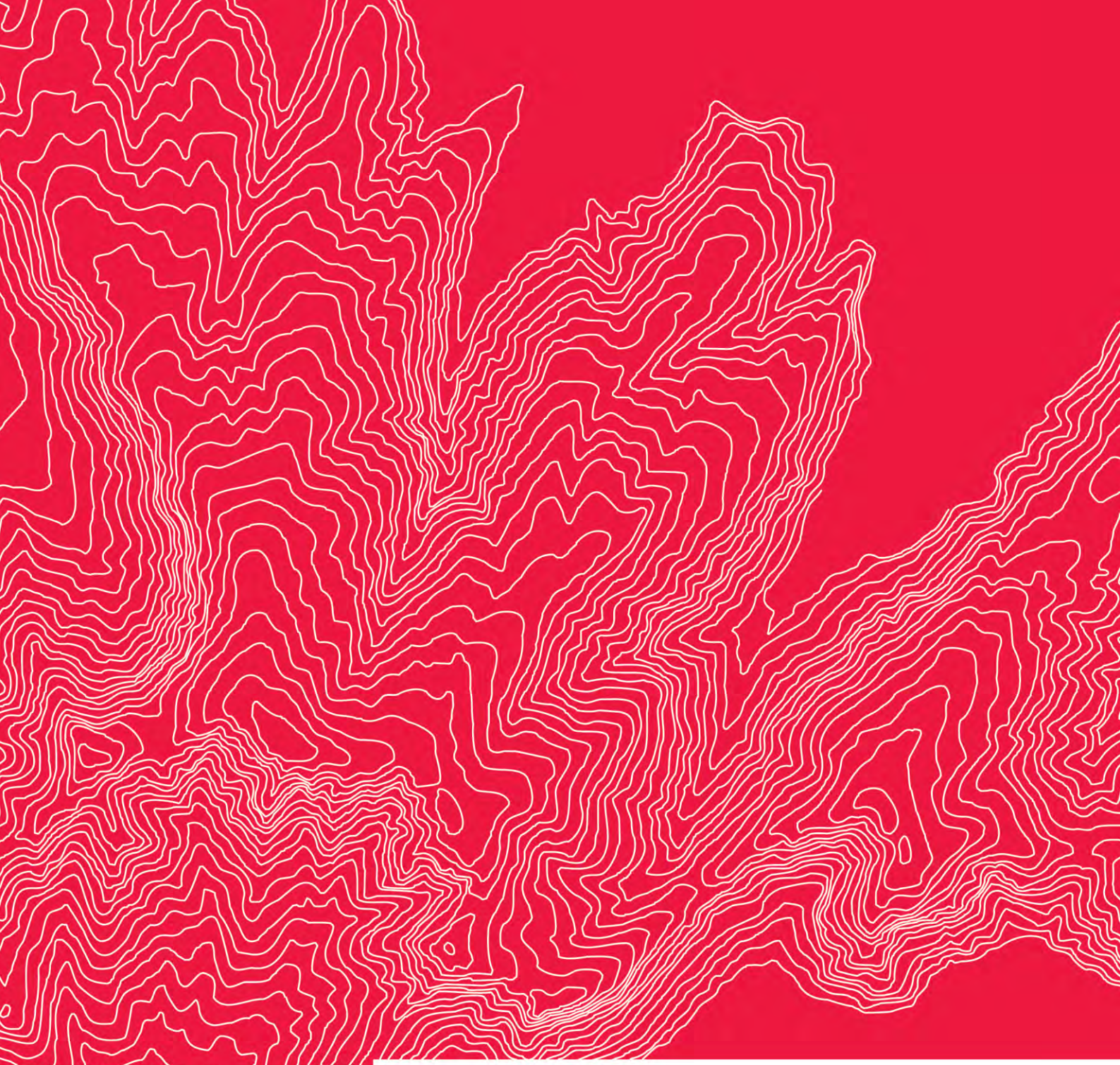


Preliminary Site Investigation

Version A

eliot sinclair

McDonald Rd & Englishs Rd, Lincoln

Prepared for Jo-Anne & Paul Campbell

520233

Preliminary Site Investigation

McDonald Rd & Englishs Rd, Lincoln

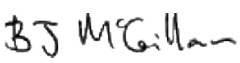
Prepared for Jo-Anne & Paul Campbell

520233

Quality Control Certificate

Eliot Sinclair & Partners Limited

eliotsinclair.co.nz

Action	Name	Signature	Date
Prepared by:	Peter Ngenang Geotechnical Engineer NZDE Civil MEngNZ		10 February 2025
Reviewed by:	Philippe Dumont Environmental Scientist BAgSc(Hons) MSc CEnvP SQEP		10 February 2025
Directed and approved for release by:	Bryan McGillan Resource Management Planner BAppSc, MNZPI & RMLA		19 February 2025
Status:	Version A		
Release date:	19 February 2025		
Distributed to:	Jo-Anne & Paul Campbell		

Version History

Status	Description	Author	Release Date
A	First issue of document	P. Ngenang	19 February 2025

Contents

1. Executive Summary

Site Address	McDonald Rd & Englishs Rd, Lincoln
Legal description	GAZ 01-940 RES 3537 BLK V HALSWELL SD -GRAVEL PIT
Site area	2.0234 ha
Local authority	Selwyn District Council
Proposed activity/land use	Change in land use and soil disturbance for construction of a residential dwelling
Historical and current land uses	Historical: Rural grazing land Current: Rural grazing Land
Current zoning	Rural Zone – Outer Plains
Adopted NESCS land use scenario	Rural Residential - Lifestyle Block (25% produce)
HAIL activities identified during site history review, site inspection, and owner interview	Historical aerial imagery: ■ HAIL G3 (landill sites)
Conclusions	It is concluded that ■ HAIL activities related to landfilling/backfilling operations have been identified on the site in the early 1990s. There could potentially be a risk to human health should the proposed soil disturbance activity relating to the construction of a residential dwelling be carried out.
Recommendations	It is recommended that ■ a Detailed Site Investigation (DSI), in terms of the Ministry for the Environment's Contaminated Land Management Guidelines (CLMG) would be prepared and undertaken to characterise the underlying soils and to determine contaminant concentrations across the proposed building platform.
NESCS activity status	The activity is considered Discretionary under the NES, until a DSI has been carried out.

2. Introduction

Eliot Sinclair & Partners Ltd was engaged by Jo-Anne & Paul Campbell to undertake a Preliminary Site Investigation (PSI) at McDonald Rd & Englishs Rd, Lincoln ('the site') prior to the proposed activity which will include a change in land use from rural grazing land to rural lifestyle land and soil disturbance to construct a new residential dwelling.

The purpose of this PSI report is to undertake a contamination assessment prior to the proposed activity being carried out to determine whether activities potentially contaminating the soil have been or are currently carried on the site and evaluate whether those activities are *"more likely than not"* generating risks for human health.

Note; The Hazardous Activities and Industries List (HAIL) is a compilation of activities and industries created by the Ministry for the Environment (MfE) that are likely to cause land contamination.

2.1. 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. 1[1] and No. 5[2], MfE National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health[3] (NESCS), and BRANZ (2017) 'New Zealand Guidelines for Assessing and Managing Asbestos in Soil'[4].

The scope comprises:

- Reviewing the Environment Canterbury (ECan) Listed Land Use Register (LLUR) database.
- Reviewing historical and recent aerial images of the site.
- Obtain and reviewing information on the property file held by the SDC.
- Fieldwork including a site walkover and interview of owners/managers of the site.
- Preparation of a PSI report in accordance with NESCS[3], BRANZ[4], and the CLMG No. 1[1] and No. 5[2].

2.2. Site Identification

Site identification details are provided in Table 1.

Table 1. Site identification

Details	
Street address/Site name	McDonald Rd & Englishs Rd, Lincoln
Appellation	GAZ 01-940 RES 3537 BLK V HALSWELL SD - GRAVEL PIT
Title	1114901
Site Area	2.0234 ha
Current site plan	Refer to 0

[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 (MfE) Contaminated Land Management Guidelines No. 5. Site Investigation and analysis of soils. (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 Assessing and Managing Asbestos in Soil.

Details

Locality map	Refer to Figure 2

Figure 1. Current site plan with the property boundary indicated in red. Proposed dwelling location outlined in yellow.

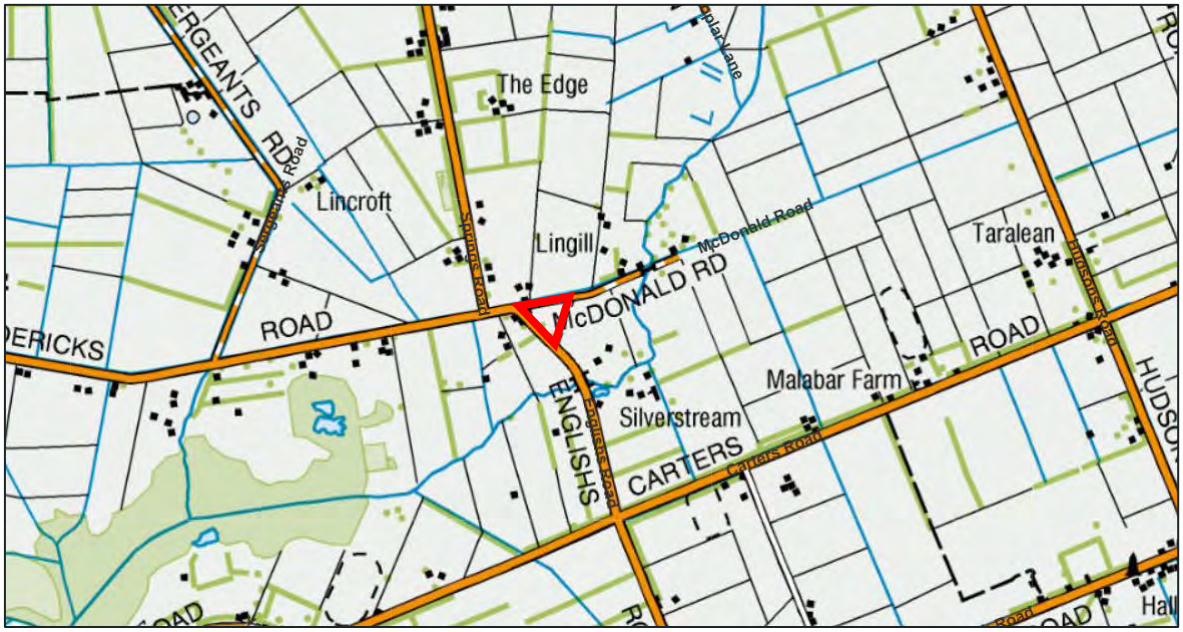


Figure 2. Locality Map – Property boundary outlined in red

2.3. Proposed Site Use

A 216m^2 *'Farm Building'* constructed with a timber pole frame, lightweight steel roofing and cladding, and a concrete floor slab currently resides at the central part of the site.

The proposed activity includes a change in land use from rural grazing land to rural residential lifestyle land. Following the change in land use, we understand the landowner intends construct a new residential dwelling adjacent to the existing shed, refer to Figure 1.

3. Site Description and Information

Site description details are provided in Table 2.

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

Site Name	McDonald Rd & Englishs Rd, Lincoln
Current land use	Rural Grazing Land
Proposed land use	Rural Residential Lifestyle Land
Neighbouring land use	Rural Residential
District plan zoning	Rural Zone – Outer Plains
Geology	GNS[5] has mapped the area as '*Modern river floodplain/low-level degradation terrace. Unweathered, variably sorted gravel/sand/silt/clay. Surfaces <2 degree slope.' (OIS1 (Holocene) river deposites).* The Landcare Research Database has listed the site and surrounding land area as '*deep, poorly drained silt over sand*'.
Surface water	Araiara/LII River is located approximately 150m southeast of the site. A shallow open drain is located along the western boundary of the site which feeds into Araiara/LII River to the south.
Groundwater	Eliot Sinclair's shallow soil investigation for the existing Farm Building undertaken in July 2023 recorded groundwater between 0.5m to 0.8m below surrounding ground level. ECan well logs (M36/20237 & M36/5335) located approximately 160m northwest and 200m southeast recorded ground water around 1.2m at time of drilling.
Topography	The overall topography is gently undulating. The existing Farm Building (shed) is located on a raised terrace. Further to the west of the shed the site dips towards a densely vegetated area along the western boundary.

[5] https://data.gns.cri.nz/geology/

4. Historical Site Use

4.1. Review of Council Information

Selwyn District Council (SDC) Property Files

The following property file documentation were retrieved from SDC:

- Building Consent; Certificate of Acceptance for Farm Shed dated 7 December 2019.
- Building Consent; Outbuilding alteration dated 22 August 2019.
- Building Consent; Construction of a pole shed dated 20 September 2023 with associated geotechnical report prepared by Eliot Sinclair dated August 2023.
- Project Information Memorandum; Outbuilding Alteration.

Eliot Sinclair's geotechnical investigation and reporting in 2023 as part of the building consent package of the farm building, recorded the presence of shallow undocumented fill comprising topsoil and gravelly soils within the upper 600mm soil profile. Groundwater was recorded between 0.5m to 0.8m bgl at time of investigation.

The presence of undocumented fill (HAIL G3) is likely associated with the historic earthwork operations dating back from the early 90's. HAIL G3 is defined by MfE as *'Landfill Sites'*

The PIM recorded the site to be located within an area known to have a high groundwater table and within the *'lower plans flood prone area'*.

HAIL Registry

According to the Land Listed User Register (LLUR) database, the site is not registered as a HAIL site and no investigation related to HAIL activities (historical or current) was carried out on the site.

The nearest property listed as a HAIL site is 1727 Springs Road located approximately 220m northwest of the site. This site is currently registered in the LLUR as HAIL A10 defined as *'Persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses or spray sheds'*.

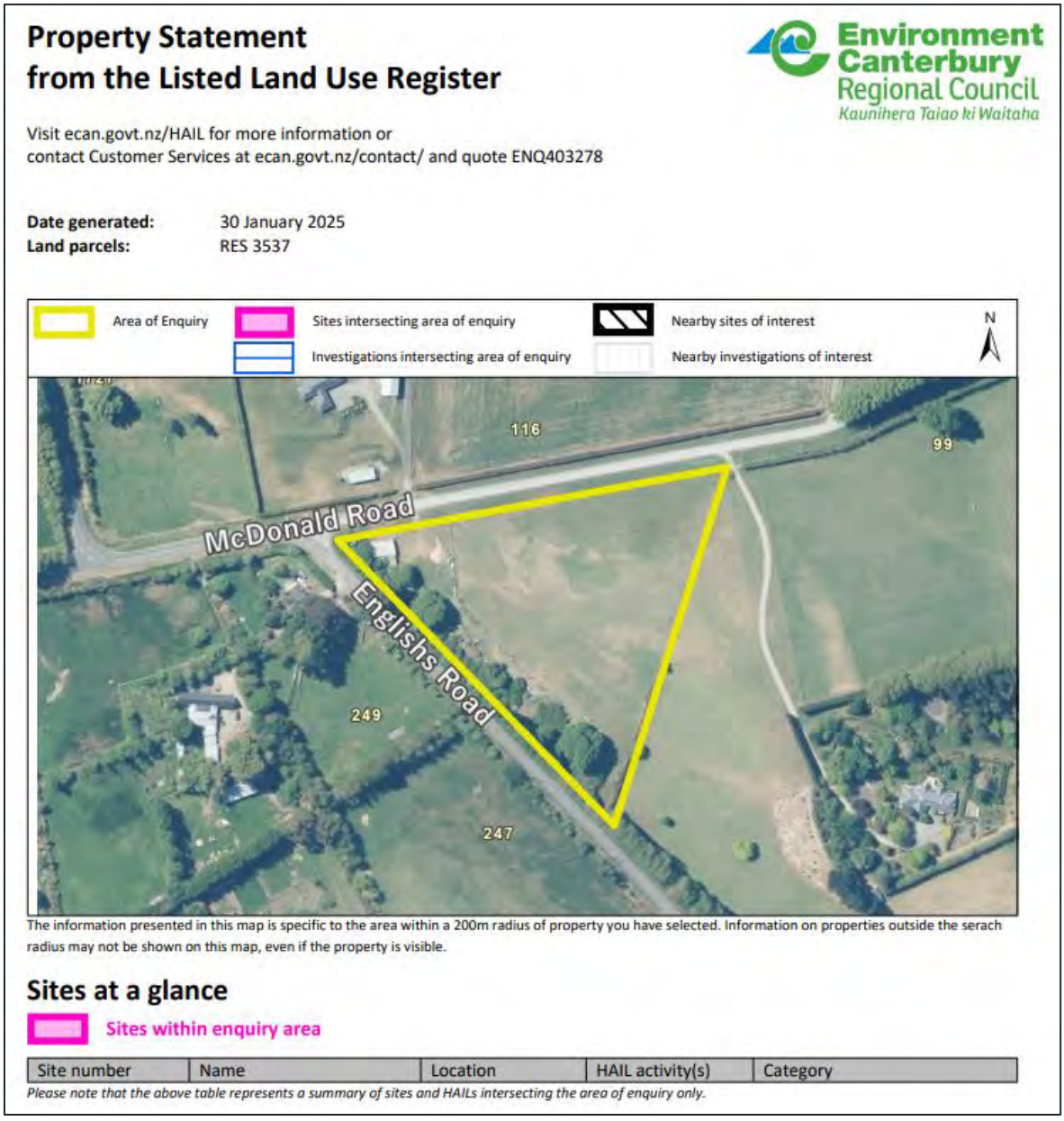


Figure 3. HAIL map with the area of enquiry outlined in yellow. Extract retrieved from ECan LLUR database in January 2025.

4.2. Review of Aerial Photographs

Aerial images from Canterbury Maps (CM) and Google Earth (GE) were reviewed to identify previous land uses and potential HAIL activities between 1940 and 2024. A summary of information retrieved from this review is provided in Table 3 and the reviewed images along with a historical layout plan are presented in Appendix B. Several historical activities potentially contaminating the soil were identified during the review of historical aerial photos.

The review of historical aerial photos indicates that the site was mostly used for rural grazing land activities very likely limited to light grazing. Between 1940 and 1990 no significant changes in the land use can be seen (see Appendix B).

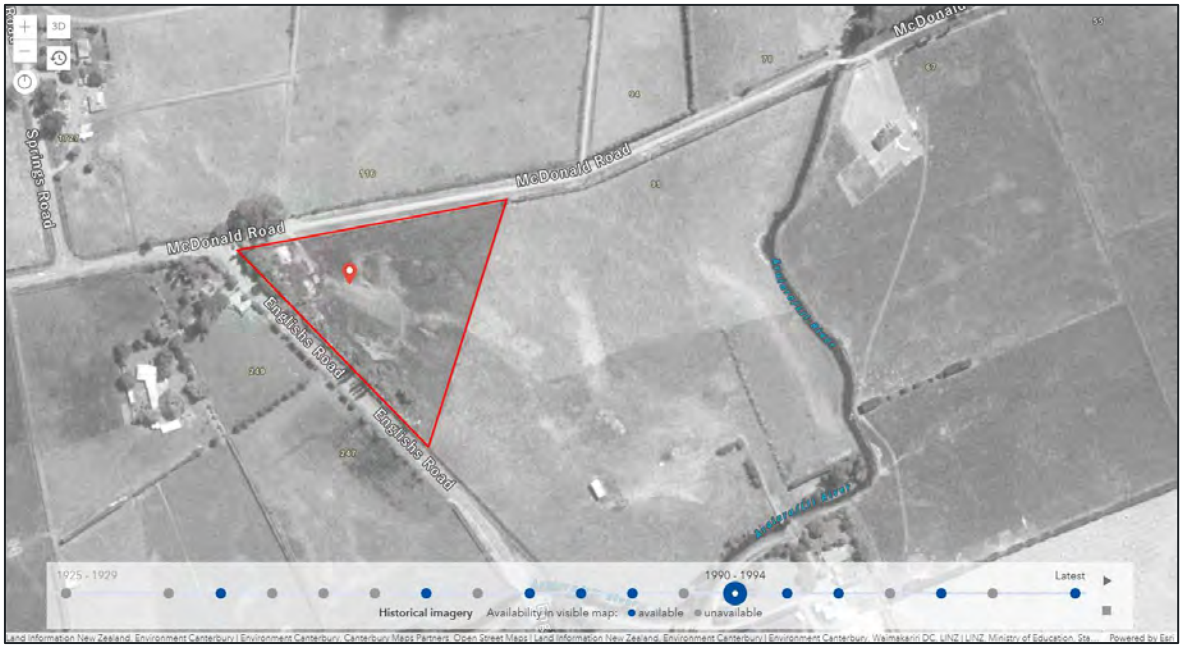


Figure 4. Site outlined in red – Imagery extract dated 1990-1994 from Canterbury Maps.

Figure 4 infers earthworks comprising soil disturbance and stockpiling across the site (HAIL G3) that were undertaken in the early 1990s. There are no records in SDC's property file that documents the inferred earthworks across the site, however aerial imageries following the mid 90's indicate stockpiles has been removed and/or spread across the site then grassed over. The site appears to be largely vacant farmland up to 2024.

Table 3. Summary of information retrieved from historical aerial images (source: Canterbury Maps and Google Earth)

Date of photograph	Land use, site features, and identified HAIL area(s)
1940 – 1944 (CM)	Dense vegetation along the western boundary, some soil disturbance across the central part of the site. Some soil disturbance inferred across neighbouring land to the northeast.
1960 – 1964 (CM)	Some soil disturbance following removal of vegetation across the southern part of the site.
1970 – 1974 (CM)	Largely grassed vacant farmland.
1980 – 1984 (CM)	No significant changes
1990 – 1994 (CM)	Inferred earthworks comprising soil disturbance and stockpiling across the site. (HAIL G3)
1995 – 1999 (CM)	Largely grassed vacant farmland.
2000 – 2004 (CM)	No significant changes
2010 – 2014 (CM)	Farm shed visible at the northwest corner of the site. Grass stripped across most of the remaining land for farming purposes.
Jull 2015 (GE)	Largely grassed vacant farmland. Inferred stockpile of vegetation located close the farm shed.
Jan 2021 (GE)	The site is largely grassed vacant land.

Date of photograph	Land use, site features, and identified HAIL area(s)
Mar 2024 (GE)	Pole Shed visible across central part of the site.

HAIL activities were identified during the historic aerial search (HAIL G3 associated with the historic landfilling activities).

5. Eliot Sinclair's Site Walkover – 5 February 2025

Eliot Sinclair undertook a site walkover on the 5 February 2025 to assess the current conditions of the site. A meeting onsite with the site owner was held to discuss site use and history. Photos were also collected during the site visit which are available in Appendix C.

At time of our site visit, the site was largely vacant and overgrown with long grass and weeds. An existing farm building constructed in 2024 with adjoining sheds and chicken coup is situated at the central part of the site on a raised mound. The farm building is accessed off McDonald Road to the north via a gravel-chip driveway.

Storage containers are founded at the northwest corner of the site. The site is typically undulating with dense vegetation and large trees along the western boundary of the site.

Eliot Sinclair has identified the underlying ground across the site as a *'Location of Interest'* which relates to the inferred historic earthworks comprising soil disturbance and stockpiling operations. Eliot Sinclair's geotechnical investigation in July 2023 recorded the presence of topsoil fill with some gravels over silty sandy gravel fill to around 0.6m bgl. The characterisation of the gravel fill was typically uniform with no rubbish or construction debris (incl. ACM debris), or hydrocarbon odours noted at time of investigation and during foundation excavation.

Figure 5. Foundation excavation inspection for Farm Building dated 2023.

6. Contamination Assessment

6.1. HAIL Activities "More Likely Than Not"

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 G3 Landfill Sites

6.2. Potential Contaminants Associated with Historical Use

Table 4 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 4. 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
G3	Landfill Sites	Heavy Metals, Asbestos in Soil

Note: given that no construction debris or any type of material potentially including asbestos was seen during the earthwork related to the construction of the shed (2023), it is deemed reasonable to assume that the presence of asbestos in soil is highly unlikely. Therefore, asbestos was removed from potential contaminants of concern. However, should future earthwork come across unexpected soil or material potentially containing asbestos, the accidental discovery protocol outlined in Section 8 would have to be applied.

6.3. Preliminary Conceptual Site Model

A Conceptual Site Model (CSM) helps to identify whether complete exposure pathways 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 5.

Table 5. Conceptual site model

Contaminant Source(s)	Contaminant/s of concern	Transport Mechanism	Receptor	Pathway complete Y/N
■ Historical landfilling operations (HAIL G3)	■ Heavy metals,	■ Ingestion of soil and dust. ■ Home grown produce consumption.	a) Site occupiers and the surrounding environment b) Construction workers (or	Likely

Contaminant Source(s)	Contaminant/s of concern	Transport Mechanism	Receptor	Pathway complete Y/N
		■ Dermal contact with soil.	contractors) during development phases c) Future users of the site (post-development)	

The assessment of the proposed activities indicates that the risk to human health and the environment is more likely than not to exist for any future soil disturbances across the site. The contaminants of concern associated with the identified HAIL activity include heavy metals and asbestos in soil.

Pathways between contaminants of concern and potential recipients are likely to be complete essentially by ingestion and inhalation, and through dermal contact to a lesser extent.

6.4. Risk to Potential Receptors

For any future soil disturbance across the site, detailed testing will be required.

6.5. Determining resource consent requirements under the NESCS

An assessment (Table 6) to determine the resource consent requirements for activities involving a change of land use under the NESCS has been completed using Figure 6.

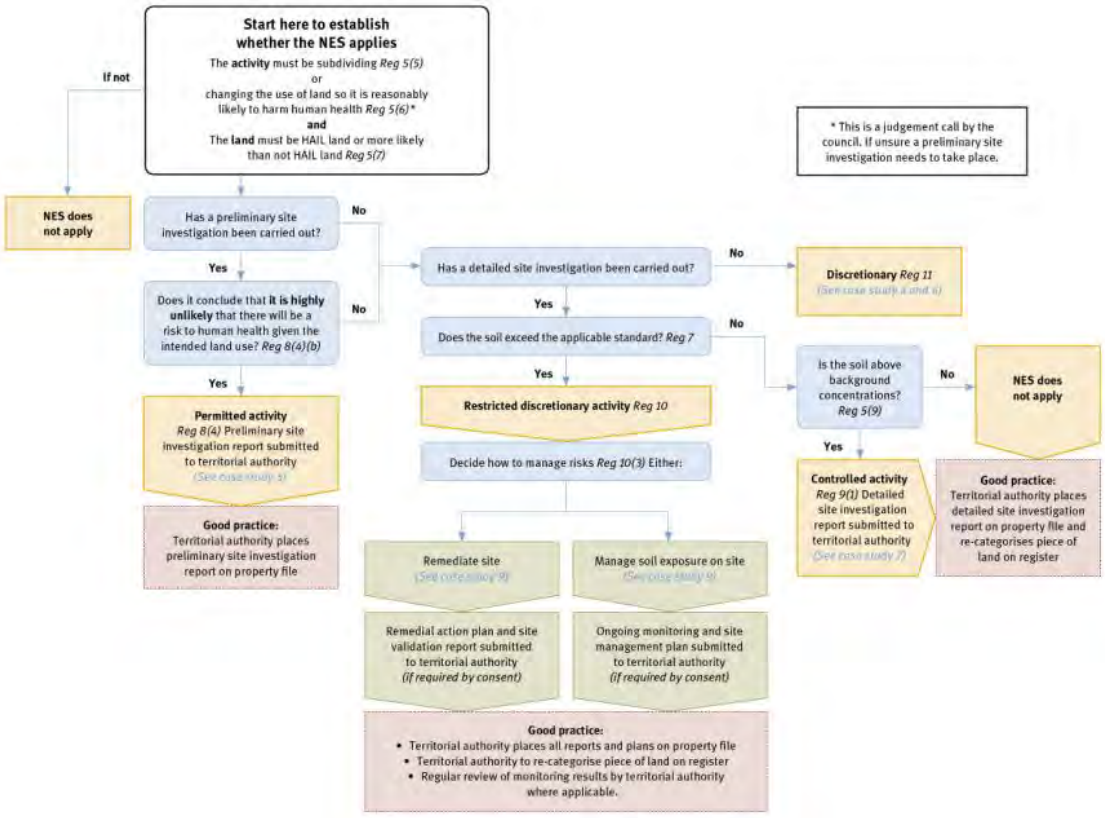


Figure 6. Reporting and consent requirements for activities involving change of land use (NESCS, 2012)

Table 6. Assessment of NES resource consent requirements

Step	Description	Comments
1	Is the activity covered by the NES? Reg 5(2) - 5(6) A	Yes, the proposed activities involve soil disturbance, Reg 5(4) and change in land use, Reg 5(6)
2	Is the land covered by the NES? Reg 5(7) – 5(9); reg 6	Yes
3	A preliminary site investigation (PSI) can establish if: a) It is more likely than not a HAIL site Reg 5(7)c; Reg 6(3) b) It is highly unlikely that there will be a risk to human health if the activity is done Reg 8(4).	It is more likely than not a HAIL site, Reg 5(7)c and Reg 6(3). Risk to human health during soil disturbance cannot be ruled out.

Because it is more likely than not a HAIL site and there is a likely risk to human health if soil disturbance has been undertaken, the proposed activities is therefore considered **Discretionary** under the NESCS.

7. Conclusions and Recommendations

This PSI is based on a review of SDC records, Canterbury Maps & Google Earth historical aerial images, Eliot Sinclair's geotechnical investigation and reporting in 2023 and Eliot Sinclair's site walkover inspection on 5 February 2025.

It is concluded that HAIL activities related to landfilling/backfilling operations have been identified on the site in the early 1990s. There could potentially be a risk to human health should the proposed soil disturbance activity relating to the construction of a residential dwelling be carried out.

We recommended that a Detailed Site Investigation (DSI), in terms of the Ministry for the Environment's Contaminated Land Management Guidelines (CLMG) would be prepared to characterise the underlying soils and to determine contaminant concentrations across the proposed building platform.

8. 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:

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

Then we recommend:

- Excavation and earthworks cease, the site secured to stop people entering the area where potential contamination was encountered, and then:

- 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.

9. SQEP Certifying Statement

I, (Philippe Dumont), of Eliot Sinclair & Partners Limited ("Eliot Sinclair") certify that:

This preliminary site investigation meets the requirements of the Resource Management (National Environmental Standard for assessing and managing contaminants in soil to protect human health) 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 highly likely that there will be a risk to human health if the activity is done to the piece of land.

The activity to be undertaken as defined in R 5(5) and R5(6) is described:

a) in Section 2.3 ..... of this preliminary site investigation; and

b) in Appendix A .....

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 (Appendix D).

10. 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:

- Information shown on LLUR database
- Historical aerial imagery source from Canterbury Maps and Google Earth.
- Information from the SDC property file.
- Eliot Sinclair's site walkover on 5 February 2025.
- NESCS and MfE's CLMG no.1 and no.5.

Where data supplied by Jo-Anne & Paul Campbell 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 Jo-Anne & Paul Campbell and Selwyn District 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.

Appendix A. Proposed Development Plan

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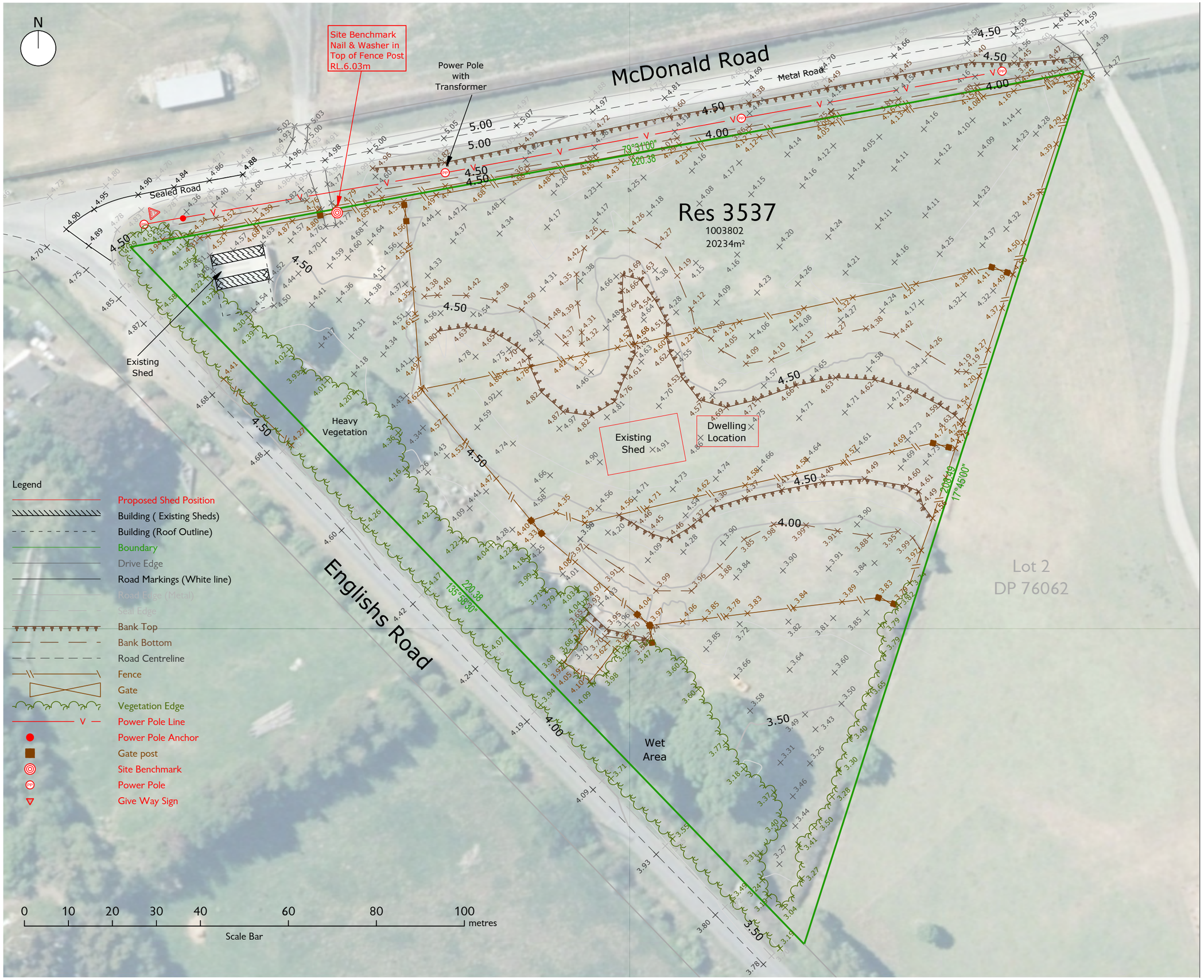


SURVEY INFORMATION

SURVEYED	
SURVEY DATE	**April 2023**
COORD SYSTEM	**NZGD2000**
CIRCUIT	**Mt Pleasant**
DATUM	**Lytt 1937 (2018)**
ORIGIN OF LEVELS	**EJ8F 5.001**

NOTES

REV.	DRAWN	DATE	NOTE
B	RCP	27.01.2025	Updated Building Locations
A	RCP	26.04.2023	For Issue

CLIENT
Jo-Anne & Paul Campbell

DESIGNED	
DRAWN	**R.C.Paulsen**
REVIEWED	**D.J.Hocken**
APPROVED	**D.J.Hocken 26.04.2023**
STATUS	**For Issue**
SCALE	**1:800 [A3]**

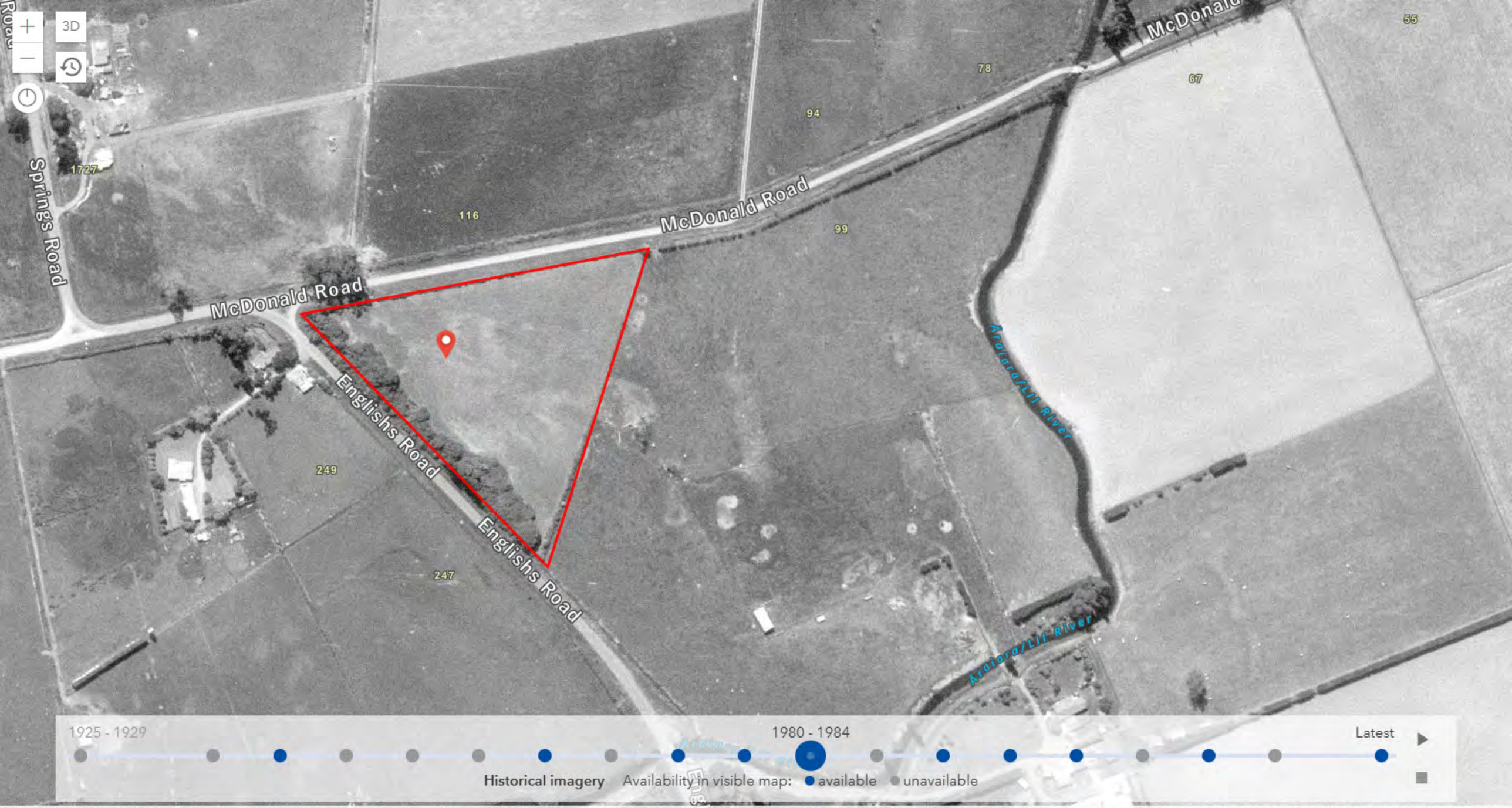
Topographical Survey

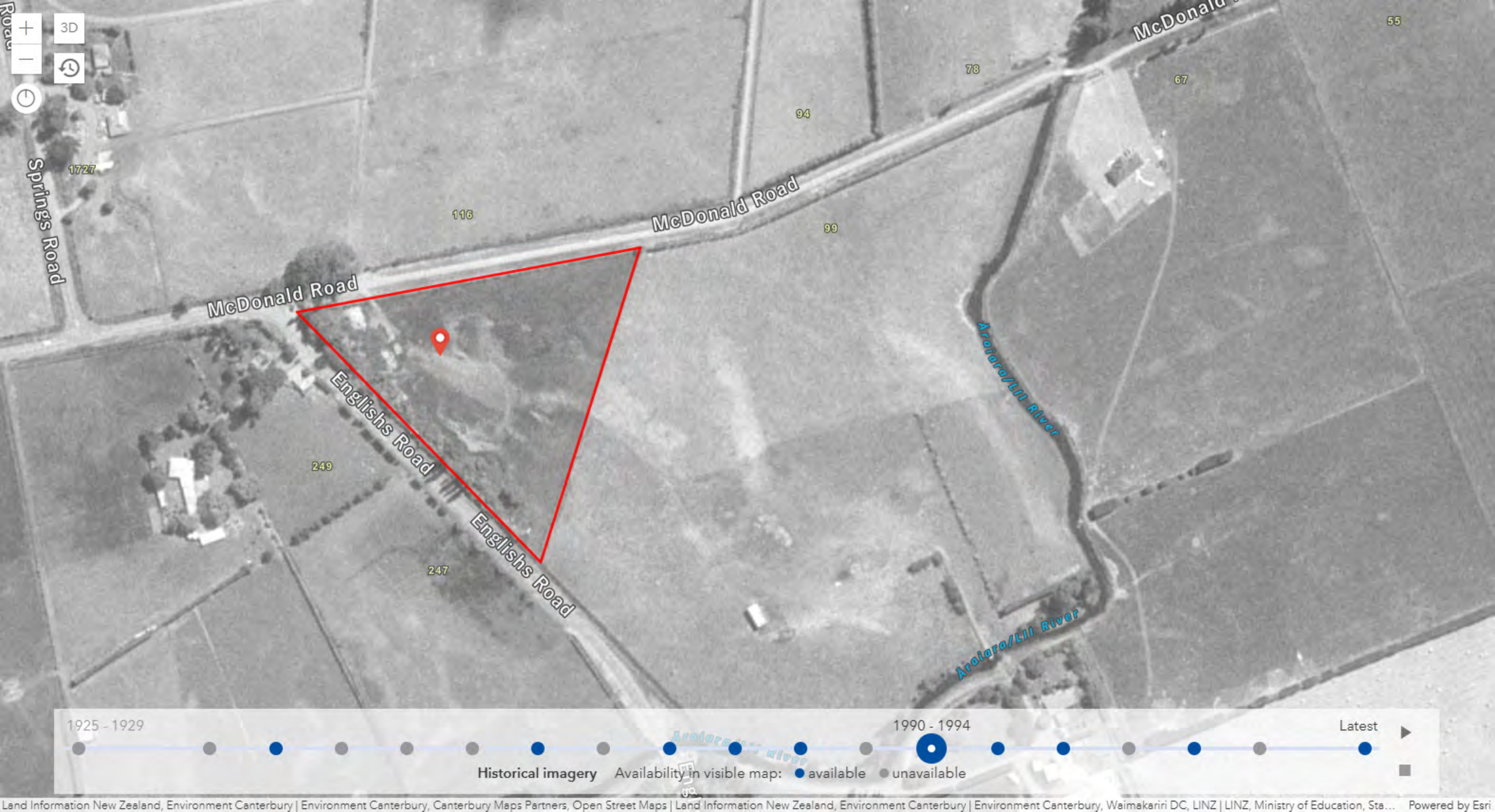
Englishs & McDonald Roads - Lincoln

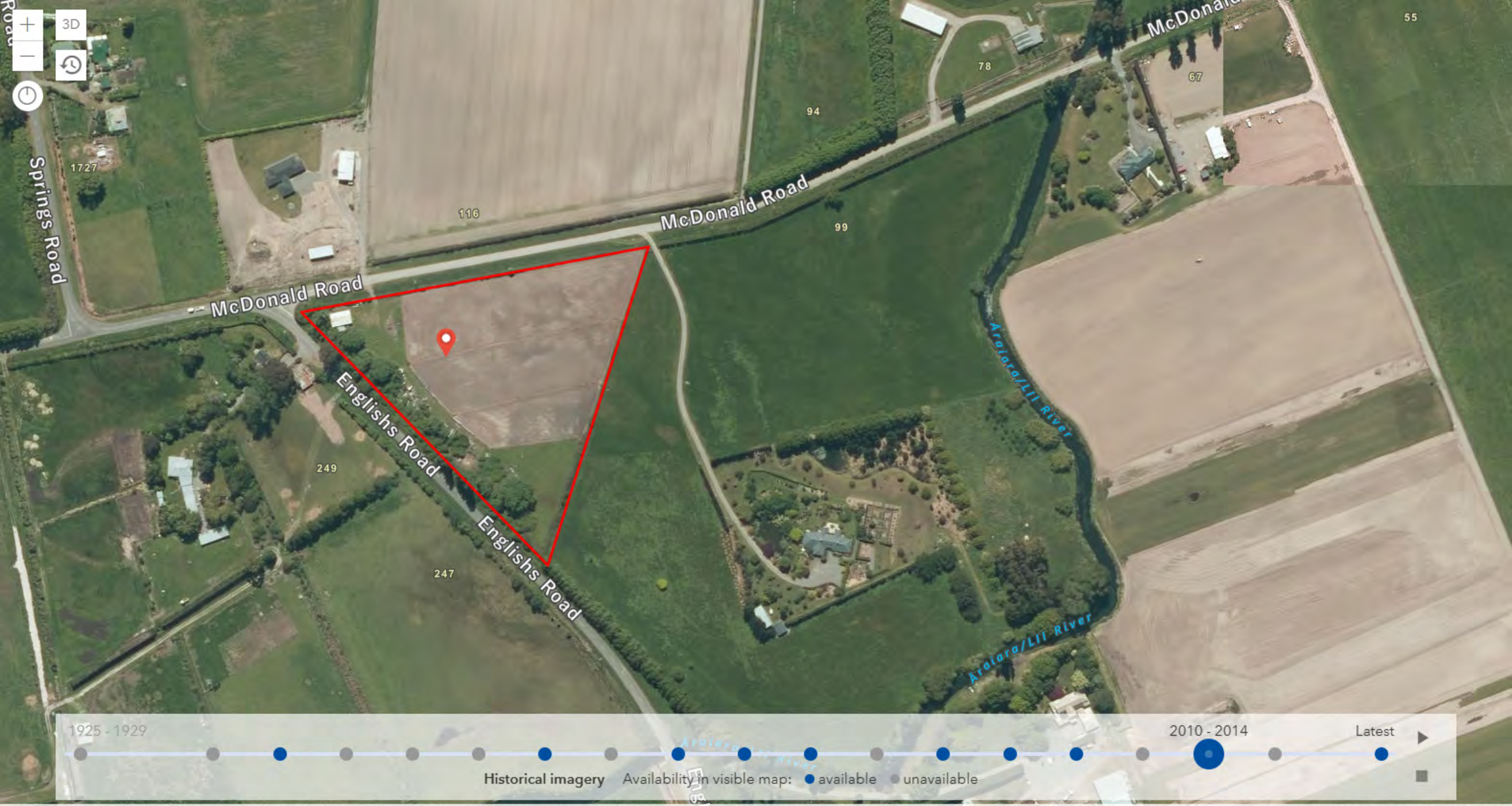
PROJECT	SET	SHEET	REV.
520233	**T1**	**1**	**B**

eliot sinclair

Appendix B. Historical Aerial Imagery







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Appendix C. Site Photographs

Figure 7. Farm Building

Figure 8. Driveway access to farm building

Figure 9. Chicken Coup

Figure 10. Storage Containers

Appendix D. SQEP Certification

The CEnvP Scheme Certification Board hereby attests that

Philippe Dumont

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

Certified Environmental Practitioner

with Registration Number

1246

on the date

07-Aug-2019

President EIANZ

30/06/2026

Certification Expiry Date

CENVP - An Initiative of the Environment Institute of Australia and New Zealand.