contaminated soil assessments and remediation.
- 5 I have reviewed and finalised the Contaminated Land assessment (Preliminary Site Investigation **attached** as Appendix A) supporting the submission of Rachel Claire Hobson and Bernard Whimp (**the Submitters**), relating to the following land (**the Site**):
 - (a) 518 Rangiora-Woodend Road, Rangiora;¹ and
 - (b) 4 Golf Links Road, Rangiora.²
- 6 The Submitters seek an extension of the North East Rangiora or South East Rangiora Development Area overlay to include the Site within a Future Development Area (**FDA**); and the rezoning of the Site from Rural to General Residential.
- 7 This evidence provides a summary of the Preliminary Site Investigation (**PSI**).

Code of Conduct for Expert Witnesses

- 8 While this is not a hearing before the Environment Court, I confirm that I have read the Code of Conduct for expert witnesses contained in the Environment Court of New Zealand Practice Note 2023 and that I have complied with it when preparing my evidence. Other than when I state I am relying on the advice of another person, this evidence is within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

Summary

- 9 The PSI is based on a review of Waimakariri District Council records, Environment Canterbury records, historical aerial images and a site visit undertaken on 26 April 2023, in compliance with the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health - Regulations 2011

¹ Legal description Part Rural Section 1054

² Legal description Lot 2 DP 16884

(NES). The PSI concludes that activities potentially contaminating the soil have more likely than not been historically and currently carried out on the site specific locations, as detailed in section 3 and 4 of the PSI report. Those activities include:

- (a) Livestock treatment (HAIL A8) – historical;
- (b) Use of persistent pesticides (HAIL A10) – historical and current;
- (c) Bulk storage of treated timber on bare ground (HAIL A18) – current;
- (d) Disposal of waste (HAIL G3) – current; and
- (e) Intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health or the environment (HAIL I) – historically and potentially current, including asbestos and Lead-based Paint from old buildings or structures present on site.

- 10 The PSI also included a Preliminary Conceptual Site Model (**CSM**) which is used to identify if a complete exposure pathway exists. An exposure pathway must include a contaminant source, a transport mechanism, and a receptor. If one of these components does not exist, or can be removed, then the exposure pathway is incomplete and there is little risk to human health at the specified location.
- 11 The CSM concluded that, should the proposed change to residential land use and/or soil disturbance on or within the various locations of interest referenced in the PSI occur, the pathway between contaminants and potential receptors was likely to be complete, meaning that there may be risks to human health.
- 12 Based on the information presented in the PSI report, whilst it is clear that there have been, and continue to be, HAIL activities at the Site, it is uncertain what effects, if any, they have had on Site soils.
- 13 As a result, I recommend that a Detailed Site Investigation (**DSI**) is prepared in compliance with the NES, to establish the nature, degree and extent of contaminant distribution and to determine the level of risk to human health associated with future residential development. If further investigation is not undertaken prior to lodging an application for subdivision consent, then the proposed subdivision would be a discretionary activity under Regulation 11 of the NES.
- 14 I consider it is sufficient for the DSI to occur following rezoning and prior to subdivision. If contaminated land is confirmed on the Site through the DSI, there are a number of options open to the Submitters to manage and/or remediate prior to residential development. These include a remedial action plan and the removal if required of any contaminants to a suitable disposal facility. The most appropriate methodology and remediation will be determined after completion of the DSI.

Conclusion

- 15 I am satisfied that the proposed rezoning or extension of the FDA is a suitable outcome for Site, provided more detailed HAIL investigation is carried out prior to subdivision and/or soil disturbance and required management of remediation measures are undertaken at subdivision stage.

Dated 5 March 2024

Philippe Dumont



Preliminary Site Investigation

518 Rangiora Woodend Road & 4 Golf Links Road, Rangiora, Canterbury

Prepared for CVI Projects Ltd

511185

**eliot
sinclair**

Preliminary Site Investigation

518 Rangiora Woodend Road & 4 Golf Links
Road, Rangiora, Canterbury




Prepared for CVI Projects Ltd

511185

Quality Control Certificate

Eliot Sinclair & Partners Limited

eliotsinclair.co.nz

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Status:	Final		
Release date:	13 June 2023		
Distributed to:	CVI Projects Ltd Waimakariri District Council		

Version History

Status	Description	Author	Release Date
A	First issue of document	S. Pollock	28 May 2023
B	Final	S. Pollock	13 June 2023

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Executive Summary

Site Address	518 Rangiora Woodend Road & 4 Golf Links Road, Rangiora, Canterbury
Legal description	Part R S 1054 & Lot 2 DP 16884
Site area	11.34 ha
Local authority	Waimakariri District Council
Proposed activity	Proposed Waimakariri District Plan to rezone the land from rural to residential use.
Historical and current land uses	Historical: Rural Residential Current: Rural Residential
Current zoning	Rural
HAIL activities identified during our investigation	Based off our desktop investigation and site walkover, HAIL activities have historically and currently been carried out on the site (HAIL A8, HAIL A10, HAIL A18, HAIL G3 and HAIL I). Depending on the future land use/site development there could a risk to human health.
Conclusions	<p>It is concluded that:</p> <ul style="list-style-type: none">■ This land is suitable for re-zoning (as per the purpose of this report) under the assumption that all potential HAIL areas listed above are investigated further prior to subdivision and any earthworks taking place.■ However, we recommend that the areas outlined as potential HAIL areas undergo additional detailed site investigation (DSI) in terms of the Ministry for the Environments Contaminated Land Management Guidelines to establish the nature, degree, and extent of contaminants distribution.■ A further assessment against the NESCS can be completed once these areas have been investigated further. This will detail the impacts to human health
Recommendations	<ul style="list-style-type: none">■ Consequently, depending on the future land use/site development, there could be a risk to human health and a Detailed Site Investigation in terms of the Ministry for the Environments Contaminated Land Management Guidelines to establish the nature, degree, and extent of contaminants distribution would be required under the NES.
NESCS activity status	As this is a plan change submission, the NESCS does not apply

1. Introduction

Eliot Sinclair & Partners Ltd was engaged by CVI Projects Ltd to undertake a Preliminary Site Investigation (PSI) to support the submission of a private plan change (PPC) through Waimakariri District Councils Plan Change process to rezone land areas within the rural zone.

The purpose of this PSI report is to determine whether activities potentially contaminating the soil have been or are currently carried on the site prior to the proposed plan change and evaluate whether those activities are or have been “more likely than not” generating risks for human health.

1.1. Investigation, Objectives, and Scope

The objective of the investigation was to prepare a PSI in general accordance with the Ministry for the Environment (MfE) Contaminated Land Management Guidelines (CLMG) No. 1¹ and No. 5², MfE National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health³ (NESCS), and BRANZ (2017) 'New Zealand Guidelines for Managing and Assessing Asbestos in Soil'.⁴

The scope comprises:

- Reviewing the Environment Canterbury (ECan) Hazardous Activities and Industries List⁵ (HAIL) database.
- Reviewing historical and recent aerial images of the site.
- Obtain and reviewing information on the property file held by the Waimakariri Council (WDC).
- Fieldwork including a site walkover and interview of owners/managers of the site.
- Preparation of a PSI report in accordance with NESCS, BRANZ, and the CLMG No. 1 and No. 5.

1.2. Site Identification

The site under consideration (“the site”) for the proposed Plan Change consists of two Titles which total area is 11.2796 hectares. Details of the Titles constituting the site under consideration are presented in Table 1 below.

Site identification details are provided in Table 1. A current site layout and a locality map are presented in Figure 1 and Figure 2.

Table 1. Site identification

Legal Description	Owners	Address	Survey Area
Lot 2 DP 16884	Henry McKay	4 Golf Links Road	9806 m ²
Part RS 1054	Maria Stella Maris Antonia Young, Peter Christopher Eastgate, Rachel Claire Hobson	518 Rangiora Woodend Road	10.229 Ha

¹ Ministry for the Environment (MfE) 2011. Contaminated Land Management Guidelines No. 1. Reporting on Contaminated Sites in New Zealand. Wellington: Ministry for the Environment (Revised 2021).

² Ministry for the Environment. (2021). Contaminated land management guidelines No 5: Site investigation and analysis of soils (Revised 2021). Wellington: Ministry for the Environment (Revised 2021).

³ Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 administered by the Ministry for the Environment

⁴ BRANZ, 2017. New Zealand Guidelines for Managing and Assessing Asbestos in Soil.

⁵ Ministry for the Environment. (2021). Hazardous Activities and Industries List (HAIL).



Figure 1. Current site layout with the property boundaries indicated in red (Sourced: Canterbury Maps, 2023).

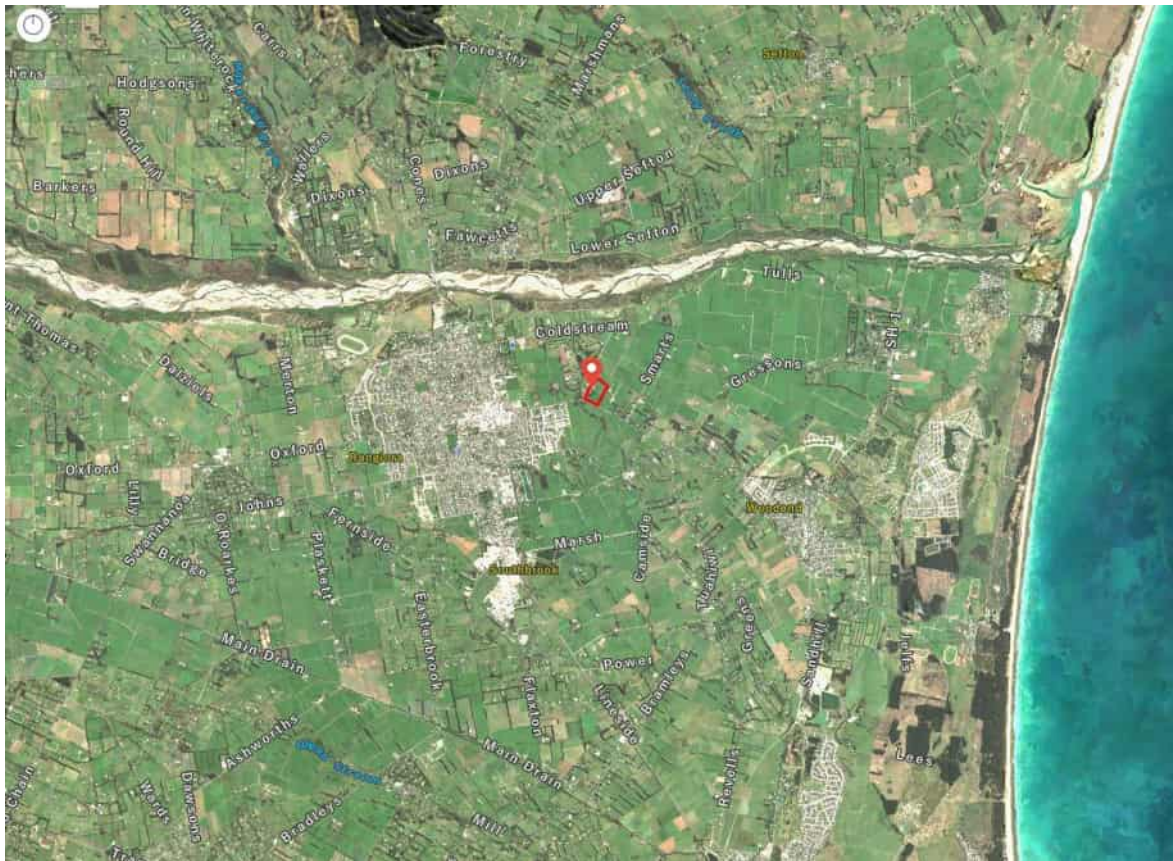


Figure 2. Locality Map (Sourced: Canterbury Maps, 2023).

1.3. Proposed Activity

The proposal is a submission on the Proposed Waimakariri District Plan to rezone the land from rural to residential use. The proposal will not include any soil disturbance or any immediate change in land use however future residential use has been assumed for the purposes of this assessment.

2. Site Description

Site description details are provided in Table 2.

Table 2. Site details including the environmental setting, district plan zoning, and land uses.

Site Name	4 Golf Links Road 518 Rangiora Woodend Road
Neighbouring land use	Rural and Residential
District plan zoning	Rural
Geology	GNS has mapped the area as Holocene River Deposits.
Surface water	There is an ephemeral stream running west to east through the centre of 518 Rangiora Woodend Road and forms the northern boundary of the property at 4 Golf Links Road. At the time of the investigation no water was observed to be flowing in the channel, but based on comments from the site owner the stream does at times have flowing water.

Groundwater	There are five bores located across the two properties which are recorded on Environment Canterbury online database. Three are listed as being 'Not Used' and the remaining two are listed as being for domestic supply. The depths of the two bores listed for domestic supply are 9.0 m and 5.5 m. No information on water level was provided but based on the well depths groundwater is inferred to be at shallow depths below the site.
Topography	The properties are largely flat and vegetated with grass.

3. Historical Site Use

3.1. Review of Council Information

3.1.1. WDC Property Files

The following property files of their respective property were available from the WDC:

Table 3. Property file review.

Property Address	Significant Information
4 Golf Links Road	A building permit was found relating to the construction of a greenhouse for growing an unidentified crop (illegible). Growing of plants in such a way that requires the use of large greenhouses indicates there is potential for pesticides and herbicides to have been used (HAIL A10).
518 Rangiora Woodend Road	No HAIL activities identified in the property files for this address.

HAIL A10 activities were identified from the property file documents for the property at 4 Golf Links Road.

3.2. HAIL Registry

A search of Environment Canterbury's Listed Land Use Register (LLUR) has been undertaken. The LLUR is a database containing records of contaminated, potentially contaminated, and remediated (previously contaminated) sites in Canterbury. It is not an exhaustive database, i.e. an unregistered site does not confirm that there have never been any HAIL activities undertaken on the site in the past.

Persistent pesticide bulk storage or use (HAIL A10) was identified on 4 Golf Links Road. No LLUR records are recorded for 518 Rangiora Woodend Road.

3.3. Review of Aerial Photographs

Aerial images from the Canterbury Maps, LINZ and Retrolens were reviewed to identify previous land uses and potential HAIL activities between 1942 and 2023. A summary of information retrieved from this review is provided in Table 4 and the reviewed images along with a historical layout plan are presented in Appendix A. Several historical activities potentially contaminating the soil were identified during the review of historical aerial photos.

Figure 3 shows the first appearance of a dwelling on 518 Rangiora Woodend Road and a building on 4 Golf Links Road. Due to the date of its construction – prior to 1944, the risks of soil contamination by asbestos and lead-based paint (**HAIL I**) exist. Although this cannot be confirmed, the likelihood of that building to have been a “shearing” shed or a building used for an activity related to sheep/cattle treatment cannot be ruled out, particularly the structures on the north side of the building which could have been part of a sheep treatment/management. This activity would be related to **HAIL A8**: Livestock dip or spray race operations. The entire site seems to be used for agricultural/pastoral activities which potentially involved the use of persistent pesticides (**HAIL A10**).



Figure 3. Site between 1940-1944 (Retrolens).

Note:

From the mid-1940s until the 1970s some persistent organochlorine pesticides (including DDT, dieldrin) were used widely in New Zealand. The main areas of use were agriculture, horticulture, timber treatment and public health. DDT was used as a pasture insecticide to control grass grub (*Costelytra zealandia*) and porina (*Wiseana* sp.) caterpillars. Frequently mixed with fertiliser or lime and applied particularly to agriculture pastures, as well as lawns, market gardens and parks. Other organochlorines, like Lindane, were used as an insecticide in agriculture for the control of lice on cattle, ectoparasites (lice, keds and blowflies) in sheep and grass grub in pasture. Also used for insect control on vegetables and in orchards. Household use: flyspray, flea control and carpet moth.

<http://www.mfe.govt.nz/more/international-environmental-agreements/multilateral-environmental-agreements/key-multilatera-10>

DDT is known for having a *half-life* ranging from 10 to 30 years in the soil (depending on the soil environment). The half-life of a pesticide in the soil gives the time it takes for the pesticide concentration to decrease to half of the initial concentration. This means that pesticide can still be largely present in the soils after that period of time as explained below.

"A given pesticide's half-life is the time it takes for a certain amount of a pesticide to be reduced by half. This occurs as it dissipates or breaks down in the environment. In general, a pesticide will break down to 50% of the original amount after a single half-life. This means that after two half-lives, 25% will remain. About 12% will remain after three half-lives. This continues until the amount remaining is nearly zero. The half-life can help estimate whether or not a pesticide tends to build up in the environment. Pesticide half-lives can be lumped into three groups in order to estimate persistence. These are low (less than 16 day half-life), moderate (16 to 59 days), and high (over 60 days). Pesticides with shorter half-lives tend to build up less because they are much less likely to persist in the environment. In contrast, pesticides with longer half-lives are more likely to build up after repeated applications. This may increase the risk of contaminating nearby surface water, ground water, plants, and animals." (Oregon National Pesticides Information Centre (NPIC)). This can be illustrated with Figure 5.3.4 below.

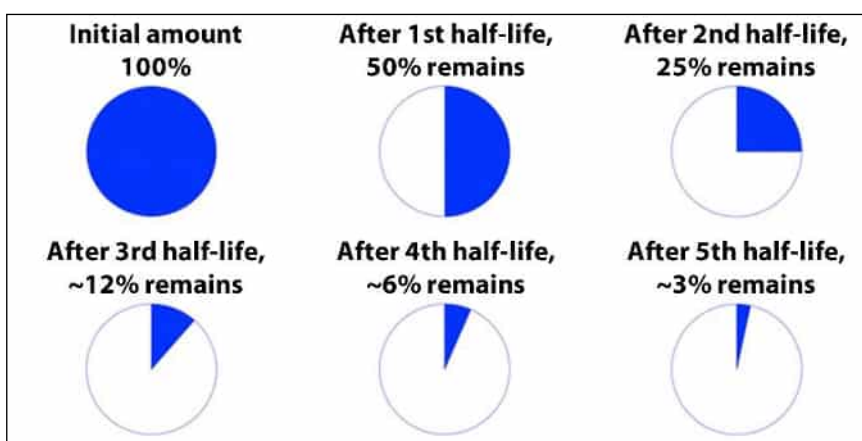


Figure 4. Approximate amount of pesticide (shaded area) remaining at the application site over time (source: NPIC)

Figure 5 clearly shows market gardens on 4 Golf Links Road, indicating the likely Hail A10 of persistent pesticide bulk storage and use. This activity carried on for many years, with its first appearance in 1963 and carrying on through till the 1990's.



Figure 5. Site between 1960-1970 (Retrolens).



Figure 6. Site between 2015 – 2019 (Canterbury Maps)

Figure 6 shows stockpiles near the shed on 518 Rangiora Woodend Road. Exposed soil in around the trees and to the northeast of the dwelling.

New driveway being developed and buildings on 4 Golf Links Road. Exposed soil where garden was.

Table 4 below summarises the most relevant information collected from the review of historical aerial photos.

Table 4. Reviewed aerial images (Retrolens and ECan GIS: Canterbury Maps).

Date of photograph	Land use, site features, identified HAIL area(s)
1940 – 1944	Site appears to be undeveloped and in grass. There appears to be a dwelling on 518 Rangiora Woodend Road and a shed to the north. There appears to be a dwelling on 4 Golf Links Road and unidentifiable structures to the north. See Figure 3.
1960– 1964	Horticulture development on 4 Golf Links Road – appears to have market gardens. See Figure 5.
1965 – 1969	Further horticulture development on both properties.
1970 – 1974	Further horticulture development on both properties. Some trees near the dwelling on 518 Rangiora appear to have been removed.
1975 - 1979	No significant changes to site.
1980 – 1984	No significant changes to site.
1990 – 1994	No significant change to site (poor image quality).
1995 – 1999	Soil on an area to the northeast of the dwelling on 518 Rangiora Woodend Road, appear to be exposed. No other significant changes to site.
2000 - 2004	Horticulture development on 4 Golf Links Road (poor image quality).
2010 – 2014	Rangiora Woodend Road property appear to have exposed soil to northeast of the dwelling again. Aesthetic development of the Golf Link property garden.
2015 - 2019	Appears to be stockpiles near the shed on 518 Rangiora Woodend Road. Exposed soil in around the trees and to the northeast of the dwelling. New driveway being developed and buildings on 4 Golf Links Road. Exposed soil where garden was. See Figure 6.
Latest	Completed driveway and grassed over garden on 4 Golf Link Road.

4. Eliot Sinclair's Site Walkover – 26 April 2023

Eliot Sinclair undertook a site walkover on the 26th of April 2023 to assess the **current conditions** of the site. Photos taken during the various site visits are available in Appendix B.

During the site visit, Eliot Sinclair determined several areas to be considered as a "Locations of Interest" (LOI - i.e. location that are deemed potentially contaminated) given the current conditions of the site and the specific activities carried out there.

Note:

The determination of the "Locations of Interest" is solely based on the current conditions i.e. those encountered during the site visit. These locations come in addition or to support to those determined during the desktop investigation including (but not limited to) the historic aerial photos and property file documents which are addressed above.



Figure 7. Locations of Interest at 518 Rangiora Woodend Road and 4 Golf Links Road (Eliot Sinclair Maps, 2023).

The LOIs are outlined on Figure 6 and details are provided below with site images attached as Appendix B.

1. Mound of deposited fill (**HAIL G3**).
2. Burn pad with evidence of household rubbish being burned (**HAIL I**).
3. Septic waste system. Unsure of the nature of the wastewater disposal system.
- 4 Storage of empty and rusted drums. It is not known what these may have used to hold but the risk of chemicals being lost to ground cannot be ruled out (**HAIL I**).
5. Residential dwelling from 1940's. The presence of asbestos and lead based paint in a degraded condition cannot be ruled out (**HAIL I**).
6. Farm sheds/workshops that contain a variety of commercial/industry grade products (herbicide/pesticides, oils, paints, etc) on bare ground. **HAIL I** and **HAIL A10** cannot be ruled out.

7. Farm sheds/workshops that contain a variety of commercial/industry grade products (herbicide/pesticides, oils, paints, etc). **HAIL I** and **HAIL A10** cannot be ruled out.
8. Burn pad with evidence of household rubbish being burned (**HAIL I**).
9. Treated timber posts stored on ground along with a variety of farm incidentals (**HAIL A18**)
10. Long drop toilet.

5. Contamination Assessment

5.1. HAIL Activities “More Likely Than Not” Carried Out Onsite

The information reviewed in this investigation and the evidence found during the site visit suggest that HAIL activities have been or are “more likely than not” to have occurred on the area under consideration.

A review of the HAIL includes the following listings which are relevant to the activities identified above:

HAIL A Chemical manufacture, application and bulk storage

8. Livestock dip or spray race operations
10. Persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses or spray sheds
18. Wood treatment or preservation, including the commercial use of antiseptain chemicals during milling, or bulk storage of treated timber outside.

HAIL G Cemeteries and waste recycling, treatment and disposal

3. Landfill sites

HAIL 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.

5.2. Potential Contaminants Associated with Historical Use

Table 5 outlines the potential contaminants that could be present onsite due to its current and/or historical use.

Note:

The terms used below are directly taken from the HAIL contaminants list.

Table 5. Hazardous substances typically associated with selected HAIL activities.

HAIL Category	Activity or industry on the HAIL	Hazardous substances likely to be associated with that activity or industry
A8	Livestock dip or spray race operations	Arsenic, organochlorines (e.g., aldrin, dieldrin, DDT, lindane) and organophosphates, carbamates, and synthetic pyrethroids
A10	Persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses or spray sheds.	Arsenic, lead, copper, mercury; wide range of organic compounds including, organophosphates, and organochlorines.

A18	Wood treatment or preservation, including the commercial use of antisapstain chemicals during milling, or bulk storage of treated timber outside.	Heavy metals (particularly copper, chromium and arsenic), PCP's
G3	Landfill sites	Dependant on the contaminants associated with the landfill materials
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.	Dependant on contaminants associated with the accidental release (e.g. burn pad).

5.3. Preliminary Conceptual Site Model

A conceptual site model helps to identify whether or not a complete exposure pathway exists. An exposure pathway must include a contaminant source, a transport mechanism, and a receptor. If one of these components does not exist, or can be removed, then the exposure pathway is incomplete. If the exposure pathway is incomplete, then there is little risk to human health at the specified location.

The conceptual site model developed for the site is presented in Table 6.

Table 6. Conceptual site model

Contaminant Source(s)	Contaminant/s of concern	Transport Mechanism	Receptor	Pathway complete Y/N
<ul style="list-style-type: none"> Livestock dip or spray race operations (HAIL 8) 	<ul style="list-style-type: none"> Multi-residue Pesticides Acidic herbicides Heavy metals 	<ul style="list-style-type: none"> Ingestion of soil and dust. Home grown produce consumption. Dermal contact with soil. 	<ul style="list-style-type: none"> Site occupiers and the surrounding environment Construction workers (or contractors) during development phases Future users of the site (post-development) 	Potentially
<ul style="list-style-type: none"> Treated timber storage (HAIL A18) 	<ul style="list-style-type: none"> Heavy Metals 	<ul style="list-style-type: none"> Inhalation of fugitive dust. Ingestion of soil and dust. Home grown produce consumption. Dermal contact with soil. 	<ul style="list-style-type: none"> Site occupiers and the surrounding environment Construction workers (or contractors) during development phases 	Potentially

				<ul style="list-style-type: none"> Future users of the site (post-development) 	
<ul style="list-style-type: none"> Historical pesticide usage (HAIL A10) 	<ul style="list-style-type: none"> Multi-residue Pesticides Acidic herbicides Heavy metals 	<ul style="list-style-type: none"> Ingestion of soil and dust. Home grown produce consumption. Dermal contact with soil. 	<ul style="list-style-type: none"> Site occupiers and the surrounding environment Construction workers (or contractors) during development phases Future users of the site (post-development) 	Potentially	
<ul style="list-style-type: none"> Stockpiling on land (G3) 	<ul style="list-style-type: none"> Heavy Metals 	<ul style="list-style-type: none"> Ingestion of soil and dust. Home grown produce consumption. 	<ul style="list-style-type: none"> Site occupiers and the surrounding environment Construction workers (or contractors) during development phases Future users of the site (post-development) 	Potentially	
<ul style="list-style-type: none"> Burn pads, leaking Hazmat containers, asbestos and lead based paint (HAIL I) 	<ul style="list-style-type: none"> Asbestos Heavy metals Lead paint PAH 	<ul style="list-style-type: none"> Inhalation of fugitive dust. Ingestion of soil and dust. Home grown produce consumption. Dermal contact with soil. 	<ul style="list-style-type: none"> Site occupiers and the surrounding environment Construction workers (or contractors) during development phases Future users of the site (post-development) 	Potentially	

The assessment of the proposed activity (a private plan change request) it is that there may be risks to human health if soil disturbance and change in land use occurs. However, any future development or land use changes within/on LOIs outlined within this report would require a Detailed Site Investigation.

5.4. Determining resource consent requirements under the NESCS

As this is a plan change submission, the NESCS does not apply. This is because there is no subdivision or land use change taking place. A DSI is required in order to complete this assessment.

Once the plan change review has been completed, a DSI can be undertaken and then an assessment against the NESCS can be made.

6. Conclusions and Recommendations

This PSI is based on a review of Waimakariri District Council records, Environment Canterbury records, historical aerial images, and Eliot Sinclair's site walkover inspection on 26 April 2023. Our conclusions and recommendations are as follows:

- a) Based off our desktop investigation and site walkover, HAIL activities have historically and currently been carried out on the site (**HAIL A8, HAIL A10, HAIL A18, HAIL G3** and **HAIL I**). Depending on the future land use/site development there could a risk to human health.
- b) This land is suitable for re-zoning (as per the purpose of this report) under the assumption that all potential HAIL areas listed above are investigated further prior to subdivision and any earthworks taking place.
- c) **However**, we recommend that the areas outlined as potential HAIL areas undergo additional detailed site investigation (DSI) in terms of the Ministry for the Environment's Contaminated Land Management Guidelines to establish the nature, degree, and extent of contaminants distribution.
- d) A further assessment against the NESCS can be completed once these areas have been investigated further. This will detail the impacts to human health.

7. Accidental Discovery Protocol

It is recommended that if any unusual or contaminated materials are encountered during any future site works within the site that the requirements of the Accidental Discovery Protocol provided are followed.

If any of the following materials are encountered during any future earthworks, such as:

- a) Stained or odorous soil (e.g., black, green, grey; or smells of rotting organic material, petroleum hydrocarbons or solvents)
- b) Slag, ash, charcoal
- c) Rubbish comprising putrescible waste, or hardfill, or treated timber, or agrichemicals, etc
- d) Potential asbestos containing-material (for example fragments from cement fibre sheets, or loose fibres from insulation, etc.)

Then we recommend:

- e) Excavation and earthworks cease, the site secured to stop people entering the area where potential contamination was encountered, and then:
- f) Contact a contaminated land specialist for further advice. If required, **Eliot Sinclair (03) 379 4014** can inspect the area, assess the material determine if it is contaminated or hazardous, and then determine a practical course of action.

This report does not relieve contractors of their responsibilities under the Health and Safety at Work Act 2015. Site conditions relevant to construction works should be assessed by contractors who can make their own interpretation of the factual data provided. They should perform any additional tests as necessary for their own purposes, at their own expense.

8. SQEP Certifying Statement

I, Simon Pollock of Eliot Sinclair & Partners Limited ("Eliot Sinclair"), certify that:

1. this preliminary site investigation meets the requirements of the Resource Management (National Environmental Standard for assessing and managing contaminants in soil to protect human health) Regulations 2011 because it has been:
 - a. done by a suitably qualified and experienced practitioner, and
 - b. reported on in accordance with the current edition of Contaminated land management guidelines No 1 – Reporting on contaminated sites in New Zealand, and
 - c. the report is certified by a suitably qualified and experienced practitioner.

For activities under R8(4) of the NESCS this preliminary site investigation concludes it is possible that there will be a risk to human health if the activity is done to the piece of land.

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

9. Disclaimer

This report has been prepared by Eliot Sinclair & Partners Limited ("Eliot Sinclair") only for the intended purpose as a preliminary site investigation report (PSI) for the proposed soil disturbance relating to the dwelling construction.

The report is based on:

- a) Information shown on Environment Canterbury HAIL database.
- b) Historical aerial imagery source from Canterbury Maps and Google Earth.
- c) Information from the Christchurch City Council property file.
- d) Eliot Sinclair's site walkover on 14 February 2023.
- e) NESCS and MfE's CLMG no.1 and no.5.

Where data supplied by CVI Projects Ltd or other external sources, including previous site investigation reports, have been relied upon, it has been assumed that the information is correct unless otherwise stated. No responsibility is accepted by Eliot Sinclair for incomplete or inaccurate data supplied by other parties.

Whilst every care has been taken during our investigation and interpretation of soil conditions and available data to ensure that the conclusions drawn, and the opinions and recommendations expressed are correct at the time of reporting, Eliot Sinclair has not performed an assessment of all possible conditions or circumstances that may exist at the site. Variations in conditions may occur between investigatory locations and there may be conditions such as contaminant sources that were not detected by the scope of the investigation that was carried out or have been covered over or obscured over time. Eliot Sinclair does not provide any warranty, either express or implied, that all conditions will conform exactly to the assessments contained in this report.

The exposure of conditions or materials that vary from those described in this report, or any update to the NES SCS or CLMG guidelines may require a review of our recommendations. Eliot Sinclair should be contacted to confirm the validity of this report should any of these occur.

This report has been prepared for the benefit of CVI Projects Ltd and the Christchurch City Council for the purposes as stated above. No liability is accepted by Eliot Sinclair or any of their employees with respect to the use of this report, in whole or in part, for any other purpose or by any other party.

10. References

Institute of Geological and Nuclear Sciences Limited. (2022, October 20). *New Zealand Geology Web Map*. GNS Science, Te Pū Ao. Retrieved January 30, 2023, from <https://data.gns.cri.nz/geology/>

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

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

Ministry for the Environment, Hazardous Activities and Industries List (HAIL) (2021). Wellington.

Ministry for the Environment, Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations (2011). Wellington.

Appendix A. Historical Aerial Imagery



Aerial imagery of 4 Golf Links Road (left) and 518 Rangiora Woodend Road (right) in 1942 (site boundary outlined in red). Retrieved from Retrolens.



Aerial imagery of 4 Golf Links Road (left) and 518 Rangiora Woodend Road (right) in 1963 (site boundary outlined in red). Retrieved from Retrolens.



Aerial imagery of 4 Golf Links Road (left) and 518 Rangiora Woodend Road (right) in 1969 (site boundary outlined in red). Retrieved from Retrolens.



Aerial imagery of 4 Golf Links Road (left) and 518 Rangiora Woodend Road (right) in 1973 (site boundary outlined in red). Retrieved from Retrolens.



Aerial imagery of 4 Golf Links Road (left) and 518 Rangiora Woodend Road (right) in 1976 (site boundary outlined in red). Retrieved from Retrolens.



Aerial imagery of 4 Golf Links Road (left) and 518 Rangiora Woodend Road (right) in 1978 (site boundary outlined in red). Retrieved from Retrolens.



Aerial imagery of 4 Golf Links Road (left) and 518 Rangiora Woodend Road (right) in 1980 (site boundary outlined in red). Retrieved from Retrolens.



Aerial imagery of 4 Golf Links Road (left) and 518 Rangiora Woodend Road (right) in 1984 (site boundary outlined in red). Retrieved from Retrolens.



Aerial imagery of 4 Golf Links Road (left) and 518 Rangiora Woodend Road (right) in 1994 (site boundary outlined in red). Retrieved from Retrolens.



Aerial imagery of 4 Golf Links Road (left) and 518 Rangiora Woodend Road (right) between 1995-1999 (site boundary outlined in red). Retrieved from Canterbury Maps.



Aerial imagery of 4 Golf Links Road (left) and 518 Rangiora Woodend Road (right) in 2000 (site boundary outlined in red). Retrieved from Retrolens.



Aerial imagery of 4 Golf Links Road (left) and 518 Rangiora Woodend Road (right) between 2010- 2014 (site boundary outlined in red). Retrieved from Canterbury Maps.



Aerial imagery of 4 Golf Links Road (left) and 518 Rangiora Woodend Road (right) between 2015- 2019 (site boundary outlined in red). Retrieved from Canterbury Maps.



Latest aerial imagery of 4 Golf Links Road (left) and 518 Rangiora Woodend Road (right) (site boundary outlined in red). Retrieved from Canterbury Maps.

Appendix B. Site Photographs



















Appendix C. SQEP Qualifications



*The CEnvP Scheme Certification Board
hereby attests that*

Simon Pollock

*having fulfilled all the requirements of the Board
has been certified as a*

Certified Environmental Practitioner

with Registration Number

1507

on the date

01-Dec-2021

Chairperson of the Board

30/06/2024

Certification Expiry Date

