

Appendix A Jacobs PSI

Preliminary Site Investigation

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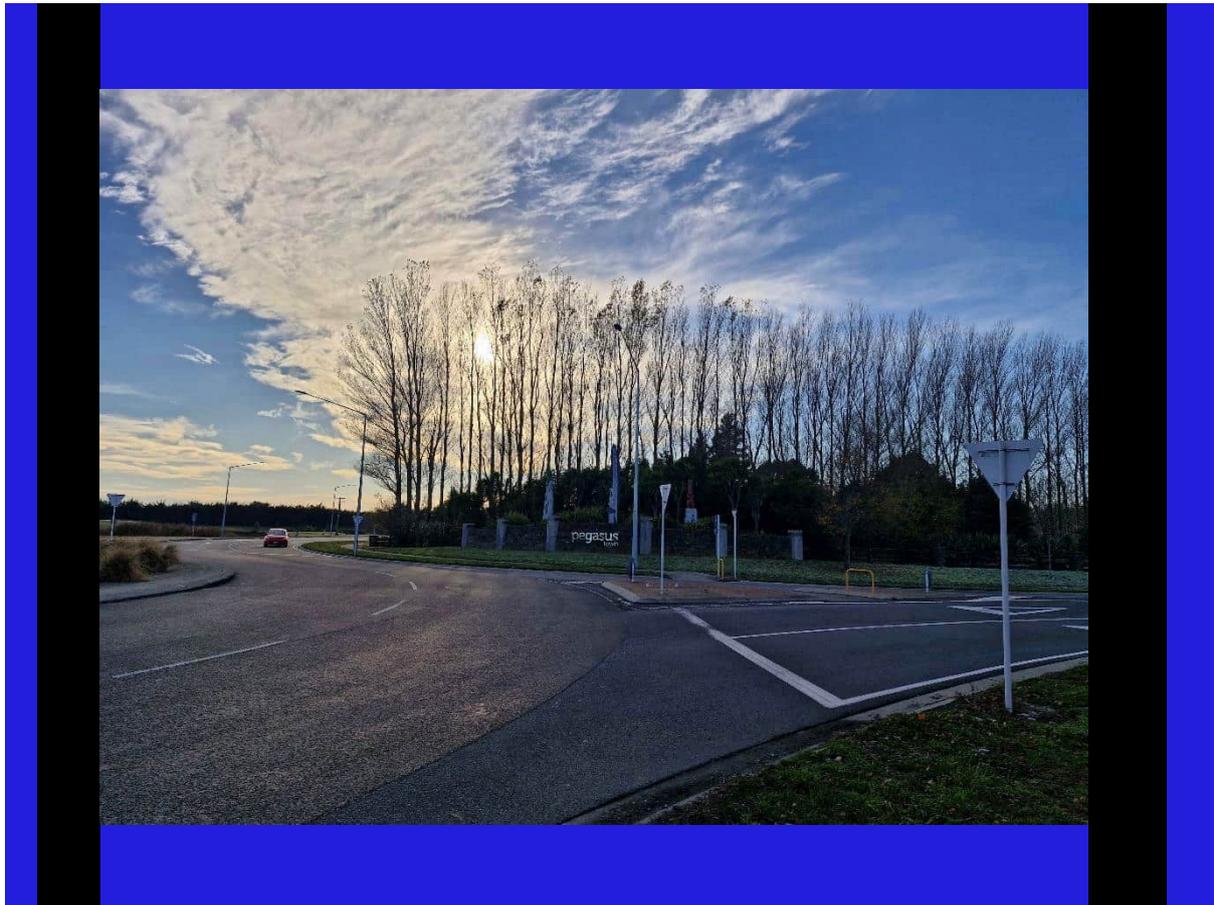
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NZ Transport Agency Waka Kotahi

10423-V03

Belfast to Pegasus Motorway and Woodend Bypass

5 November 2024



Preliminary Site Investigation

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Executive Summary

The New Zealand Transport Agency Waka Kotahi (NZTA) has engaged Jacobs New Zealand Limited (Jacobs) to undertake a Preliminary Site Investigation (PSI) to support the development of State Highway 1 (SH1) Belfast to Pegasus and Woodend Bypass project to deliver a nine-kilometre extension on SH1 north of Christchurch from the SH1/SH71 Lineside Road interchange to just north of the Pegasus roundabout (the project). This project aims to reduce congestion, improve safety and travel times, and reduce community severance in Woodend. This project has been prioritised for delivery as one of the 'Roads of National Significance' (RoNS). For the purposes of this PSI, the project footprint is referred to as 'the study area'.

The scope of this PSI included a desktop review of available historical information and preparation of this report. A site visit could not be conducted due to access constraints.

The desktop review indicates several activities described on the hazardous activities and industries list (HAIL) are likely to be present within the project area. Activities identified include:

- A8 – Livestock dip or spray race operations
- A10 – persistent pesticide bulk storage or use
- E1 – Asbestos products manufacture or disposal
- F4 – Motor vehicle workshops
- F7 - Service stations
- G3 – Landfill sites
- I – Any other land

Due to the presence of potential HAIL sites, the project area will be subject to the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 (the 'NES').

Additional investigation work is recommended in the form of a detailed site investigation (DSI). The DSI investigation should be informed by a sampling and analysis quality plan (SAQP) which should be prepared following a site visit to confirm the findings of this PSI.

Important note about your report

The sole purpose of this report prepared by Jacobs New Zealand Limited (Jacobs) is to document the findings of a Preliminary Site Investigation in relation to the contamination potential for the SH1 Belfast to Pegasus and the Woodend Bypass project. The contents of the report are in accordance with the scope of services detailed in the terms of engagement between Jacobs and the New Zealand Transport Agency Waka Kotahi (the Client).

In assessing available information and preparing this report, Jacobs has relied upon and presumed accurate, all information provided by the Client and any third party. Unless otherwise stated in this report, Jacobs has not attempted to verify the accuracy or completeness of any such information and Jacobs accepts no liability to the client and/or any third party for any loss and/or damage incurred as a result of any inaccurate or incomplete information.

The information in this report is derived from data provided by the client, a number of public domains and Environment Canterbury.

It is imperative to note that the Report only considers the site conditions current at the time of investigation, and to be aware that conditions may have changed due to natural forces and/or operations on or near the site. Any decisions based on the findings of the Report must take into account any subsequent changes in site conditions and/or developments in legislative and regulatory requirements. Jacobs accepts no liability to the Client or any third party for any loss and/or damage incurred as a result of a change in the site conditions and/or regulatory/legislative framework since the date of the Report.

Jacobs has prepared this report in accordance with the usual care and thoroughness of the consulting profession, for the sole purpose described above and by reference to applicable standards, guidelines, procedures and practices at the date of issue of this report. For the reasons outlined above, however, no other warranty or guarantee, whether expressed or implied, is made as to the data, observations and findings expressed in this report, to the extent permitted by law. Opinions and judgements expressed in the report are based on Jacobs' understanding and interpretation of current regulatory standards and should not be construed as legal opinions.

This report does not have sufficient information to be used for any other purpose than the project specific requirements for which the report was carried out as detailed in the agreement. This report should be read in full and no excerpts are to be taken as representative of the findings. No responsibility is accepted by Jacobs for use of any part of this report in any other context.

This report has been prepared on behalf of, and for the exclusive use of, the Client, and is subject to, and issued in accordance with, the provisions of the contract between Jacobs and the Client. Jacobs accepts no liability or responsibility whatsoever for, or in respect of, any use of, or reliance upon, this report by any third party.

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Acronyms and Abbreviations

ACM	Asbestos Containing Material
BTEX	Benzene, Toluene and Xylene
CBD	Central Business District
CLMG	Contaminated Land Management Guidelines
CoPC	Contaminants of Potential Concern
CSM	Conceptual Site Model
DSI	Detailed Site Investigation
ECan	Environment Canterbury
HAIL	Hazardous Activity and Industry List
Jacobs	Jacobs New Zealand Limited
LLUR	Listed Land Use Register
MfE	Ministry for the Environment
NES	National Environmental Standard
NESCS	National Environmental Standard for assessing and managing contaminants in soil to protect human health Regulations 2011
NZGD	New Zealand Geotechnical Database
NZTA	The New Zealand Transport Agency Waka Kotahi
OCPs	Organochlorine Pesticides
PAHs	Polycyclic Aromatic Hydrocarbons
PSI	Preliminary Site Investigation
RoNS	Roads of National Significance
SAQP	Sampling and Analysis Quality Plan
SH1	State Highway 1
SH71	State Highway 71
SPR	Source-Pathway-Receptor
SQEP	Suitably Qualified and Experienced Practitioner
TPHs	Total Petroleum Hydrocarbons
VOCs	Volatile Organic Compounds

1. Introduction

The New Zealand Transport Agency Waka Kotahi (NZTA) has engaged Jacobs New Zealand Limited (Jacobs) to undertake a Preliminary Site Investigation (PSI) to support the development of State Highway (SH1) Belfast to Pegasus and Woodend Bypass which includes a nine-kilometre extension on SH1 north of Christchurch from the SH1/SH71 Lineside Road interchange to just north of the Pegasus roundabout (the project). This project aims to reduce congestion, improve safety and travel times, and reduce community severance in Woodend. This project has been prioritised for delivery as one of the 'Roads of National Significance' (RoNS). For the purposes of this PSI, the project footprint is referred to as 'the study area'. The approximate study area is presented in **Figure 1-1**.



Figure 1-1. Approximate Study Area

To better-articulate desktop review of current and historical references, the study area has been segmented as follows:

- Section 1 – Start of Project Corridor to Cam Road
- Section 2 – Cam Road to SH1 and William Street intersection
- Section 3 – SH1 and William Street intersection to Gladstone Road
- Section 4 – Gladstone Road to Wards Road

The study area boundary is defined by the 'Designation' depicted in concept design general arrangement drawings presented in **Appendix A**.

The purpose of the PSI is to inform the design and planning strategy for the project with regards to the potential risks associated with ground contamination.

1.1 Objectives

This report documents the findings of Jacobs's desktop investigation and presents our interpretation of conditions, with specific recommendations to inform the feasibility design process stage and consenting strategy for the project. The overarching objective of this PSI report is to present the history of the study area and identify potential contamination sources that could impact the project.

Specific objectives of the PSI are to:

- Determine if an activity or industry described in the Ministry for the Environment (MfE) *Hazardous Activities and Industries List guidance: Identifying HAIL land (MfE 2023)* is being undertaken, has been undertaken, or is more likely than not to have been undertaken within or adjacent to the study area;
- Consider the likelihood that any potentially contaminating activities identified within the study area pose a risk to human health, the built environment and/or environmental receptors based on the proposed final land use; and
- Assess the need for further investigation within the study area, with consideration of the proposed final land use and potential environmental impact of the civil works.

1.2 Scope of Work

The scope of this PSI includes:

- A review of study area historical aerial photography;
- A review of Environment Canterbury (ECan) Listed Land Use Register (LLUR) and associated contaminated land investigation reports for properties within the study area;
- A review of publicly available information, previous investigation reports, and published geological maps from available online sources;
- Preparation of this PSI report which includes:
 - Identification of activities or industries described on the Hazardous Activities Industries List (HAIL) which are being undertaken, have been undertaken, or are more likely than not to have been undertaken on or adjacent to the site .
 - Development of a preliminary conceptual site model (CSM) to assess the likelihood of potentially contaminating activities identified within or adjacent to the study area that may pose a risk to human health or the environment during the proposed works.
 - Recommendations to address potential ground contamination risk within the study area.

1.3 Legislative Requirements

The PSI has been undertaken in general accordance with the MfE *Contaminated Land Management Guidelines No. 1 Reporting on Contaminated Sites in New Zealand* and the *Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011* (the 'NES').

This assessment has been reviewed and verified by Suitably Qualified and Experienced Practitioners (SQEP) as required under the NES.

This assessment has been conducted in accordance with Contaminated Land Management Guidelines (CLMG), within the framework of the Resource Management Act 1991 (RMA). Relevant guidelines include:

- MfE, 2011, Contaminated Land Management Guidelines No. 1, Reporting on Contaminated Sites in New Zealand, (Revised 2021) ME No. 1071;
- MfE, 2011, Contaminated Land Management Guidelines No. 5, Site Investigation and Analysis of Soils, (Revised 2021) ME No. 1073; and
- MfE, 2011, Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health, ME No. 1055.

For the purpose of this report, 'the study area' should be considered 'the site', as referred to in the CLMG. The study area boundary is defined by the 'Designation' depicted in concept design general arrangement drawings presented in **Appendix A**.

1.4 Report Certification

Consistent with Regulation 3(3)(c) of the Resource Management (National Environmental Standard for assessing and managing contaminants in soil to protect human health) Regulations 2011 (NESCS) this report is certified by Stanley Howell, CEnvP:SC (SC41088), a SQEP, and has been prepared in general accordance with MfE CLMG No.1: Reporting on Contaminated Sites in New Zealand. ok

2. Study Area Setting

2.1 Study Area Location

The study area is located approximately 16 kilometres (km) north of Christchurch City's Central Business District (CBD), 1.6km northwest of the Kaiapoi Town Centre.

SH1 Belfast to Pegasus and Woodend Bypass is a widening of the existing Motorway from the SH1/SH71 Lineside Road interchange to Pineacres from two lanes to four, and then a four-lane motorway greenfield extension from Pineacres to north of the roundabout on the Pegasus Boulevard and SH1 intersection. The study area comprises a 9km section that stretches from 29 Sneyd Street and 32 Whitefield Street in the south to 1301 SH1 in the north.

Key intersections along the project corridor include those between SH71 and SH1, William Street and SH1, and SH1 and Pegasus Boulevard (in the northern area of the corridor). A proposed four lane motorway branching off SH1 and William Street that bypasses the Woodend Town Centre through existing farmland.

According to Waimakariri District Council GIS (accessed on 09 October 2024), District Plan Zones covering the study area and adjacent properties include:

- Rural Zone (Rural Pegasus, Mapleham Rural)
- Business Zone (Rangiora and Kaiapoi)
- Residential Zones

2.2 Study Area Layout

As discussed in **Section 1.1**, the study area consists of the proposed SH1 Belfast to Pegasus and Woodend Bypass corridor between 29 Sneyd Street and 32 Whitefield Street in the south and 1301 SH1 in the north. The Project is predominantly within the existing road designation. Identification details and legal descriptions of the properties both over which the corridor crosses, and those directly adjacent to the corridor are presented in **Appendix A**. Generally, the alignment does not have its own legal description, as it is within the transport corridor designation. The study area also includes the proposed Woodend Bypass section of the alignment, which crosses through 19 properties. These properties are privately owned.

2.3 Surrounding Land Use

Surrounding land use is primarily farmland, with areas of medium-density residential dwellings and townships as presented in **Table 2-1**.

Table 2-1. Surrounding Land Use

Direction	Land Uses
North	Farmland, both pastoral and horticultural. Rural residential properties are also sparsely populated.
East	Farmland, both pastoral and horticultural along with the township of Pegasus. Further east (approximately 2.45 km at its closest point) is the South Pacific Ocean.
South	Farmland, both pastoral and horticultural. To the south is the Waimakariri River (approximately 3.25 km at its closest point).
West	The small townships of Flaxton and Tauwhi (approximately 2.4 km and 2.6 km at its closest points). The larger township of Rangiora (approximately 5.7 km at its closest point) to the alignment. Farmland, both pastoral and horticultural can also be found along the western areas of the proposed alignment.

2.4 Geology and Hydrogeology

2.4.1 Published Geology

The underlying geology of the study area as indicated on the 1:250,000 Geological Map of Waitaki, Map 19 (Institute of Geological & Nuclear Sciences Limited, 2001) can be classified as OIS1 (Holocene) river deposits, described as modern river floodplain/low-level degradation terrace with grey river alluvium beneath plains or low-level terraces. The expected site geology can be further described as consisting of unweathered, variably sorted gravel, sand, silt and clay. (Forsyth, 2001).

2.4.2 Hydrology

The Kaiapoi River is located within the project corridor and is present 336m south of the SH71 SH1 intersection at its closest point. The project corridor is bridged in part, to cross this river.

The project corridor crosses the Cam River/ Ruataniwha approximately 2.5 km north of the SH71 intersection.

Lake Hutchinson and the Kaiapoi Lakes Reserve is located approximately 650 m east of the project corridor. The North End Sand and Shingle Supplies effluent ponds are located 262 m northeast of the SH1 and William Street intersection.

2.4.3 Hydrogeology

The site is generally low lying and coastal, so it is considered likely shallow groundwater will be present along the project corridor.

A review of the available boreholes with recorded groundwater levels on the NZGD was undertaken by Jacobs. The groundwater borehole search identified six historical boreholes within the proposed project corridors footprint. These boreholes were constructed for multiple purposes including irrigation, geological research, groundwater quality testing, ground investigation and aquifer testing. Static water levels were recorded between 1.4 to 5.7 m bgl.

Shallow groundwater is anticipated to be present within the shallow granular marine deposits or granular fill.

Piezometric contours obtained from ECan Maps indicate that the direction of groundwater flow is generally to the east towards Pegasus Bay.

2.4.4 Fill

Fill is anticipated across the project corridor, primarily in areas associated with levelling associated with the construction of the current SH1. Fill placed as part of this construction is likely to be graded, engineered and unlikely to be associated with waste disposal. Undocumented fill associated with local earthworks and demolition may also be present in these areas.

3. Review of Available Information

In addition to the project corridor, a historical record review has been completed for the surrounding area, and generally includes properties that are located directly adjacent to the corridor. The Site Layout Plan showing the Canterbury Maps Viewer search area and property files requested is included in **Appendix A**.

Based on information provided from the project team, the proposed construction works for the road will involve excavation of ground up to an estimated maximum depth of 0.5 m bgl for the majority of the road development. Some deeper excavation will most likely be required around existing bridges for ground improvements/abutments up to a maximum of 2.0 m bgl. Woodend Bypass areas are generally proposed to be above existing ground surface and therefore no significant excavation of ground required.

3.1 Review of Historical Aerial Photography

Historical aerial photographs are presented in **Appendix B**, and a review of these photographs as they relate to the respective project sections is presented in **Appendix C**.

Generally, the study area comprised agricultural land use and has been progressively built up from at least the 1940s. The northern and southern extents of the study area are primarily medium- to low-density residential land use. The central portion of the study area consists of pastoral and horticultural agricultural use.

3.2 Listed Land Use Register

The LLUR is a publicly available database of sites where hazardous activities and industries have been located throughout Canterbury. ECan has identified these sites and maintained the database for some years. According to this database there are records relating to HAIL for properties adjacent to the site.

The following HAIL activities were identified within or directly adjacent to the project corridor:

- A2 – Chemical manufacture or bulk storage
- A8 – Livestock dip or spray race operations
- A10 – Persistent pesticide bulk storage or use
- A17 – Storage tanks or drums for fuel
- E1 – Asbestos products manufacture or disposal
- F4 – Motor vehicle workshops
- F7 – Service stations
- G1 - Cemeteries
- G3 – Landfill sites
- G5 – Waste disposal to land
- I – Any other land

The LLUR statements, tabulated summary, and location of identified HAIL activities are presented in **Appendix D**.

3.3 Review of Previous Investigations

Previous investigation reports relating to sites within and/or adjacent the study area have also been provided by ECan in addition to a report provided by the client.

Reports and investigations provided by the client and within property files (supplied by ECan) with pertinent information are summarised in **Appendix E**.

3.4 Summary of Identified HAIL Activities

Based on the review of existing background information as described above, the following section discusses HAIL activities/sources that are 'more likely than not' to have occurred within or adjacent to the study area. Additional detail regarding specific HAIL activities/sources within or adjacent to the study area is summarised in **Appendix F**.

3.4.1 State Highway 1

A potentially contaminating activity not listed by the NESCS is the filling and levelling that occurs during the construction of motorway corridors (SH1), motorway connections, stormwater assets constructed to control the local hydrogeology, as well as other assets. Fill of an unknown nature and quality was potentially used to build up the infrastructure associated with SH1. Additionally, the nature of roadway construction includes even distribution of bitumen across most sealed surfaces and possible use of coal tar (CCC, 2018). Vehicle crashes have been documented within the project corridor which may have resulted in loss of vehicle fuel to ground. Therefore, it should be noted that although a specific HAIL activity for this land use is not noted in the NESCS, the potential exists for unexpected discovery of soil contaminants in built-up areas within the road reserve.

The alignment that is currently SH1 first underwent construction in 1965-1969, along with the realignment of the Kaiapoi River. By 1970-1974, SH1 was developed within its current approximate footprint.

3.4.2 Section 1

From 1940 – 1944, Section 1 of the project area was predominantly agricultural land with low-density residential neighbourhoods. Associated with this, identified from aerial imagery includes horticultural lots and possible market gardening activities as seen adjacent to the west of the northern portion of the alignment from pre-1940 to pre-1970. Possible market gardens can also be seen to the east of the northern portion of the alignment in the 1940-1944 aerial image.

During the construction of SH1 and Lineside Road in the 1970-1974 aerial imagery, the Kaiapoi River has been visibly realigned to accommodate the development. Following this, a significant area has been filled with material from a potentially unknown source/material. A portion of this material to the east of the alignment has been sampled (INV76003) with results indicating elevated concentration of heavy metals, below guideline values for a commercial/industrial land use.

Identified on the LLUR at 21 Hakarau Road is a petrol station (McKeown Card Fuel Shop) that recently began operating sometime after 2019 with the site categorised as HAIL A17 – fuel tanks or drums for fuel, chemicals or liquid waste. Other potentially contaminating activities identified at the site include *HAIL G5 – waste disposal to land*, which can be seen in the aerial photography with evidence of excavation present across the site. Adjacent to 21 Hakarau Road is the Waimak Junction site (331055) which also has evidence of soil disturbance including the presence of stockpiles. Information on the LLUR indicates the activity *HAIL G5 – waste disposal to land* has occurred at the site since 2007.

3.4.3 Section 2

Section 2 of the alignment has been predominantly rural farmland since pre-1940. An investigation was conducted at 155 Lower Camside Road that identified no potentially contaminating activities with the site utilised for agricultural purposes. Following a review by the auditor, a potential sheep dip was identified in the 1965 to 1973 aerial photographs, likely in the eastern portion of the site.

At the far north end of the alignment (732 Main North Road), a motor vehicle workshop is present (Burrowes Motors Ltd) which has been operating since 1954 until present based on the LLUR. The site was also utilised as a service station from an unknown time up until 2002. Investigations summarised on the LLUR detail the removal of 4 underground storage tanks at the site in 2001 including the results of subsequent sampling. Results included TPH concentrations that exceeded the MfE Tier 1 soil acceptance criteria for a commercial/industrial land use, elevated BTEX compound concentrations, benzene and xylene concentrations exceeding the MfE criteria for groundwater quality, and xylene and toluene concentrations also exceeding the criteria for the protection of maintenance/excavation workers. A site management plan was produced in 2002 which addresses the need for the future use of the site to remain commercial/industrial. No assessment has been made of the workshop operating on site.

3.4.4 Section 3

An aggregate and cement production facility is visible adjacent to the northwest of the alignment at 820 Main North Road. Several large ponds are visible, along with stockpiles and machinery associated with North End Sand and Shingle Supplies. Identified on the LLUR is the HAIL activity F4 – Motor vehicle workshops and A17 – Storage tanks or drums for fuel, chemicals or liquid relating to the presence of a 20000L UST that was removed in 2011. A soil validation investigation (INV6735) was undertaken with results indicating one sample exceeding the Tier 1 Soil Acceptance Criteria (All Pathways) for polycyclic aromatic hydrocarbons (PAH). Detected concentrations of PAHs comply with the route specific Tier 1 Soil Acceptance Criteria, with the report concluding that no unacceptable risks to human health or the environment associated with the petroleum hydrocarbons stored in the former UPSS were identified. Other potential sources of contamination at the site not investigated include the repair and servicing of motor vehicles, storage and transfer of waste oil, and a 4000L AST of diesel.

With the predominance of agricultural activities in this section of the alignment, HAIL activity A10 – Persistent pesticide bulk storage or use has been identified at several properties in the vicinity of the alignment. Intersecting the alignment is a large blackcurrant operation (DJ Eder Blackcurrants) adjacent to Fullers Road, extending to the west of the alignment. Since pre-1979 the site has been subjected to the application of pesticides with a switch to fish oil-based pesticide in 1994. Another site (169689) has been identified as having been subjected to the use of pesticides to the east of the alignment, attributed to horticultural activities. At 17 Jelfs Road in the period between 1973 and 1984, HAIL activity A10 – Persistent pesticide bulk storage or use was noted in aerial photographs on the LLUR, however no other information is provided.

Further potential contaminating activities identified relating to agricultural activity is the HAIL activity A8 – Livestock dip or spray race operations. Located at the legal description Lot 1 DP 423296, a livestock dip or spray race operation was identified on the LLUR between 1955 and 1973. Furthermore, another livestock dip or spray race operation was identified on the LLUR (site 169535) at legal description RS 1203 between 1941 and 1984.

At 196 Woodend Beach Road, the LLUR statement identified the activities at the site as HAIL G5 – Waste disposal to land from 2000 to present and G3 – Landfill sites from 2010 to 2020. From historical aerial imagery, it can be seen in the 2010-2014 image that the northwestern portion of the site contains a variety of building materials, stockpiles, soil disturbance and machinery. No other information is provided regarding the site.

3.4.5 Section 4

Throughout Section 4 of the alignment, a number of properties have been categorised as HAIL A10 – Persistent pesticide bulk storage or use. Site 89048 on the LLUR located at 116-126 Main North Road has been subjected to orcharding and market gardening activities post-1973 to 2015. An investigation (INV20006) in 2005 reported the non-detection of pesticides and all metal results below background concentrations. Further investigations in 2014 (INV60094) prior to the site being subdivided for residential purposes identified a sheep dip at the site and apple orchard. Sampling in the orchard and market gardening

footprints in the southern portion of the site did not detect pesticides, and metals were detected within recorded background concentrations. As part of the same investigation, at 82 Parsonage Road (Lot 2 DP 82046), which contains the sheep foot dip, elevated levels of contaminants were detected including a duplicate sample for arsenic detected above the soil contaminant standard for residential land use. Zinc was also detected at a level that could have an adverse effect on surface water quality. Further sampling to delineate contamination has been recommended. Located in the vicinity is site 261443 at 48 Thirlwall Street which includes HAIL A10 activities as mentioned above, along with HAIL G5 - waste disposal to land recorded in 2020. As described in investigation 267140, the site has been subjected to the burning of various brick, timber, and concrete within 8 separate stockpiles. Sampling indicates concentrations of arsenic exceeded the commercial/industrial outdoor worker land use and recreational land use. Further delineation sampling was recommended along with remediation.

Another livestock dip or spray race operation has been identified in this section, with information on the LLUR indicating its presence on the property located at Lot 2 DP 393876 from 1973 until present.

Adjacent to the west of the above site (89048), at 128 Main North Road, as stated on the LLUR, an orchard was visible on aerial photographs from 1973 to 1984. No other information is available for the site. Further activities involving the use of pesticides are located at Lot 4 DP 407339 to the north of the alignment. Little information is provided and has had HAIL A10 activities occurring on site from an unknown time until present, likely attributed to the golf course. Site 169865 and 169867 are also listed on the LLUR as HAIL A10, likely attributed to the golf course which was established sometime pre-2010.

Further records relating to HAIL activity A10 were identified on the LLUR at 128 Gladstone Road (site 169881 and 169883) and 202 Gladstone Road from an unknown time to present, and 112 Gladstone Road (site 169885) from 1965 to 1973. From aerial photographs, the HAIL activities are likely attributed to horticultural activities.

HAIL activity G1 – Cemeteries (St Barnabas Anglican Cemetery) has been identified at 147 Main North Road and was established in 1840.

Located at 1221 Main North Road, a site with a history of various HAIL activities was identified in the investigation by ENGEO in 2014 (INV71139), including a livestock dip, storage tanks, and waste disposal to land at site 133337 and 207310. An intrusive investigation was undertaken in 2015 (INV131413) which recorded concentrations of arsenic, cadmium and lead exceeding the Tier 1 soil acceptance criteria for residential and commercial land use in the vicinity of the animal races and swim dip. Additionally, arsenic and lead concentrations exceeded Tier 1 soil acceptance criteria for residential land use in the vicinity of a waste pit on site. Following the remediation of the site in 2017, validation sampling in the impacted areas returned contaminant concentrations below the human health guideline criteria for a commercial/industrial land use.

3.5 Site Visit

Attending a site to observe current activities and document physical evidence of historical contaminating activities is an important step in the site investigation process. Due to access constraints, a site visit to the study area could not be conducted to support the conclusions of the desktop assessment. Therefore, prior to developing additional investigation scope, a site visit should be conducted to confirm the findings of this PSI and inform future investigation works, if necessary.

4. Conceptual Site Model

A robust CSM which identifies potential source-pathway-receptor (SPR) linkages can be used to qualitatively assess risk to human health and the environment. This PSI identifies the presence or absence of potential linkages; however, due to the limited information available it cannot make a robust assessment of the magnitude of that risk. This section presents the development of a preliminary site model which may be used to inform additional location-specific investigation, where required.

The CSM considers potential sources, pathways and receptors, and can be used to understand where linkages may exist. For this assessment and the development of the CSM:

- 'sources' (historic and current) refer to identified HAIL sites located within and directly adjacent to the Project area. Identified contaminants of potential concern (COPC) have potential to migrate from these source sites to receptors;
- 'receptors' refer to humans and environmental systems whose health may be adversely affected by exposure to COPC associated with identified sources; and
- 'pathways' refer to the exposure route linking sources to receptors.

4.1 Contamination Sources

Appendix F presents a high-level assessment of the likelihood HAIL activities identified in **Section 3** may impact proposed roadway construction activities. Where identified HAIL activities either overlap with the study area or are a potential source of contamination that might migrate on to the study area, there is potential or a complete source-pathway-receptor linkage to be present and therefore a potential risk to human health and/or the environment.

As mentioned in **Section 3.4.1** the potential exists for the unexpected discovery of soil contaminants in built-up areas within the road reserve and the nature of roadway construction includes even distribution of bitumen (petroleum hydrocarbons) across most sealed surfaces and possible use of coal tar.

A summary of HAIL activities and locations identified in the HAIL activity risk assessment are presented in Table 4-1 and includes a summary of COPC associated with each of these HAIL activities.

Table 4-1. Summary of COPC

Section	Address	HAIL Activity	COPC
3	162 Gladstone Road	G3 – Landfill sites	Heavy metals, polycyclic aromatic hydrocarbons (PAH), asbestos, dependent on waste
1	89 Sneyd Street, Kaiapoi	E1 – Asbestos products manufacture or disposal	Heavy metals (lead), asbestos
3	16 Fullers Road		
4	160 Gladstone Road		
4	144-146 SH1	I – Any other land	
4	1271-1279 SH1		

Section	Address	HAIL Activity	COPC
2	732 Main North Road	F4 – Motor vehicle workshops; F7 – Service stations	Heavy metals, hydrocarbons including benzene, toluene, ethylbenzene and xylenes (BTEX), PAHs
3	Lot 1 DP 423296	A8 – Livestock dip or spray race operations A10 – Persistent pesticide bulk storage or use	Organochlorine pesticides (OCP)/ Organophosphate pesticides (OPP), heavy metals
3	RS1203, Woodend Beach (16 Fullers Road)		
4	160 Gladstone Road		
4	1211 Main North Road		

4.2 Receptors

Receptors can include persons, structures and utilities and water supply wells that are or may be adversely affected by the contaminants of concern. As the final development is yet to be confirmed, future site users are considered as a possible receptor. The potential receptors identified for the purpose of this assessment include:

- Construction and excavation workers;
- Future site users;
- Adjacent site users and nearby residents;
- Stormwater system, with ultimate discharge to surface water; and
- Downstream ecological communities.

4.3 Potential Transport Mechanisms and Exposure Pathways

Potential transport mechanisms connecting contaminants sources and receptors include:

- Migration of CoPC through soils;
- Dust generation and dispersion under windy conditions
- Entrainment of sediments in surface water;
- Dissolution in groundwater; and
- Migration of vapour through vadose zone soils (hydrocarbon vapour, only).

Shallow groundwater abstraction for anthropogenic use has not been considered in this assessment; however, dewatering of groundwater may be required during excavations, which will require an update to the current CSM.

There is a possibility that study area construction works may encounter evidence of contamination that could not be identified through the scope of this PSI. Should unanticipated contamination be encountered, a SQEP should be engaged to assess the requirement for further investigation and/or risk management.

Preliminary Site Investigation

This assessment is limited to identified receptors within or directly adjacent to the project corridor. A summary of the potential linkages (exposure pathways) connecting sources, transport mechanisms and receptors are presented in the high-level CSM flowcharts in **Figure 4-1**, **Figure 4-2** and **Figure 4-3**.

Preliminary Site Investigation

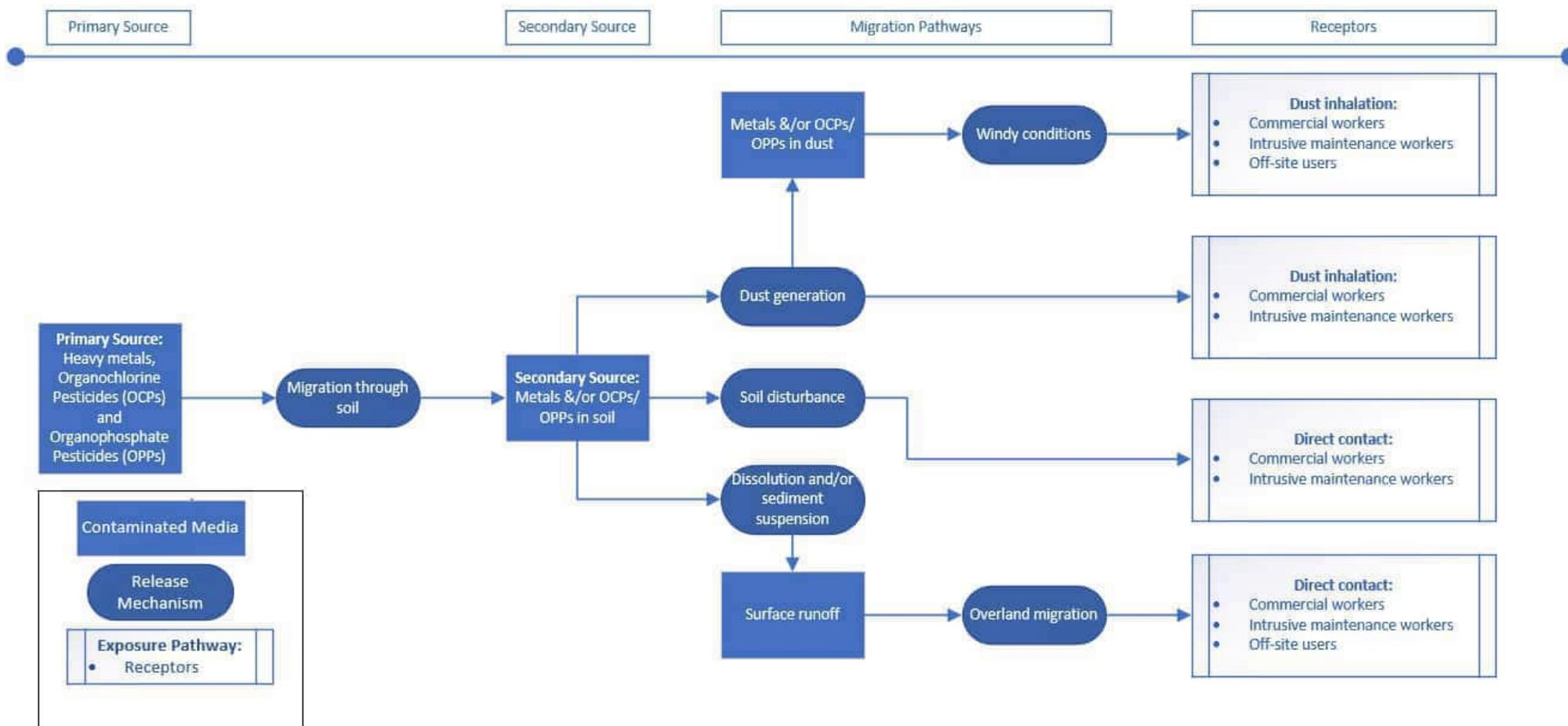


Figure 4-1 CSM for Heavy Metals, Organochlorine Pesticides and Organophosphate Pesticides

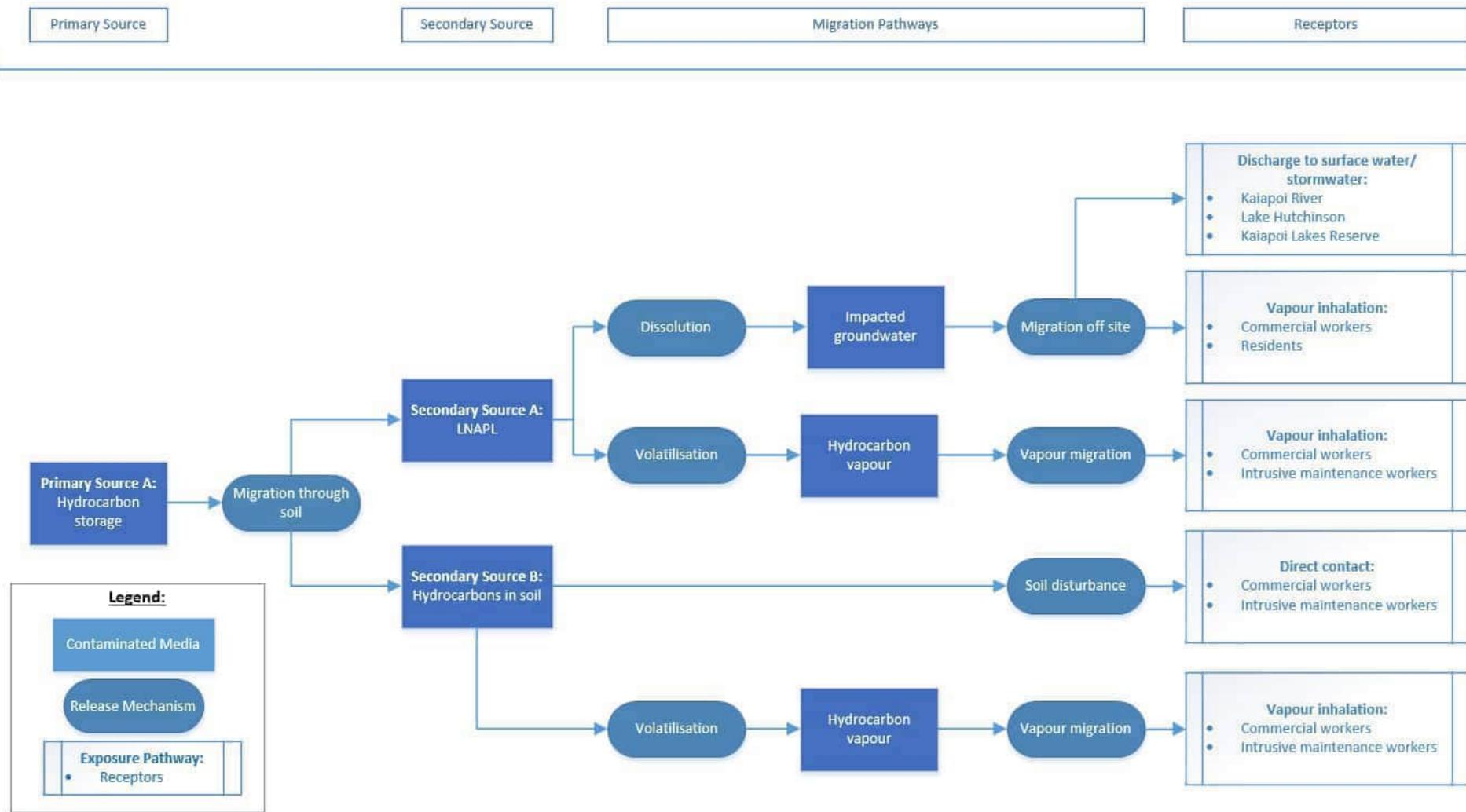


Figure 4-2 CSM for Hydrocarbon Storage

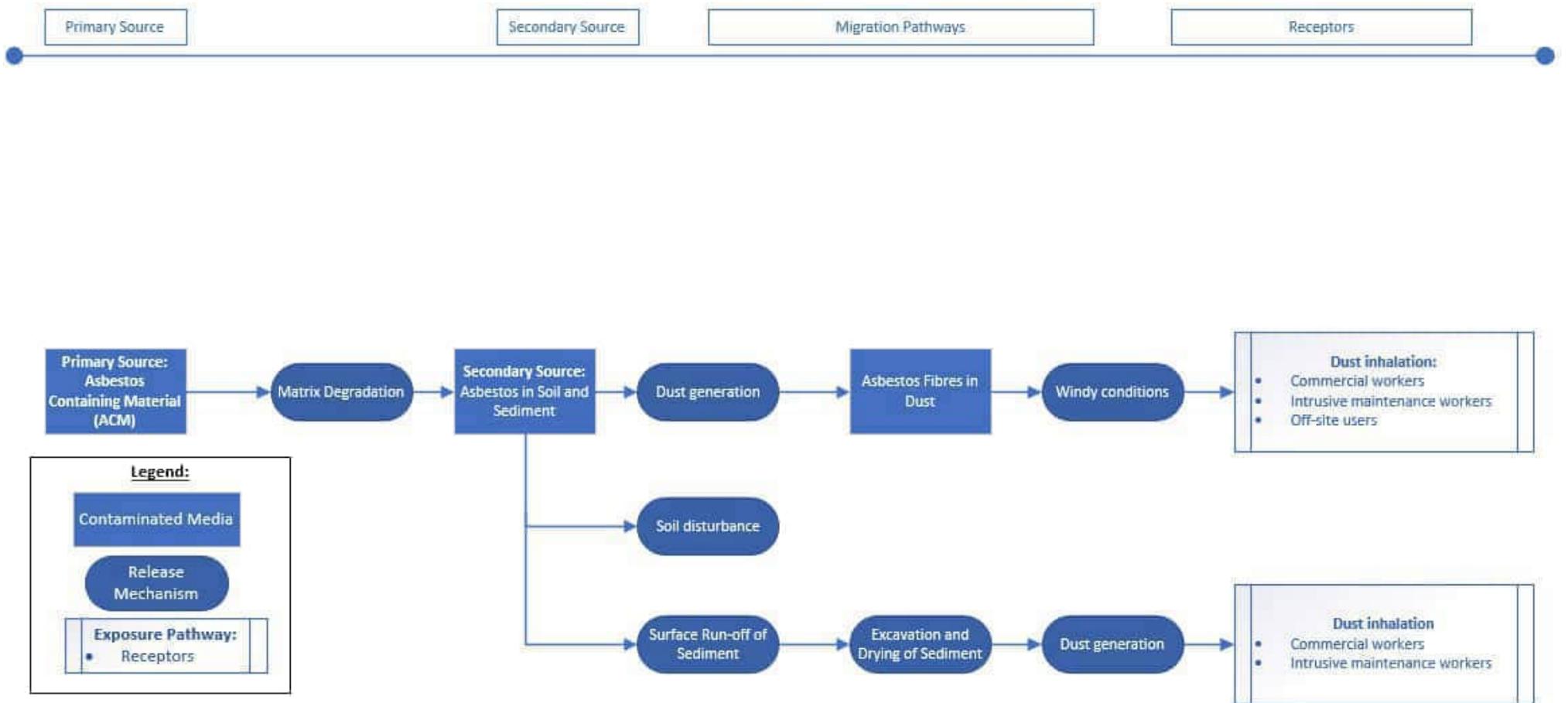


Figure 4-3 CSM for Asbestos

5. Regulatory Assessment

5.1 Health and Safety Work Act 2015

Risks to construction and maintenance workers are legislated by the Health and Safety at Work Act (2015), and there is the potential for risks to construction and maintenance workers to be present during the proposed development works. Due to the potential for asbestos to be present within fill material the requirements of the Health and Safety at Work (Asbestos) Regulations (2016) may also apply to the development earthworks.

A Contaminated Site Management Plan (CSMP) is likely to be required to support the earthworks. This will document minimum procedures and standards to be followed during earthworks and construction to manage and/or remove the risks posed by soil contamination, including asbestos. Through implementation of the CSMP, the risk posed to human health (construction and maintenance workers, and off-site users) and potential environmental/ecological receptors can be substantially reduced to an acceptable standard.

5.2 NES Soil

The NES is applicable to any HAIL sites with proposed development works that includes soil disturbance or sampling, removal of fuel storage systems, subdivision or change in land use. Although the project area is not currently recorded by ECan as a HAIL site, the findings of this PSI indicate that several HAIL activities are likely to be present within the project area. Therefore, the NES will be applicable.

Based on the proposed soil disturbance and disposal volumes, risk assessment and the anticipated duration of the works, the requirement for land disturbance to be a permitted activity under Regulation 8(3) of the NES will likely not be met.

5.3 Canterbury Land and Water Regional Plan

Sections 5.186 – 5.188 of the Canterbury Land and Water Regional Plan (CLWRP), provide region wide rules and the consenting requirements relating to contaminated land including site investigations and the discharge of contaminants from contaminated land.

As per Section 5.185 if further investigations are to take place to assess concentrations for hazardous substances that may be present in the soil the activity would be a permitted activity provided that the following conditions are met:

- The site investigation is undertaken in accordance with Contaminated Land Management Guidelines No. 5: Site Investigation and Analysis of Soils (Ministry for the Environment, 2011) and reported on in accordance with the Contaminated Land Management Guidelines No. 1: Reporting on Contaminated Sites in New Zealand, (Ministry for the Environment, 2011); and
- The person or organisation initiating the site investigation provides a copy of the report of the site investigation to the CRC within two months of the completion of the investigation.

6. Recommendations

Potentially unacceptable ground contamination risk to human health and the environment has been identified within the study area. The following is recommended:

- Preparation of a sampling and analysis quality plan (SAQP) documenting planned ground investigation works that will support preparation of a detailed site investigation (DSI). The SAQP should include a site visit to confirm the findings of this PSI, and update the HAIL activity risk assessment presented in **Appendix F**.
- Preparation of a DSI that focuses on HAIL activities where the risk to project is 'unknown' in **Appendix F**. The DSI report should be prepared consistent with the requirements of MfE 202 1a and MfE 202 1b.

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Appendix A. Concept Design General Arrangement Drawings



NOTES

- ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.

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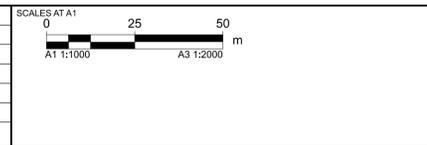
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			IA328200-JAC-GE-00-DRG-CI-000222	B	WILLIAMS STREET SOUTHBOUND ON RAMP	IA328200-JAC-GE-00-DRG-BR-000040	B	WILLIAMS STREET UNDERPASS

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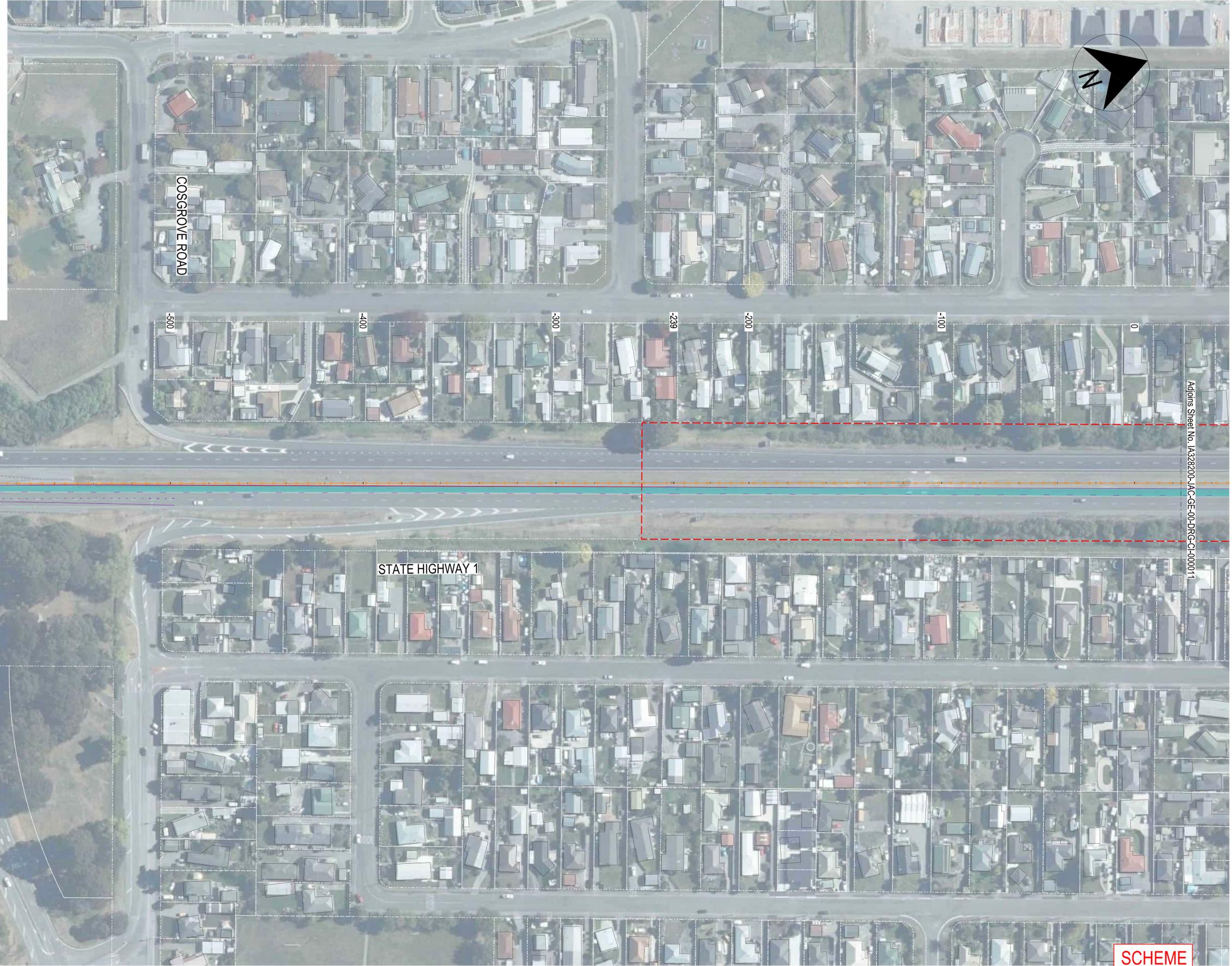
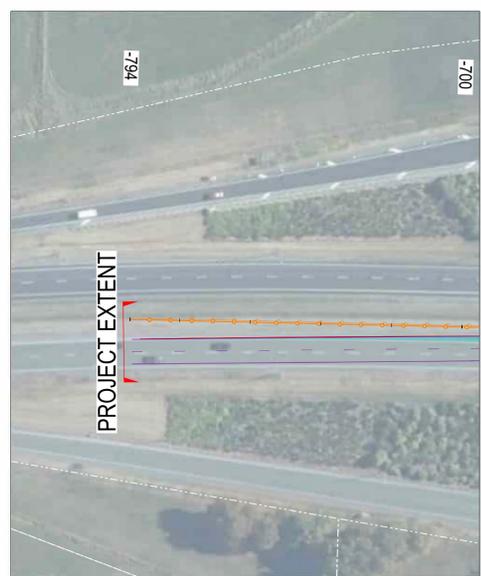
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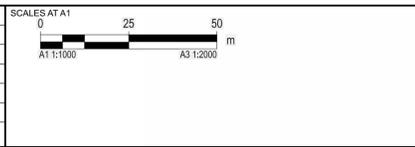


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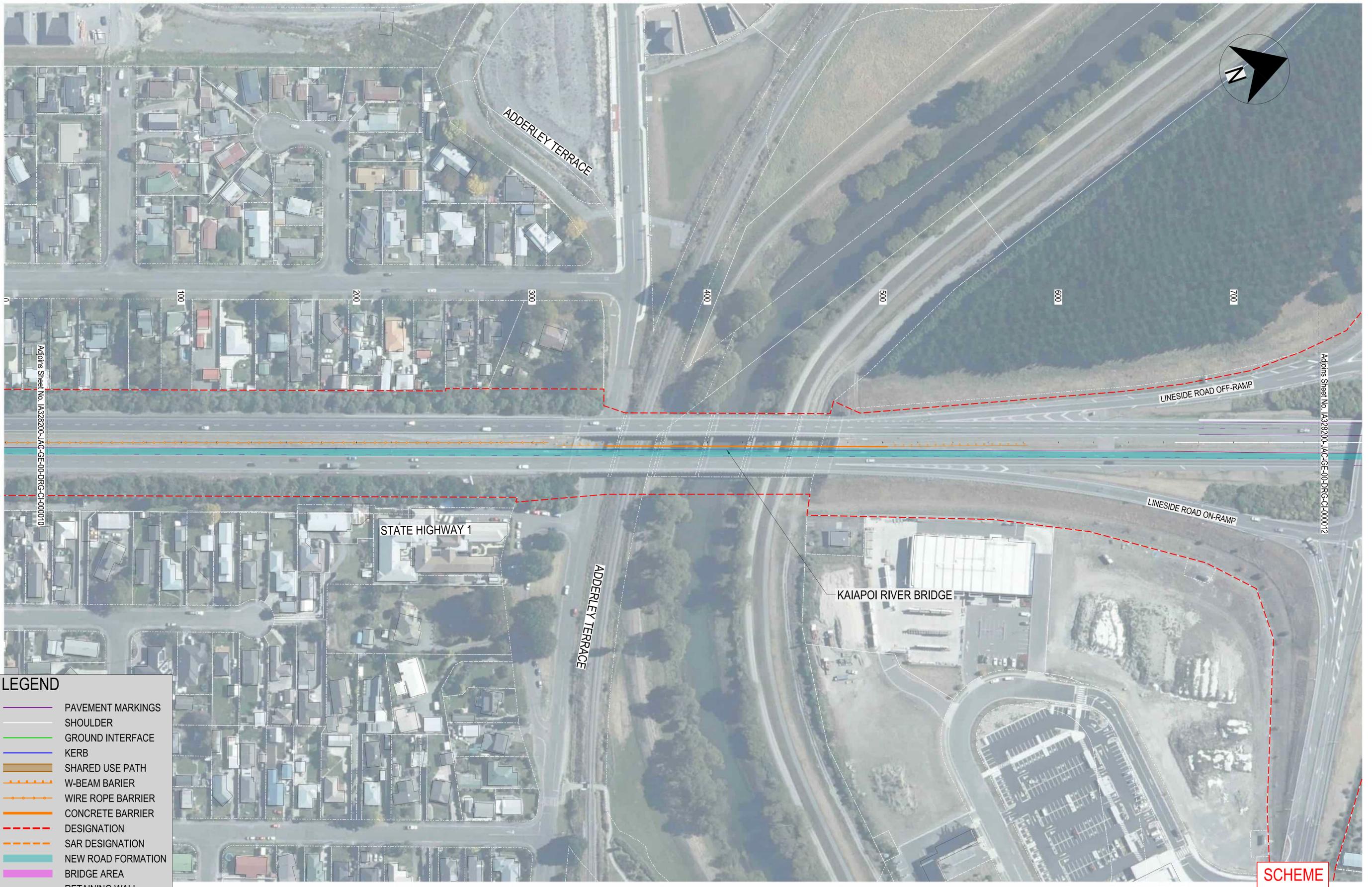
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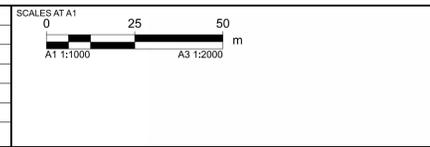
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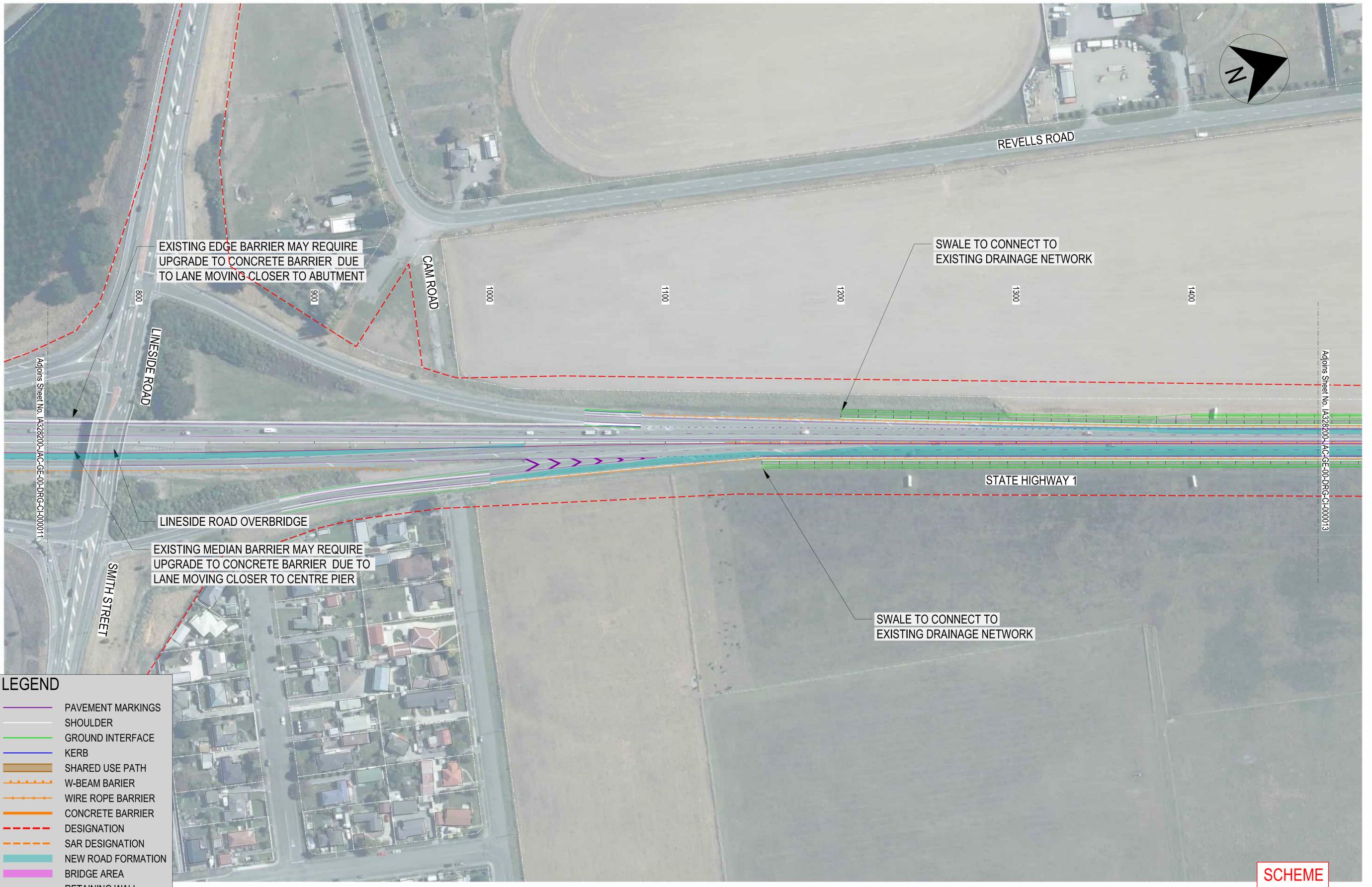
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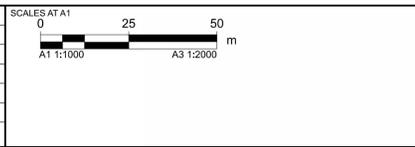
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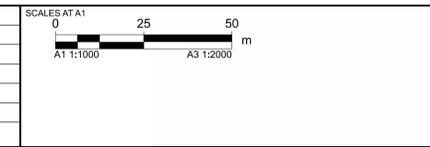
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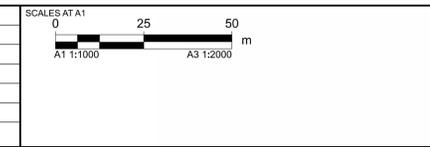


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- WIRE ROPE BARRIER
- CONCRETE BARRIER
- DESIGNATION
- SAR DESIGNATION
- NEW ROAD FORMATION
- BRIDGE AREA
- RETAINING WALL

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A	17/09/24	AN	CR	DRAFT SCHEME DESIGN FOR REVIEW

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PROJECT
 BELFAST TO PEGASUS MOTORWAY
 AND WOODEND BYPASS

SCALE: NTS
 PROJECT DATUMS: NZVD2016

DRAWING STATUS: **CONCEPT DESIGN**

DRAWN	DRAWING CHECK	REVIEWED	APPROVED
AN	VP	MM	CR
DESIGNED	DESIGN CHECK	DATE: 10/10/24	DATE: 10/10/24

TITLE
 CIVIL
 GENERAL ARRANGEMENT
 SHEET - 7

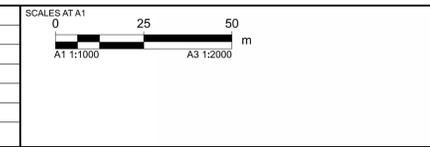
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	SHOULDER
	GROUND INTERFACE
	KERB
	SHARED USE PATH
	W-BEAM BARRIER
	WIRE ROPE BARRIER
	CONCRETE BARRIER
	DESIGNATION
	SAR DESIGNATION
	NEW ROAD FORMATION
	BRIDGE AREA
	RETAINING WALL

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PROJECT
 BELFAST TO PEGASUS MOTORWAY
 AND WOODEND BYPASS

SCALE
 NTS

PROJECT DATUMS
 NZVD2016

DRAWING STATUS			
CONCEPT DESIGN			
DRAWN AN	DRAWING CHECK VP	REVIEWED MM	APPROVED CR
DESIGNED KD / DC	DESIGN CHECK VP	DATE 10/10/24	DATE 10/10/24

TITLE
 CIVIL
 GENERAL ARRANGEMENT
 SHEET - 8

DRAWING No
 IA328200-JAC-GE-00-DRG-CI-000017

REV
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LEGEND	
	PAVEMENT MARKINGS
	SHOULDER
	GROUND INTERFACE
	KERB
	SHARED USE PATH
	W-BEAM BARRIER
	WIRE ROPE BARRIER
	CONCRETE BARRIER
	DESIGNATION
	SAR DESIGNATION
	NEW ROAD FORMATION
	BRIDGE AREA
	RETAINING WALL

SCHEME

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PROJECT
 BELFAST TO PEGASUS MOTORWAY
 AND WOODEND BYPASS

SCALE
 NTS

PROJECT DATUMS
 NZVD2016

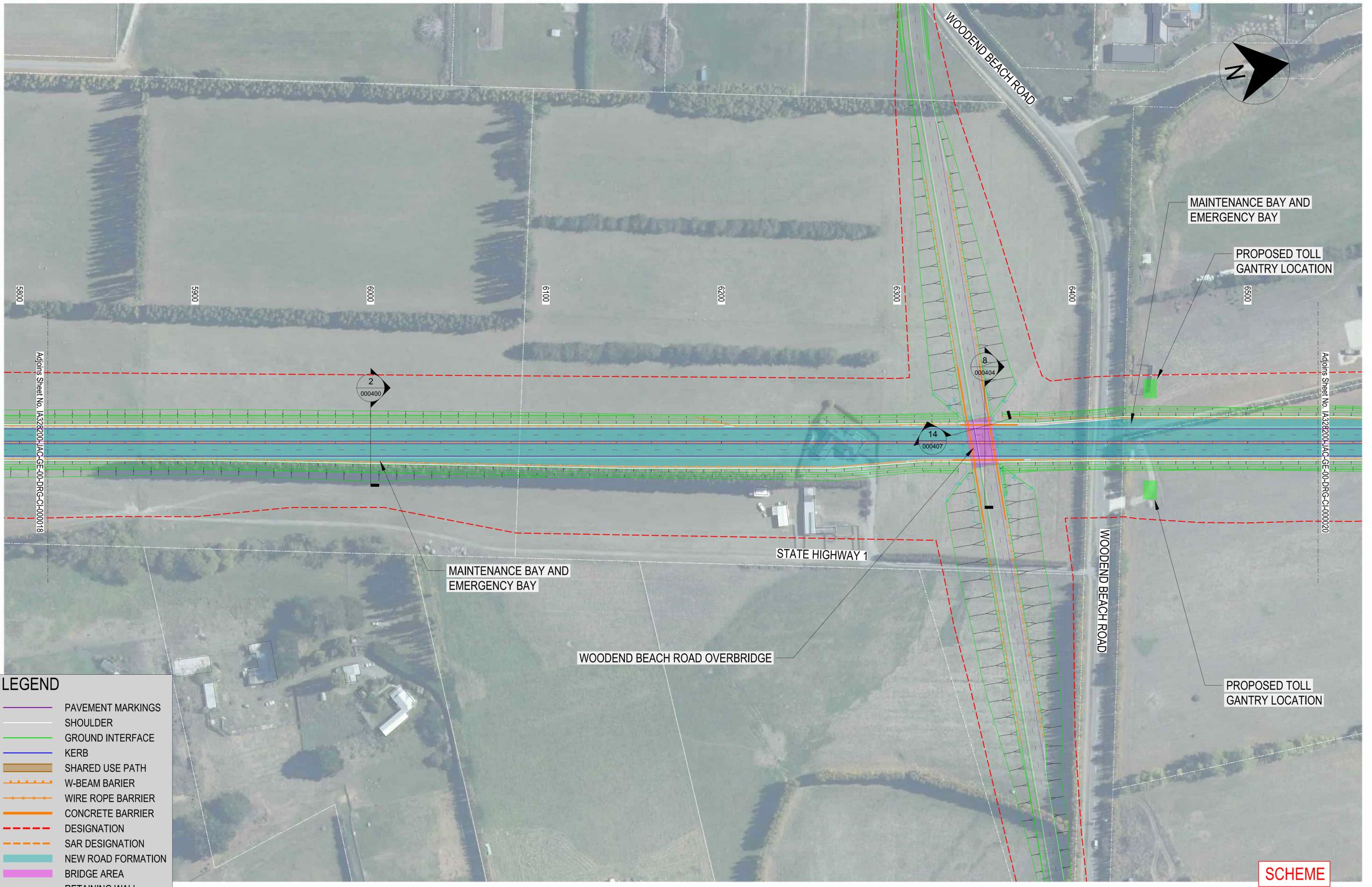
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TITLE
 CIVIL
 GENERAL ARRANGEMENT
 SHEET - 9

DRAWING No
 IA328200-JAC-GE-00-DRG-CI-000018

REV
B



LEGEND

- PAVEMENT MARKINGS
- SHOULDER
- GROUND INTERFACE
- KERB
- SHARED USE PATH
- W-BEAM BARRIER
- WIRE ROPE BARRIER
- CONCRETE BARRIER
- - - DESIGNATION
- - - SAR DESIGNATION
- NEW ROAD FORMATION
- BRIDGE AREA
- RETAINING WALL

SCHEME

REV	DATE	DRWN	APPD	DESCRIPTION
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A	17/09/24	AN	CR	DRAFT SCHEME DESIGN FOR REVIEW

SCALES AT A1
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PROJECT
 BELFAST TO PEGASUS MOTORWAY
 AND WOODEND BYPASS

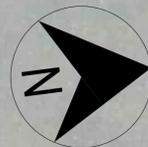
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TITLE
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 GENERAL ARRANGEMENT
 SHEET - 10

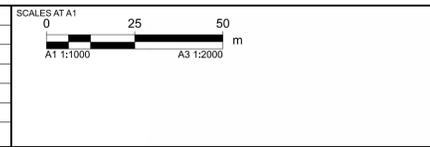
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	SHOULDER
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	KERB
	SHARED USE PATH
	W-BEAM BARRIER
	WIRE ROPE BARRIER
	CONCRETE BARRIER
	DESIGNATION
	SAR DESIGNATION
	NEW ROAD FORMATION
	BRIDGE AREA
	RETAINING WALL

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PROJECT BELFAST TO PEGASUS MOTORWAY AND WOODEND BYPASS	
SCALE NTS	PROJECT DATUMS NZVD2016

DRAWING STATUS CONCEPT DESIGN			
DRAWN AN	DRAWING CHECK VP	REVIEWED MM	APPROVED CR
DESIGNED KD / DC	DESIGN CHECK VP	DATE 10/10/24	DATE 10/10/24

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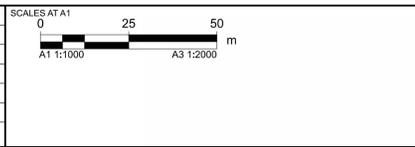


LEGEND

- PAVEMENT MARKINGS
- SHOULDER
- GROUND INTERFACE
- KERB
- SHARED USE PATH
- W-BEAM BARRIER
- WIRE ROPE BARRIER
- CONCRETE BARRIER
- - - DESIGNATION
- - - SAR DESIGNATION
- NEW ROAD FORMATION
- BRIDGE AREA
- RETAINING WALL

SCHEME

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A	17/09/24	AN	CR	DRAFT SCHEME DESIGN FOR REVIEW



PROJECT
 BELFAST TO PEGASUS MOTORWAY
 AND WOODEND BYPASS

SCALE
 NTS

PROJECT DATUMS
 NZVD2016

DRAWING STATUS
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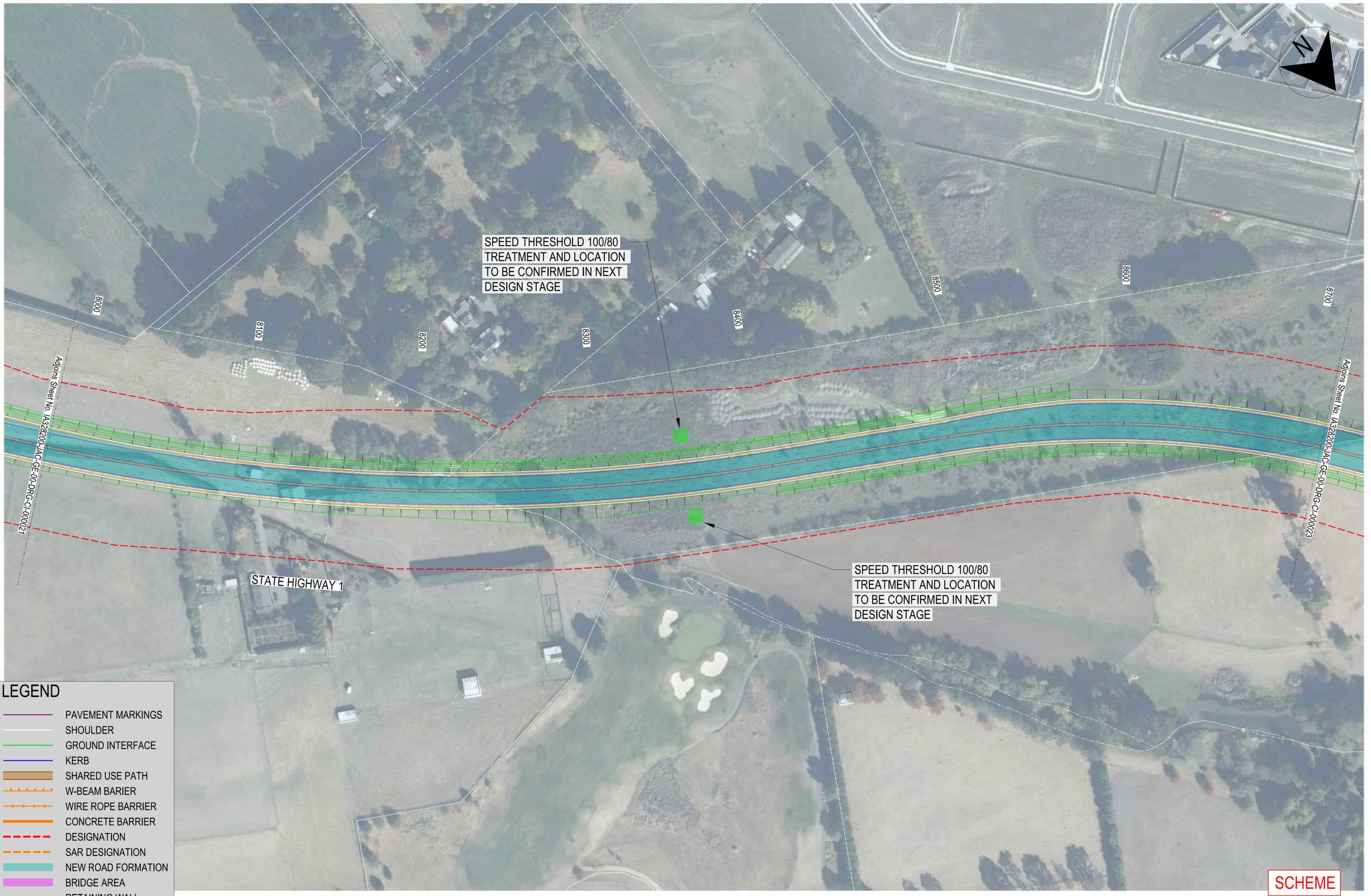
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TITLE
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 GENERAL ARRANGEMENT
 SHEET - 12

DRAWING No
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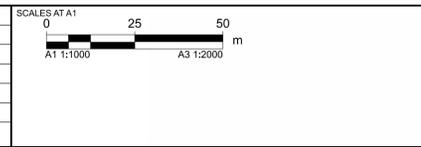


LEGEND

- PAVEMENT MARKINGS
- SHOULDER
- GROUND INTERFACE
- KERB
- SHARED USE PATH
- W-BEAM BARRIER
- WIRE ROPE BARRIER
- CONCRETE BARRIER
- DESIGNATION
- SAR DESIGNATION
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- BRIDGE AREA
- RETAINING WALL

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PROJECT
BELFAST TO PEGASUS MOTORWAY AND WOODEND BYPASS

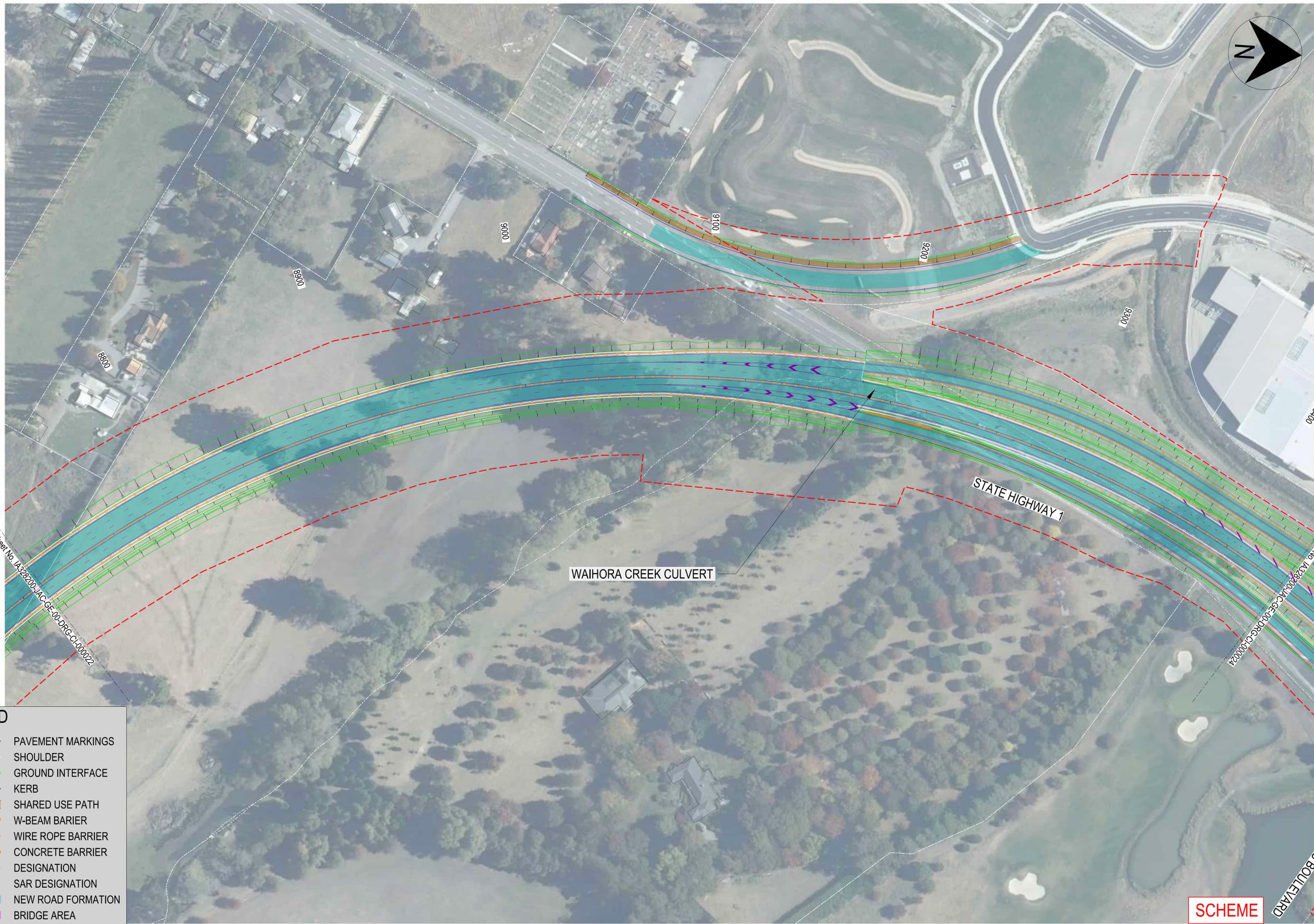
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TITLE
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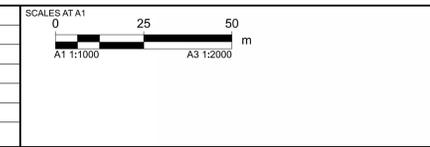
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 REV: B



LEGEND

	PAVEMENT MARKINGS
	SHOULDER
	GROUND INTERFACE
	KERB
	SHARED USE PATH
	W-BEAM BARRIER
	WIRE ROPE BARRIER
	CONCRETE BARRIER
	DESIGNATION
	SAR DESIGNATION
	NEW ROAD FORMATION
	BRIDGE AREA
	RETAINING WALL

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PROJECT

BELFAST TO PEGASUS MOTORWAY AND WOODEND BYPASS

SCALE: NTS PROJECT DATUMS: NZVD2016

DRAWING STATUS

CONCEPT DESIGN

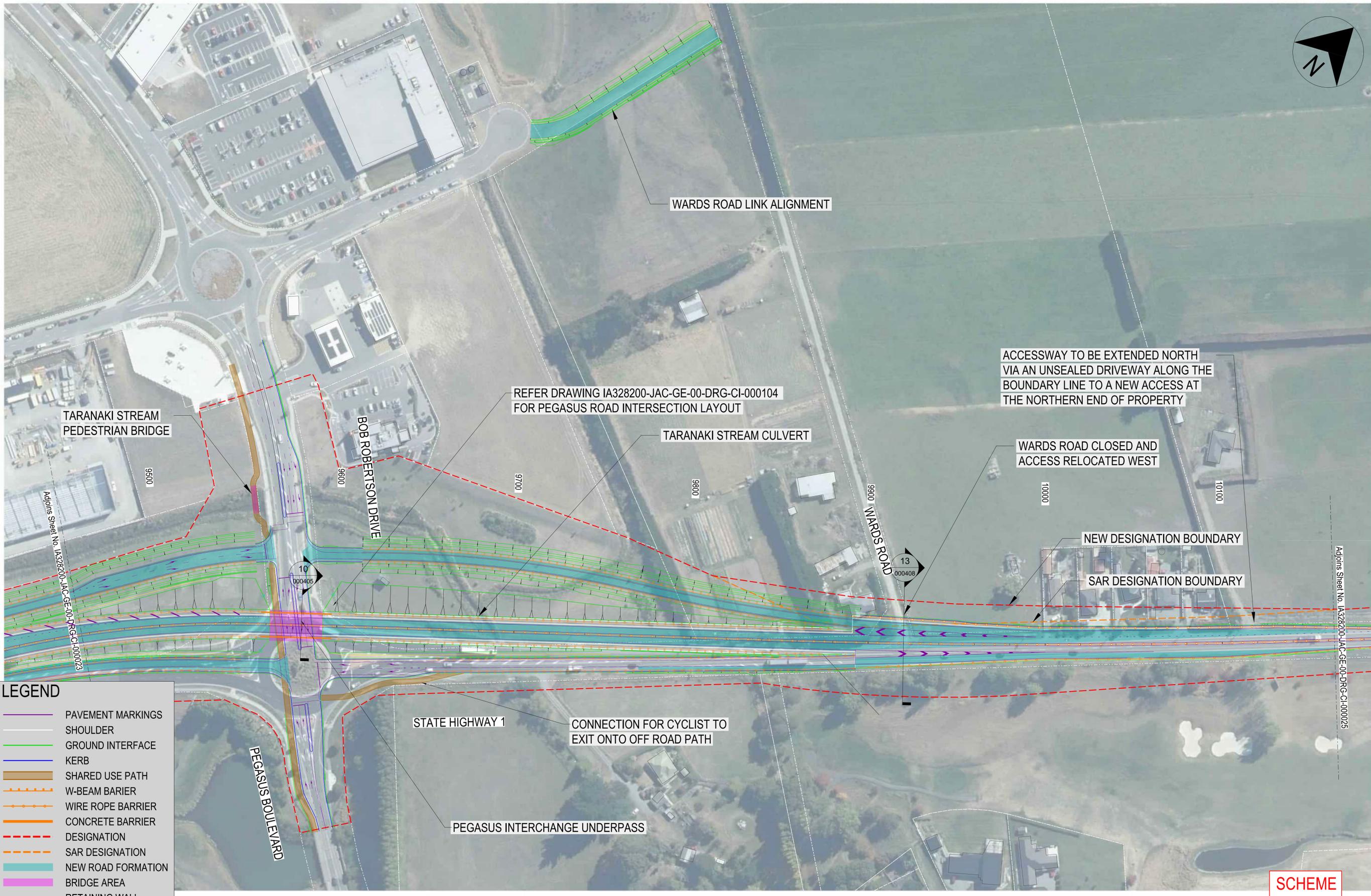
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TITLE

CIVIL GENERAL ARRANGEMENT SHEET - 14

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REV: B



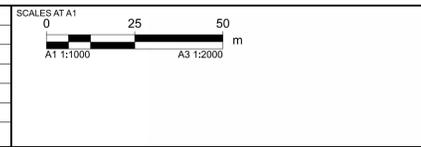
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	SHOULDER
	GROUND INTERFACE
	KERB
	SHARED USE PATH
	W-BEAM BARRIER
	WIRE ROPE BARRIER
	CONCRETE BARRIER
	DESIGNATION
	SAR DESIGNATION
	NEW ROAD FORMATION
	BRIDGE AREA
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PROJECT
 BELFAST TO PEGASUS MOTORWAY AND WOODEND BYPASS

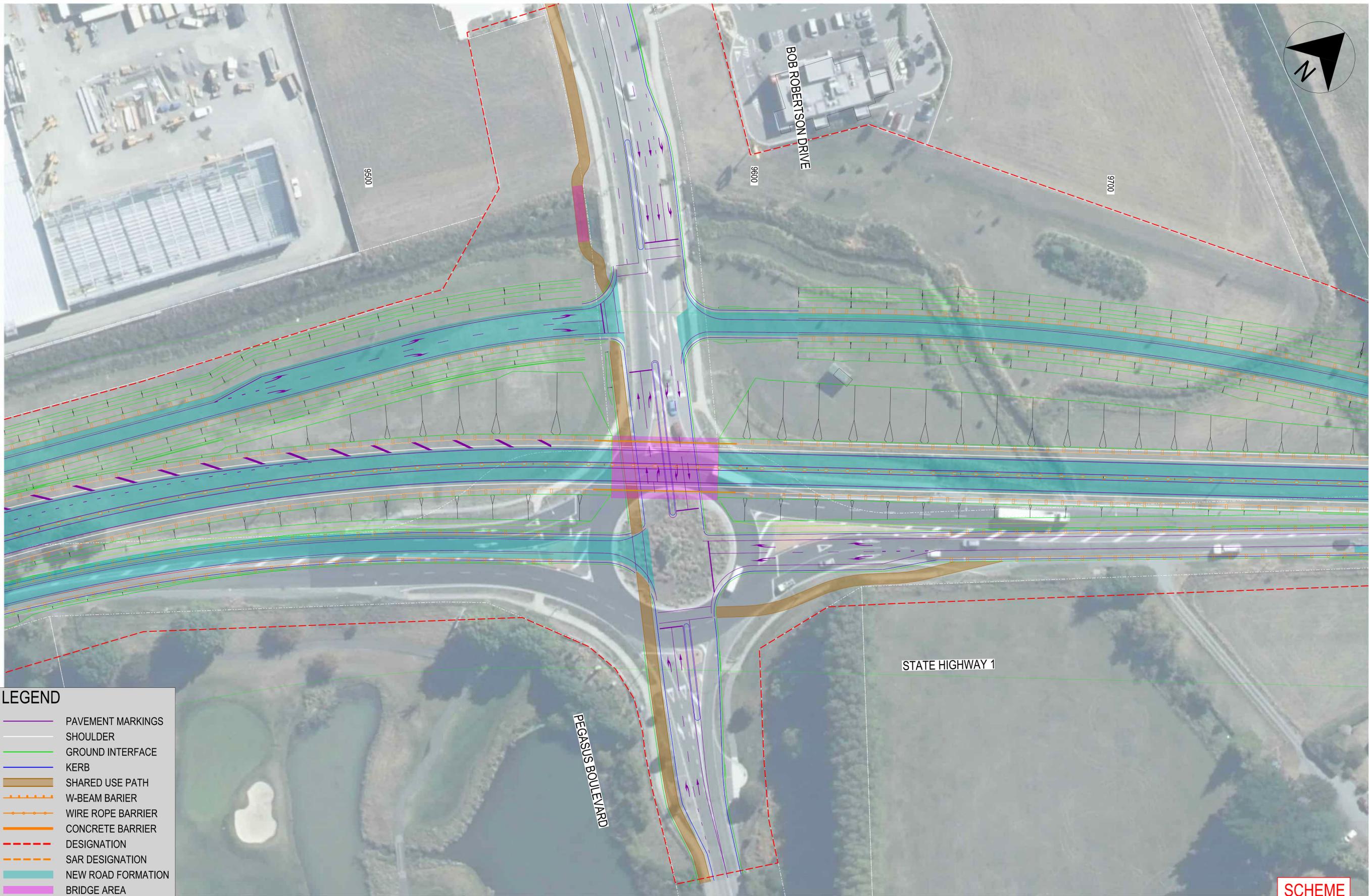
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DRAWING STATUS
CONCEPT DESIGN

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TITLE
 CIVIL
 GENERAL ARRANGEMENT
 SHEET - 15

DRAWING No: IA328200-JAC-GE-00-DRG-CI-000024
 REV: B



LEGEND

- PAVEMENT MARKINGS
- SHOULDER
- GROUND INTERFACE
- KERB
- SHARED USE PATH
- W-BEAM BARRIER
- WIRE ROPE BARRIER
- CONCRETE BARRIER
- DESIGNATION
- SAR DESIGNATION
- NEW ROAD FORMATION
- BRIDGE AREA
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PROJECT
BELFAST TO PEGASUS MOTORWAY
AND WOODEND BYPASS

SCALE: NTS
PROJECT DATUMS: NZVD2016

DRAWING STATUS: **CONCEPT DESIGN**

DRAWN: AN	DRAWING CHECK: VP	REVIEWED: MM	APPROVED: CR
DESIGNED: KD / DC	DESIGN CHECK: VP	DATE: 10/10/24	DATE: 10/10/24

TITLE: **CIVIL INTERSECTION LAYOUTS**
PEGASUS INTERCHANGE INTERSECTION

DRAWING No: IA328200-JAC-GE-00-DRG-CI-000102

REV: **B**

Appendix B. Historical Aerial Imagery





















Scale: 1:11,000 @A3

Map Created by Canterbury Maps on 21/10/2024 at 8:47 AM











































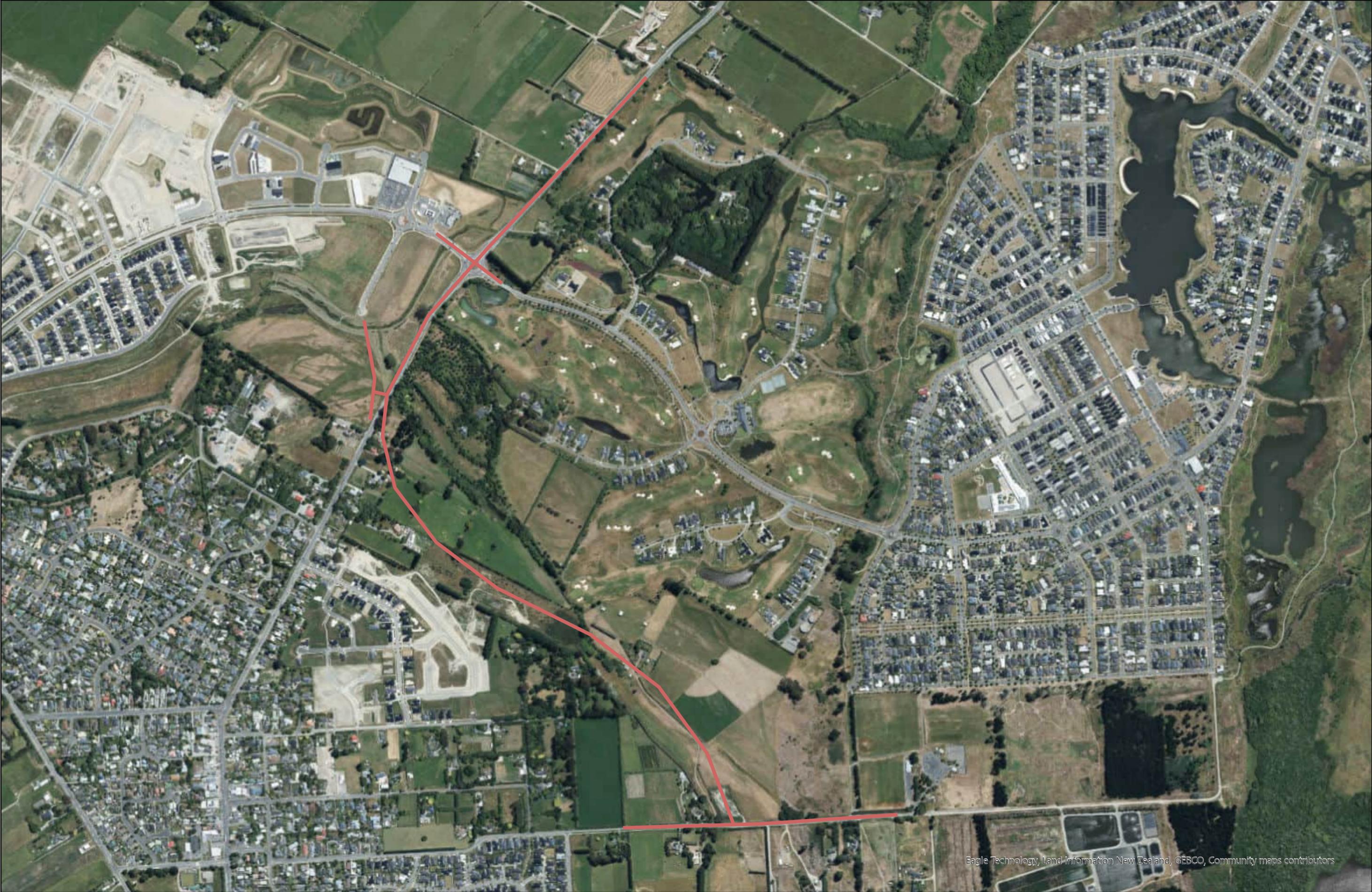












Appendix C. Review of Historical Aerial Imagery

Appendix C – Review of Historical Aerial Imagery
Preliminary Site Investigation – Belfast to Pegasus Motorway and Woodend Bypass

Image Date and Source	Project Corridor Observations	Surrounding Area
Section 1 – Start of Project Corridor to Cam Street (southern extent)		
1940 - 1944	<p>Aerial imagery shows the area within the start of the project corridor (southern extent) is for the most part undeveloped, consisting primarily of farmland.</p> <p>Kaipoi River is present within the northern end of this section.</p> <p>Cam Road is present as well as a former alignment of Silverstream Terrace / Adderley Terrace. A railway line is present and intersects the project corridor in the centre of this section.</p> <p>In the southern half of the section, some rural properties are present with buildings and evidence of orcharding.</p> <p>In the northern portion of the section, north of the Kaipoi River, large buildings with evidence of orcharding and cropping are present as well as smaller rural residential properties.</p>	<p>A single laned road runs adjacent to the western boundary of the project corridor separated by a row of houses.</p> <p>The area to the east of the project corridor boundary is largely vacant south of the Kaipoi River. The former Silverstream Boulevard / Adderley Terrace intersects the project corridor south of the Kaipoi River.</p> <p>To the northeast of the project corridor is partially developed residential area.</p>
1955 - 1959	<p>The imagery shows no significant change from the previously available imagery; however, a large rural residential property has been constructed in the project corridor on the northern bank of the Kaiapoi River.</p>	<p>No visual evidence that significant change has occurred on site.</p>
1965 -1969	<p>The imagery shows the early stages of the existing SH1 with a new road alignment present within the project corridor. The intersection between SH1 and SH71 appears to be under construction with large scale earthworks present.</p> <p>North of the Kaipoi River, two residential properties are still present within the project corridor.</p>	<p>The Township Kaiapoi of has undergone urban intensification with the area on the eastern side of the project corridor showing many residential properties, streets and larger commercial dwellings with large carparks.</p> <p>The southern area of the project corridor is undergoing substantial earthworks that appears to be for the construction of SH1.</p>

Appendix C – Review of Historical Aerial Imagery
Preliminary Site Investigation – Belfast to Pegasus Motorway and Woodend Bypass

Image Date and Source	Project Corridor Observations	Surrounding Area
1970 – 1974	<p>A double laned motorway (SH1), including a double laned bridge crossing the Kaipoi River, is present.</p> <p>The major intersection between the SH1 and SH71 (Smith Street) is present in the north of the section and is now located north of the Kaipoi River.</p> <p>The Kaipoi river course has been infilled and redirected / aligned to bend further south just north of Silverstream Terrace / Adderley Terrace.</p>	<p>To the east of the project alignment, the Cam River / Ruataniwha has been realigned to flow into the Kaipoi River further to the west and Smith Street connects with Ranfurly Street.</p>
1980 - 1984	<p>No visual evidence that significant change has occurred within the project corridor.</p>	<p>An intersection has been constructed to the south of the project area with a multilane overpass and on/off ramps from SH1 to Ohoka Road. The residential area along the western boundary of the project has been further developed with additional residential properties present.</p> <p>No visual evidence that significant change around the major intersection between SH1 and SH71 has occurred on site.</p>
1990 - 1994	<p>No visual evidence that significant change has occurred within the project corridor.</p>	<p>The residential area adjacent to the southern end of this section of the project corridor has been further developed with additional residential properties present along with schools, shops and similar amenities.</p> <p>Rural properties are also located slightly beyond and further west of the immediate boundary of the project corridor.</p>
2000 - 2004	<p>No visual evidence that significant change has occurred within the project corridor.</p>	<p>Apart from further residential development to the north-east of the project corridor, no visual evidence that significant change has occurred in the site surrounds.</p>
2010 - 2014	<p>The intersection between SH1 and SH71 is undergoing further development with on, and off ramps being constructed to the north of the intersection connecting the SH1 and the SH71 from the north.</p> <p>Evidence of tree planting is visible adjacent and to the south-west of the SH1 SH71 intersection.</p>	<p>Further to the west of the project corridor on the southern end previously undeveloped land is undergoing substantial development for residential housing.</p>

Appendix C – Review of Historical Aerial Imagery
Preliminary Site Investigation – Belfast to Pegasus Motorway and Woodend Bypass

Image Date and Source	Project Corridor Observations	Surrounding Area
Current aerial imagery (Live Hosted Canterbury maps viewed October 2024)	<p>Construction of the northern on and off ramps connecting to the she SH1 / SH71 intersection is complete.</p> <p>To the south-east of the SH1 / SH71 intersection (between Smith Street and the Kaipoi River) the previously vacant land is being developed for commercial use, with roads and large warehouses / buildings present.</p>	
Section 2 – Cam Street to SH1 and Williams Street Intersection		
1940 - 1944	<p>The area of the project corridor is undeveloped primarily consisting of farmland.</p> <p>Lower Camside Road and the Cam River intersect the project corridor towards the northern end of this section.</p> <p>Williams Street is present and intersects the project corridor within the north extent of this section.</p> <p>A residential property is present on the northern end of this section, west of Williams Street.</p>	<p>The surrounding area of the project corridor is undeveloped, consisting primarily of farmland.</p> <p>Within the area to the north-east of the project corridor there are a few rural residential dwellings and patches of dense vegetation.</p> <p>A long straight road (Revels Road) is present along the western boundary of the project corridor (approximately 150 m – 750 m from to project corridor). Similarly, the Cam River runs along the eastern boundary of the project corridor (approximately 550 m from the project corridor) and later intersects the project corridor further to the north.</p> <p>The Kaipoi Golf Course is present to the east of the corridor between Cam River and Williams Street.</p>
1955 - 1959	<p>Apart from an animal racing/training track that falls partially within the project corridor on the southern end of this section there is no visual evidence that significant change has occurred within the project corridor</p>	<p>Aside from the animal racing/training oval present along the western boundary of the project corridor there is no visual evidence that significant change has occurred within the site surrounds.</p>
1960 - 1964	<p>Aside from the racing / training track no longer being present, there is no visual evidence that significant change has occurred within the project corridor.</p>	<p>A large quarry to the north of the project corridor has undergone major earthworks for future sediment ponds.</p>
1965 - 1969	<p>No visual evidence that significant change has occurred within the project corridor.</p>	<p>Imagery not available for the areas north of the project corridor.</p> <p>No visual evidence that significant change has occurred with the site surrounds.</p>

Appendix C – Review of Historical Aerial Imagery
Preliminary Site Investigation – Belfast to Pegasus Motorway and Woodend Bypass

Image Date and Source	Project Corridor Observations	Surrounding Area
1970 – 1974	<p>A double- laned motorway (SH1) has been developed and is present within the project corridor. The SH1 intersects and terminates Cam Road.</p> <p>A bridge has been constructed to allow passage over Cam River.</p>	<p>The quarry in the north area of the project corridor appears to be fully operational with large scale earthworks.</p>
1980 - 1984	<p>No visual evidence that significant change has occurred within the project corridor.</p>	<p>Adjacent to the northeastern side of the northern extent of this section the land appears to be undergoing development for the holiday park with vegetation clearance evident.</p> <p>The quarry appears to now extend across onto the western side of Williams Road.</p>
1990 - 1994	<p>No visual evidence that significant change has occurred within the project corridor.</p>	<p>The land adjacent to northeastern side of the northern extent of this section has been further developed.</p> <p>A quarry is present on the land to the north-east of the northern extent of this section of the project corridor.</p> <p>The area north, west and south of the quarry is scattered with minor dwellings.</p> <p>Rural residential properties with minor dwellings are present between the eastern boundary of the project corridor and Revells Road.</p>
2000 - 2004	<p>No visual evidence that significant change has occurred within the project corridor.</p>	<p>The quarry at the northern extent of the section has been further developed / extended as well as the quarry on Williams Road which has been further extended further south on the western side of Williams Road.</p>
2010 - 2014	<p>Apart from the clearing of a trees at 110 and 128 Revells Road (adjacent and west of the project corridor) and the presence of what appears as a small dirt bike track at 128 Revells Road there is no visual evidence that significant change has occurred within the project corridor.</p>	<p>The land to the east of Williams Street is undergoing extensive development for residential housing.</p>

Appendix C – Review of Historical Aerial Imagery
Preliminary Site Investigation – Belfast to Pegasus Motorway and Woodend Bypass

Image Date and Source	Project Corridor Observations	Surrounding Area
Current aerial imagery (Live Hosted Canterbury maps viewed October 2024)	No visual evidence that significant change has occurred within the project corridor.	The land adjacent to northeastern side of the northern extent of this section in the vicinity of the holiday park has been further developed. The land to the east of Williams Street has been further developed for residential housing.
Section 3 – SH1 and Williams Street Intersection to Gladstone Road		
1940 - 1944	Aerial imagery shows the area within this section of the project corridor to be undeveloped, consisting primarily of farmland. There are two structures or sheds within the corridor at the very southern end adjacent and to the east of Main North Road. Rural residential properties with dwellings are also encountered within the project corridor. Woodend Beach Road intersects the project corridor with Gladstone Road present at the very northern end this section. There are two rural residential properties within the project corridor south of Gladstone Road.	The surrounding area of the project corridor consists primarily of farmland with a pocket of dense vegetation on the southern end of the section. Rural residential properties and Woodend Beach Road are present on the project corridor's eastern and western boundaries.
1955 - 1959	Aerial imagery is not available to the area south of Gladstone Road however for the remainder of the section, there is no visual evidence that significant change has occurred within the project corridor.	Apart from several more residential properties being present at Woodend and Woodend Beach on the coast, there is no visual evidence that significant change has occurred within the surrounding area.
1960 - 1964	No visual evidence that significant change has occurred within the project corridor.	A quarry is present to the west of the project corridor, just east of Main North Road. What appears to be a horticultural site is present on the southern end of the section to the west of Barkers Lane.
1970 - 1974	No visual evidence that significant change has occurred within the project corridor.	The quarry west of the project boundary is now fully operational, and there is evidence of large-scale earthworks. Woodend is further developed with more residential properties.
1980 - 1984	In the centre of this section. south of Woodend Beach Road and west of the project corridor more intensive cropping / horticultural activity is evident.	The quarry west of the project boundary has expanded to cover a larger area. Woodend is further developed with more residential properties.
1990 - 1994	No visual evidence that significant change has occurred within the project corridor.	No visual evidence that significant change has occurred within the surrounding area.

Appendix C – Review of Historical Aerial Imagery
Preliminary Site Investigation – Belfast to Pegasus Motorway and Woodend Bypass

Image Date and Source	Project Corridor Observations	Surrounding Area
2000 - 2004	No visual evidence that significant change has occurred within the project corridor.	The quarry east of the project boundary has expanded to cover a larger area. Woodend is further developed with more residential properties.
2010 - 2014	The quarry to the west of the project corridor has now expanded into the boundary of the project corridor. An additional rural residential property with dwellings has been constructed south of Woodend Beach Road.	At 196 Woodend Beach Road the north-western corner of the site appears to have been developed for light industrial use with possible workshops on site. The population of rural residential dwellings and properties has now increased within the surrounding area. Large portions of the surrounding areas still primarily of farmland and dense vegetation / forestry to the east. Woodend is further developed with more residential properties.
Current aerial imagery (Live Hosted Canterbury maps viewed October 2024)	No visual evidence that significant change has occurred within the project corridor.	North of Woodend Beach Road, Copper Beech Road is now present with several residential properties located off it. A cul-de-sac is being developed south of Woodend Beach Road to the west of the project corridor.

Section 4 – Gladstone Road to Just north of Wards Road

1940 - 1944	<p>Within the proposed project corridor, Gladstone Road (in the south) and Main North Road are present (in the north). Wards Road is present on the northern end of the section extending west off Main North Road</p> <p>The proposed project corridor that runs between these two roads traverses through land that is primarily farmland.</p> <p>Rural residential properties with major and minor dwellings are sparsely scattered within the project corridor.</p> <p>At 162 Gladstone Road, excavated depressions suggest the site is or has been used for quarrying and landfilling.</p> <p>The contours and site imagery suggest that there is an ephemeral stream present within the southern portion of this section of the project corridor</p>	<p>The surrounding area of the project corridor consists primarily of farmland and dense vegetation.</p> <p>Rural residential properties are sparsely scattered within the wider surrounds and the town of Woodend to the west of the project corridor is populated with residential dwellings along single laned road. The cemetery at 147 Main North Road is present.</p>
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Appendix C – Review of Historical Aerial Imagery
Preliminary Site Investigation – Belfast to Pegasus Motorway and Woodend Bypass

Image Date and Source	Project Corridor Observations	Surrounding Area
1960 - 1964	<p>There are several more residential properties present adjacent and to the west of Main North Road on the northern end of the section. No visual evidence that significant change has occurred within the project corridor.</p> <p>The excavations at 162 Gladstone Road appear to have been infilled and vegetation has established.</p> <p>Market gardening / orcharding / horticultural activities are evident at several properties west of and adjacent to the proposed project corridor, east of Main North Road.</p>	<p>The number of rural residential properties has increased within the surrounding area as well as the number of residential properties and associated amenities within Woodend.</p>
1970 – 1974	<p>No visual evidence that significant change has occurred within the project corridor.</p>	<p>No visual evidence that significant change has occurred within the surrounding area, however the population of residential properties in the town of Woodend to the west of the project corridor has increased.</p>
1980 - 1984	<p>A new rural residence is present west of 162 Gladstone Road at 156 Gladstone Road.</p> <p>The vegetation at 162 Gladstone Road has been cleared.</p> <p>The market gardening / horticultural activities west of and adjacent to the proposed project corridor, east of Main North Road appear to have been intensified.</p>	<p>No visual evidence that significant change has occurred within the surrounding area, however the population of residential properties to the west of the project corridor has increased.</p>
1990 - 1994	<p>No obvious visual evidence that significant change has occurred within the project corridor.</p>	<p>No obvious visual evidence that significant change has occurred within the surrounding area.</p>
2000 - 2004	<p>Cropping / more intensive agricultural farming is evident at 156 Gladstone Road which is west of and adjacent to the project corridor on the southern end of this section.</p> <p>No visual evidence that significant change has occurred within the remainder of the project corridor.</p>	<p>No visual evidence that significant change has occurred within the surrounding area. However, the number of residential properties and associated amenities within Woodend have further increased.</p>

Appendix C – Review of Historical Aerial Imagery
Preliminary Site Investigation – Belfast to Pegasus Motorway and Woodend Bypass

Image Date and Source	Project Corridor Observations	Surrounding Area
2010 - 2014	At 162 Gladstone Road, the southeastern corner of the site has been cleared and it appears that there are a few stockpiles of green waste. To the north and east of the southern end of this section of the project corridor, Pegasus golf course is being developed along with a substantial residential development including roads and infrastructure. Pegasus Boulevard connects with Main North Road south of Wards Road on the northern end of this section of the project corridor.	The number of residential properties and associated amenities within Woodend have increased. The town of Pegasus, located approximately 460 m to the east of the project corridor, has now been fully established with residential properties surrounding Lake Pegasus.
Current aerial imagery (Live Hosted Canterbury maps viewed October 2024)	162 Gladstone Road appears to be in use as a green waste site / waste transfer site. Adjacent and to the south-west of the southern end of project corridor, the former horticultural land has been subdivided for a residential development with development of roads and houses underway. Bob Robertson Drive and Garlick Street are now present within to the northern section of the project corridor.	West of the project corridor, adjacent to Bob Roberston Drive and along Garlick Street, a large retail / commercial precinct including a petrol station are present. Further west of this precinct a substantial area is being developed for residential housing.

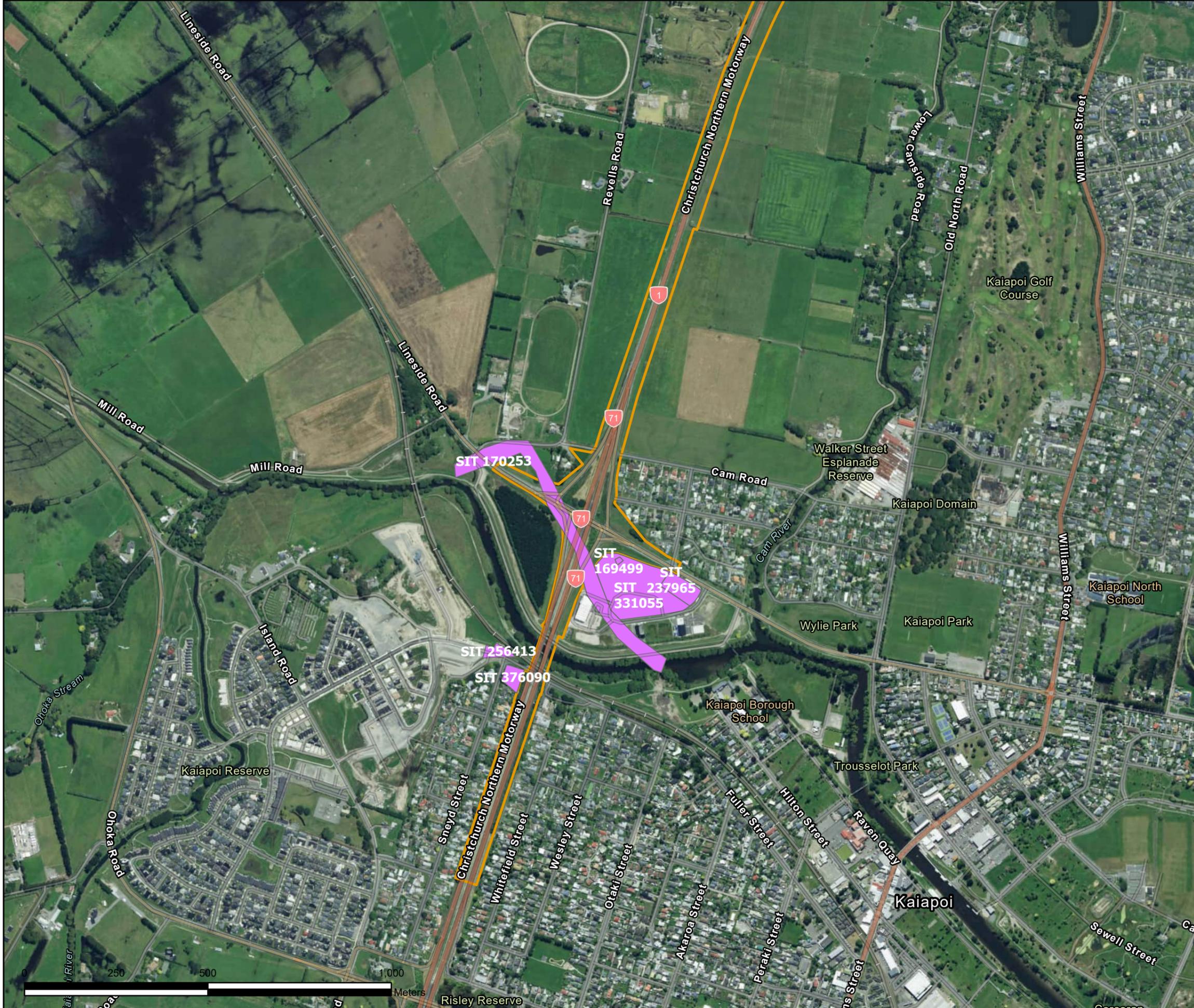
Appendix D. Listed Land Use Register

Appendix D – LLUR Statement Summary

Preliminary Site Investigation – Belfast to Pegasus Motorway and Woodend Bypass

Site Number	Name and Legal Descriptions	Location	Hail activity	Category
Section 1 - Start of Project Corridor to Cam Road				
170253	Multiple legal descriptions	State Highway 1 & Lineside Road, Kaiapoi	G3 – Landfill sites;	Below guideline values – Industrial/Commercial
256413	Lot 1003 DP 570640, Lot 504 DP 570640, Railway Land SO 11723	30 Adderley Terrace, Kaiapoi	E1 – Asbestos products manufacture or disposal;	Yet to be reviewed
169499	Lot 3 DP 431485	Lot 3 DP 431485, Kaiapoi	G3 – Landfill sites; G5 – Waste disposal to land;	Below guideline values – Industrial/Commercial
237965	Mckeown Card Fuel Shop Section 200 SO 569172, Section 30 SO 569172	21 Hakarau Road, Kaiapoi	A17 – Storage tanks or drums for fuel, chemicals or liquid waste; G5 – Waste disposal to land;	Not Investigated
331055	Waimak Junction Site multiple legal descriptions	21 Hakarau Road, Kaiapoi	G5 – Waste disposal to land;	Yet to be reviewed
376090	RS 40085	89 Sneyd Street, Kaiapoi	I – Any other land; E1 – Asbestos products manufacture or disposal;	Verified HAIL

Hail Sites in Section 1 - Start of Project Corridor to Cam Road



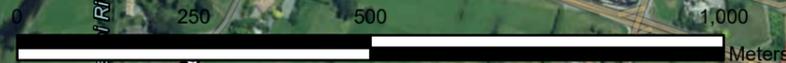
Legend

- NZTA B2P Designation
- Hail Sites



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Dear Sir/Madam

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

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

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

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

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

Yours sincerely

Contaminated Sites Team

The information presented in this map is specific to the area within a 50m radius of property you have selected. Information on properties outside the search radius may not be shown on this map, even if the property is visible.

Sites at a glance



Sites within enquiry area

Site number	Name	Location	HAIL activity(s)	Category
170253	State Highway 1 & Lineside Road, Kaiapoi	State Highway 1 & Lineside Road, Kaiapoi	G3 - Landfill sites;	Below guideline values - Industrial/Commercial
256413	30 Adderley Terrace, Kaiapoi	30 Adderley Terrace, Kaiapoi	E1 - Asbestos products manufacture or disposal;	Yet to be reviewed

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



Nearby sites

Site number	Name	Location	HAIL activity(s)	Category
169499	Lot 3 DP 431485, Kaiapoi	Lot 3 DP 431485, Kaiapoi	G3 - Landfill sites;G5 - Waste disposal to land;	Below guideline values - Industrial/Commercial
237965	McKeown Card Fuel Stop	21 Hakarau Road, Kaiapoi	A17 - Storage tanks or drums for fuel, chemicals or liquid waste;G5 - Waste disposal to land;	Not Investigated
331055	Waimak Junction Site	21 Hakarau Road, Kaiapoi	G5 - Waste disposal to land;	Yet to be reviewed
376090	89 Sneyd Street, Kaiapoi	89 Sneyd Street, Kaiapoi	I - Any other land;E1 - Asbestos products manufacture or disposal;	Verified HAIL

Please note that the above table represents a summary of sites and HAILS intersecting the area of enquiry within a 50m buffer.

More detail about the sites

Site 169499: Lot 3 DP 431485, Kaiapoi (Within 50m of enquiry area.)

Category: Below guideline values - Industrial/Commercial
 Definition: Investigation results demonstrate that hazardous substances present at the site, but below applicable guidelines. - Industrial/Commercial

Location: Lot 3 DP 431485, Kaiapoi
 Legal description(s): Lot 6 DP 489058

HAIL activity(s):

Period from	Period to	HAIL activity
1941	1965	Landfill sites
2007	Present	Waste disposal to land (excluding where biosolids have been used as soil conditioners)

Notes:

- 23 Nov 2016** This record was created as part of the Waimakariri District Council 2016 HAIL identification project.
7 Jul 2017 Area defined from 1941 to 1965 aerial photographs. G3 - Landfill sites was noted in aerial photographs reviewed.



Investigations:

INV 76003 **Ground Contaminant Assessment, 4 Smith Street, Kaiapoi, North Canterbury**
 Eliot Sinclair & Partners Ltd - Detailed Site Investigation
 19 Feb 2015

Summary of investigation(s):

The site sits on the northern side of the Kaiapoi River, immediately east of State Highway 1. Prior to 1970, the Kaiapoi River ran directly through the property. This was diverted in the late 1960s to flow around the southern border of the site and the original riverbed was backfilled. Disposal of hardfill occurred on the property from around 2004 to 2014 resulting in 1-1.5 metres of fill material across the entire site. The property owner stated that no earthquake demolition material was received, only clean soil from undeveloped locations.

Elliot Sinclair Ltd were engaged to complete a combined preliminary and detailed site investigation at 4 Smith Street, Kaiapoi. It was proposed to develop the site to a commercial development. The preliminary site investigation identified two instances of landfill activities on the property - the filling of the historic Kaiapoi Riverbed and extensive filling across the site.

Twenty-five test pits were excavated in a 50 x 50 metre gridded pattern (although 30 test pit locations were identified on the sample map) to the depth of groundwater of approximately 3 metres. Soil samples from each test pit were analysed by X-Ray Fluorescence Analyser (XRF) for heavy metals. Seven of the soil samples were analysed by laboratory for heavy metals and three of these were also analysed for semi-volatile organic compounds (SVOCs) and organochlorine pesticides. The sample depths for laboratory analysed samples were between 0.4 and 1 metre below ground level but the depths of the other samples was not provided. Results were compared with National Environmental Standard (NES) Soil Contaminant Standards for commercial/industrial land use.

Results: Soil samples exceeded background concentrations for at least one heavy metal in all laboratory analysed samples. All SVOCs and organochlorine pesticides were below laboratory detection limits. One sample collected from 1 metre below ground level exceeded commercial/industrial standards for arsenic when analysed by XRF (115 mg/kg). A sample from this test pit was also collected from 0.5 metres and was analysed by laboratory to have an arsenic concentration of 5 mg/kg. Additional samples from this test pit collected from unknown depths were analysed by XRF and concentrations ranged between detection limit and 14 mg/kg. The consultant concluded that the elevated arsenic result was an outlier. All other metals were below the commercial/industrial standards.

The site has been categorised as 'Below Guideline Values - commercial/industrial land use'.

Justification: A majority of the sample depths are unknown and it is unclear whether the five additional test pit locations shown on the sample map were excavated or analysed. Only three samples were analysed for SVOCs (including polycyclic aromatic hydrocarbons) but as all of these samples were below detection limits, it is considered the volatile compounds are unlikely to pose an unacceptable risk. Elevated arsenic was identified in one sample to exceed commercial/industrial standards. This is considered to be an outlier due to results of other samples analysed from this test pit. The site is considered to be adequately investigated and is suitable for the commercial development.

Site 170253: State Highway 1 & Lineside Road, Kaiapoi (Intersects enquiry area.)

Category: Below guideline values - Industrial/Commercial
 Definition: Investigation results demonstrate that hazardous substances present at the site, but below applicable guidelines. - Industrial/Commercial

Location: State Highway 1 & Lineside Road, Kaiapoi
 Legal description(s): Lot 3 DP 489058, Lot 4 DP 431485, Lot 4 DP 489058, Lot 5 DP 489058, Lot 6 DP 489058, Lot 7 DP 489058, Lot 8 DP 489058, Old Riverbed, Old Riverbed Survey Office Plan 11722, Old Riverbed Survey Office Plan 11722, Part Lot 1 DP 5974, Part Lot 1 DP 5974, Part RS 760, Part RS 760, River Bed Survey Office Plan 16148, RS 41554, Section 3 SO 435273, Section 5 SO 435273, Section 6 SO 435273, Stopped Road Survey Office Plan 11722

HAIL activity(s):	Period from	Period to	HAIL activity
	1965	1970	Landfill sites

Notes:

- 20 Jan 2017** This record was created as part of the Waimakariri District Council 2016 HAIL identification project.
- 7 Jul 2017** Area defined from 1965 to 1970 aerial photographs. G3 - Landfill sites was noted in aerial photographs reviewed.

Investigations:

There are no investigations associated with this site.

Site 237965: McKeown Card Fuel Stop (Within 50m of enquiry area.)

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

Location: 21 Hakarau Road, Kaiapoi
 Legal description(s): Section 200 SO 569172, Section 30 SO 569172

HAIL activity(s):	Period from	Period to	HAIL activity
	2019	Current	Storage tanks or drums for fuel, chemicals or liquid waste
	2007	Present	Waste disposal to land (excluding where biosolids have been used as soil conditioners)

Notes:

19 Jun 2019

Site is a self-serve fuel card service station built in 2019. No information is held on file at this time about the volume of petroleum hydrocarbons stored. This information will be updated in due course.



Investigations:

There are no investigations associated with this site.

Site 256413: 30 Adderley Terrace, Kaiapoi (Intersects enquiry area.)

Category: Yet to be reviewed

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

Location: 30 Adderley Terrace, Kaiapoi

Legal description(s): Lot 1003 DP 570640, Lot 504 DP 570640, Railway Land SO 11723

HAIL activity(s):

Period from	Period to	HAIL activity
Unknown	Present	Asbestos products manufacture or disposal including sites with buildings containing asbestos products known to be in a deteriorated condition

Notes:



Investigations:

INV 256410

Remediation Action Plan – Silverstream Stages 6 to 10

Davis Ogilvie - Detailed Site Investigation

12 Dec 2022

Summary of investigation(s):

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

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

This investigation has not been summarised.

Site 331055: Waimak Junction Site (Within 50m of enquiry area.)

Category: Yet to be reviewed

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

Location: 21 Hakarau Road, Kaiapoi

Legal description(s): Lot 1 DP 540592, Lot 6 DP 431485, Lot 7 DP 489058, Section 20 SO 569172, Section 200 SO 569172, Section 203 SO 569172, Section 204 SO 569172, Section 30 SO 569172

HAIL activity(s):

Period from	Period to	HAIL activity
2007	Present	Waste disposal to land (excluding where biosolids have been used as soil conditioners)

Notes:



Investigations:

There are no investigations associated with this site.

Site 376090: 89 Sneyd Street, Kaiapoi (Within 50m of enquiry area.)

Category: Verified HAIL

Definition: The land-use / HAIL history has been confirmed.

Location: 89 Sneyd Street, Kaiapoi

Legal description(s): RS 40085

HAIL activity(s):	Period from	Period to	HAIL activity
	Unknown	Present	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
	Unknown	Present	Asbestos products manufacture or disposal including sites with buildings containing asbestos products known to be in a deteriorated condition

Notes:



Investigations:

INV 364462 **Asbestos Demolition Survey**
Davis Ogilvie - Detailed Site Investigation
15 Dec 2023

Summary of investigation(s):

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

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

This investigation has not been summarised.

INV 376147 **Detailed Site Investigation: 89 Sneyd Street, Kaiapoi, Canterbury**
Davis Ogilvie - Detailed Site Investigation
22 Mar 2024

Summary of investigation(s):

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

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

This investigation has not been summarised.



Nearby investigations of interest

INV 11276 **Environmental Site Assessment - Silverstream Estate, Kaiapoi**
Pattle Delamore Partners Ltd - Detailed Site Investigation
13 Jun 2012

Summary of investigation(s):

Report(s) have not yet been audited.

Disclaimer

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Appendix D – LLUR Statement Summary

Preliminary Site Investigation – Belfast to Pegasus Motorway and Woodend Bypass

Site Number	Name and Legal Descriptions	Location	Hail activity	Category
Section 2- Cam Road to SH1 and William Street Intersection				
1209	Burrowes Motors Ltd Lot 1 DP 23217	732 Main North Road, Kaiapoi	F4 – Motor vehicle workshops; F7 – Service stations;	Partially Investigated

Hail Sites in Section 2- Cam Street to SH1 & William Street Intersection



Legend

- NZTA B2P Designation
- Hail Sites



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Dear Sir/Madam

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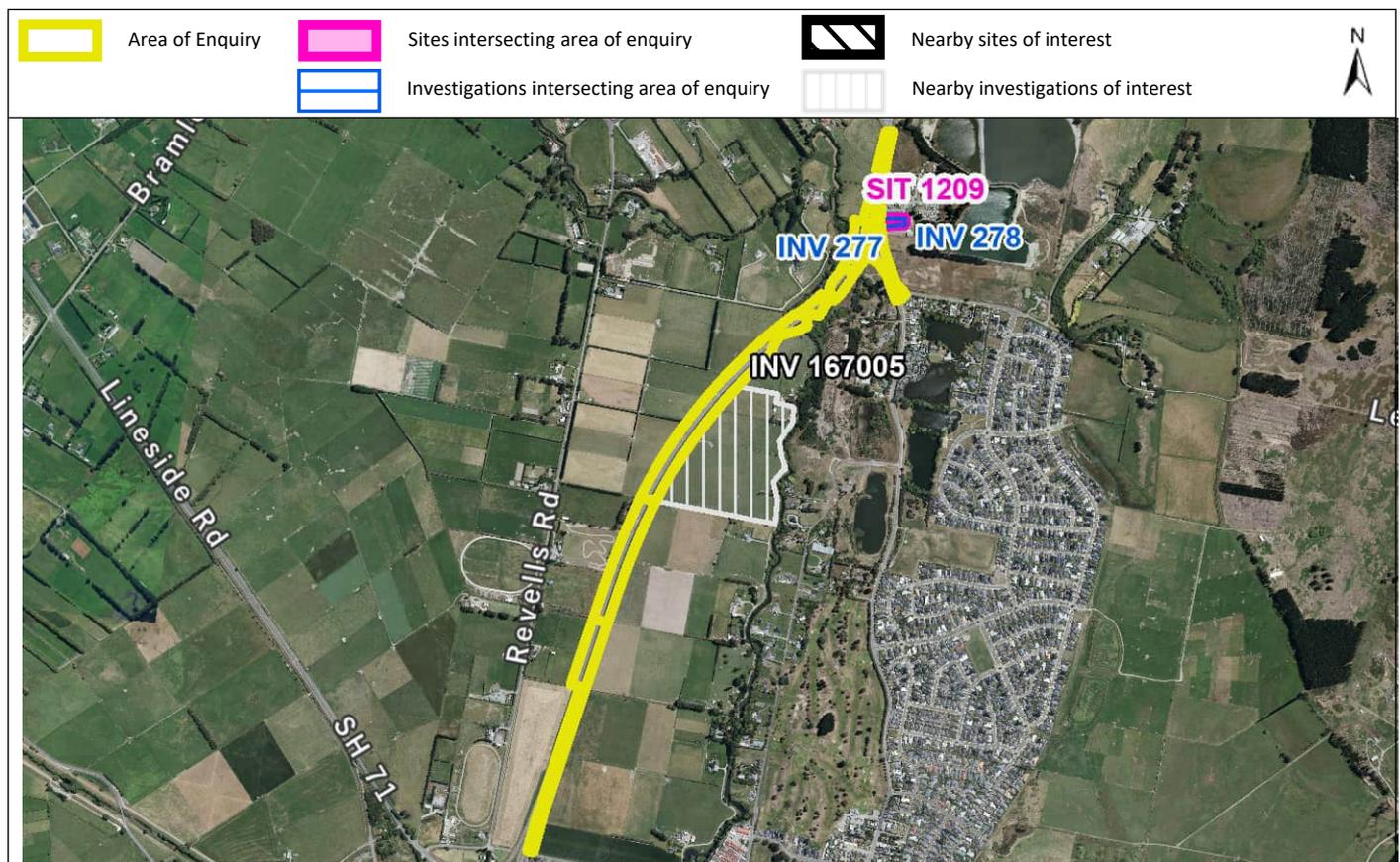
Yours sincerely

Contaminated Sites Team

Property Statement from the Listed Land Use Register

Visit ecan.govt.nz/HAIL for more information or contact Customer Services at ecan.govt.nz/contact/ and quote ENQ394045

Date generated: 15 October 2024
Land parcels: Part Lot 1 DP 6666
 Marked R SO 13782
 Part RS 237
 Part Lot 1 DP 20603
 Marked V SO 13783
 Area LL SO 13784
 Part Rakiwhakaputa Maori Reserve 873 223 Block
 Part Lot 2 DP 20603



The information presented in this map is specific to the area within a 50m radius of property you have selected. Information on properties outside the search radius may not be shown on this map, even if the property is visible.

Sites at a glance

 Sites within enquiry area

Site number	Name	Location	HAIL activity(s)	Category
1209	Burrowes Motors Ltd	732 Main North Road, Kaiapoi	F4 - Motor vehicle workshops; F7 - Service stations;	Partially Investigated

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

 Nearby sites

There are no sites associated with the area of enquiry.

More detail about the sites

Site 1209: Burrowes Motors Ltd (Intersects enquiry area.)

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

Location: 732 Main North Road, Kaiapoi
Legal description(s): Lot 1 DP 23217, also land without legal description.

HAIL activity(s):	Period from	Period to	HAIL activity
	1954	Current	Motor vehicle workshops
	?	2002	Service stations including retail or commercial refuelling facilities

Notes:

12 Feb 2002 Tank pull removal report received January 2002, documenting the removal of 4 underground storage tanks from the site in October 2001 and presents results of soil sampling. Further investigation was undertaken in November 2001 and involved the excavation and sampling from 4 test pits.

A site management plan was produced. The plan addresses all complete exposure pathways identified in the investigations: management for the protection of maintenance/excavation workers, prevention of indoor/outdoor inhalation of vapours from soil/water, prevention of the use of groundwater in the vicinity of the tank pits, disposal of surplus soil and maintenance of the asphalt covering the site (which provides a barrier to the soil and reduces the potential for leaching of contaminants to groundwater). The plan addresses the need for the future use of the site to remain commercial/industrial.

2 Dec 2008 The information held on our files for this site was appraised on 7 March 2008 and the LLUR site category changed to partially investigated. Although we hold report information about the removal of four petrol and one diesel UST, at present there is no information about the other HAIL activities on site (i.e. the engine reconditioning workshop).



Investigations:

INV 277 **Site Inspection for the removal of four underground storage tanks at Burrowes Motors Ltd, Main North Road, Pinearces, Kaiapoi**
Mobil Oil New Zealand/PDP - Detailed Site Investigation
10 Oct 2001

Summary of investigation(s):

In September 2001 4 underground storage tanks (USTs), 1 x 4,000 litre (L) capacity used to hold diesel and 3 used to hold motor spirit (1 x 13,600 L and 3 x 4,500 L capacity) were removed from 2 tank pit excavations at the site. 19 soil samples were collected from the tank pits, fill material and from beneath the diesel dispenser. 18 soil samples were submitted for total petroleum hydrocarbon (TPH) analysis and 12 were additionally analysed for BTEX compounds. 4 soil samples (3 from tank pit 1 and 1 from fill material used to backfill the tank pit excavation) yielded TPH concentrations in the C7-C9 band that exceeded the Ministry for the Environment Tier 1 soil acceptance criteria for a commercial/industrial land use and the criteria for the protection of maintenance/excavation workers. One of these samples collected from tank pit 1 at the southern end also yielded elevated BTEX compound concentrations. The benzene and total xylene concentrations exceeded the MfE criteria for the protection of groundwater quality. The total xylene and toluene concentrations also exceeded the criteria for the protection of maintenance/excavation workers. The sample collected from the fill material also yielded a TPH in the C10-C14 band that exceeded the MfE Tier 1 soil acceptance criteria for heavy fraction TPH associated with diesel. On receipt of these results the duplicate of the fill material sample was analysed for polycyclic aromatic hydrocarbons. It yielded concentrations less than the laboratory level of detection.

INV 278 **Test pit soil sampling and environmental assessment at Burrowes Motors Ltd, Main North Road, Pinearces, Kaiapoi**
Mobil Oil New Zealand/PDP - Detailed Site Investigation
23 Nov 2001

Summary of investigation(s):

A second investigation was undertaken in November 2001 to assess the extent of petroleum hydrocarbon residues in the soils. 4 test pits were excavated on the east side of the former tank pit 1 and 29 soil samples were collected from the test pits. Groundwater was encountered in all 4 test pits at a depth of 2.7 m below ground level. 16 samples were submitted for TPH analysis and 5 were also analysed for BTEX compounds. All 16 soil samples yielded TPH concentrations less than the laboratory level of detection. 1 sample collected from the test pits was analysed for BTEX compounds and yielded elevated ethylbenzene and total xylene concentrations that were below the relevant guideline criteria.

A site management plan was produced in January 2002. The plan addresses all complete exposure pathways identified in the investigations: management for the protection of maintenance/excavation workers, prevention of indoor/outdoor inhalation of vapours from soil/water, prevention of the use of groundwater in the vicinity of the tank pits, disposal of surplus soil and maintenance of the asphalt covering the site (which provides a barrier to the soil and reduces the potential for leaching of contaminants to groundwater). The plan addresses the need for the future use of the site to remain commercial/industrial.

No groundwater quality information has been obtained as no groundwater monitoring bores have been installed. No groundwater abstraction bores should be installed in the vicinity of the tank pits, until groundwater quality has been assessed.

No assessment has yet been made of other activities (a workshop operated on the site) undertaken at the site that may have the potential to cause contamination.



Nearby investigations of interest

INV 167005

Combined Geotechnical and Phase 1 Preliminary Site Investigation Report - 155 Lower Camside Road, Kaiapoi

EDC - Engineering Design Consultants - Preliminary Site Investigation
14 Mar 2014

Summary of investigation(s):

INV167005 - Combined Geotechnical and Phase 1 Preliminary Site Investigation Report - 155 Lower Camside Road, Kaiapoi - EDC 2014

Engineering Design Consultants (EDC) were contracted to complete a preliminary site investigation on 155 Lower Camside Road.

The report involved assessment of anecdotal records, aerial photographs and the Listed Land Use Register. Certificates of Title and district council records were not assessed. The report states that the land was used for grazing cows for at least 40 years. The owner states that no chemicals have been stored on site but fertiliser has been used on the paddocks. The consultant did not identify any HAIL activities on the site. However, the auditor notes a potential sheep dip structure in the aerial photographs from 1965 to 1973.

The consultant has not fully assessed all sources of information for identification of HAIL activity and did not identify or mention a potential sheep dip structure on the site. The investigation has been categorised as Not Investigated.

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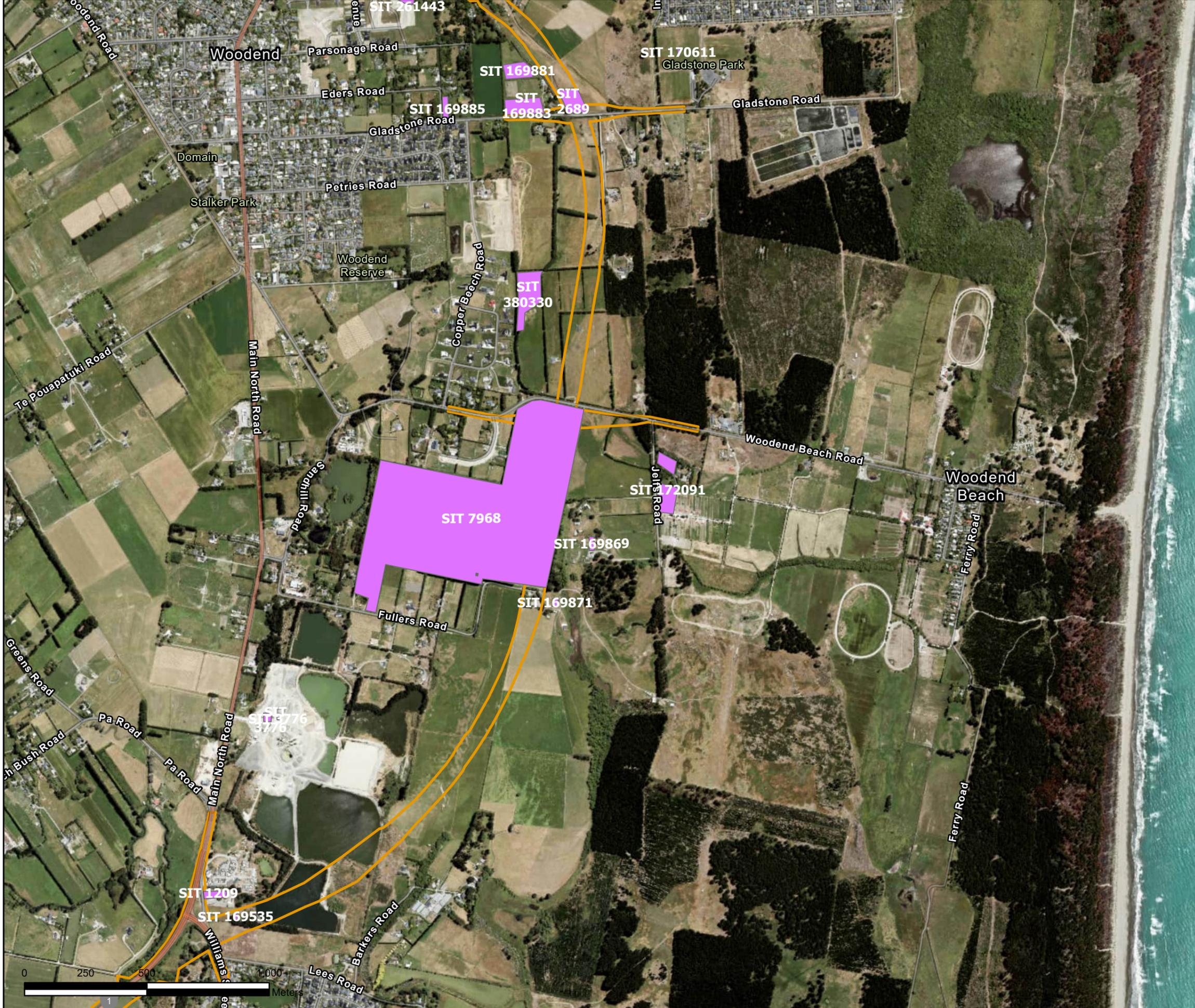
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Appendix D – LLUR Statement Summary

Preliminary Site Investigation – Belfast to Pegasus Motorway and Woodend Bypass

Site Number	Name and Legal Descriptions	Location	Hail activity	Category
Section 3 - SH1 and William Street Intersection to Gladstone Road				
3776	North End Sand and Shingle Supplies RS 35470	820 Main North Road, Woodend	A17 – Storage tanks or drums for fuel, chemical or liquid ; F4 – Motor vehicle workshops;	Partially Investigated
7968	DJ Eder Blackcurrants	Fullers Road, Woodend	A10 – Persistent pesticide bulk storage or use;	Below Guideline Values – Rural – residential land use
169535	Lot 1 DP 423296	Woodend Beach	A8 – Livestock dip or spray race operations;	Not Investigated
169869	Lot 2 DP 330014	Woodend Beach	A10 – Persistent pesticide bulk storage or use;	Not Investigated
169871	RS 1203	Woodend Beach	A8 – Livestock dip or spray race operations;	Not Investigated
172091	Lot 1 DP 42610, Lot 5 DP 42610	17 Jeffs Road, Woodend Beach	A10 – Persistent pesticide bulk storage or use;	Not Investigated
380330	Section 1 SO 565976	196 Woodend Beach Road	G5 – Waste disposal to land; G3 – Landfill sites;	Not Investigated

Hail Sites in Section 3 - SH1 & William Street Intersection to Gladstone Road



Legend

- NZTA B2P Designation
- Hail Sites



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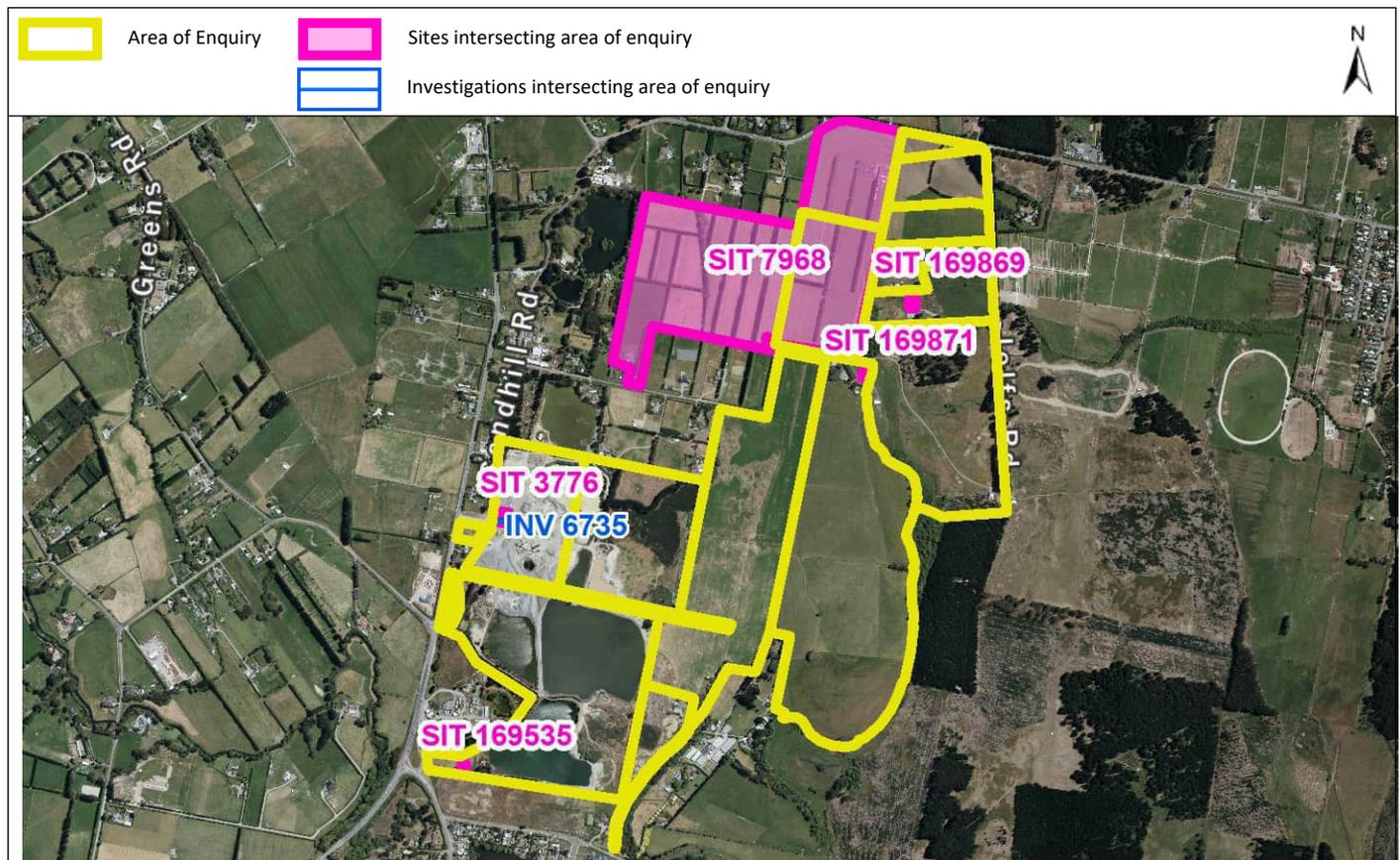
Yours sincerely

Contaminated Sites Team

Property Statement from the Listed Land Use Register

Visit ecan.govt.nz/HAIL for more information or contact Customer Services at ecan.govt.nz/contact/ and quote ENQ394058

Date generated: 15 October 2024
Land parcels: Lot 1 DP 423296
 Lot 2 DP 423296
 RS 12191
 Lot 2 DP 575733
 Lot 2 DP 330014
 Lot 1 DP 330014
 Tawhiti-O-Te-Rangiwetea Maori Reserve 873 16 Block
 Lot 3 DP 575733
 Lot 1 DP 575733
 RS 1203
 Tawhiti-O-Te-Rangiwetea Maori Reserve 873 18 Block
 RS 35470
 Lot 3 DP 423296
 RS 13796
 Lot 8 DP 50914



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

Sites at a glance

 Sites within enquiry area

Site number	Name	Location	HAIL activity(s)	Category
3776	North End Sand & Shingle Supplies	820 Main North Road, Woodend	A17 - Storage tanks or drums for fuel, chemicals or liquid	Partially Investigated

			waste;F4 - Motor vehicle workshops;	
7968	DJ Eder Blackcurrants	Fullers Road, Woodend	A10 - Persistent pesticide bulk storage or use;	Below Guideline Values - Rural-residential landuse
169535	Lot 1 DP 423296, Woodend Beach	Lot 1 DP 423296, Woodend Beach	A8 - Livestock dip or spray race operations;	Not Investigated
169869	Lot 2 DP 330014, Woodend Beach	Lot 2 DP 330014, Woodend Beach	A10 - Persistent pesticide bulk storage or use;	Not Investigated
169871	RS 1203, Woodend Beach	RS 1203, Woodend Beach	A8 - Livestock dip or spray race operations;	Not Investigated

More detail about the sites

Site 3776: North End Sand & Shingle Supplies (Intersects enquiry area.)

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

Location: 820 Main North Road, Woodend
Legal description(s): RS 35470

HAIL activity(s):	Period from	Period to	HAIL activity
	~1991	Current	Storage tanks or drums for fuel, chemicals or liquid waste
	?	Current	Motor vehicle workshops

Notes:

- 11 Nov 2009** This Site has been identified from the Waimakariri district HAIL site location project. On this site there is a 20000L Underground storage tank which contains diesel used for refuelling purposes.
- 16 Feb 2011** The 20,000 L diesel underground storage tank was removed from the site on 18 November 2011. Other potential sources of contamination associated with the site include repair and servicing of motor vehicles, storage and transfer of waste oil, and above ground storage of diesel (4,000L, bunded).
- 20 Apr 2011** This site is in the process of being re-categorised as 'Partially Investigated' on the Listed Land Use Register.

Investigations:

INV 6735 **Soil Validation Investigation, Ready-Mix North End, 808 Main North Road, Canterbury**
ERM - Detailed Site Investigation
16 Dec 2010

Summary of investigation(s):

ERM were commissioned by Chevron NZ Ltd to undertake a soil validation exercise following the removal of a 20,000 L diesel underground storage tank and associated infrastructure from North End Sand & Shingle Supplies (820 Main North Road, Woodend) on 18 November 2010. The tank was of steel construction, direct fill, and was described as being in good condition on removal. The tank was used for refuelling of vehicles. A small area of surface petroleum hydrocarbon staining was visible around the dispenser and vent point location. Repair and servicing of motor vehicles, storage and transfer of waste oil, and above ground storage of diesel were identified as other potential sources of ground contamination present at the North End Sand & Shingle Supplies site.

The surface geology is represented by sand dune deposits with sands and silts expected to be underlain by alluvial gravel, sand, silt and clay deposits at approximately 4 m below ground level. Groundwater was observed at 2 m below ground level in the tank pit excavation and is anticipated to flow in an easterly direction. The aquifer is described as semi-confined or unconfined and the groundwater is abstracted for potable purposes in the vicinity of the site. The aquifer meets the sensitive classification according to the MfE (1999) criteria. A unnamed drain running parallel to Main North Road and groundwater pooling within the on-site extraction pits are the nearest surface water bodies, respectively located 120 m west and 120 m east of the removed tank location.

The tank pit excavation was characterised through collection of 13 soil samples from its walls and base. Two (2) further samples were collected at the dispenser and vent point location. All samples were submitted for banded total petroleum hydrocarbon (TPH) analysis with analysis for polycyclic

aromatic hydrocarbons (PAHs) contingent on the TPH results. The sampling and analyses programmes were conducted in accordance with the MfE (1999) guidance and applicable criteria were adopted in the assessment of sample results.

All soil sample results complied with MfE (1999) Tier 1 soil acceptance criteria for human health (commercial/industrial use) and groundwater protection. Two samples collected from the dispenser and vent point location contained detectable TPH concentrations with one exceeding the surrogate criteria for PAHs. Subsequent PAH analysis yielded acceptable results. No further assessment is required in association with the decommissioned underground petroleum storage system, but it is recommended that the visually impacted soil from the former dispenser and vent point area is removed for aesthetic reasons.

The ERM investigation did not identify any significant soil hydrocarbon impact associated with the former underground petroleum storage system. However, due to the presence of other potential sources of ground contamination at the site (workshop activities, above ground storage and transfer of waste oil and diesel fuel), it is proposed to classify the site as Partially Investigated on the Listed Land Use Register.

Site 7968: DJ Eder Blackcurrants (Intersects enquiry area.)

Category: Below Guideline Values - Rural-residential landuse
Definition: Investigation results demonstrate that hazardous substances present at the site, but below applicable guidelines.

Location: Fullers Road, Woodend
Legal description(s): Lot 1 DP 378176, Lot 2 DP 378176, Lot 7 DP 50914, Lot 8 DP 50914

HAIL activity(s):	Period from	Period to	HAIL activity
	Prior to 1979	Present	Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds

Notes:

20 Apr 2011 This site was uncovered through discussion (in August 2009) with DJ Eder while registering an alternative site which he uses to store pesticides. This site is currently used for market gardening (growing blackcurrants), with the pesticides from DJ Eder's nearby pesticide storage being applied.

Persistent pesticides were reportedly used from sometime prior to 1985 up until 1994 when the operation switched to a fish oil based pesticide. Pesticides are not known to have been stored anywhere on this site. Information provided by site occupier.



Investigations:

There are no investigations associated with this site.

Site 169535: Lot 1 DP 423296, Woodend Beach (Intersects enquiry area.)

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

Location: Lot 1 DP 423296, Woodend Beach
Legal description(s): Lot 1 DP 423296

HAIL activity(s):	Period from	Period to	HAIL activity
	1955	1973	Livestock dip or spray race operations

Notes:

24 Nov 2016 This record was created as part of the Waimakariri District Council 2016 HAIL identification project.

7 Jul 2017 Area defined from 1955 to 1973 aerial photographs. A8 - Livestock dip or spray race operations was noted in aerial photographs reviewed.



Investigations:

There are no investigations associated with this site.

Site 169869: Lot 2 DP 330014, Woodend Beach (Intersects enquiry area.)

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

Location: Lot 2 DP 330014, Woodend Beach
Legal description(s): Lot 2 DP 330014

HAIL activity(s):	Period from	Period to	HAIL activity
	Unknown	Present	Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds

Notes:

14 Dec 2016 This record was created as part of the Waimakariri District Council 2016 HAIL identification project.
7 Jul 2017 Area defined from Unknown to Present aerial photographs. A10 - Horticultural activities, a poultry farm or sports turf were noted in aerial photographs reviewed.



Investigations:

There are no investigations associated with this site.

Site 169871: RS 1203, Woodend Beach (Intersects enquiry area.)

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

Location: RS 1203, Woodend Beach
Legal description(s): RS 1203

HAIL activity(s):	Period from	Period to	HAIL activity
	1941	1984	Livestock dip or spray race operations

Notes:

14 Dec 2016 This record was created as part of the Waimakariri District Council 2016 HAIL identification project.
7 Jul 2017 Area defined from 1941 to 1984 aerial photographs. A8 - Livestock dip or spray race operations was noted in aerial photographs reviewed.



Investigations:

There are no investigations associated with this site.

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Appendix D – LLUR Statement Summary

Preliminary Site Investigation – Belfast to Pegasus Motorway and Woodend Bypass

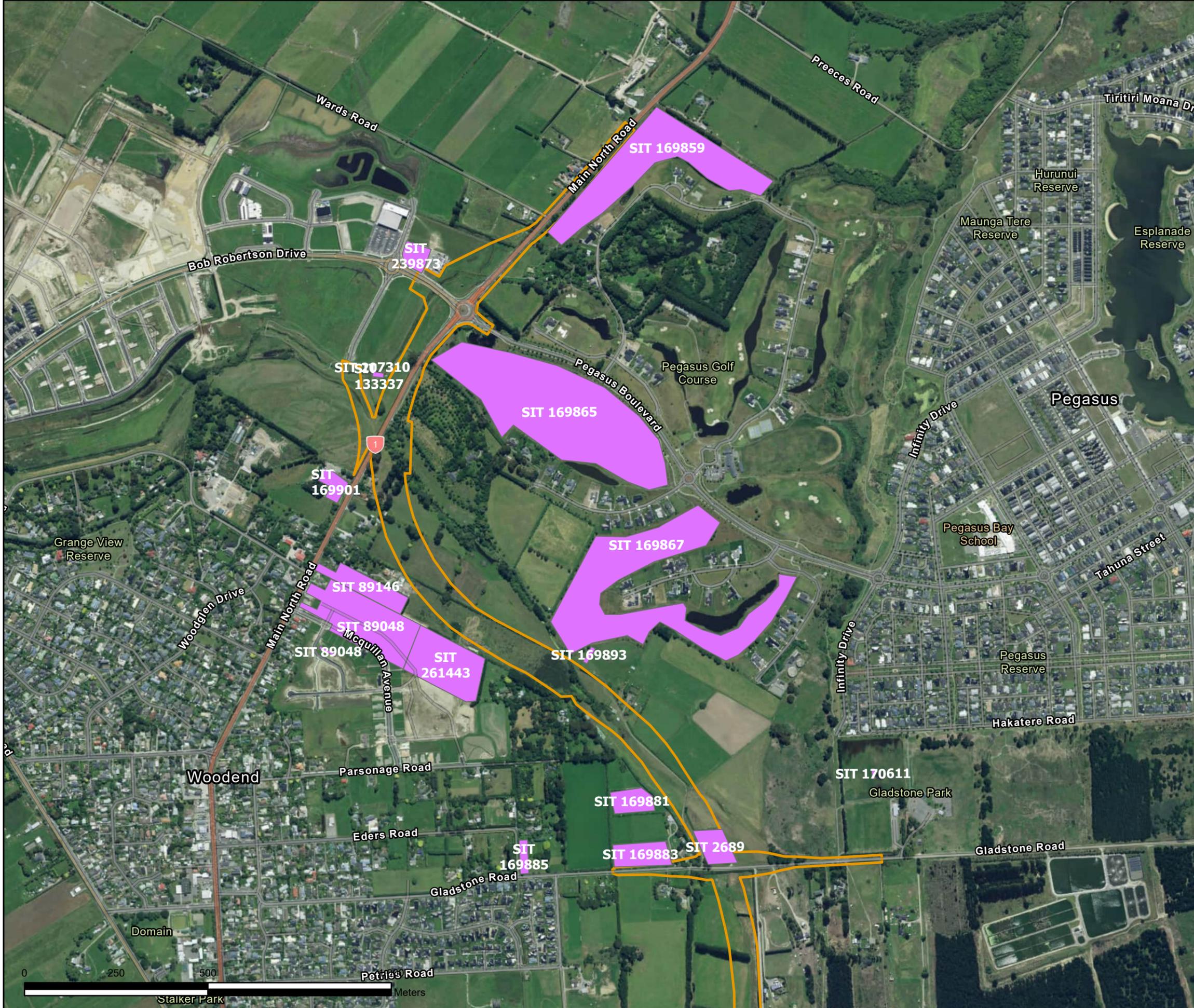
Site Number	Name and Legal Descriptions	Location	Hail activity	Category
Section 4 – Gladstone Road to Wards Road				
2689	Woodend Rubbish Pit Pt RS 3722	162 Gladstone Road, Woodend	G3 – Landfill sites	Not Investigated
89048	Lot 1 DP 47469, Lot 2 DP 431710, Lot 3 DP 48205, Part Lot 1 DP 16789	116-126 Main North Road, Woodend	A10 – Persistent pesticide bulk storage or use;	Below guideline values - Residential
89146	Part RS 685	128 Main North Road, Woodend	A10 – Persistent pesticide bulk storage or use;	Not Investigated
169859	Lot 4 DP 407339	Lot 4 DP 407339	A10 – Persistent pesticide bulk storage or use;	Not Investigated
169865	Lot 210 DP 453895	Lot 210 DP 453895, Pegasus	A10 – Persistent pesticide bulk storage or use;	Not Investigated
169867	Lot 211 DP 437099	Lot 211 DP 437099, Pegasus	A10 – Persistent pesticide bulk storage or use;	Not Investigated
169881	Lot 2 DP 342658	128 Gladstone Road	A10 – Persistent pesticide bulk storage or use;	Not Investigated
169883	Lot 2 DP 342658	128 Gladstone Road	A10 – Persistent pesticide bulk storage or use;	Not Investigated
169885	Part RS 367B	112 Gladstone Road	A10 – Persistent pesticide bulk storage or use;	Not Investigated
169893	Lot 2 DP 393876, Woodend	Lot 2 DP 393876	A8 – Livestock dip or spray race operations;	Not Investigated
169901	Part RS 3171, Part RS 3171, Part RS 358	147 Main North Road, Woodend	G1 – Cemeteries;	Not Investigated
170611	RS 39605	202 Gladstone Road, Woodend	A10 – Persistent pesticide bulk storage or use;	Not Investigated
261443	Lot 102 DP 559824	70 Parsonage Road, Woodend	A10 – Persistent pesticide bulk storage or use; G5 – Waste disposal to land;	Not Investigated

Appendix D – LLUR Statement Summary

Preliminary Site Investigation – Belfast to Pegasus Motorway and Woodend Bypass

Site Number	Name and Legal Descriptions	Location	Hail activity	Category
133337	Lot 2 DP 327014	1221 Main North Road, Woodend	A8 – Livestock dip or spray race operations;	Below guideline values – Industrial/Commercial
207310	Lot 2 DP 327014	1221 Main North Road, Woodend	A2 – Chemical manufacture or bulk storage;	Below guideline values – Industrial/Commercial
239873	LOT 9 DP 521536 BP Ravenswood	Corner of Bob Robertson Drive and Kesteven Place, Ravenswood	A17 – Storage tanks or drums for fuel, chemicals or liquid waste;	Not Investigated

Hail Sites in Section 4 – Gladstone Road to Wards Road



Legend

- NZTA B2P Designation
- Hail Sites



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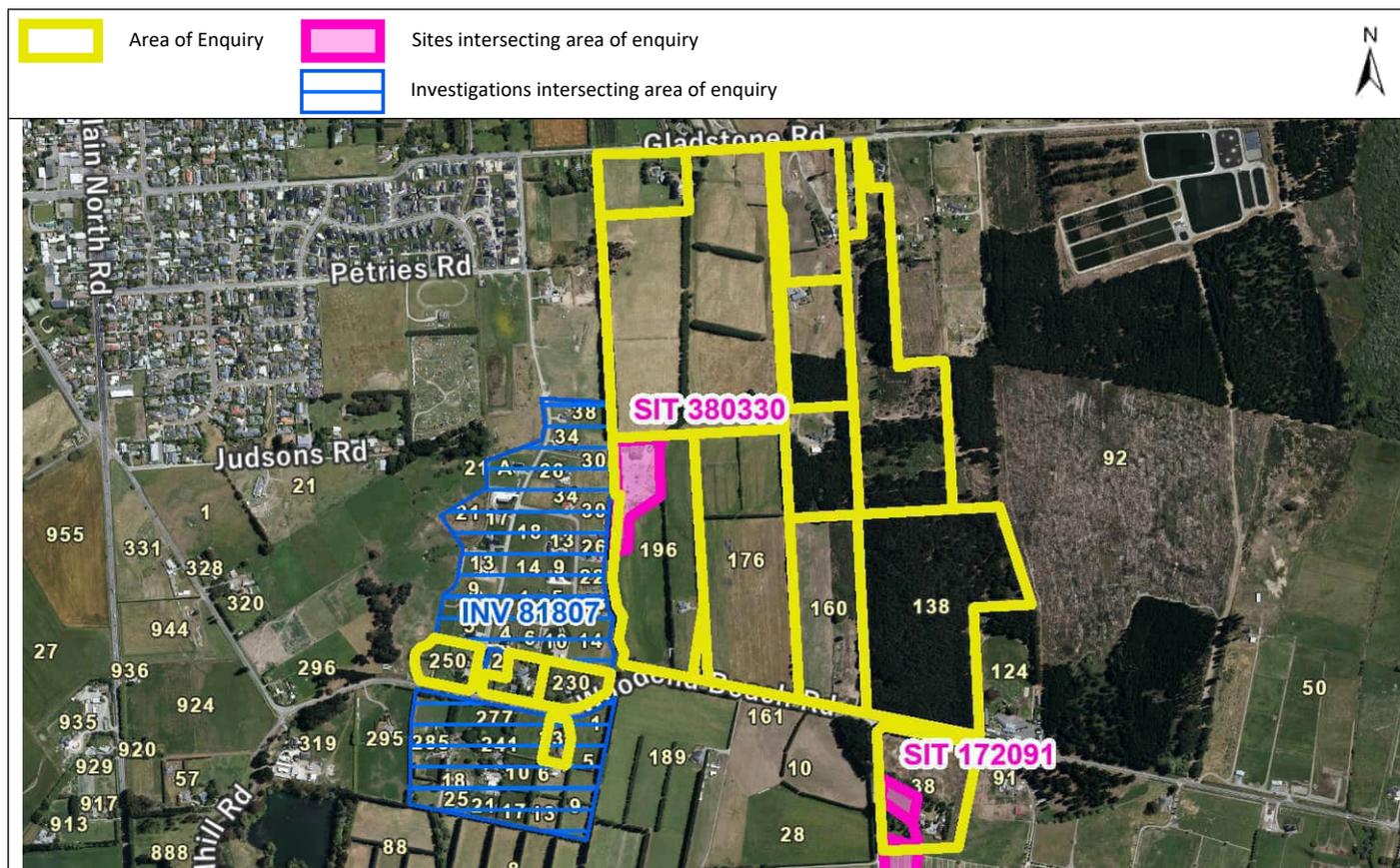
Yours sincerely

Contaminated Sites Team

Property Statement from the Listed Land Use Register

Visit ecan.govt.nz/HAIL for more information or contact Customer Services at ecan.govt.nz/contact/ and quote ENQ394064

Date generated: 15 October 2024
Land parcels: Lot 3 DP 3631
 Section 2 SO 565976
 Lot 1 DP 42610
 RS 41174
 Section 3 SO 565976
 Lot 2 DP 345904
 Lot 1 DP 29099
 Lot 1 DP 545098
 Lot 3 DP 508553
 Lot 1 DP 345904
 Lot 3 DP 80494
 Lot 2 DP 29099
 Lot 17 DP 484451
 Lot 3 DP 345904
 Lot 1 DP 80494
 Section 1 SO 565976



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Sites at a glance

 Sites within enquiry area

Site number	Name	Location	HAIL activity(s)	Category
172091	17 Jelfs Road, Woodend Beach	17 Jelfs Road, Woodend Beach	A10 - Persistent pesticide bulk storage	Not Investigated

			or use;	
380330	196 Woodend Beach Road, Woodend Beach, Woodend, Canterbury, 7691, NZL	196 Woodend Beach Road, Woodend Beach, Woodend, Canterbury, 7691, NZL	G5 - Waste disposal to land;G3 - Landfill sites;	Not Investigated

More detail about the sites

Site 172091: 17 Jelfs Road, Woodend Beach (Intersects enquiry area.)

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

Location: 17 Jelfs Road, Woodend Beach
 Legal description(s): Lot 1 DP 42610, Lot 5 DP 42610

HAIL activity(s):	Period from	Period to	HAIL activity
	1973	1984	Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds

Notes:

- 13 Dec 2016** This record was created as part of the Waimakariri District Council 2016 HAIL identification project.
- 21 Aug 2017** Area defined from 1973 to 1984 aerial photographs. A10 - Persistent pesticide bulk storage or use was noted in aerial photographs reviewed.

Investigations:

There are no investigations associated with this site.

Site 380330: 196 Woodend Beach Road, Woodend Beach, Woodend, Canterbury, 7691, NZL (Intersects enquiry area.)

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

Location: 196 Woodend Beach Road, Woodend Beach, Woodend, Canterbury, 7691, NZL
 Legal description(s): Section 1 SO 565976

HAIL activity(s):	Period from	Period to	HAIL activity
	2000	Present	Waste disposal to land (excluding where biosolids have been used as soil conditioners)
	2010	2020	Landfill sites

Notes:

Investigations:

There are no investigations associated with this site.

Nearby investigations of interest

INV 81807 **Soil Contamination Risk - Stage 1 Preliminary Site Investigation Report - 231, 244, 273 and 285 Woodend Beach Road, Woodend**
 Davie Lovell Smith - Preliminary Site Investigation
 1 May 2014

Summary of investigation(s):

A preliminary site investigation reviewed historical aerial photographs, regional and district council records and land titles to identify Hazardous Activities and Industries List (HAIL) sites. A 1,500 metre square area of peonies was identified at Lot 1 DP 72955, consented in 1996 and is not thought to have used persistent pesticides based on the era of development. No other HAIL activities were identified in the report.

Environment Canterbury understands that copper based sprays are commonly used to control bacterial blight on peonies. Fungicides for grey mould sprays are not likely to be persistent from this time period. Aerial photographs at Lot 2 DP 72955 indicate a shooting range at Lot 2 DP 72955 from 1994 to 2013 that was subsequently found to never have been used. The clay shooting trap house was set up but the owner could not afford the trap. The trap house was used to house lambs. No HAIL sites have been identified on Lot 3 DP 72955 or Lot 4 DP 80494.

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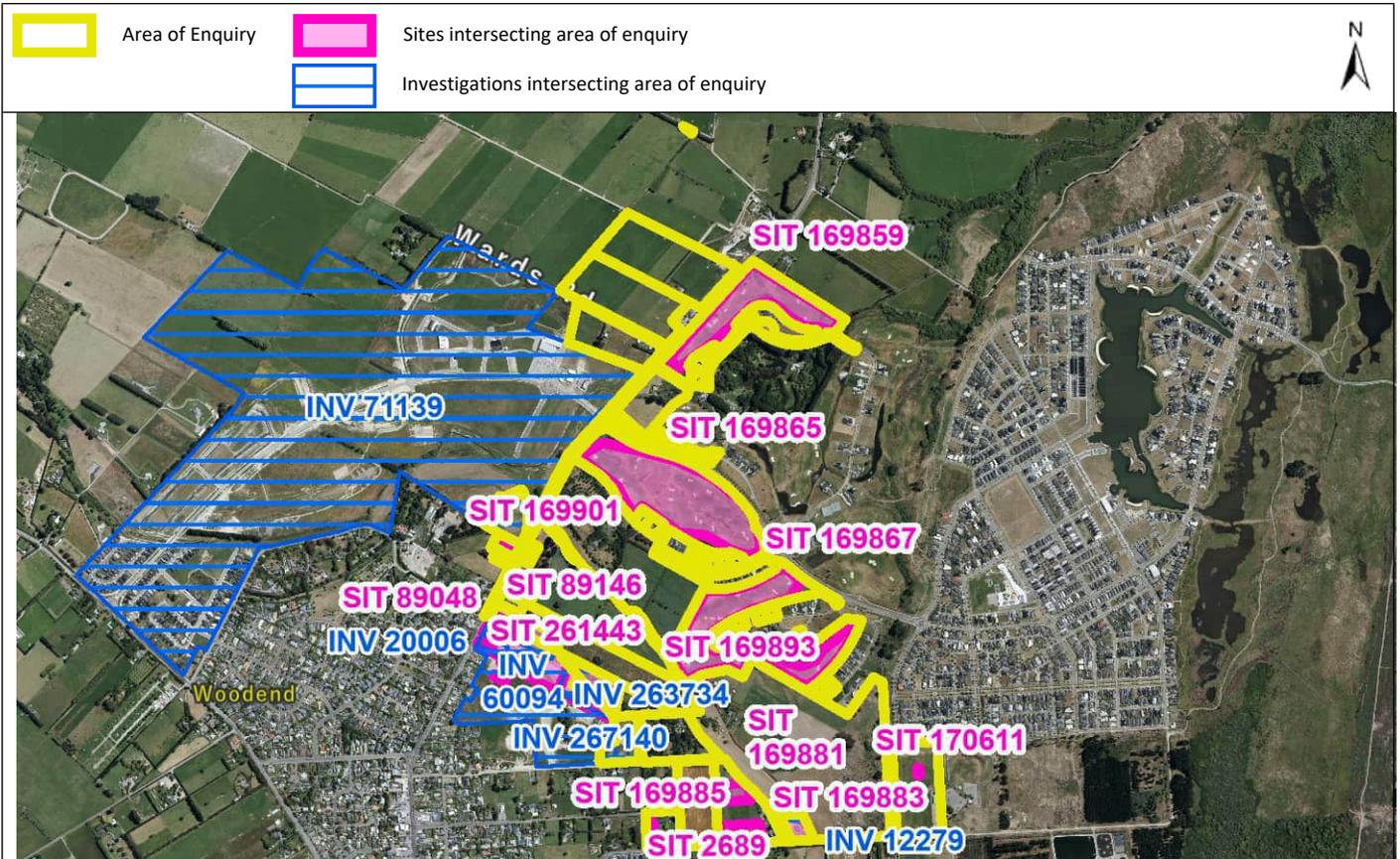
Contaminated Sites Team

Property Statement from the Listed Land Use Register

Visit ecan.govt.nz/HAIL for more information or
contact Customer Services at ecan.govt.nz/contact/ and quote ENQ394411

Date generated: 17 October 2024
Land parcels: Part RS 358
Lot 173 DP 579125
Lot 63 DP 412982
Lot 211 DP 437099
Lot 1 DP 13738
Lot 701 DP 437099
Lot 2 DP 407339
Lot 43 DP 437099
Lot 97 DP 417391
RS 39605
Lot 45 DP 437099
Lot 201 DP 559824
Lot 9 DP 403716
Lot 15 DP 399996
Lot 99 DP 453895
Part RS 3093,3129,3141-3144,3169,3170
Lot 42 DP 437099
Lot 700 DP 417391
Lot 46 DP 437099
Lot 2 DP 393876
Lot 502 DP 412982
Lot 500 DP 417391
Part RS 685
Lot 215 DP 400595
Lot 5 DP 400595
Lot 2 DP 481513
Lot 64 DP 412982
Lot 1 DP 478302
Part RS 3171
Lot 1 DP 3598
Lot 24 DP 399996
Lot 23 DP 399996
Lot 1 DP 41797
Lot 504 DP 437099
Part RS 3722
Lot 27 DP 399996
Lot 2 DP 414079
Lot 1 DP 342658
Lot 10 DP 403716
Lot 25 DP 399996
Lot 28 DP 399996
Lot 2 DP 342658
Lot 1 DP 414079
Part RS 864
Lot 600 DP 545059
Part RS 3171
Lot 1 DP 11040
Lot 3 DP 407339
Part RS 3093,3129,3141-3144,3169,3170
Lot 210 DP 453895
Part RS 685
Lot 1 DP 15192
Lot 2011 DP 598404

Lot 2 DP 80926
 Part RS 757
 Lot 4 DP 407339
 Part RS 3093,3129,3141-3144,3169,3170
 Part RS 367B



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Sites at a glance

Sites within enquiry area

Site number	Name	Location	HAIL activity(s)	Category
2689	Woodend Rubbish Pit	162 Gladstone Road, Woodend	G3 - Landfill sites;	Not Investigated
89048	116-126 Main North Road, Woodend	116-126 Main North Road, Woodend	A10 - Persistent pesticide bulk storage or use;	Below guideline values - Residential
89146	128 Main North Road, Woodend	128 Main North Road, Woodend	A10 - Persistent pesticide bulk storage or use;	Not Investigated
169859	Lot 4 DP 407339, Pegasus	Lot 4 DP 407339, Pegasus	A10 - Persistent pesticide bulk storage or use;	Not Investigated
169865	Lot 210 DP 453895, Pegasus	Lot 210 DP 453895, Pegasus	A10 - Persistent pesticide bulk storage or use;	Not Investigated
169867	Lot 211 DP 437099, Pegasus	Lot 211 DP 437099, Pegasus	A10 - Persistent pesticide bulk storage or use;	Not Investigated
169881	128 Gladstone Road, Woodend	128 Gladstone Road, Woodend	A10 - Persistent pesticide bulk storage or use;	Not Investigated
169883	128 Gladstone Road, Woodend	128 Gladstone Road, Woodend	A10 - Persistent pesticide bulk storage or use;	Not Investigated
169885	112 Gladstone Road, Woodend	112 Gladstone Road, Woodend	A10 - Persistent pesticide bulk storage or use;	Not Investigated
169893	Lot 2 DP 393876, Woodend	Lot 2 DP 393876,	A8 - Livestock dip or	Not Investigated

		Woodend	spray race operations;	
169901	147 Main North Road, Woodend	147 Main North Road, Woodend	G1 - Cemeteries;	Not Investigated
170611	202 Gladstone Road, Woodend	202 Gladstone Road, Woodend	A10 - Persistent pesticide bulk storage or use;	Not Investigated
261443	70 Parsonage Road, Woodend	70 Parsonage Road, Woodend	A10 - Persistent pesticide bulk storage or use;G5 - Waste disposal to land;	Not Investigated

More detail about the sites

Site 2689: Woodend Rubbish Pit (Intersects enquiry area.)

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

Location: 162 Gladstone Road, Woodend
Legal description(s): Pt RS 3722

HAIL activity(s):	Period from	Period to	HAIL activity
	?	?	Landfill sites

Notes:

- 20 Feb 2006** Former Borough pit filled with rubbish and fill material. A site visit in 1995 reported that the site has been covered with clean fill with scrub established over the site. Exposed rubbish and ponding water were noted during the visit. A motorcycle/bike/horse track has been constructed on the site.
- 5 May 2008** Based on the anecdotal knowledge reported by the site's owner, the pit was predominantly filled with hardfill material.

Investigations:

INV 12279 *** Notification of contaminated site investigation received - MWH, 19/7/2012 ***
Montgomery Watson Harza - Notice of Site Investigation
24 Jul 2012

Summary of investigation(s):

Report(s) have not yet been audited.

Site 89048: 116-126 Main North Road, Woodend (Intersects enquiry area.)

Category: Below guideline values - Residential
Definition: Investigation results demonstrate that hazardous substances present at the site, but below applicable guidelines. - Residential

Location: 116-126 Main North Road, Woodend
Legal description(s): Lot 1 DP 47469, Lot 2 DP 431710, Lot 3 DP 48205, Part Lot 1 DP 16789

HAIL activity(s):	Period from	Period to	HAIL activity
	post-1973	2015	Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds

Notes:

Investigations:

INV 20006 Preliminary Soil Sampling at Parsonage Road, Woodend
Pattle Delamore Partners Ltd - Detailed Site Investigation
22 Jun 2005

Summary of investigation(s):

Investigation objective: The investigation undertook broad scale composite sampling across the area which was used for agricultural, market gardening and orcharding. The investigation intended to identify broadly whether there were elevated levels of contaminants present due to these land-uses, because the land-owners were investigating the potential subdivision of the site for residential purposes. The investigation did not intend to determine whether there was any contamination from a sheep foot bath area, and this area was not sampled.

Results: Eight composite samples were analysed from surface soils. Each composite sample consisted of ten sub-samples, which were mixed together in the field. Compositing this number of sub-samples is no longer considered to be best practise. The samples were analysed for metals, organochlorine, organonitrogen and organophosphorus pesticides. There were no detections of organonitrogen or organophosphorus pesticides. All metals results appeared to be below local background concentrations, and there were detectable but very low levels of organochlorine pesticides present in all samples. The report stated that the sampling undertaken could only be considered to be indicative.

INV 60094

Preliminary and Detailed Environmental Site Investigation - 70-82 Parsonage Road & 116-126 Main North Road, Woodened, Canterbury

Geoscience Consulting Ltd - Detailed Site Investigation
19 Aug 2014

Summary of investigation(s):

Investigation objective: The report investigated the site history and undertook sampling across the site to investigate levels of contamination, prior to the site being subdivided for residential purposes.

Results: The investigation collected soil samples from shallow soils across the site. The majority of the samples were analysed as composites, however samples from the sheep dip area and one sample from the vineyard area were analysed individually. Three of the composite samples included more than one land-use (for example the orchard and the market garden area) which is not best practise. In the orchard/market garden area the soil sampling results from these areas were consistent with or lower than the remainder of the market garden area and this methodology is not considered to be a cause for concern in this case. There was no sampling of the pile of organic and demolition waste in the former orchard area.

The soil sampling results from the southern portion of Lot 3 DP 48205 (no HAIL activity), Lot 1 DP 82046 (including the former apple orchard) did not detect organochlorine pesticides, and found levels of metals within recorded background concentrations. The soil sampling results for the northern portion of Lot 3 DP 48205 (surrounding the vineyard), Part Lot 1 DP 16789 (market gardening area), Lot 2 DP 431710 (northern orchard area), and Lot 1 DP 47469 (120 Main North Road, market gardening) showed some levels of metals above recorded background concentrations, and detectable levels of DDT in some samples. However there were no exceedances of the soil contaminant standards for residential land-use.

82 Parsonage Road (Lot 2 DP 82046), which contains the sheep foot dip, does contain elevated levels of contaminants. Samples from the sheep foot dip area showed elevated arsenic, with the duplicate sample exceeding the soil contaminant standard for residential land-use. There were also elevated levels of zinc in this area, which could have adverse effects on surface water quality. DDT was below the laboratory limit of detection in this area. The composite sample from this property, including the vicinity of the house, also showed elevated metals - in particular zinc - although the levels did not exceed human health or environmental protection levels.

Conclusions: Sampling across the majority of the site was appropriate, and shows that levels of contaminants are either within recorded background concentrations or below residential guideline values. Further sampling is required to delineate contamination in the area of the sheep foot bath. The waste pile within the apple orchard, which included some demolition waste, and the former glasshouse have not been adequately investigated at this stage.

Site 89146: 128 Main North Road, Woodend (Intersects enquiry area.)

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

Location: 128 Main North Road, Woodend
Legal description(s): Part RS 685

HAIL activity(s):

Period from	Period to	HAIL activity
Pre-1973	Pre-1994	Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds

Notes:

23 Mar 2015 An orchard is visible on aerial photographs from 1973 and 1984.



Investigations:

There are no investigations associated with this site.

Site 169859: Lot 4 DP 407339, Pegasus (Intersects enquiry area.)

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

Location: Lot 4 DP 407339, Pegasus
Legal description(s): Lot 4 DP 407339

HAIL activity(s):	Period from	Period to	HAIL activity
	Unknown	Present	Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds

Notes:

- 14 Dec 2016** This record was created as part of the Waimakariri District Council 2016 HAIL identification project.
- 7 Jul 2017** Area defined from Unknown to Present aerial photographs. A10 - Horticultural activities, a poultry farm or sports turf were noted in aerial photographs reviewed.

 **Investigations:**

There are no investigations associated with this site.

Site 169865: Lot 210 DP 453895, Pegasus (Intersects enquiry area.)

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

Location: Lot 210 DP 453895, Pegasus
Legal description(s): Lot 2001 DP 394635, Lot 210 DP 453895

HAIL activity(s):	Period from	Period to	HAIL activity
	Unknown	Present	Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds

Notes:

- 14 Dec 2016** This record was created as part of the Waimakariri District Council 2016 HAIL identification project.
- 7 Jul 2017** Area defined from Unknown to Present aerial photographs. A10 - Horticultural activities, a poultry farm or sports turf were noted in aerial photographs reviewed.

 **Investigations:**

There are no investigations associated with this site.

Site 169867: Lot 211 DP 437099, Pegasus (Intersects enquiry area.)

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

Location: Lot 211 DP 437099, Pegasus
Legal description(s): Lot 211 DP 437099

HAIL activity(s):	Period from	Period to	HAIL activity
	Unknown	Present	Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds

Notes:

- 14 Dec 2016** This record was created as part of the Waimakariri District Council 2016 HAIL identification project.
- 7 Jul 2017** Area defined from Unknown to Present aerial photographs. A10 - Horticultural activities, a poultry farm or sports turf were noted

in aerial photographs reviewed.



Investigations:

There are no investigations associated with this site.

Site 169881: 128 Gladstone Road, Woodend (Intersects enquiry area.)

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

Location: 128 Gladstone Road, Woodend
Legal description(s): Lot 2 DP 342658

HAIL activity(s):	Period from	Period to	HAIL activity
	Unknown	Present	Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds

Notes:

- 14 Dec 2016** This record was created as part of the Waimakariri District Council 2016 HAIL identification project.
- 7 Jul 2017** Area defined from Unknown to Present aerial photographs. A10 - Horticultural activities, a poultry farm or sports turf were noted in aerial photographs reviewed.



Investigations:

There are no investigations associated with this site.

Site 169883: 128 Gladstone Road, Woodend (Intersects enquiry area.)

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

Location: 128 Gladstone Road, Woodend
Legal description(s): Lot 2 DP 342658

HAIL activity(s):	Period from	Period to	HAIL activity
	Unknown	Present	Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds

Notes:

- 14 Dec 2016** This record was created as part of the Waimakariri District Council 2016 HAIL identification project.
- 7 Jul 2017** Area defined from Unknown to Present aerial photographs. A10 - Horticultural activities, a poultry farm or sports turf were noted in aerial photographs reviewed.



Investigations:

There are no investigations associated with this site.

Site 169885: 112 Gladstone Road, Woodend (Intersects enquiry area.)

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

Location: 112 Gladstone Road, Woodend
Legal description(s): Part RS 367B

HAIL activity(s):	Period from	Period to	HAIL activity
	1965	1973	Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds

Notes:

14 Dec 2016

This record was created as part of the Waimakariri District Council 2016 HAIL identification project.

7 Jul 2017

Area defined from 1965 to 1973 aerial photographs. A10 - Horticultural activities, a poultry farm or sports turf were noted in aerial photographs reviewed.



Investigations:

There are no investigations associated with this site.

Site 169893: Lot 2 DP 393876, Woodend (Intersects enquiry area.)

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

Location: Lot 2 DP 393876, Woodend
Legal description(s): Lot 2 DP 393876

HAIL activity(s):	Period from	Period to	HAIL activity
	1973	Present	Livestock dip or spray race operations

Notes:

14 Dec 2016

This record was created as part of the Waimakariri District Council 2016 HAIL identification project.

7 Jul 2017

Area defined from 1973 to Present aerial photographs. A8 - Livestock dip or spray race operations was noted in aerial photographs reviewed.



Investigations:

There are no investigations associated with this site.

Site 169901: 147 Main North Road, Woodend (Intersects enquiry area.)

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

Location: 147 Main North Road, Woodend
Legal description(s): Part RS 3171,Part RS 3171,Part RS 358

HAIL activity(s):	Period from	Period to	HAIL activity
	Pre-1943	Present	Cemeteries

Notes:

14 Dec 2016

This record was created as part of the Waimakariri District Council 2016 HAIL identification project.

7 Jul 2017

Area defined from Pre-1943 to Present aerial photographs. G1 - Cemeteries was noted in aerial photographs reviewed.



Investigations:

There are no investigations associated with this site.

Site 170611: 202 Gladstone Road, Woodend (Intersects enquiry area.)

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

Location: 202 Gladstone Road, Woodend
Legal description(s): RS 39605

HAIL activity(s):	Period from	Period to	HAIL activity
	Unknown	Present	Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds

Notes:

- 15 Jun 2017** This record was created as part of the Waimakariri District Council 2016 HAIL identification project.
- 7 Jul 2017** Area defined from Unknown to Present aerial photographs. A10 - Horticultural activities, a poultry farm or sports turf were noted in aerial photographs reviewed.



Investigations:

There are no investigations associated with this site.

Site 261443: 70 Parsonage Road, Woodend (Intersects enquiry area.)

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

Location: 70 Parsonage Road, Woodend
 Legal description(s): Lot 173 DP 579125, Lot 20 DP 579125, Lot 21 DP 579125, Lot 22 DP 579125, Lot 23 DP 579125, Lot 24 DP 579125, Lot 28 DP 559824, Lot 29 DP 559824, Lot 303 DP 579125, Lot 53 DP 579125, Lot 54 DP 579125, Lot 55 DP 579125, Lot 56 DP 579125, Lot 57 DP 579125, Lot 58 DP 579125, Lot 59 DP 579125, Lot 60 DP 579125, Lot 61 DP 579125, Lot 62 DP 579125, Lot 63 DP 579125, Lot 64 DP 579125, Lot 65 DP 579125, Lot 76 DP 579125, Lot 77 DP 579125

HAIL activity(s):	Period from	Period to	HAIL activity
	post-1973	2015	Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds
	2020	2020	Waste disposal to land (excluding where biosolids have been used as soil conditioners)

Notes:

- 17 Aug 2020** Incident Response Officer reported that a house was demolished, moved to this location and burned. XRF screening of soil collected by Incident Response Officer showed arsenic up to 559 mg/kg, lead up to 3429 mg/kg and zinc up to 871 mg/kg.



Investigations:

INV 267140 Detailed Environmental Site Investigation, Parsonage Road, Woodend
 ENGEO - Detailed Site Investigation
 20 Oct 2020

Summary of investigation(s):

Environment Canterbury has received a Detailed Site Investigation report that includes all or part of the property you have selected.
 A DSI seeks to identify the type, extent and level of contamination (if any) in an area. Soil, soil-gas or water samples will have been collected and analysed.
 This investigation has not been summarised.



Nearby investigations of interest

INV 71139 Preliminary Environmental Site Investigation: Ravenswood Subdivision, Woodend
 Geoscience Consulting Ltd - Preliminary Site Investigation
 5 Jun 2014

Summary of investigation(s):

Site history: The study area is situated at 1211, 1221 and 1241 Main North Road; 5, 45, 57 and 69 Wards Road; 126 Chinnerys Road; and 174 Rangiora-Woodend Road, Woodend. Information on file suggests that the land associated with the study area has been used or agricultural purposes since well before 1940. It is understood that the study area is scheduled to be developed as a residential subdivision.

As more information about the nature of historical horticultural activities associated with the study area has been received, the extents of the HAIL activity polygons have been adjusted to more closely reflect areas of concern.

INV71139: Preliminary Environmental Site Investigation: Ravenswood Subdivision, Woodend

Investigation objective: To identify conditions indicative of releases and threatened releases of hazardous substances on, at, in or to the subject property or in the immediate vicinity of the property and report on the potential risk to site users.

Results: The following HAIL activities were identified, generally in areas close to the former farm homesteads and working yards: A8 Livestock dip or spray race operations, A17 Storage tanks or drums for fuel, chemicals or liquid waste, G4 Scrap yards including automotive dismantling, wrecking or scrap metal yards, and G5 Waste disposal to land. All HAIL areas were assigned specific site polygons on the LLUR. Sampling was recommended on the Main North Road and Rangiora / Woodend Road farmsteads to assess the potential for contamination associated with these HAIL activities.

In all other areas of the wider subdivision site not assigned a HAIL site polygon, there was no evidence of any HAIL activities that may have caused soil contamination. These areas were considered to be safe for residential use with no further investigation required.

INV 263734 **Sediment Basin Assessment - Woodlands Estate, Parsonage Road, Woodend**
ENGEO - Detailed Site Investigation
10 Sep 2020

Summary of investigation(s):

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

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

This investigation has not been summarised.

Disclaimer

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

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

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www.ecan.govt.nz

Dear Sir/Madam

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

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

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

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

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

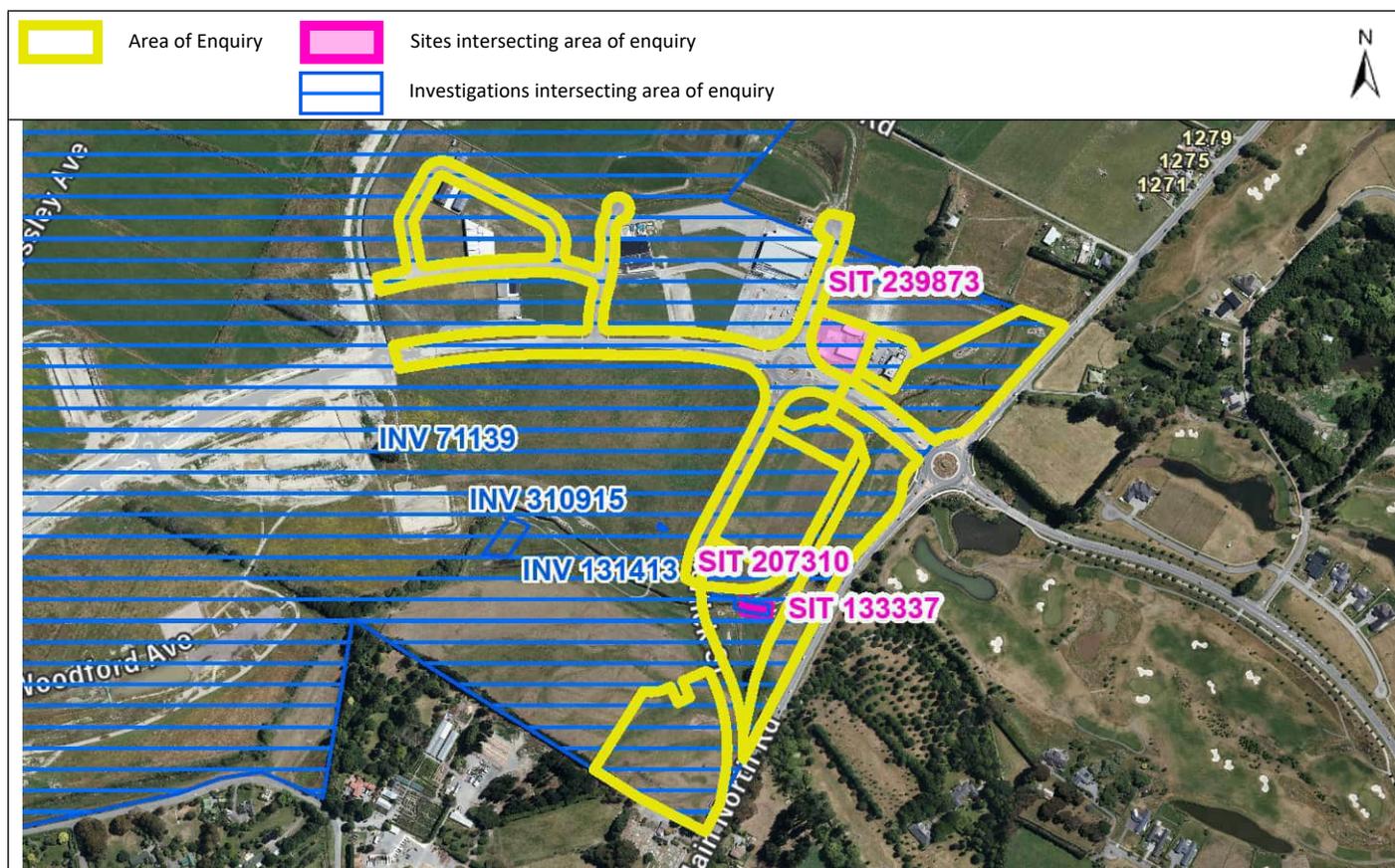
Yours sincerely

Contaminated Sites Team

Property Statement from the Listed Land Use Register

Visit ecan.govt.nz/HAIL for more information or contact Customer Services at ecan.govt.nz/contact/ and quote ENQ395155

Date generated: 24 October 2024
Land parcels: Lot 3001 DP 521536
 Lot 9 DP 521536
 Lot 10 DP 521536
 Lot 3000 DP 521536
 Lot 11 DP 545570
 Lot 202 DP 521536
 Lot 2011 DP 598404
 Lot 3003 DP 521536
 Lot 1 DP 545570
 Lot 2 DP 545570
 Lot 5001 DP 526350



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

Sites at a glance

 Sites within enquiry area

Site number	Name	Location	HAIL activity(s)	Category
133337	Ravenswood North	1221 Main North Road, Woodend	A8 - Livestock dip or spray race operations;	Below guideline values - Industrial/Commercial
207310	Ravenswood North	1221 Main North Rd, Woodend	A2 - Chemical manufacture, formulation or bulk storage;	Below guideline values - Industrial/Commercial
239873	BP Ravenswood	Corner of Bob Robertson Drive and	A17 - Storage tanks or drums for fuel,	Not Investigated

		Kesteven Place, Ravenswood	chemicals or liquid waste;	
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More detail about the sites

Site 133337: Ravenswood North (Intersects enquiry area.)

Category: Below guideline values - Industrial/Commercial
 Definition: Investigation results demonstrate that hazardous substances present at the site, but below applicable guidelines. - Industrial/Commercial

Location: 1221 Main North Road, Woodend
 Legal description(s): Lot 2 DP 327014

HAIL activity(s):	Period from	Period to	HAIL activity
	Unknown	Unknown	Livestock dip or spray race operations

Notes:

Investigations:

INV 71139 Preliminary Environmental Site Investigation: Ravenswood Subdivision, Woodend
 Geoscience Consulting Ltd - Preliminary Site Investigation
 5 Jun 2014

Summary of investigation(s):

Site history: The study area is situated at 1211, 1221 and 1241 Main North Road; 5, 45, 57 and 69 Wards Road; 126 Chinnerys Road; and 174 Rangiora-Woodend Road, Woodend. Information on file suggests that the land associated with the study area has been used or agricultural purposes since well before 1940. It is understood that the study area is scheduled to be developed as a residential subdivision.

As more information about the nature of historical horticultural activities associated with the study area has been received, the extents of the HAIL activity polygons have been adjusted to more closely reflect areas of concern.

INV71139: Preliminary Environmental Site Investigation: Ravenswood Subdivision, Woodend

Investigation objective: To identify conditions indicative of releases and threatened releases of hazardous substances on, at, in or to the subject property or in the immediate vicinity of the property and report on the potential risk to site users.

Results: The following HAIL activities were identified, generally in areas close to the former farm homesteads and working yards: A8 Livestock dip or spray race operations, A17 Storage tanks or drums for fuel, chemicals or liquid waste, G4 Scrap yards including automotive dismantling, wrecking or scrap metal yards, and G5 Waste disposal to land. All HAIL areas were assigned specific site polygons on the LLUR. Sampling was recommended on the Main North Road and Rangiora / Woodend Road farmsteads to assess the potential for contamination associated with these HAIL activities.

In all other areas of the wider subdivision site not assigned a HAIL site polygon, there was no evidence of any HAIL activities that may have caused soil contamination. These areas were considered to be safe for residential use with no further investigation required.

INV 131413 Detailed Environmental Site Investigation Ravenswood Subdivision, Stages 9 & 10, Woodend
 ENGEO - Detailed Site Investigation
 27 Oct 2015

Summary of investigation(s):

In September 2015 ENGEO performed a detailed site investigation of several HAIL areas identified during a preliminary site investigation (INV 71139) of the future Ravenswood Subdivision in Woodend. The three HAIL areas investigated consisted of an underground storage tank (UST), a waste disposal to land area, an area used for chemical storage/mixing and an area used for animal races and swim dip. An approximately 4,000 litre steel petrol UST was removed during the investigation. A total of 24 soil samples were collected and analysed. A summary of soil samples collected and submitted for analysis is provided below:

UST Validation Samples: Seven soil samples were collected from the tank bedding material, the base and the walls of the UST and analysed for total petroleum hydrocarbons (TPH) and volatile organic compounds (VOCs). Terminus of tank pit was at 3.0 metres below ground level.

Waste Disposal Area samples: Four soil samples were collected at various depths from three test pits excavated in the vicinity of two waste pits and one offal pit. Samples were analysed for seven priority metals (arsenic, cadmium, chromium, copper, lead, nickel, zinc); polycyclic aromatic hydrocarbons (PAHs) and organochlorine pesticides (OCPs).

Livestock Dip samples: Eleven soil samples were collected along the axis of the livestock dip and analysed for seven priority metals, OCPs and organonitrogen pesticides (ONP).

Chemical Storage/Mixing area samples: One sample was collected from the footprint of a chemical storage/mixing area and analysed for copper sulphate.

Reported toluene and total xylenes concentrations exceeded applicable Tier 1 for protection of groundwater quality in one UST sample collected at 2.25 m bgl. No other reported VOC or TPH concentrations exceeded relevant guideline values in the UST excavation. Reported arsenic and lead concentrations exceeded applicable soil contaminant standards (SCSs) for residential land use in one sample collected from Waste Pit 1. Reported concentrations of constituents of interest did not exceed relevant SCSs for residential land use in any other Waste Disposal Area sample. Reported constituent concentrations did not exceed applicable commercial land use soil contaminant standards in any sample.

Reported arsenic concentrations exceeded the applicable SCS for residential land use in seven samples ranging in depth from 0.0 to 0.25 m bgl. Four of these concentrations exceeded the SCS for commercial/industrial land use as well. Reported lead concentrations exceeded the applicable SCS for residential and commercial/industrial land use in two samples collected from the surface and near surface (0.0 and 0.15 m bgl) at what is believed to be a chemical mixing area. The reported cadmium concentration exceeded the applicable SCS for residential land use in one sample collected at the surface in the chemical mixing area as well. Reported concentrations of all other constituents of interest did not exceed applicable SCSs or guideline values for residential land use.

Although not included in the tables of results, laboratory analytical data sheets show that a sample of a blue substance collected from the vicinity of the storage shed contained sulphate at 360,000 mg/kg and copper at 250,000 mg/kg, which may be indicative of copper sulphate. The majority of OCPs and ONP constituents were not detected above laboratory method detection limits in any sample. The report presents several potential strategies to remediate the contaminated soil but does not recommend any one particular strategy.

INV 310915 **Validation Report - Ravenswood Subdivision, Stage 9 & 10**
ENGEO - Site Validation Report
8 Jun 2017

Summary of investigation(s):

Site history: The site is located on Chinnerys Road, Woodend and has been used for agricultural activity since pre-1940 to the present. Contamination was identified in a series of investigations (audited separately) originating from activities including waste disposal to land, chemical storage, and sheep dip operations. It is understood that the site was to be developed for a residential subdivision, and that Stage 9 and 10 were for an area of the development intended for commercial use.

INV131413 – Detailed Environmental Site Investigation Ravenswood Subdivision, Stages 9 & 10 (ENGEO 2015)

Please refer to the INV131413 investigation summary (audited separately).

INV310915 - Validation Report, Ravenswood Subdivision Stage 9 & 10 (ENGEO, 2017)

The purpose of this validation report was to outline the remediation works undertaken and to document the results of the validation soil sampling. The remediation process involved the excavation of contaminated soil identified in the detailed site investigation within the sheep dip and waste disposal areas. X-ray fluorescence (XRF) testing was used in the initial excavations to screen for trace elements, and additional material was removed until the XRF results met the Commercial/Industrial land use Soil Contamination Standard (SCS). The final depth of the excavations ranged from 0.3m to 0.7m. Once the contaminated soil had been excavated, ENGEO conducted validation soil sampling in the floors and walls of the excavated areas. Two discrete soil samples were collected from the waste disposal area and ten discrete samples were collected from the sheep dip and spray race areas. All soil samples were analysed for trace elements (arsenic, cadmium, chromium, copper, lead, mercury, zinc, nickel) and organochlorine pesticides (OCPs). Soil from the contaminated areas was stockpiled, banded, mixed and analysed to meet waste disposal criteria for Kate Valley Landfill. Two discrete stockpile soil samples were collected, and the results showed no exceedances of the Kate Valley Landfill acceptance criteria. A total of 551.3 tonnes of contaminated soil was disposed of at Kate Valley Landfill. Two discrete soil samples were also collected from the soil upon which the stockpiles were situated, and the results had concentrations of trace elements and OCPs below the Commercial/Industrial land use SCS. The validation soil samples indicated that remedial action removed known contaminated soil with contaminant concentrations exceeding the Commercial/Industrial land use criteria.

Conclusion: SIT 133337, 207310 & 207286 have been categorised as 'Below guideline values – Commercial/Industrial'.

Justification: The validation soil sampling demonstrated that remedial works were adequate. With the information at hand the property is considered suitable for Commercial/Industrial land use. It is noted that the proposed land use for this particular area is commercial, though the wider works included residential development.

Site 207310: Ravenswood North (Intersects enquiry area.)

Category: Below guideline values - Industrial/Commercial

Definition: Investigation results demonstrate that hazardous substances present at the site, but below applicable

guidelines. - Industrial/Commercial

Location: 1221 Main North Rd, Woodend
Legal description(s): Lot 2 DP 327014

HAIL activity(s):	Period from	Period to	HAIL activity
	Unknown	Unknown	Chemical manufacture, formulation and bulk storage

Notes:

28 Jun 2018 Individual sites have been created for each HAIL activity in the northern Ravenswood subdivision. The site has been categorised based on INV131413 and associated audit report.

 **Investigations:**

There are no investigations associated with this site.

Site 239873: BP Ravenswood (Intersects enquiry area.)

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

Location: Corner of Bob Robertson Drive and Kesteven Place, Ravenswood
Legal description(s): Lot 9 DP 521536

HAIL activity(s):	Period from	Period to	HAIL activity
	2018	Current	Storage tanks or drums for fuel, chemicals or liquid waste

Notes:

30 Jul 2019 The site has operated as a service station since August 2018 and supplies unleaded petrol (91, 95 and 98) and diesel. A motor vehicle workshop is not associated with the site.

 **Investigations:**

There are no investigations associated with this site.

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

Listed Land Use Register

What you need to know



What is the Listed Land Use Register (LLUR)?

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

Why do we need the LLUR?

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

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

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

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

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

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

We have two main ways of identifying HAIL sites:

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

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

How does Environment Canterbury classify sites on the LLUR?

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

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

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

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

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

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



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

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

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

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

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



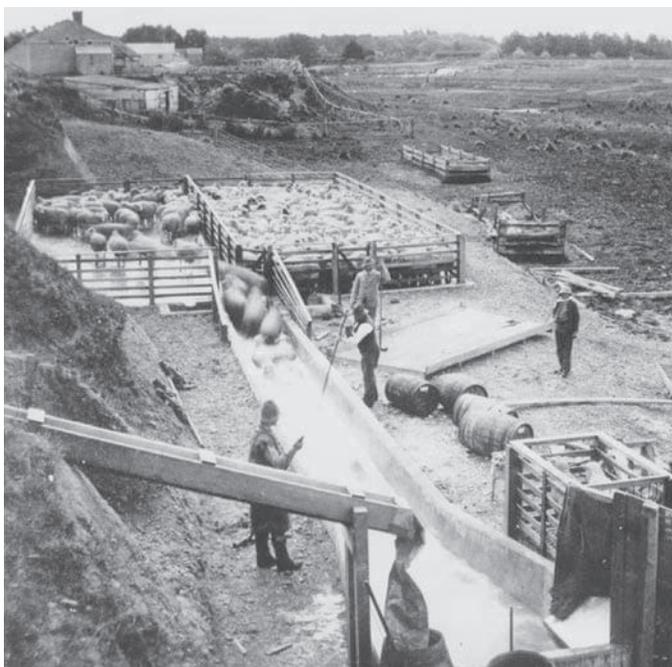
I think my site category is incorrect – how can I change it?

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

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

IMPORTANT!

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



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

Contact us

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

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

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

Contact Environment Canterbury:

Email: ecinfo@ecan.govt.nz

Phone:

Calling from Christchurch: (03) 353 9007

Calling from any other area: 0800 EC INFO (32 4636)



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E13/101

Listed Land Use Register

Site categories and definitions

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

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

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

Not investigated:

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

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

At or below background concentrations:

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

Below guideline values for:

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

Managed for:

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

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

Partially investigated:

The site has been partially investigated. Results:

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

Significant adverse environmental effects:

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

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

Contaminated:

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

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

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

Verified non-HAIL:

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

Please contact Environment Canterbury for further information:

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

Appendix E. Review of Previous Investigations

[Table E1 – Section 1: Start of Project Corridor to Cam Road](#)

[Table E2 – Section 2: Cam Street to SH1 & William Street Intersection](#)

[Table E3 – Section 3: SH1 & William Street Intersection to Gladstone Road](#)

[Table E4 – Section 4: Gladstone Road to Wards Road](#)

[Table E5 – Entire Road Alignment](#)

Appendix E – Review of Previous Investigations
Preliminary Site Investigation – Belfast to Pegasus Motorway and Woodend Bypass

Table E1 – Section 1: Start of Project Corridor to Cam Road

Site Address	ECan ref/Year	Report title	Historical activities	Distance from site (meters)	Potential sources of contamination	Exceedance of adopted criteria/COPC	Key conclusions
89 Sneyd Street	INV364462/2023	Asbestos Demolition Survey			Asbestos in building materials	Asbestos containing material found in main building, externally and the outhouse	Removal by a licensed contractor is recommended
	INV376147/2024	Detailed Site Investigation: 89 Sneyd Street, Kaiapoi, Canterbury	Residential dwelling	~ 15 northwest	Asbestos in building materials Historical fill and or roading	- Heavy metals above background concentrations - Lead and arsenic exceed the SCS for residential land use - Naphthalene above background concentrations -Asbestos fragments in soil below guideline criteria but will require remediation	- A remedial action plan (RAP) is required - Following implementation of the RAP a soil validation report (SVR) will be required
263 and 274 Giles Road, 296 Island Road, 45, 56 and 70 Adderley Terrace	INV11276/2012	Environmental Site Assessment – Silverstream Estate, Kaiapoi	Farming and rural residential land use	> 200 northwest	- Above ground storage tanks - Storage of small quantities of oil, fuel, paint and degreases - Waste disposal	- Arsenic and lead concentrations above residential land use standard - Existing buildings likely contain asbestos	Elevated arsenic and lead concentrations are not expected to have any negative impact upon workers during site development works

Appendix E – Review of Previous Investigations

Preliminary Site Investigation – Belfast to Pegasus Motorway and Woodend Bypass

Site Address	ECan ref/Year	Report title	Historical activities	Distance from site (meters)	Potential sources of contamination	Exceedance of adopted criteria/COPC	Key conclusions
30, 45, 51, 56, 58, 60 and 70 Adderley Terrace, 290 and 310 – 326 Island Road	INV256410/2022	Remediation Action Plan – Silverstream Stages 6 to 10		>80 northwest	- Potential horticultural activities - Offal pits		- RAP objectives include removal of ACM contamination via hand pick and machine extraction along with heavy metal contaminated soil - Validation sampling required to confirm contaminant removal
4 Smith Street, Kaiapoi	INV76003/2015	Ground Contamination Assessment, 4 Smith Street, Kaiapoi, Canterbury	Pastoral land	>200 east	Large scale filling activities	Elevated levels of heavy metals, however, all concentrations below contaminant standards for commercial land use	The analysed fill material is considered suitable for commercial development with no significant risk to human health or the environment

Appendix E – Review of Previous Investigations
Preliminary Site Investigation – Belfast to Pegasus Motorway and Woodend Bypass

Table E2 – Section 2: Cam Road to SH1 and William Street Intersection

Site Address	Report ref/Year	Report title	Historical activities	Distance from site (meters)	Potential sources of contamination	Exceedance of adopted criteria/COPC	Key conclusions
155 Lower Camside Road, Kaiapoi	INV167005/2014	Combined Geotechnical and Phase 1 Preliminary Site Investigation Report	Pastoral land	< 5 east	N/A	N/A	Potential sources of HAIL contaminants are not present on-site.
808 Main North Road, Canterbury	INV6735/2010	Soil Validation Investigation Ready-Mix North End 808 Main North Road, Canterbury	Ready-Mix North End including an underground storage tank	~ 80 to east	20,000 litre diesel underground storage tank	<ul style="list-style-type: none"> - Of 15 samples, one sample exceeded the Tier 1 Soil Acceptance Criteria (All Pathways) for polycyclic aromatic hydrocarbons (PAH) - Detected concentrations of PAHs within sample comply with the route specific Tier 1 Soil Acceptance Criteria 	No unacceptable risks to human health or the environment associated with the petroleum hydrocarbons stored in the former UPSS were identified

Appendix E – Review of Previous Investigations
 Preliminary Site Investigation – Belfast to Pegasus Motorway and Woodend Bypass

Table E3 – Section 3: SH1 and William Street Intersection to Gladstone Road

Site Address	Report ref/Year	Report title	Historical activities	Distance from site (meters)	Potential sources of contamination	Exceedance of adopted criteria/COPC	Key conclusions
Woodend Beach Road	INV81807/2014	Soil Contamination Risk Stage 1 Preliminary Site Investigation Report	Pastoral land	< 5	N/A	N/A	The site is suitable for it's intended residential use with no further investigation required

Appendix E – Review of Previous Investigations

Preliminary Site Investigation – Belfast to Pegasus Motorway and Woodend Bypass

Table E4 – Section 4: Gladstone Road to Wards Road

Site Address	Report ref/Year	Report title	Historical activities	Distance from site (meters)	Potential sources of contamination	Exceedance of adopted criteria/COPC	Key conclusions
North of Woodend	INV71139/2014	Preliminary Environmental Site Investigation – Ravenswood Subdivision, Woodend	Residential and agricultural purposes	~ 30 to west	<ul style="list-style-type: none"> - Livestock dips - Storage tanks or drums or fuel - Scrap yards - Waste disposal to land 	No sampling	<p>A detailed site investigation is undertaken around the following areas:</p> <p>Main North Road Property</p> <ul style="list-style-type: none"> - Animal races and swim dip - Waste disposal to land - Oil staining east of hay sheds containing a possible UST <p>Rangiora / Woodend Road</p> <ul style="list-style-type: none"> - Areas used for dismantling of cars - Area containing the UST - Areas used to dispose of waste

Appendix E – Review of Previous Investigations
Preliminary Site Investigation – Belfast to Pegasus Motorway and Woodend Bypass

Site Address	Report ref/Year	Report title	Historical activities	Distance from site (meters)	Potential sources of contamination	Exceedance of adopted criteria/COPC	Key conclusions
North of Woodend	INV131413/2015	Detailed Environmental Site Investigation – Ravenswood Subdivision, Stages 9 & 10, Woodend				<ul style="list-style-type: none"> - In vicinity of the animal races and swim dip, arsenic, cadmium and lead concentrations exceed the Tier 1 soil acceptance criteria for residential and commercial land use - Arsenic and lead concentrations in one waste pit exceed the Tier 1 soil acceptance criteria for residential land use 	ENGEO recommend that a remedial strategy is developed to manage the soil that exceeds the NES for residential and commercial land use in the areas of the site identified in this report
North of Woodend	INV310915/2017	Validation Report – Ravenswood Subdivision Stage 9 & 10				Validation samples returned concentrations below of contaminants below the Industrial/Commercial guideline criteria.	The site is suitable for the intended commercial/industrial land use.
Parsonage Road	INV20006/2013	Preliminary Soil Sampling at Parsonage Road, Woodend	Market gardening and orchards	~ 25 to south. From contaminating activity (orchard) > 200	<ul style="list-style-type: none"> - Market gardening - Apple orchard 	All concentrations of heavy metals and pesticide compounds tested for are below the residential land use guideline criteria	The soil on site is not considered to be a significant risk to human health or to the receiving environment

Appendix E – Review of Previous Investigations

Preliminary Site Investigation – Belfast to Pegasus Motorway and Woodend Bypass

Site Address	Report ref/Year	Report title	Historical activities	Distance from site (meters)	Potential sources of contamination	Exceedance of adopted criteria/COPC	Key conclusions
82 Parsonage Road	INV263734/2020	Sediment Basin Assessment – Woodlands Estate, Parsonage Road	Market gardening and orchards	> 250 to south	- Market gardening - Apple orchard	All sediment samples have reported concentrations below the consent condition 14 contaminant leachate trigger concentrations	The site is suitable for the discharge of operational stormwater to occur over these soils
Parsonage Road	267140/2020	Detailed Environmental Site Investigation – Parsonage Road, Woodend	Market gardening	> 35 to south	Burning of potentially contaminated material on site	Concentrations of arsenic exceeded the commercial/industrial outdoor worker land use and recreational land use	- A form of remediation and management is required for the site - Additional soil sampling is recommended to delineate area of contamination
70-82 Parsonage Road	INV60094/2014	Preliminary and Detailed Environmental Site Investigation – 70-82 Parsonage Rd & 116-126 Main North Rd, Woodend	Horticultural activities	> 250 south to sheep dip	- Sheep dip - Market gardens - Apple orchard	Concentrations of heavy metals and OCPs below residential and maintenance/excavation land use criteria with the exception of one sample around sheep dip with a concentration of arsenic above residential criteria	If the area around the sheep dip is to be redeveloped for a residential end use, then additional investigation/remediation work will be required

Appendix E – Review of Previous Investigations

Preliminary Site Investigation – Belfast to Pegasus Motorway and Woodend Bypass

Table E5 – Entire Alignment

Site Address	Report ref/Year	Report title	Historical activities	Distance from site (meters)	Potential sources of contamination	Exceedance of adopted criteria/COPC	Key conclusions
Belfast to Pegasus	2012	Woodend Bypass Site Investigation Reports for Compliance with NES Requirements	Various including: - Rubbish dump - Blackcurrant farm	Intersecting site	- Landfill site - Market gardens/horticultural activities	- At the closed rubbish pit results were below NES soil contaminant standards for human health for commercial/industrial land use. Results were below the ANZECC sediment quality guidelines with the exception of lead - At the Blackcurrant site all the results were below the NES and ANZECC guidelines	Slightly elevated levels of chromium, copper, lead and zinc. It is recommended that soil is left in situ and the road placed on top of the identified sites where possible

Appendix F. HAIL Sites Risk Assessment

Appendix F – HAIL Activity Risk Assessment
Preliminary Site Investigation – Belfast to Pegasus Motorway and Woodend Bypass –
IA328200

Legal Description	Location	HAIL Activity	Information Source	Approximate chainage location (Appendix A)	Comments	Risk to Project
Section 1						
Multiple legal descriptions (old riverbed)	SH1 & Lineside Road	G3 – Landfill sites	LLUR, historical aerial imagery	600, east and west	Investigation results of fill in the riverbed indicate contaminants below an industrial/commercial land use criteria.	Unlikely – (Previous investigation detected analytes < commercial/industrial land use criteria)
Lot 1003 DP 570640, Lot 504 DP 570640, Railway Land SO 11723	30 Adderley Terrace	E1 – Asbestos products manufacture or disposal	LLUR, previous investigations	350, west	With the distance between excavation works and HAIL activity being over 50 meters, and the contaminant likely to be confined to shallow surface soils only, the migration potential of contaminants is low.	Unlikely > 50 m from study area, limited COPC migration potential
Section 200 SO 569172, Section 30 SO 569172	21 Hakarau Road	A17 – Storage tanks or drums for fuel, chemical or liquid waste	LLUR, historical aerial imagery	650, east	Designation associated with HAIL activity A17 has not been assessed.	Unlikely –A17 designation associated with recent service station installation
Section 200 SO 569172, Section 30 SO 569172	21 Hakarau Road	G5 – Waste disposal to land	LLUR, historical aerial imagery	650, east	Following sampling, analysed fill material is considered suitable for commercial development with no significant risk to human health or the environment.	Unlikely – waste disposal activities investigated, limited potential for COPC migration, project earthworks in this area unlikely
Lot 3, DP 431485, Kaiapoi	5 Smith Street	G3 – Landfill sites, G5 – Waste disposal to land	LLUR, historical imagery, previous investigation	700 east	Investigation identified outlier As concentration above guideline. LLUR categorised site as 'Below Guidelines Values'	Unlikely – waste disposal activities investigated, limited potential for COPC migration, project earthworks in this area unlikely

Appendix F – HAIL Activity Risk Assessment

Preliminary Site Investigation – Belfast to Pegasus Motorway and Woodend Bypass – IA328200

Legal Description	Location	HAIL Activity	Information Source	Approximate chainage location (Appendix A)	Comments	Risk to Project
RS 40085	89 Sneyd Street	E1 – Asbestos products manufacture or disposal; I – Any other land	LLUR, previous investigations	300, west	Lead and Arsenic exceed SCS for residential land use associated with historical fill. Asbestos present in soil but below human health criteria for a residential land use. A remedial action plan was recommended.	Unlikely – although asbestos and metals identified and lot is adjacent, CoPC are generally less mobile and location is downhill from study area. If this property is to be procured as part of the project, this location will require re-assessment
--	1-87 Sneyd Street	E1 – Asbestos products manufacture or disposal; I – Any other land	Historical imagery	-500-300, west	Vintage of residential lots suggest potential for asbestos and lead to be used in building construction	Unlikely – although asbestos and lead are potential and lots are adjacent, CoPC are generally less mobile and location is downhill from study area. If this property is to be procured as part of the project, this location will require re-assessment
Section 2						
Lot 1 DP 23217	732 Main North Road	F4 – Motor vehicle workshops; F7 – Service stations	LLUR	3700, west	TPH concentrations exceed the MfE Tier 1 soil acceptance criteria for a commercial/industrial land use. Xylene and Toluene exceed criteria for the protection of maintenance/excavation workers. Former service station investigations were not provided and information in the LLUR is not conclusive	Unknown – UST removal validation did not indicate UPSS leakage; however, no investigation were conducted for the balance of the motor vehicle workshop HAIL activity. If deeper excavations or dewatering is required, additional investigation is warranted
LOT 1 DP 501681	139 Lower Camside Road	A8 - Livestock dip or spray race operations	LLUR, aerial photograph, previous investigation	2700, east	Investigation identified no contaminating activities on property however the 'auditor' identified a sheep dip/spray race operation (likely in eastern portion of the site); however, a review of aerial photographs associated with this investigation does not suggest a sheep dip was present.	Unlikely – alleged sheep dip >50 m from study area and hydraulically down-gradient

Appendix F – HAIL Activity Risk Assessment

Preliminary Site Investigation – Belfast to Pegasus Motorway and Woodend Bypass – IA328200

Legal Description	Location	HAIL Activity	Information Source	Approximate chainage location (Appendix A)	Comments	Risk to Project
Section 3						
Lot 1 DP 423296	Lot 1 DP 423296, Woodend Beach	A8 – Livestock dip or spray race operations	LLUR	3700, east	Site is intersecting the study area. No previous investigations have been undertaken.	Unknown – No previous investigation. Site is intersecting the study area
Lot 1 DP 423296	808 Main North Road	A17 – Storage tanks or drums for fuel, chemicals or liquid waste F4 – Motor vehicle workshops	LLUR, Previous investigations	3850, west	TPH concentrations below the MFE Tier 1 soil acceptance criteria for a commercial/industrial land use. Investigation related to UST removal only, with no investigation of the former waste oil tank or workshop	Unlikely – UST removal validation did not indicate UPSS leakage; however, no investigation were conducted for the balance of the motor vehicle workshop HAIL activity. UST and workshop are ~200 m north of study area and planned construction works likely to be built up in this area
RS 35470	820 Main North Road	A17 – Storage tanks or drums for fuel, chemicals or liquid waste; F4 – Motor vehicle workshops	LLUR	3900, west	LLUR indicates tank was removed in early 2000s with no additional investigation.	Unlikely – Removed UST and workshop are ~200 m north of study area and planned construction works likely to be built up in this area
Lot 1 DP 378176, Lot 2 DP 378176, Lot 7 DP 50914, Lot 8 DP 50914	Fullers Road, Woodend	A10 – Persistent pesticide bulk storage or use	LLUR, previous investigations, historical aerial imagery	5600-6400, west	Investigation results stated on LLUR that contaminants are present at the site but below a rural-residential land use scenario.	Unlikely – Previous investigation indicates soils acceptable for residential use. Most lots have been re-developed for low-density residential
Lot 2 DP 330014	Lot 2 DP 330014, Woodend Beach	A10 – Persistent pesticide bulk storage or use	LLUR	5900, east	Likelihood of HAIL activity is anecdotal. Alleged HAIL is ~50 m east of study area.	Unlikely – Contamination confined within property boundary, no proposed excavation on this site