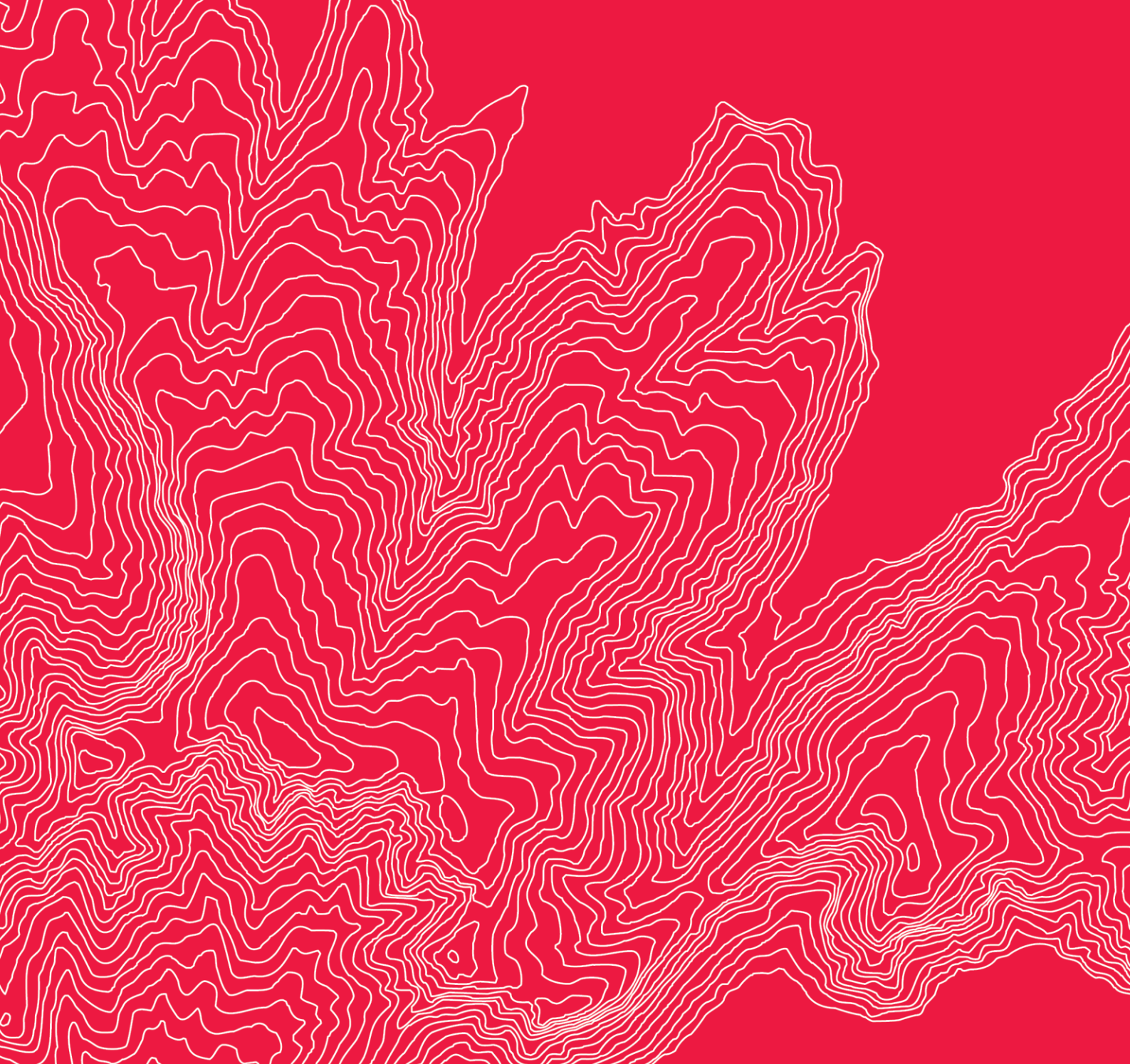




Preliminary Site Investigation

**Cashmere Road - Sparks Road -
Northaw Street - Leistrella Road, Hoon
Hay, Christchurch**

Prepared for Cashmere Private Plan Change
(CPPC)
511270

**eliot
sinclair**

Preliminary Site Investigation

Cashmere Road - Sparks Road - Northaw Street -
Leistrella Road, Hoon Hay, Christchurch

Prepared for Cashmere Private Plan Change
(CPPC)

511270

Quality Control Certificate

Eliot Sinclair & Partners Limited

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Appendix A. Historical Aerial Imagery

Appendix B. Site Photographs

Executive Summary

Site Address	Cashmere Road - Sparks Road - Northaw Street - Leistrella Road, Hoon Hay, Christchurch
Legal description	Lot 1 DP 412488; Lot 2 DP 412488; Lot 3 DP 412488; Lot 23 DP 3217; RS 41613; Lot 1 DP 547021
Site area	23.0061 ha
Local authority	Christchurch City Council
Proposed activity	Private plan change (PPC) to rezone land areas within the Henderson's and Cashmere Catchments.
Historical and current land uses	Historical: Rural Current: Rural Residential
Current zoning	Rural and Rural Residential
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 , and HAIL E1 and HAIL I).
Conclusions	It is concluded that: HAIL activities have historically and currently been carried out on the site. However, given the proposed activity being a plan change, which will involve no soil disturbance or immediate land use change, it is highly unlikely that it would create any risks to human health. However, Areas or Locations of Interest (LOI) have been outlined and would require to be further investigated should future projects intercept those areas/locations.
Recommendations	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	NESCS does not apply to plan changes

1. Introduction

Eliot Sinclair & Partners Ltd was engaged by Cashmere Park Ltd, Hartward Investment Trust and Robert Brown collectively referred to within this document as Cashmere Private Plan Change (CPPC) to undertake a Preliminary Site Investigation (PSI) to support the submission of a private plan change (PPC) through Christchurch City Councils Plan Change 14 (PC14) process to rezone land areas within the Henderson and Cashmere Catchments (as shown in Figure 1).

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 (NESC), 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 Christchurch City Council (CCC).
- Fieldwork including a site walkover and interview of owners/managers of the site.
- Preparation of a PSI report in accordance with NESC, 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 several Titles which total area is 23.0061 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 1 DP 412488	Landsborough Trustee Services No 30 Limited Marianne Ruth Lewis	126 Sparks Road	4.0001 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).

	Warren Richard Lewis		
Lot 2 DP 412488	Landsborough Trustee Services No 30 Limited, Marianne Ruth Lewis, Warren Richard Lewis	17 Northaw Street	4.0004 ha
Lot 3 DP 412488	Landsborough Trustee Services No 30 Limited, Marianne Ruth Lewis, Warren Richard Lewis	36 Leistrella Road	4.0003 ha
Lot 23 DP 3217	Jeanette Katherine Brown Robert James Brown	240 Cashmere Road	8.0937 ha
RS 41613	Debra Down Hartnell-Ward, Geoffrey Peter Ward Young Hunter Trustees Limited	236 Cashmere Road	2.0234 ha
Lot 1 DP 547021	Cashmere Park Limited	200 Cashmere Road	0.8882 ha

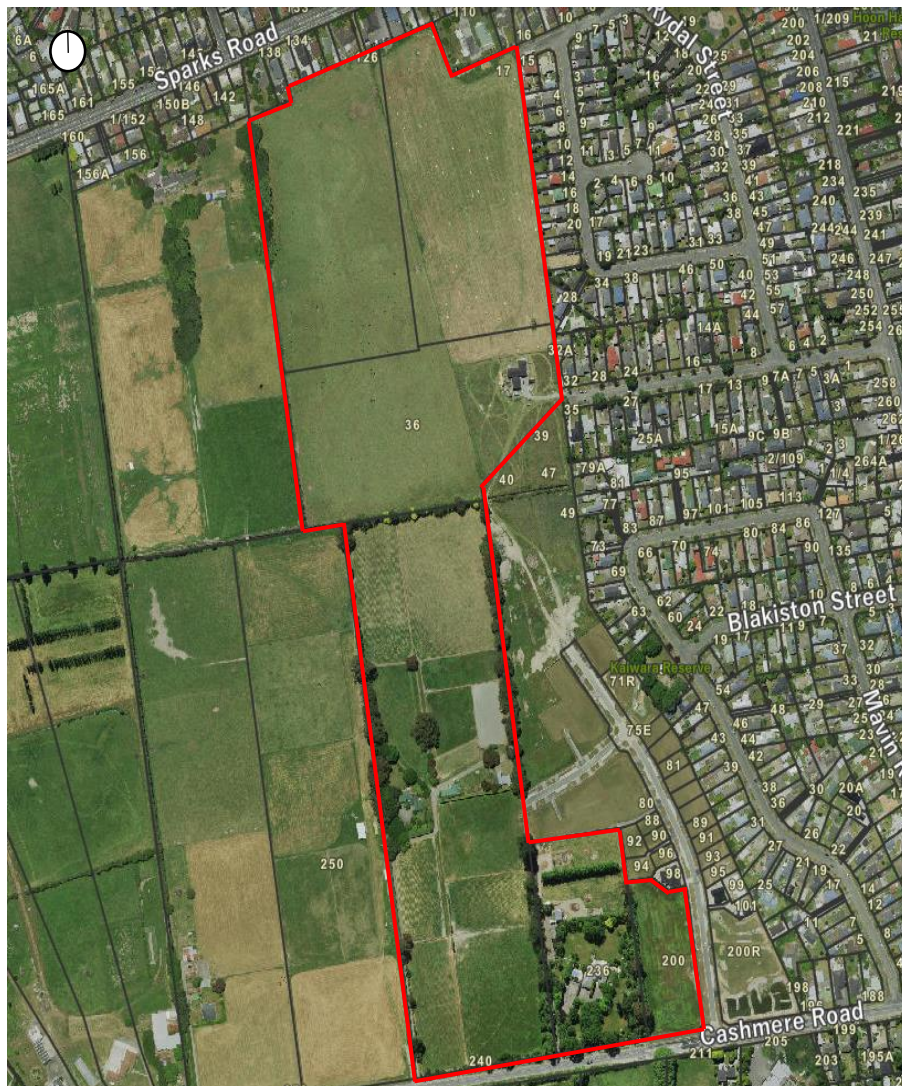


Figure 1. Current site layout with the property boundaries indicated in red (Sourced: Canterbury Maps, 2023).

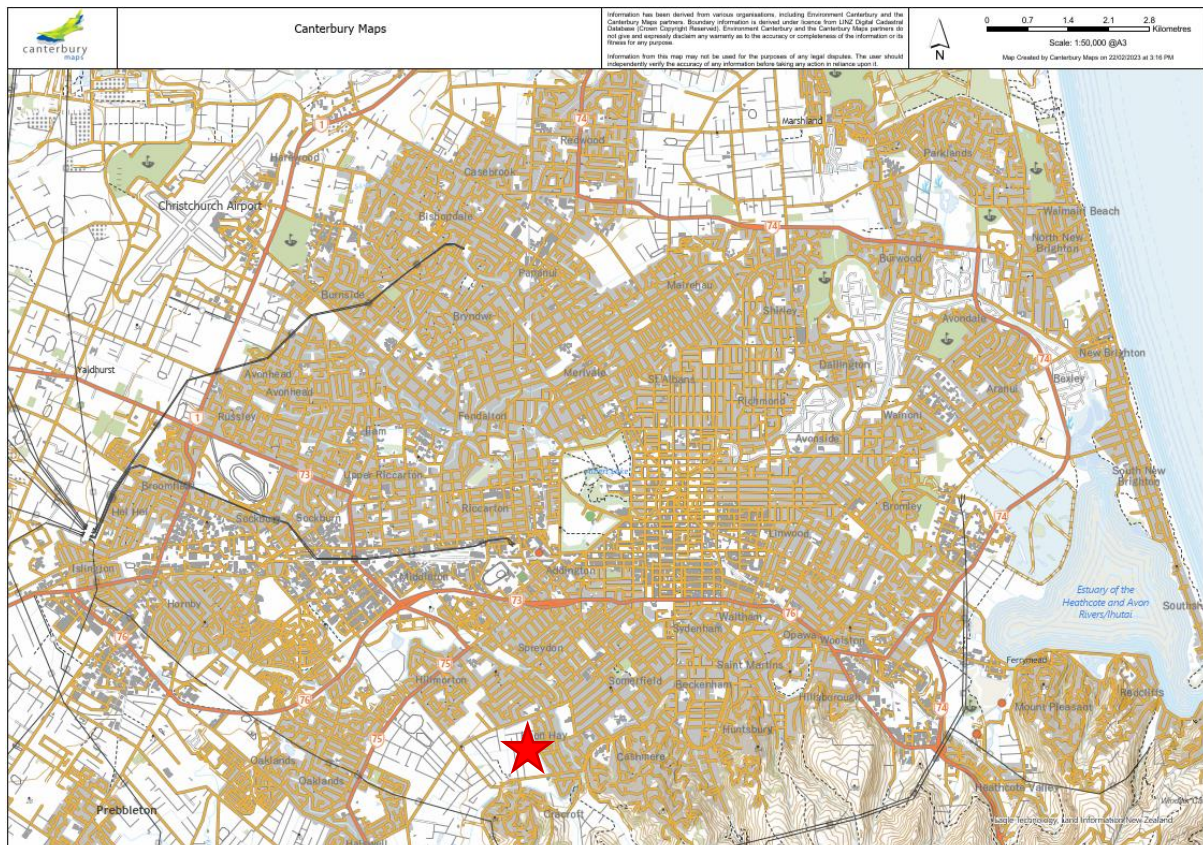


Figure 2. Locality Map (Sourced: Canterbury Maps, 2023).

1.3. Proposed Activity

The proposed activity is to submit a Private Plan Change request to Christchurch City Council through the PC14 process. Figure 3 shows the proposed development for the area. The proposed activity (plan change) will not include any soil disturbance or any immediate change in land use.

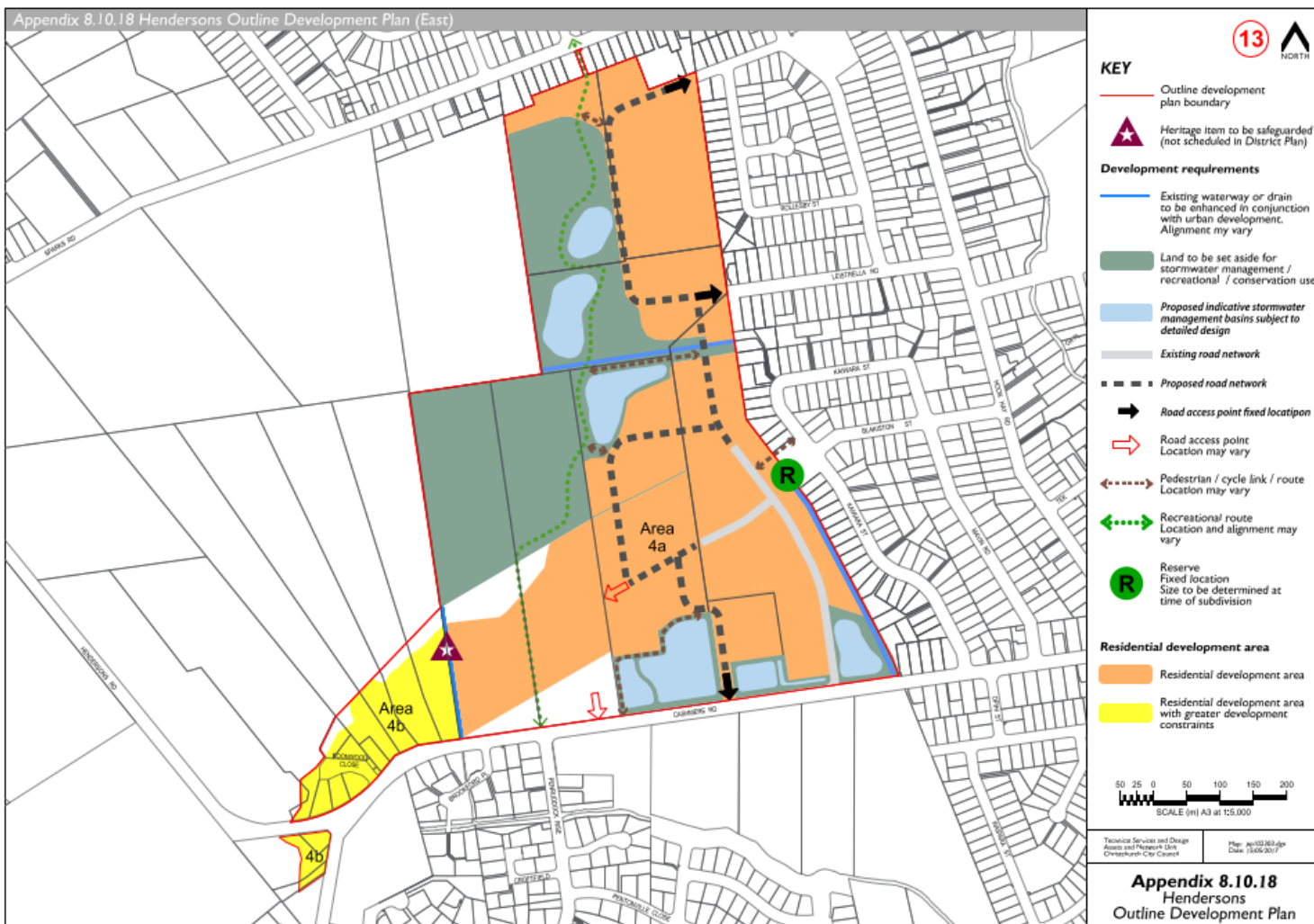


Figure 3. Proposed Outline Development Plan.

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	Cashmere Road - Sparks Road - Northaw Street - Leistrella Road
Neighbouring land use	Rural and Residential
District plan zoning	Rural Urban Fringe, Residential New Neighbourhood, Residential Suburban
Geology	GNS has mapped the area as 'Holocene River Deposits' OIS1
Surface water	A wooden box drain runs across the northern boundary of 240 Cashmere Road/southern boundary of 36 Leistrella Road and flows from west to east. Another box drain runs down the eastern boundary of Northaw Street and flows from north to south.
Groundwater	Estimated depth between 1m to 4.5m below ground (based off Wells and Bores data layer on Canterbury Maps).

Topography	The properties are largely flat and vegetated with grass (for production). 126 Sparks Road has a natural water channel running through it.
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3. Historical Site Use

3.1. Review of Council Information

3.1.1. CCC Property Files

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

Table 3. Property file review.

Property Address	Significant Information
126 Sparks Road	No significant documents or possible instances of contamination were identified within the property file.
17 Northaw Street	No significant documents or possible instances of contamination were identified within the property file.
36 Leistrella Road	No significant documents or possible instances of contamination were identified within the property file.
240 Cashmere Road	■ Building Consent CON97001991 for proposed 'Stables/Demolish Existing Stables' (April 1997)
236 Cashmere Road	No significant documents or possible instances of contamination were identified within the property file.
200 Cashmere Road	■ An application for a Drainage Permit for the current dwelling on the site, dated 1955. ■ Building permit to erect the hayshed that is currently on the site, dated 1971. ■ Correspondence from 1990 in relation to dwelling alterations. ■ An application for resource consent to subdivide that site, dated 2003. ■ Subdivision plans for the site, dated from 2006 (never completed). ■ RMA20181501 Approved consent document (June 2018) which included an Eliot Sinclair & Partners Ground Contamination Assessment PSI and DSI.

No HAIL activities were identified from the property files.

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.

No LLUR records are recorded for any of the land parcels included in the site are recorded on the LLUR.

3.2.1. Previous Site Investigations

As found in the CCC property file review, the Approved consent document RMA20181501 (dated Aug 2018) included an Eliot Sinclair & Partners Ground Contamination Assessment Preliminary and Detailed Site Investigation (job #438642). The conclusion of this report has been reviewed and the outcome of that review is evaluated in the report.

Section 6.7 – owner interview:

- Eliot Sinclair interviewed Steve Lewis, the son of the owner of the site (Warren Lewis), on 19 May 2018 and subsequently on 22 June 2018. Stockpiled material noted in the 2004 historical aerial image was confirmed to be organic debris from trimming of trees and other vegetation from the hedgerow to the west. The stockpiles were left to decompose naturally and were never burnt. He stated that he was not aware of any HAIL activities that have been undertaken onsite.

Section 6.8 – summary of the reviewed information:

- Identified potential for HAIL activity A-10, persistent pesticide use, from the possible market gardens noted in historical aerial images taken between 1980 and 1989. Although given the relatively short time the land was used as a market garden, at the time of this report Eliot Sinclair concluded it highly unlikely that any contaminants would be present on the site in quantities that would affect human health.

Although this information is useful, it does not indicate whether the soil would meet cleanfill criteria at this time of investigation.

3.3. Review of Aerial Photographs

Aerial images from the Canterbury Maps, LINZ, and Google Earth were reviewed to identify previous land uses and potential HAIL activities between 1925 and 2022. 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 4. 126 Sparks Road between 1925-1929 (Canterbury Maps).

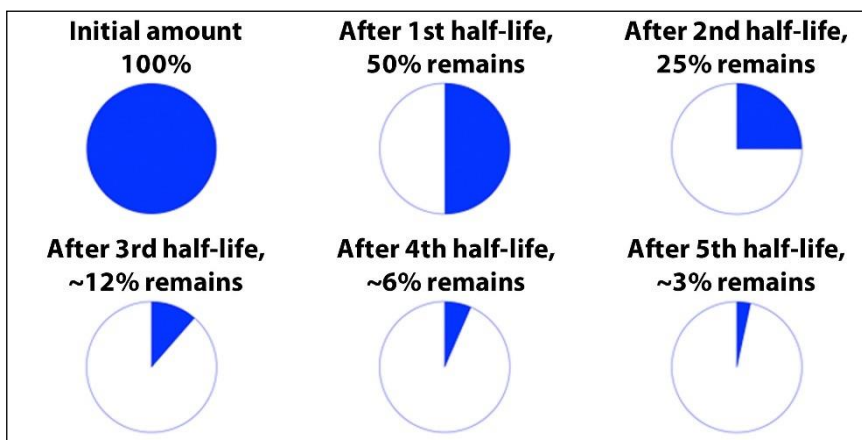
Figure 4 contains the first available aerial photo of the site, and shows the presence of a house on 126 Sparks Road. Given the house was constructed before 1925, the presence of contaminants like asbestos and lead-based paint cannot be ruled out. The later demolition of that building potentially released contaminants to the soil (**HAIL I**). The entire site seems to be used for agricultural/pastoral activities which potentially involved the use of persistent pesticides (**HAIL A10**).

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.



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



Figure 5. 240 Cashmere Road between 1940-1944 (Canterbury Maps).

Similarly, Figure 5 shows the first appearance of a house on 240 Cashmere Road. Due to the date of its construction – prior to 1944, the risks of soil contamination by asbestos (**HAIL E1**) 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 structure on the west side of the building which could have been part of a sheep dip. This activity would be related to **HAIL A8**: Livestock dip or spray race operations.



Figure 6. 126 Sparks Road between 1965-1969 (Canterbury Maps).

The house seen on 126 Sparks Road appears to have been removed in the historic aerial photograph displayed in Figure 6. The demolition of this house could be classified under **HAIL I**: “land subjected to accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health or the environment”. The area remaining in and surrounding the house footprint, has potential for **heavy metal (lead-based paint)** and **asbestos** contamination.



Figure 7. Site 1990-1994 (Canterbury Maps).

Figure 7 shows the presence of new buildings located at both 236 and 240 Cashmere Road and the start of additional horticultural activities that may have involved the use of persistent pesticides.

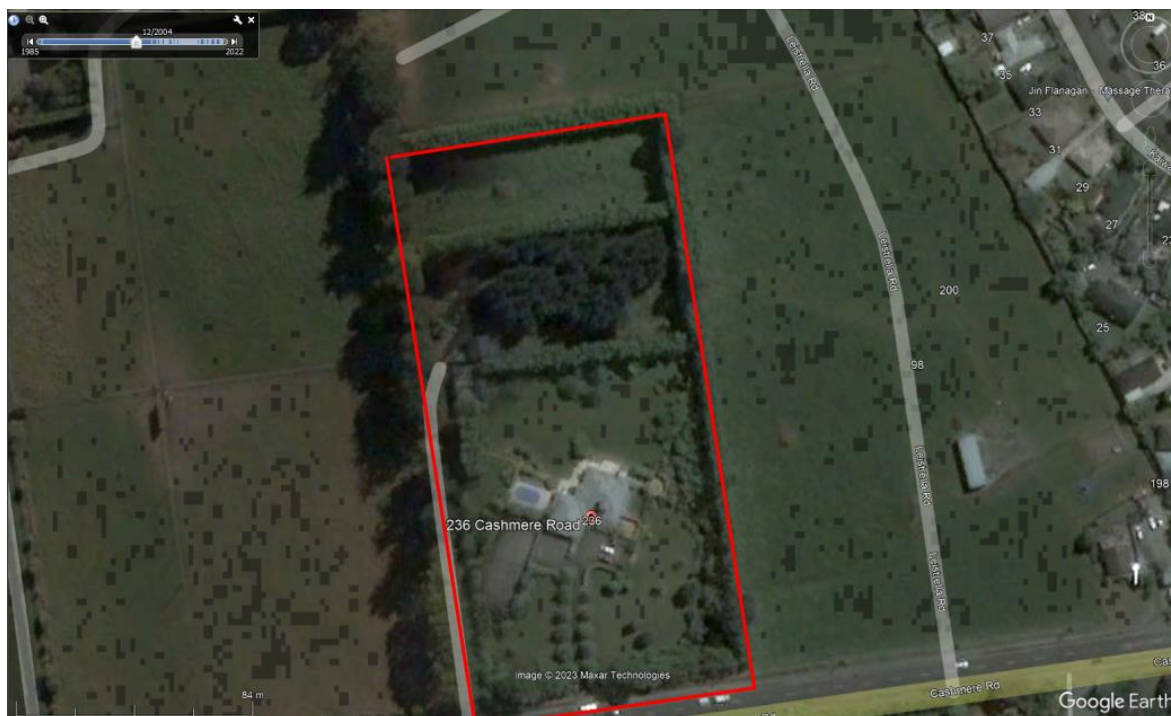


Figure 8. Site 2000-2004 (Google Earth Pro).

Figure 8 shows the presence of new or upgraded buildings at 236 Cashmere Road alongside continued horticultural activities that may have involved the use of persistent pesticides.

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

Table 4. Reviewed aerial images (ECan GIS: Canterbury Maps, Google Earth Pro 2023).

Date of photograph	Land use, site features, identified HAIL area(s)
1925 – 1929	Site appears to be undeveloped and in grass – used for grazing and/or cropping. Appearance of house on the northern corner of 126 Sparks Road (imagery only covers the northern part of the site blocking Cashmere Road properties from view). See Figure 4.
1940 – 1944	Appearance of house around halfway along the western property end of 240 Cashmere Road otherwise no significant change. See Figure 5.
1945 – 1949	Development of agricultural fencing and the building at 240 Cashmere Road appears to have undergone upgrades.
1955 – 1959	Shows a farm shed along the northwest boundary of 200 Cashmere Road. Majority of the remainder of the site appears to be used for grazing with animal tracks visible across the site with the heaviest activity in the southeast part of the site just north of the dwelling.
1965 – 1969	Further development for horticulture at 240 Cashmere Road, otherwise the site remains relatively unchanged.
1970 – 1974	Building at 126 Sparks Road appears to have been removed. See Figure 6.
1975 – 1979	No significant change to site.
1980 – 1984	Shows the farm shed along the northwest boundary of 200 Cashmere Road has been removed and two smaller structures are now in its place. Further development of horticulture across the site – particularly the allotment to the west of 200 Cashmere Road as it shows potential market gardens (HAIL A10). See Error! Reference source not found..
1985 – 1989	No significant change to site (poor image quality).
1990 – 1994	First appearance of two buildings and redevelopment for horticulture at 236 Cashmere Road. Further development for horticulture and appearance of another building at 240 Cashmere Road.
1995 – 1999	Market gardens to the west of 200 Cashmere Road are no longer visible.
2000 – 2004	Buildings on 236 Cashmere Road appear to have undergone upgrades and horticulture has undergone further development.
2010 – 2014	Appearance of what looks to be a court at 240 Cashmere Road. Further development of horticulture at 236 Cashmere Road. Livestock appears to now be present at 200 Cashmere Road.
2015 – 2019	Further development of agriculture at 200 Cashmere Road – site appear to now be used for grazing with animal tracks visible. Otherwise, the site appears relatively unchanged from previous aerial photography.
Latest	Appearance of house at 36 Leistrella Road. Further development of agriculture at 200 Cashmere Road

4. Eliot Sinclair's Site Walkover – 14 February 2023

Eliot Sinclair undertook a site walkover on the 14th February 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.

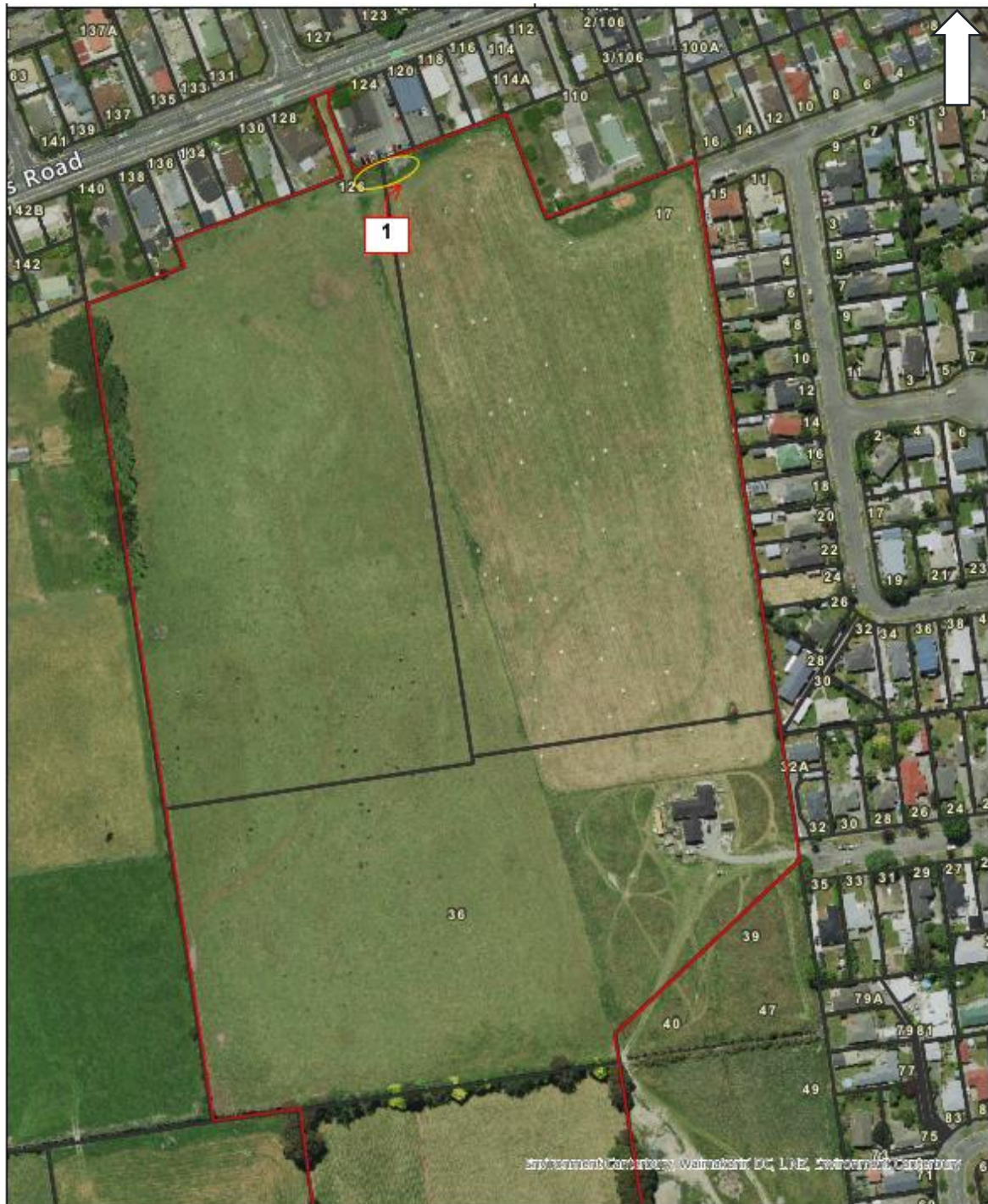


Figure 9. Locations of Interest at 126 Sparks Road, 17 Northaw Street and 36 Listrella Road (Canterbury Maps, 2023).



Figure 10. Locations of Interest at 200, 235 and 240 Cashmere Road (Canterbury Maps, 2023).

The LOIs are outlined on Figure 9 and Figure 10 and details are provided below with site images attached as Appendix B.

1. An old stock pen that borders the boundary. It cannot be ruled out that this was used as part old dipping or spraying operations and therefore could result in contamination from such activities (**HAIL A8**).
2. A horse arena likely used for dressage and jumping. This arena is topped with a layer of crusher dust but traditionally they can be made of ash which can result in contamination in some cases (**HAIL I**).

3 and 3a. 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.

4 and 4a. Green waste stockpiles. While the organic material is unlikely to contain any contaminants, any additional items (e.g. timbers and plastics) that may have been placed in these piles could produce contamination if burnt (**HAIL I**). There was evidence during the site walkover that these locations could have previously been used for burning.

5. Vegetable garden with a variety of crops growing. This area could have been subject to pesticide use and therefore contaminants associated with **HAIL A10** cannot be ruled out.

6. Some rubble/foreign material identified on the driveway at 240 Cashmere Road suggests that the driveway could have been filled with uncontrolled fill such as demolition rubble. This material could contain building materials that could be a source of contamination (e.g. lead based paint or asbestos containing materials) (**HAIL E1** and **HAIL I**).

7. There were two glasshouses at this property with crops growing inside. The persistent use of pesticides cannot be ruled out (**HAIL A10**).

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

HAIL E Mineral extraction, refining and reprocessing, storage and use

1. Asbestos products manufacture or disposal including sites with buildings containing asbestos products known to be in a deteriorated condition.

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.
E1	Asbestos products manufacture or disposal including sites with buildings containing asbestos products known to be in a deteriorated condition.	Asbestos
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
■ Livestock Dip (HAIL A8)	■ Heavy metals ■ Pesticides	■ Ingestion of soil and dust. ■ Home grown produce consumption. ■ Dermal contact with soil.	a) Site occupiers and the surrounding environment b) Construction workers (or contractors) during development phases c) Future users of the site (post-development)	Potentially
■ Historical pesticide	■ Multi-residue Pesticides	■ Ingestion of soil and dust.	a) Site occupiers and the	Potentially

usage (HAIL A10)	■ Acidic herbicides ■ Heavy metals	■ Home grown produce consumption. ■ Dermal contact with soil.	- surrounding environment b) Construction workers (or contractors) during development phases c) Future users of the site (post-development)	
■ Building Demolition (HAIL E1 - I)	■ Asbestos ■ Heavy metals ■ Lead paint	■ Inhalation of fugitive dust. ■ Ingestion of soil and dust. ■ Home grown produce consumption. ■ Dermal contact with soil.	a) Site occupiers and the surrounding environment b) Construction workers (or contractors) during development phases c) Future users of the site (post-development)	Potentially

The assessment of the proposed activity (a private plan change request) it is highly unlikely that it would create any risks to human health. However, any future development or land use changes within/on LOI outlined within this report would require a Detailed Site Investigation.

5.4. Determining resource consent requirements under the NESCS

As this is a Private Plan Change consideration, 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 Christchurch City Council records, Environment Canterbury records, historical aerial images, and Eliot Sinclair's site walkover inspection on 14 February 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**, and **HAIL E1** 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 Environments 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, Philippe Dumont 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 Cashmere Private Plan Change (CPPC) 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 Cashmere Private Plan Change (CPPC) 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

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Appendix A. Historical Aerial Imagery

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Aerial imagery of Cashmere properties in 1925-1929 (site boundary outlined in white).
Retrieved from Eliot Sinclair Desktop Study.



Aerial imagery of Cashmere properties in 1940-1944 (site boundary outlined in white).
Retrieved from Eliot Sinclair Desktop Study.



Aerial imagery of Cashmere properties in 1945-1949 (site boundary outlined in white).
Retrieved from Eliot Sinclair Desktop Study.



Aerial imagery of Cashmere properties in 1955-1959 (site boundary outlined in white).
Retrieved from Eliot Sinclair Desktop Study.



Aerial imagery of Cashmere properties in 1965-1969 (site boundary outlined in white).
Retrieved from Eliot Sinclair Desktop Study.



Aerial imagery of Cashmere properties in 1970-1974 (site boundary outlined in white).
Retrieved from Eliot Sinclair Desktop Study.



Aerial imagery of Cashmere properties in 1975 -1979 (site boundary outlined in white).
Retrieved from Eliot Sinclair Desktop Study.



Aerial imagery of Cashmere properties in 1980 -1984 (site boundary outlined in white).
Retrieved from Eliot Sinclair Desktop Study.



Aerial imagery of Cashmere properties in 1985 -1989 (site boundary outlined in white).
Retrieved from Eliot Sinclair Desktop Study.



Aerial imagery of Cashmere properties in 1990 -1994 (site boundary outlined in white).
Retrieved from Eliot Sinclair Desktop Study.



Aerial imagery of Cashmere properties in 1995 -1999 (site boundary outlined in white).
Retrieved from Eliot Sinclair Desktop Study.



Aerial imagery of Cashmere properties in 2000 -2004 (site boundary outlined in white).
Retrieved from Eliot Sinclair Desktop Study.



Aerial imagery of Cashmere properties in 2010 -2014 (site boundary outlined in white).
Retrieved from Eliot Sinclair Desktop Study.



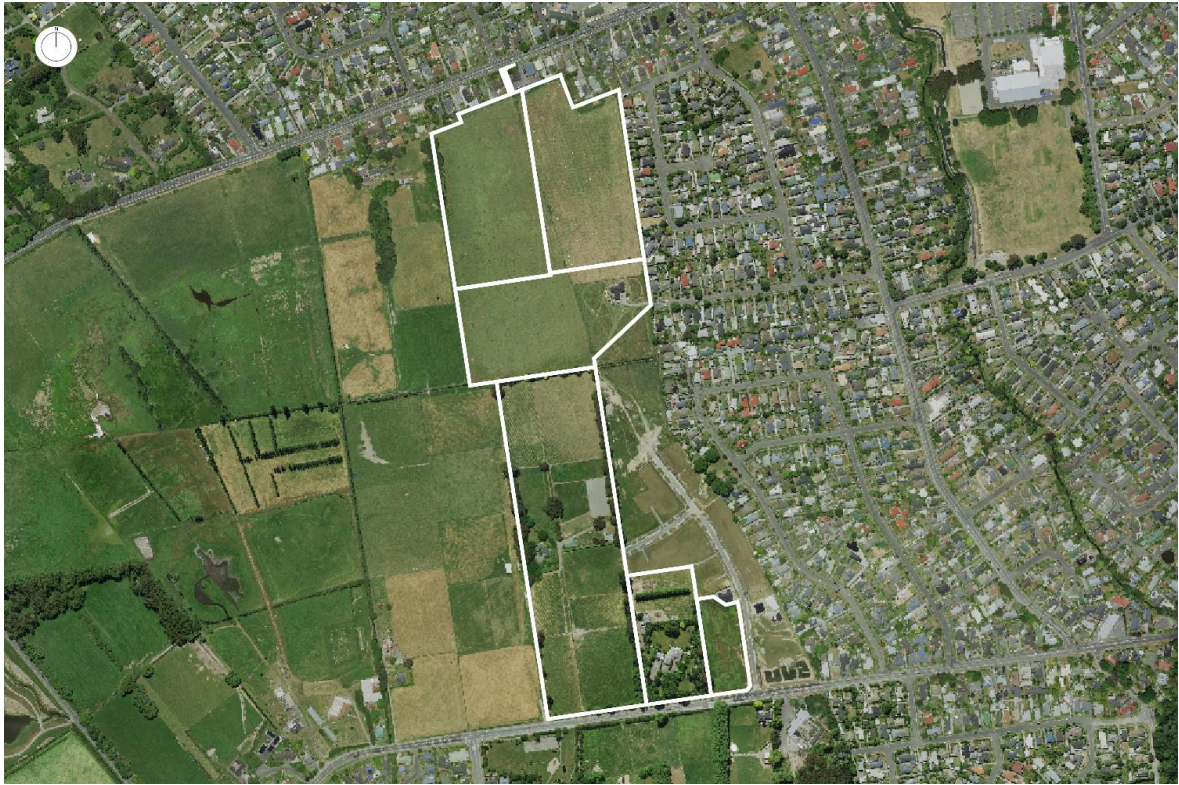
Christchurch post-earthquake aerial imagery of Cashmere properties in 2011 (site boundary outlined in white). Retrieved from Eliot Sinclair Desktop Study.



Aerial imagery of Cashmere properties in 2015 -2019 (site boundary outlined in white).
Retrieved from Eliot Sinclair Desktop Study.



Aerial imagery of Cashmere properties in 2016 (site boundary outlined in white). Retrieved
from Eliot Sinclair Desktop Study.



Latest aerial imagery of Cashmere properties (site boundary outlined in white). Retrieved from Eliot Sinclair Desktop Study.

Appendix B. Site Photographs



A) 240 Cashmere Road looking northeast from the Cashmere Road entrance.



B) Driveway for 240 Cashmere Road that is possibly created with rubble material.



C) Green waste stockpile at 240 Cashmere Road.



D) Box drain at the northern boundary of 240 Cashmere Road



E) Horse Arena on the north-eastern boundary of 240 Cashmere Road.



F) Farm sheds at 240 Cashmere Road.



G) Horse stable at 240 Cashmere Road.



H) Farm workshop at 240 Cashmere Road.



I) Pole shed at 236A Cashmere Road



J) Glasshouses and stockpiles at 236A Cashmere Road.



K) Greenwaste stockpiles at 236A with vegetable garden in the background.



L) 200 Cashmere Road from the north western boundary.



M) 36 Listrella Road looking east from the western boundary.



N) 36 Listrella Road (foreground) and 126 Sparks Road (background) looking north from the eastern boundary of 36 Listrella Road.



O) 126 Sparks Road looking from the southwestern boundary.



P) The entrance to 126 Sparks Road and the stock pens on 17 Northhaw Street.



Q) 17 Northaw Street from the north east boundary.