

Report

Contamination Assessment - Cranford Basin

Prepared for Christchurch City Council

Prepared by Beca Ltd (Beca)

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Revision History

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Document Acceptance

Action	Name	Signed	Date
Prepared by	Jessie Bird		23/08/2016
Reviewed by	Phillip Ware		23/08/2016
Approved by	Paul Whyte		23/08/2016
on behalf of	Beca Ltd		

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Executive Summary

Beca has been commissioned by Christchurch City Council (CCC) to undertake a contamination assessment of an area of land within the Cranford Basin.

Information reviewed for this contamination assessment has concluded that the majority of the site has been used for horticultural / market gardening purposes since at least 1940. Other activities on the site include the storage of fuels, and potential livestock dips on areas of the site which were used for pastoral purposes.

Further work is recommended to develop the understanding of the contamination status of the sites soils including review of the property files, a site walkover, interview with persons knowledgeable of the site, and a potential soil investigation. The need for the above work will depend on the nature of any future activities proposed for the site to determine whether consents would be required under the Resource Management National Environmental Standard for Assessing and Managing Contaminants in Soils to Protect Human Health Regulations 2011.

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1 Introduction

Beca has been commissioned by Christchurch City Council (CCC) to undertake a contamination assessment of an area of land within the Cranford Basin.

1.1 Purpose and Scope

The purpose of this desk study was the following:

- n Identify the potential for the sites soils to be contaminated.

The scope of works included a desk-based review of historical background information. The following sources were reviewed:

- n Environment Canterbury (ECan) Listed Land Use Register (LLUR)
- n Historical aerial photographs from ECan GIS.
- n Discharge consent information within 100m of the site.

This assessment has been undertaken and reported in general accordance with the *Ministry for the Environment (MfE) Contaminated Land Management Guidelines No. 1 – Reporting on Contaminated Sites in New Zealand* (2011) and *MfE Contaminated Land Management Guidelines No. 5 – Site Investigation and Analysis* (2011) however does not cover the full scope of a Preliminary Site Investigation.

2 Site Description

2.1 Site Location and Area

The site is situated 4km north of the Christchurch CBD. It is relatively flat and consists of a mixture of residential, rural / commercial properties. **Figure 1** below shows the location and properties within the 'site'.



Figure 1 - Location of the individual sites within the overall 'site' (Image source: ECan GIS)

2.1.1 Legal Descriptions

Table 1 below provides the legal descriptions for all the individual sites within the overall site.

Table 1 - Legal Descriptions

Site Address	Legal Description
39 Meadow Street	Lot 2 DP 334194
31 Grassmere Street	Part RS 308
41 Grassmere Street	Lot 1 DP 29576
43 Grassmere Street	Lot 2 DP 29576
45 Grassmere Street	Part RS 308
45a Grassmere Street	Lot 1 DP 3106
57 Grassmere Street	Part Lot 1 DP 1729
59 Grassmere Street	Part RS 308
63 Grassmere Street	Lot 1 DP 7419
69 Grassmere Street	Lot 2 DP 427759
468 Cranford Street	Lot 3 DP 69136
470 Cranford Street	Lot 1 DP 305983 and Lot 2 DP 305983
471 Cranford Street	Lot 2 DP 25100
340 Cranford Street	Lot 1 DO 471475
517A Cranford Street	Lot 5 DP 17113
503 Cranford Street	Lot 1 DP 25100
507 Cranford Street	Lot 1 DP 369252
94 Winters Road	Lot 2 DP 74941
102 Winters Road	Lot 2 DP 69136
120 Winters Road	Lot 2 DP 50323
128 Winters Road	Lot 2 DP 13111
136 Winters Road	Lot 1 DP 5998
140 Winters Road	Lot 2 DP 5998
142a Winters Road	Part Lot 2 DP 2755
144 Winters Road	Lot 1 DP 481306
103 Philpotts Road	Lot 1 DP 24456
117 Philpotts Road	Lot 8 DP 5998
60 Croziers Road	Lot 1 DP 491986 and Lot 3 DP 17794

3 Environmental Setting

3.1 Current Land Use

The majority of the site is used for rural / grazing / market gardening purposes. Some residential houses are also located within the site.

3.2 Surrounding Land Use

The site is zone 'rural' in the District Council Planning Zone Map on the ECan GIS. Neighbouring the site there are a number of different zoned uses such as rural residential (light blue), residential (pink), business (yellow), cultural (purple) and open space (light green). **Figure 2** below shows the zoning map.

In general, the surrounding land use is dominated by residential housing, with some farming / market gardening activities located to the north and east of the site.

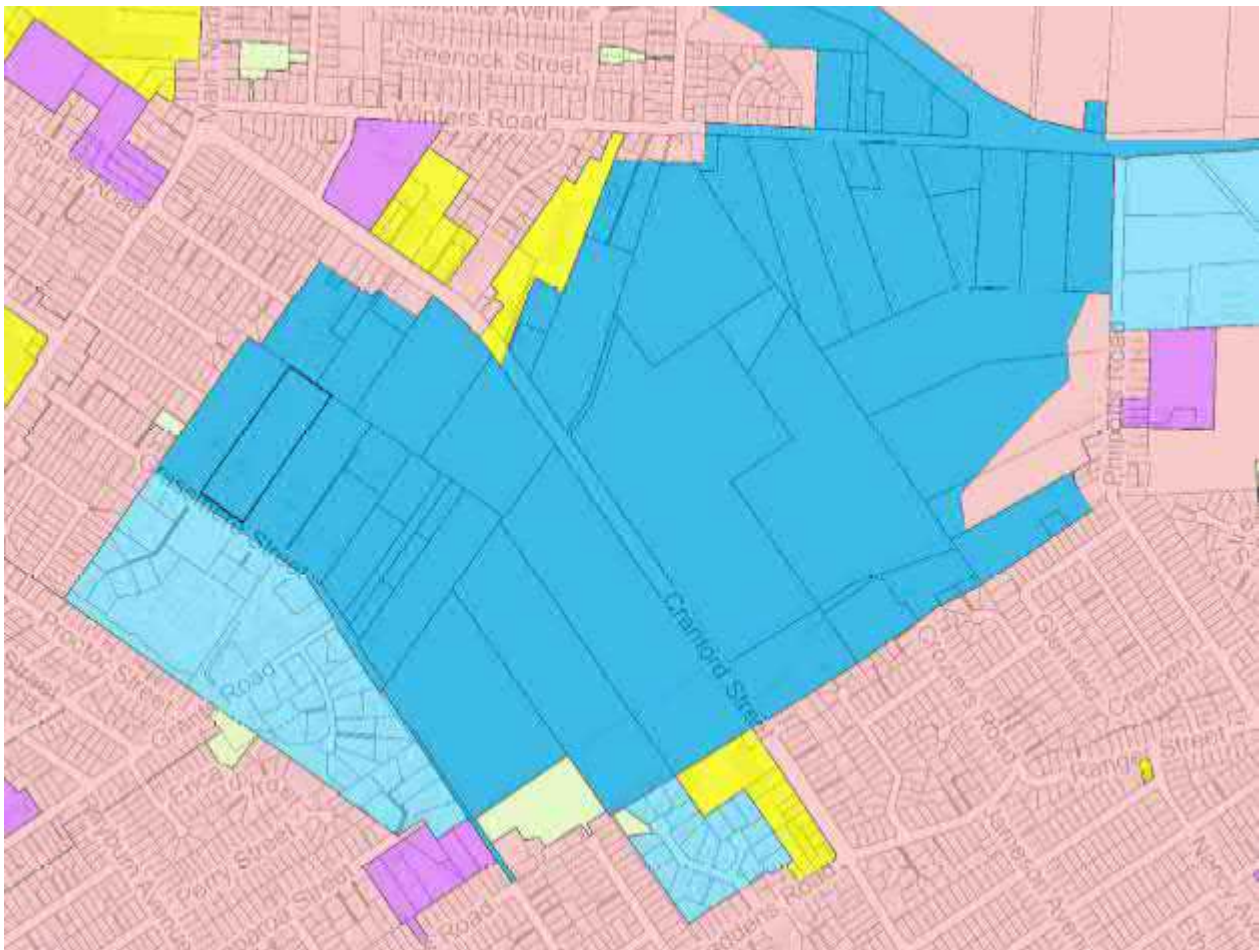


Figure 2 - Planning zones of the site (Source: ECan GIS)

3.3 Topography

The topography of the site is generally flat.

3.4 Sensitive Receptors / Hydrology

A geotechnical investigation was undertaken at the site by GHD in September 2015.¹ The following is a summary of information provided in the GHD report regarding the drainage at the site.

“The installation of drainage networks by land owners has resulted in the majority of the Cranford Basin being drained to the Styx River catchment via the Rhodes Main Drain sub-catchment. The southern part of the basin drains to the Dudley Creek catchment and to the Avon River.”

3.5 Geology

The geological map for the Christchurch area indicates that the site is predominantly underlain by former peat swamps belonging to the Yaldhurst Member of the Springston Formation. The eastern and north-east portion of the site is underlain by alluvial sand and silt over bank deposits.²

3.6 Hydrogeology

‘Section 9: Hydrogeological Assessment’ of the GHD report provides useful information about the hydrogeological setting of the site as follows:

“The variable thickness of the upper alluvium material across the site suggests that the water table aquifer is limited in vertical thickness and lateral extent, with the groundwater within the alluvial material likely to be perched on the underlying silts and organic peat deposits. Drainage of the water table aquifer is likely to occur towards the shallow drainage networks that are located across the site area. The hydraulic properties of the shallow alluvial material are not known. Recharge to the water table is likely to be from rainfall infiltration and possible groundwater seepage from the underlying Springston formation.”

The deeper Riccarton Gravel aquifer is located at or about 17 – 20m bgl.

¹ GHD, 2015: Christchurch City Council Cranford Basin Geotechnical Investigation Report.

² Brown, L.J; Weeber, J.H. 1992: Geology of the Christchurch urban area. Scale 1:25,000. Institute of Geological and Nuclear Sciences geological map 1. Institute of Geological and Nuclear Sciences Limited, Lower Hutt, New Zealand.

4 Information Search

4.1 Historical Aerial Photographs

Historical aerial photographs for the site have been sourced from the ECan GIS Viewer for the years 1940, 1955, 1965, 1970, 1985, 1995 and 2016.

The aerial photographs have been reviewed to identify any changes in land use activities on the site and surrounding properties, with the following observations made:

- n 1940: Cranford Street has not yet been constructed, however both Winters Road and Cranford Street have been constructed by the time of this aerial photograph. The majority of the site is paddocks and gardens with crop rows visible across the sites. Some residential properties have been constructed along Winters Road and Philpotts Road areas of the site.
- n 1955: Cranford Street has now been constructed. Residential housing along Winters Road and Philpotts Street remains, and houses have been constructed along some of the properties at Grassmere Street. The use of the majority of the land remains as horticultural.
- n 1965: Housing has been constructed at 39 Meadows Street, and the size and general property locations resembling close to current day use of the sites. An oval track has been constructed on Winters Road, however generally land use remains the same.
- n 1970: Site remains relatively unchanged. A large building has been constructed near the top of Cranford Street (this building remains today).
- n 1985: The site remains relatively unchanged, however a second oval track is visible at the southern portion of Philpotts Road
- n 1995 - 2016: Site remains relatively unchanged.

Aerial photographs are provided in **Appendix A**.

4.2 Environment Canterbury Information

4.2.1 Listed Land Use Register

Lister Land Use Register (LLUR) statements were obtained from ECan and are provided in **Appendix B**. LLUR statements indicate whether land uses that appear on the Hazardous Activities and Industries List (HAIL) are known to currently or historically have taken place on site. A summary of information provided on the LLUR statements is provided in **Table 2** below.

Table 2 – Summary of LLUR information

Site Address	Listed on the LLUR?	HAIL Code	Notes	Investigations
39 Meadow Street	Yes	<p>A.17: Storage tanks or drums for fuel, chemicals or liquid waste</p> <p>A.10: Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds.</p> <p>HAIL category: areas on the site are partially investigated, not investigated and below guideline values – other.</p>	<p>n 4th June 1999: One 6,000L UST and two 300L AST's on site.</p> <p>n 15th Jan 2008: Meadow Park Holiday Park undergoing expansion in the easterly and south easterly directions. Environmental investigations were carried out by PDP in 2005 and 2008 because historical aerial photography indicated that the land was formerly used for market gardening and pastoral farming purposes.</p> <p>n 14th June 2010: Site split and the two activities were spatially exclusive.</p>	<p>Two preliminary investigations were undertaken by Pattle Delamore Partners. The first environmental investigation, completed in 2005, assessed the quality of surface soils across a 3.3 ha area of agricultural land located to the south (2 ha), and to the east of the then existing holiday park (1.3 ha). The block to the east has since been redeveloped as a camping ground. The two paddocks were sampled by collecting eleven composite samples from near surface soils. Additionally, composite samples were collected from a fenced-off depression in the property east of the holiday park, and in vicinity of a shed and a stainless steel trough (possibly a foot rot bath) located in the field south of the holiday park. The second investigation assessed a smaller property (Lot 5 DP 17113, 0.3 ha) north-east of the existing holiday park complex, containing a residential dwelling and in use by the park for provision of short term accommodation.</p> <p>All composite sample results were within the guideline values protective of parkland/recreational land use. With exception of organophosphorous and organonitrogen pesticides, the analytes were detected above their likely background levels. Two zones of elevated contaminant concentrations were discernable within Lot 2 DP 369252, one being a fenced-off low lying area, formerly most likely used for disposal of agrichemicals, and the other representing the southern third of the land parcel, being a historically separate area of cropping affected by elevated lead concentrations.</p> <p>The soil lead concentrations at the southern part of Lot 2 DP 369252 were less than the guideline value for parkland/recreational use (600 mg/kg, NEPC (1999)), but close to the criteria protective of residential land use (300 mg/kg NEPC(1999)). Due to the reliance on composite sampling and the small sample size, the presence of hot spots within the two zones cannot be excluded. Under any future changes to more sensitive exposure scenarios, such as residential, further delineation of the two zones would be required.</p>

Site Address	Listed on the LLUR?	HAIL Code	Notes	Investigations
31 Grassmere Street	Yes (rear portion of site only)	A.10: Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds. A.8: Livestock Dip or spray race operations HAIL category: 'Review in Progress. Investigation reports have been received and are currently being reviewed to determine the most appropriate site category.	An environmental investigation was carried out by PDP in 2005 as historical aerial photography indicated that the northern portion of this land parcel was used for market gardening and pastoral farming purposes. Additionally, a small stainless steel trough located on the site may have been used for treatment of foot rot in sheep.	DSI undertaken by PDP in 2005 was undertaken for the land adjacent to the Meadow Park Holiday Park as there was concern that the soils may be impacted from agrichemicals from the historical use of the land for market gardening and pastoral purposes. The investigation area was located to the south and east of the holiday park (however the holiday park did not extend their operations to the south (the location of this site)). No significant residual contamination was identified by the PDP investigation with all composite sample results being below the soil guideline values protective of residential land use. Due to the averaging effect of the compositing technique, it possible that some of the areas contain hot spots with higher contaminant loadings. The averaging of sample concentrations is considered acceptable for the current rural residential use. However, if the area were to be redeveloped into a more intensive residential use, additional work may be warranted to assess the contaminant distribution to a greater precision.
41 Grassmere Street	Yes (rear portion of site only)	A.10: Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds. HAIL category: 'Review in Progress. Investigation reports have been received and are currently being reviewed to determine the most appropriate site category.	An environmental investigation was carried out by PDP in 2005 as historical aerial photography indicated that the northern portion of this land parcel was used for market gardening and pastoral farming purposes.	Same as above.
43 Grassmere Street	No	N/A	N/A	N/A

Site Address	Listed on the LLUR?	HAIL Code	Notes	Investigations
45 Grassmere Street	Yes	Verified HAIL – not investigated A.17: Storage tanks or drums for fuel, chemicals or liquid waste	<ul style="list-style-type: none"> 18 June 1999 CCC DGL (1993): Two underground storage tanks on site, on 4,500L 3(a) product and one 4,500L 3(c) product. 11 Feb 2005: CCC Webmap indicates that both tanks were removed in 1998, in good condition. 	-
45a Grassmere Street	No	N/A	N/A	N/A
57 Grassmere Street	Yes	Verified HAIL Contaminated – residential. Site Investigation demonstrates that the land is significantly contaminated.	-	<ul style="list-style-type: none"> The plans included with the report indicate that the frontage of 57 Grassmere Street, and almost two thirds of 63 Grassmere Street have been filled. Fill had reportedly commenced at the Grassmere Street frontage, and fill was present between 0.6 and 1.2m deep. Cropped areas (59 – 63 Grassmere) – some heavy metal samples from the former cropped areas exceeded the NES Soil Contaminant Standard (SCS) for residential Land-use (when adjusted to allow for the compositing). Filled area (57 Grassmere) - Reported concentrations of lead in two of the discrete samples collected from the fill area exceeded
59 Grassmere Street	Yes	Verified HAIL	-	
63 Grassmere Street	Yes	A10: Persistent pesticide bulk storage or use including sports turfs,	-	

Site Address	Listed on the LLUR?	HAIL Code	Notes	Investigations
69 Grassmere Street	Yes	market gardens, orchards, glass houses or spray sheds. HAIL category below guideline values- residential		<p>the NES SCS for residential land-use. The report states that the soil from this area has already been removed from the site. In addition, reported concentrations of lead in two of the composite samples also exceeded the NES SCS when adjusted for the compositing.</p> <ul style="list-style-type: none"> n House area (57 Grassmere) - Reported concentrations of lead in two samples collected from near the house exceeded the NES SCS for residential use, with one sample significantly exceeding (five times the guideline value). n Garage area (57 Grassmere) - Reported concentrations of lead in one of the three samples exceeded the NES SCS for residential use, although all other metals were below the relevant guideline values for residential use. Low but detectable levels of OCPs were found in the two samples analysed. The sample analysed from the hydrocarbon stained soil near a large drum reportedly contained hydrocarbons in the C15-C36 band
468 Cranford Street	No LLUR available	N/A	N/A	N/A
470 Cranford Street	Yes	Verified HAIL – not investigated A.10: Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds.	Area defined from 1941 – 2011. Market garden plots were noted in aerial photographs reviewed.	-
471 Cranford Street	Yes	Verified HAIL – not investigated A.10: Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds.	-	-

Site Address	Listed on the LLUR?	HAIL Code	Notes	Investigations
340 Cranford Street	Yes (part of site)	Verified HAIL – not investigated A.10: Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds.	-	-
503 Cranford Street	Yes	Verified HAIL – not investigated A.10: Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds.	-	-
507 Cranford Street	Yes	Verified HAIL – not investigated A.10: Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds.	-	-
517A Cranford Street	Yes	Refer 39 Meadow Street	Refer 39 Meadow Street	Refer 39 Meadow Street

Site Address	Listed on the LLUR?	HAIL Code	Notes	Investigations
94 Winters Road	Yes	A.10: Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds. HAIL category: 'Review in Progress'. Investigation reports have been received and are currently being reviewed to determine the most appropriate site category.		<ul style="list-style-type: none"> n Tonkin and Taylor prepared limited DSI for the site in March 2016 for an area being disturbed for repairs to a wastewater line immediately to the south and east of the dwelling. n The property was formerly part of a wider block of land that was used for horticultural purposes from at least 1941 – 2011. Aerial photography confirmed that market gardening, orcharding and glashouse activities have also occurred within the area of works. Some glasshouses were still present at the time of the DSI. n The DSI confirmed that there is copper, lead and DDT contamination above background levels in the surface layers of soil at the site. All results were below the rural residential/lifestyle block 25% produce SCS. Soil is suitable for disposal at Burwood landfill, but not in a cleanfill. n This assessment only refers to the area of land sampled around the dwelling for the wastewater line, so the proposed category is "partially investigated". There is evidence of glasshouses at the rear of the property, and further investigation may be required if soil disturbance/land use change occurs in this area in future.
102 Winters Road	Yes	Verified HAIL – not investigated A.10: Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds.	HAIL identified from ECan aerial photograph review	-

Site Address	Listed on the LLUR?	HAIL Code	Notes	Investigations
120 Winters Road	Yes	Verified HAIL – not investigated A.10: Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds.	Southern portion of site investigated by Beca previously – Investigation results demonstrate hazardous substances present but below applicable guidelines (this portion of the site is outside the area of this investigation).	-
128 Winters Road	No	N/A	N/A	Southern portion of site (outside of our investigation area) is subject to the Beca investigation (see Section 4.3)
136 Winters Road	No	N/A	N/A	Southern portion of site (outside of our investigation area) is subject to the Beca investigation (see Section 4.3)
140 Winters Road	No	N/A	Only small portion of the site within subject area. Rest of site is subject to the Beca DSI.	N/A
142a Winters Road	No	N/A	Only small portion of the site within subject area. Rest of site is subject to the Beca DSI.	N/A
144 and 144a Winters Road	No	N/A	N/A	Southern portion of site (outside of our investigation area) is subject to the Beca investigation (see Section 4.3). GHD investigation also undertaken however reports have not been audited.
103 Philpotts Road	No	N/A	N/A	N/A

Site Address	Listed on the LLUR?	HAIL Code	Notes	Investigations
117 Philpotts Road	No	N/A	Part of the site within investigation area is not on LLUR. However the remaining portion of the site (outside the area of this investigation) is on the LLUR.	N/A
60 Croziers Road	No	N/A	Adjacent site at 60A Croziers Road (to the immediate north of the site) is on the LLUR for HAIL code: A.10:	N/A

4.2.2 Discharge Consents

Information on discharge consents was obtained from the ECan GIS. **Table 3** below provides a summary of discharge consents that have been granted within a 100m radius of the site.

Table 3 - Consents

Consent Number	Holder	Purpose	Location	Status
CRC156177	CCC	To temporarily discharge sediment and contaminants from earthworks and dewatering during construction onto land and surface water.	Land bound by Winters Road, Philpotts Road, Grassmere Street and Cranford Street	Issued - Inactive
CRC151943	CCC	To discharge stormwater to land and stormwater and water to surface water associated with the operation of the Northern Arterial Extension and Cranford Street upgrade and associated stormwater works.		
CRC073404	Graeme Charles Walsh	To discharge contaminants (domestic wastewater) to land	470 Cranford Street	Issued - Active
CRC102588	Mr and Mrs I H and L C L Hsu	To discharge contaminants (domestic wastewater) to land	142A Winters Road	Issued - Active
CRC134392	Brad Garringer	To discharge up to 2000 L per day of wastewater to land	163 Queen Elizabeth II Drive	Issued – Inactive
NCY790305	CCC	Discharge diverted water into proposed flood storage basin to minimise flooding	Mairehau	Terminated – Surrendered
CRC169825	New Zealand Transport Agency	To discharge contaminants to land from an onsite wastewater system for the Christchurch Northern Corridor Alliance site office.	145 Winters Road	Issued – Inactive
CRC132843	Chevron New Zealand Ltd	To discharge contaminants and stormwater to water	500 Cranford Street	Terminated – Surrendered
NCY790307	CCC	Discharge ponded floodwaters from flood storage basin to Horners Drain to minimise flooding.	Mairehau	Terminated – Surrendered
NCY790309	CCC	Discharge any residual drainage water from flood storage basin to Croziers Drain to minimise flooding	Mairehau	Terminated – Surrendered
NCY790306 and NCY790308	CCC	Discharge excess floodwaters from flood storage basin to Bullers Drain to Minimise flooding.	Mairehau	Terminated – Surrendered
CRC135313	Ryman Healthcare Ltd	To discharge stormwater to land	88B Philpotts Road	Issued – Active
CRC132842	Chevron New Zealand Ltd	To use and store petrochemical products	500 Cranford Street	Terminated – Replaced
CRC140988	RYB Investments Limited	To use and store petrochemical products	500 Cranford Street	Issued – Active
CRC930207	Chevron New Zealand	To install and use an underground storage tank system for petroleum products, comprised of three tanks with a total capacity of 100,000L, at Caltex Cranford Street.	500 Cranford Street	Terminated – Surrendered
CRC130101	Chevron New Zealand	To use, store and transport (through a pipe), diesel and petrol. The Canterbury Regional Council confirms that the land use activity is authorised as a Permitted Activity under Rule WQL38B of the Natural Resources Regional	500 Cranford Street	Terminated - Surrendered

Consent Number	Holder	Purpose	Location	Status
		Plan Chapter 4 - Water Quality		
CRC991365	Ryman Healthcare Limited	To place onto land a structure for storing, transferring and using diesel oil.	95 Grants Road	Issued - Active

4.3 Additional Information

In September 2014, Beca prepared a Detailed Site Investigation (DSI) for the Northern Arterial Extension and Cranford Stormwater Basin project. The site for the DSI investigation is adjacent to the area of land within this contamination assessment and therefore has relevance.

In summary, the DSI concludes:

“Historical aerial photographs indicate that the majority of the land has been used for cropping at some time. The location of a former above-ground fuel storage tank (AST) was identified in the south corner of the southwest paddocks. An herbicide spill was also identified within a central paddock. Interviews with various landowners confirmed the historical and ongoing use of pesticides, fertilisers and soil fumigants during the 50 plus years that they have owned their properties.

Subsurface investigations have been completed across the site. Results confirm the use of pesticides and herbicides across the site.

The results show that contaminants in the soils do not exceed the human health criteria for Recreational and Commercial/Industrial outdoor worker (unpaved) landuses and therefore soils pose a low risk to construction workers and future users of the site.

The concentration of mercury in the majority of samples exceeded the adopted environmental criterion, as did concentrations of arsenic and zinc in a number of samples.

Leachate testing of samples with generally elevated contaminant concentrations showed that copper leached in concentrations above freshwater ecological protection levels appropriate for the site. The ecological report prepared by Opus1 concluded that:

‘The ecological value of the drains in the Basin is considered to be low... Aquatic macroinvertebrate communities were dominated by species indicative of poor water quality... The effects of construction of the NAE on farm drains and most of the Council drains will be less than minor as a result of their current low ecological value.’

It is therefore considered that leaching from site soils will not have a significant adverse effect on the drains due to their already degraded nature.

Results of leachate testing have shown all concentrations of metals are below 20x drinking water standards. Pers Comm with members of the Environment Canterbury contaminated land team indicated that this test is used by Environment Canterbury as an indication of sites that will need to apply for discharge consent. It is therefore considered that the metal concentrations pose a low risk of leaching and a low risk to groundwater (for the purposes of human consumption). Shallow groundwater is not being extracted for consumption in this area.

Results of leachate testing have shown that organic compounds were not detected. Organic compounds pose a low leachability risk because they do not readily dissolve in water and tend to bind strongly to soil particles. The risk posed to human health or environmental receptors by these compounds is considered to be low."

5 Discussion

5.1 Summary of Information Search

The information reviewed to date has indicated that some of the site has been used for horticultural / market gardening purposes, storage of chemicals / fuels, and potential livestock dips.

In summary, the sites listed on the ECan LLUR include:

- n 39 Meadow Street
- n 31, 41, 45, 57, 59, 63, and 69 Grassmere Street
- n 470, 471, 340, 503, 507 and 517A Cranford Street
- n 94, 102, and 120 Winters Road

There is however, still potential that all other sites have had contaminating activities undertaken on them that have not been identified during this search.

Based on the Beca DSI investigation undertaken at the adjacent site, it is likely that where the land use has been similar that some of the area of this assessment would have levels of contaminants in soils similar to those found within the adjacent sites DSI.

5.2 Contaminants of Potential Concern

Review of the site historical information has identified the following land use activities which may have resulted in the contamination of soil at the site. Contaminants of potential concern associated with these activities have also been identified is provided in **Table 4** below.

Table 4 - Contaminants of Potential Concern

Activity	HAIL Code	Contaminants of Potential Concern
Livestock dips	A.8: Livestock dip or spray race operations.	Organochlorines and organophosphates, Heavy metals
Horticultural practices / market gardening	A.10: Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds.	Organochlorines and organophosphates, Heavy metals
Storage of chemicals / fuels	A.17: Storage tanks or drums for fuel, chemicals or liquid waste.	Heavy metals, Total Petroleum Hydrocarbons, Polycyclic Aromatic Hydrocarbons

5.3 Exposure Pathway Assessment

Based on the information reviewed, there are a number of potential pathways between sources of contamination on site, the human and environmental receptors that may be exposed to those contaminants in the context of residential use of the site, and the pathways by which those receptors may be exposed.

In general, those receptors and pathways could be (but not limited to):

- n Future site users
- n General public
- n Groundwater resources
- n Surface water resources.

6 Summary of Conclusions

- n The site has been used for multiple purposes however has predominantly been used for horticultural / market gardening activities and associated residential purposes.
- n The information reviewed to date has indicated three HAIL activities at the site:
 - Horticultural / market gardening
 - Storage of fuels
 - Livestock dip
- n The three HAILs have not been confirmed and it is possible that further works will show that livestock dips are not present at a 'more likely than not' level in accordance with the Resource Management National Environmental Standard for Assessing and Managing Contaminants in Soils to Protect Human Health Regulations 2011.
- n As limited information was reviewed for the purposes of this assessment, a number of complete pathways have been identified where contaminants of potential concern could pose a risk to human health or the environment such as:
 - Future site users
 - General public
 - Groundwater resources
 - Surface water resources
- n Prior to any future development further work is recommended to understand the contamination status of the sites soils including review of the property files, a site walkover, interview with persons knowledgeable of the site, and a potential soil investigation.

7 Limitations

This report has been prepared by Beca Ltd (Beca) solely for Christchurch City Council (Client). Beca has been requested by the Client to provide a contamination assessment for an area within Cranford Basin. This report is prepared solely for the purpose of the assessment of potential soil contamination (Scope). The contents of this report may not be used by Christchurch City Council for any purpose other than in accordance with the stated Scope.

This report is confidential and is prepared solely for the Client. Beca accepts no liability to any other person for their use of or reliance on this report, and any such use or reliance will be solely at their own risk.

This report contains information obtained by inspection, sampling, testing or other means of investigation. Unless specifically stated otherwise in this report, Beca has relied on the accuracy, completeness, currency and sufficiency of all information provided to it by, or on behalf of, the Client or any third party, including the information listed above, and has not independently verified the information provided. Beca accepts no responsibility for errors or omissions in, or the currency or sufficiency of, the information provided. Publicly available records are frequently inaccurate or incomplete.

The contents of this report are based upon our understanding and interpretation of current legislation and guidelines ("Standards") as consulting professionals, and should not be construed as legal opinions or advice. Unless special arrangements are made, this report will not be updated to take account of subsequent changes to any such Standards.

This report should be read in full, having regard to all stated assumptions, limitations and disclaimers.

Appendix A

Historical Aerial Photographs



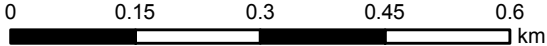












Scale: 1:9,095 @A3

Map Created by Canterbury Maps on 11:53:58 a.m.



Appendix B

LLUR statements

Dear Sir/Madam

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

The LLUR statement provided indicates the location of the land parcel(s) you enquired about and provides information regarding any LLUR sites within a radius specified in the statement of this land.

Please note that if a property is not currently entered 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 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; other information relevant to potential contamination may be held in other files (for example consent and enforcement files).

If your enquiry relates to a farm property, please note that many current and past activities undertaken on farms may not be listed on the LLUR. Activities such as the storage, formulation and disposal of pesticides, offal pits, foot rot troughs, animal dips and underground or above ground fuel tanks have the potential to cause contamination.

Please contact and Environment Canterbury Contaminated Sites Officer if you wish to discuss the contents of the LLUR statement, or if you require additional information. For any other information regarding this land please contact Environment Canterbury Customer Services.

Yours sincerely

Contaminated Sites Team

Property Statement from the Listed Land Use Register

Visit www.ecan.govt.nz/HAIL for more information about land uses.



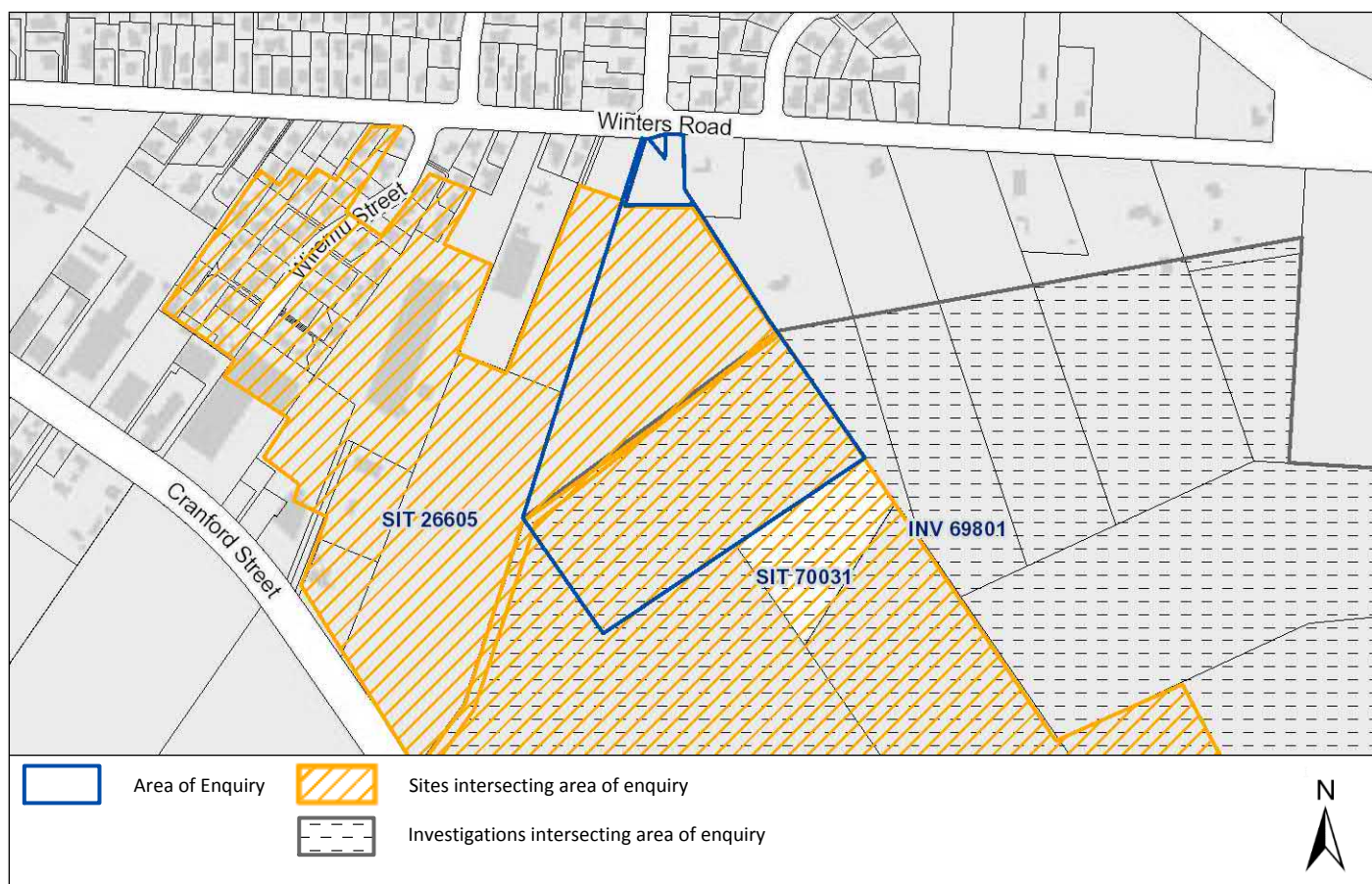
Customer Services
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PO Box 345
Christchurch 8140

P. 03 365 3828
F. 03 365 3194
E. ecinfo@ecan.govt.nz

www.ecan.govt.nz

Date:	04 August 2016	
Land Parcels:	Section 1 SO 18503	Valuation No(s): 2180026300
	Lot 2 DP 50323	Valuation No(s): 2180026300
	Lot 1 DP 50323	Valuation No(s): 2180026300



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Summary of sites:

Site ID	Site Name	Location	HAIL Activity(s)	Category
26605	26605	Wiremu Street, Redwood	A10 - Persistent pesticide bulk storage or use;	Not Investigated
70031	Northern Arterial Extension and Cranford Drainage Basin	Cranford Street, St Albans	A10 - Persistent pesticide bulk storage or use;	Below guideline values - Other

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Information held about the sites on the Listed Land Use Register

Site 26605: 26605 (Intersects enquiry area.)**Site Address:**

Wiremu Street, Redwood

Legal Description(s):

Lot 1 DP 14105, Lot 1 DP 305983, Lot 1 DP 58629, Lot 1 DP 79563, Lot 1 DP 81359, Lot 1 DP 83809, Lot 10 DP 40993, Lot 13 DP 40993, Lot 14 DP 40993, Lot 15 DP 40993, Lot 16 DP 40993, Lot 17 DP 40993, Lot 18 DP 40993, Lot 19 DP 40993, Lot 2 DP 305983, Lot 2 DP 471475, Lot 2 DP 50323, Lot 2 DP 52681, Lot 2 DP 58629, Lot 2 DP 69136, Lot 2 DP 79563, Lot 2 DP 80448, Lot 2 DP 83809, Lot 20 DP 40993, Lot 21 DP 40992, Lot 22 DP 40992, Lot 23 DP 40992, Lot 24 DP 40992, Lot 25 DP 40992, Lot 26 DP 40992, Lot 27 DP 40992, Lot 28 DP 40992, Lot 29 DP 40569, Lot 3 DP 40992, Lot 3 DP 52681, Lot 3 DP 69136, Lot 3 DP 79563, Lot 3 DP 80448, Lot 3 DP 83809, Lot 32 DP 40569, Lot 33 DP 40993, Lot 34 DP 40993, Lot 4 DP 40992, Lot 4 DP 79563, Lot 4 DP 80448, Lot 5 DP 40993, Lot 5 DP 80448, Lot 6 DP 40993, Lot 6 DP 80448, Lot 7 DP 40993, Lot 8 DP 40993, Lot 9 DP 40993, Part Lot 2 DP 40992, Part RS 1048

Site Category:

Not Investigated

Definition:

Verified HAIL has not been investigated.

Land Uses (from HAIL):

Period From	Period To	HAIL land use
Pre 1941	2011	Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds

Notes:**3 Oct 2013**

Area defined from: 1941- 2011 ECan Aerial Photo

Note: Market garden plots were noted in aerial photographs reviewed.

Investigations:**4 Sep 2014**

INV 69801: Northern Arterial Extension and Cranford Stormwater Basin: Detailed Site Investigation (Contamination) (Detailed Site Investigation)
Beca Limited

Summary of investigation(s):

The approximately 66 hectare site is located in St Albans/Mairehau on either side of Cranford Street and has been used for dairy farming and market gardening since the 1940s.

In March and April 2014 Beca performed a detailed site investigation of the site involving excavation of 46 hand auger bores with collection of soil samples for the surface and 0.4 metre below ground level (m bgl) in each borehole. Additional samples were collected from the vicinity of an above ground diesel storage tank (AST) and a reported herbicide spill. Thirty six samples were analysed for metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), organochlorine pesticides (OCP) and organonitro & phosphorus pesticides (ONPP). Two samples collected in the vicinity of the former AST were also analysed for total petroleum hydrocarbons (TPH) and six samples were additionally analysed for synthetic precipitate leaching procedure (SPLP).

No reported concentrations of metals or pesticides exceeded applicable NES soil contaminant standards for recreational land use. However, reported concentrations of various metals including arsenic, cadmium, copper, and mercury exceeded established background concentrations in numerous sample locations. Reported OCP and ONPP concentrations exceeded established Ministry for the Environment Christchurch background concentrations in numerous sample locations. Reported concentrations of arsenic, mercury and total DDT exceeded applicable environmental guideline values in various sample locations. No reported SPLP concentrations except copper exceeded applicable ANZECC 80% freshwater protection guideline values.

Site 70031: Northern Arterial Extension and Cranford Drainage Basin (Intersects enquiry area.)**Site Address:**

Cranford Street, St Albans

Legal Description(s):

Lot 1 DP 24638, Lot 1 DP 29952, Lot 1 DP 81359, Lot 2 DP 471475, Lot 2 DP 50323, Lot 8 DP 5998, Part RS 1048, Section 1 SO 461421, Section 2 SO 461421, Section 3 SO 461421, Section 4 SO 461421

Site Category:

Below guideline values - Other

Definition:

Investigation results demonstrate that hazardous substances present at the site, but below applicable guidelines. - Other

Land Uses (from HAIL):

Period From	Period To	HAIL land use
Pre 1941	2011	Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds

Notes:

Investigations:

4 Sep 2014 **INV 69801: Northern Arterial Extension and Cranford Stormwater Basin: Detailed Site Investigation (Contamination)** (Detailed Site Investigation)
Beca Limited

Summary of investigation(s):

The approximately 66 hectare site is located in St Albans/Mairehau on either side of Cranford Street and has been used for dairy farming and market gardening since the 1940s.

In March and April 2014 Beca performed a detailed site investigation of the site involving excavation of 46 hand auger bores with collection of soil samples for the surface and 0.4 metre below ground level (m bgl) in each borehole. Additional samples were collected from the vicinity of an above ground diesel storage tank (AST) and a reported herbicide spill. Thirty six samples were analysed for metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), organochlorine pesticides (OCP) and organonitro & phosphorus pesticides (ONPP). Two samples collected in the vicinity of the former AST were also analysed for total petroleum hydrocarbons (TPH) and six samples were additionally analysed for synthetic precipitate leaching procedure (SPLP).

No reported concentrations of metals or pesticides exceeded applicable NES soil contaminant standards for recreational land use. However, reported concentrations of various metals including arsenic, cadmium, copper, and mercury exceeded established background concentrations in numerous sample locations. Reported OCP and ONPP concentrations exceeded established Ministry for the Environment Christchurch background concentrations in numerous sample locations. Reported concentrations of arsenic, mercury and total DDT exceeded applicable environmental guideline values in various sample locations. No reported SPLP concentrations except copper exceeded applicable ANZECC 80% freshwater protection guideline values.

Information held about other investigations on the Listed Land Use Register

For further information from Environment Canterbury, contact Customer Services and refer to enquiry number ENQ139635.

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 and Environment Canterbury's Contaminated Land Information Management Strategy (ECan 2009).*

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Please contact and Environment Canterbury Contaminated Sites Officer if you wish to discuss the contents of the LLUR statement, or if you require additional information. For any other information regarding this land please contact Environment Canterbury Customer Services.

Yours sincerely

Contaminated Sites Team

Property Statement from the Listed Land Use Register

Visit www.ecan.govt.nz/HAIL for more information about land uses.



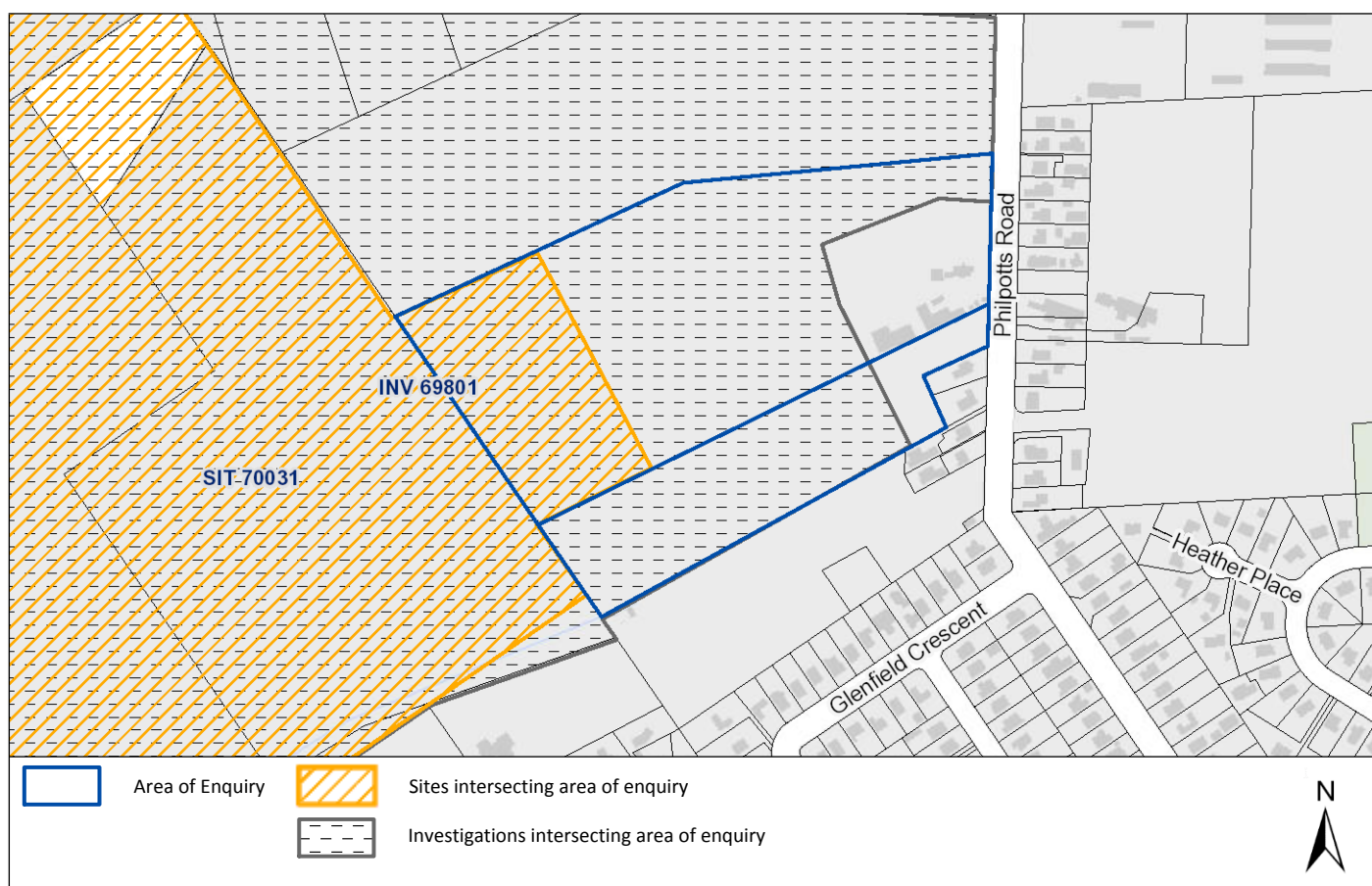
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Christchurch 8140

P. 03 365 3828
F. 03 365 3194
E. ecinfo@ecan.govt.nz

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Date:	04 August 2016	
Land Parcels:	Lot 3 DP 17557	Valuation No(s): 2180027300
	Lot 8 DP 5998	Valuation No(s): 2180027300



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Summary of sites:

Site ID	Site Name	Location	HAIL Activity(s)	Category
70031	Northern Arterial Extension and Cranford Drainage Basin	Cranford Street, St Albans	A10 - Persistent pesticide bulk storage or use;	Below guideline values - Other

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Information held about the sites on the Listed Land Use Register

Site 70031: Northern Arterial Extension and Cranford Drainage Basin (Intersects enquiry area.)

Site Address:	Cranford Street, St Albans
Legal Description(s):	Lot 1 DP 24638, Lot 1 DP 29952, Lot 1 DP 81359, Lot 2 DP 471475, Lot 2 DP 50323, Lot 8 DP 5998, Part RS

1048,Section 1 SO 461421,Section 2 SO 461421,Section 3 SO 461421,Section 4 SO 461421

Site Category:

Below guideline values - Other

Definition:

Investigation results demonstrate that hazardous substances present at the site, but below applicable guidelines. - Other

Land Uses (from HAIL):

Period From	Period To	HAIL land use
Pre 1941	2011	Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds

Notes:

Investigations:

4 Sep 2014 **INV 69801: Northern Arterial Extension and Cranford Stormwater Basin: Detailed Site Investigation (Contamination)** (Detailed Site Investigation)
Beca Limited

Summary of investigation(s):

The approximately 66 hectare site is located in St Albans/Mairehau on either side of Cranford Street and has been used for dairy farming and market gardening since the 1940s.

In March and April 2014 Beca performed a detailed site investigation of the site involving excavation of 46 hand auger bores with collection of soil samples for the surface and 0.4 metre below ground level (m bgl) in each borehole. Additional samples were collected from the vicinity of an above ground diesel storage tank (AST) and a reported herbicide spill. Thirty six samples were analysed for metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), organochlorine pesticides (OCP) and organonitro & phosphorus pesticides (ONPP). Two samples collected in the vicinity of the former AST were also analysed for total petroleum hydrocarbons (TPH) and six samples were additionally analysed for synthetic precipitate leaching procedure (SPLP).

No reported concentrations of metals or pesticides exceeded applicable NES soil contaminant standards for recreational land use. However, reported concentrations of various metals including arsenic, cadmium, copper, and mercury exceeded established background concentrations in numerous sample locations. Reported OCP and ONPP concentrations exceeded established Ministry for the Environment Christchurch background concentrations in numerous sample locations. Reported concentrations of arsenic, mercury and total DDT exceeded applicable environmental guideline values in various sample locations. No reported SPLP concentrations except copper exceeded applicable ANZECC 80% freshwater protection guideline values.

Information held about other investigations on the Listed Land Use Register

For further information from Environment Canterbury, contact Customer Services and refer to enquiry number ENQ139640.

Disclaimer:

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Please contact and Environment Canterbury Contaminated Sites Officer if you wish to discuss the contents of the LLUR statement, or if you require additional information. For any other information regarding this land please contact Environment Canterbury Customer Services.

Yours sincerely

Contaminated Sites Team

Property Statement from the Listed Land Use Register

Visit www.ecan.govt.nz/HAIL for more information about land uses.



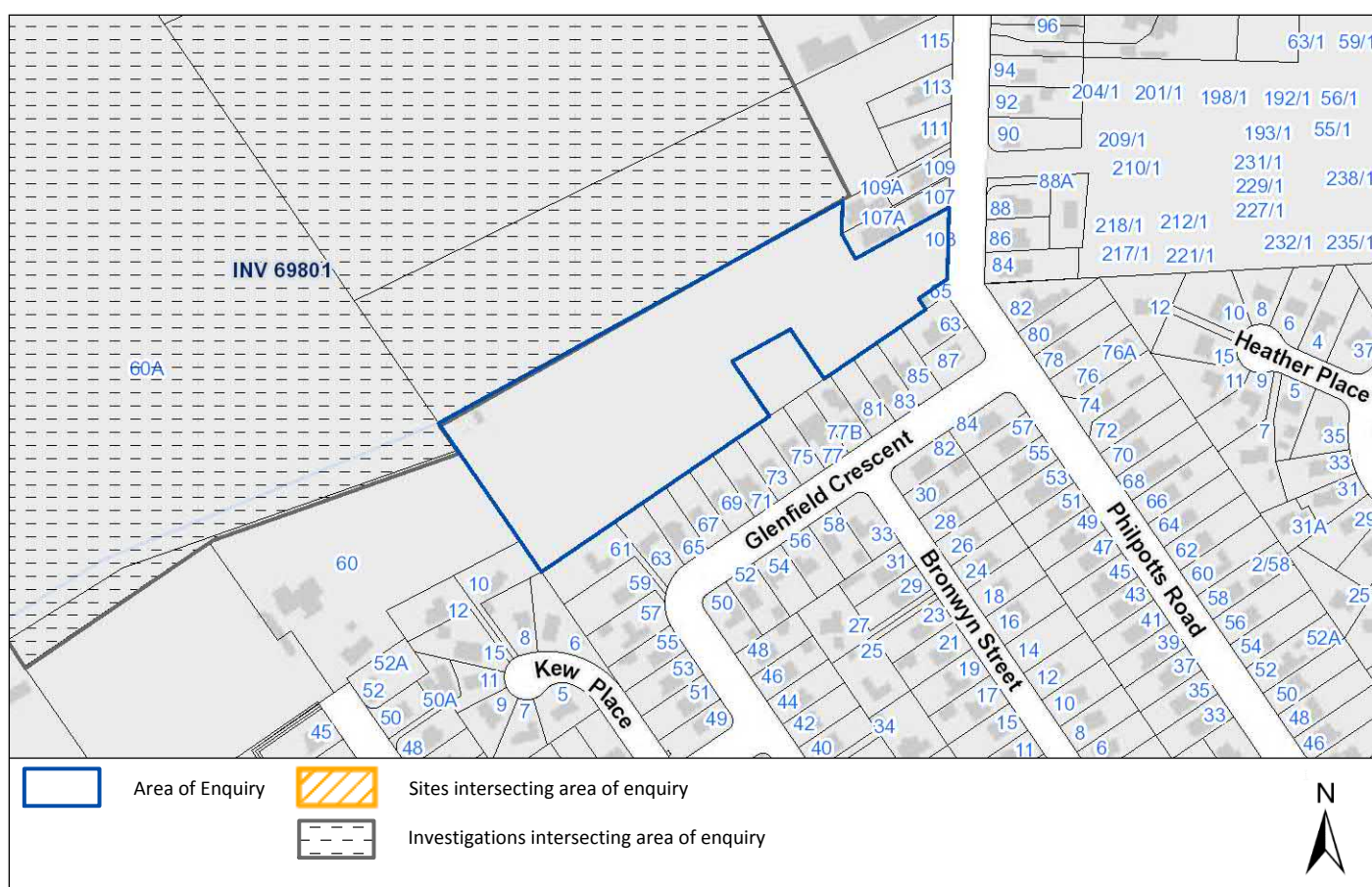
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Christchurch 8140

P. 03 365 3828
F. 03 365 3194
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Date:	08 August 2016	
Land Parcels:	Lot 1 DP 24456	Valuation No(s): 2180028000



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Summary of sites:

There are no sites associated with the area of enquiry.

Information held about the sites on the Listed Land Use Register

There are no sites associated with the area of enquiry.

Information held about other investigations on the Listed Land Use Register

4 Sep 2014	INV 69801: Northern Arterial Extension and Cranford Stormwater Basin: Detailed Site Investigation (Contamination) (Detailed Site Investigation) Beca Limited
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Summary of investigation(s):

The approximately 66 hectare site is located in St Albans/Mairehau on either side of Cranford Street and has been used for dairy farming and market gardening since the 1940s.

In March and April 2014 Beca performed a detailed site investigation of the site involving excavation of 46 hand auger bores with collection of soil samples for the surface and 0.4 metre below ground level (m bgl) in each borehole. Additional samples were collected from the vicinity of an above ground diesel storage tank (AST) and a reported herbicide spill. Thirty six samples were analysed for metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), organochlorine pesticides (OCP) and organonitro & phosphorus pesticides (ONPP). Two samples collected in the vicinity of the former AST were also analysed for total petroleum hydrocarbons (TPH) and six samples were additionally analysed for synthetic precipitate leaching procedure (SPLP).

No reported concentrations of metals or pesticides exceeded applicable NES soil contaminant standards for recreational land use. However, reported concentrations of various metals including arsenic, cadmium, copper, and mercury exceeded established background concentrations in numerous sample locations. Reported OCP and ONPP concentrations exceeded established Ministry for the Environment Christchurch background concentrations in numerous sample locations. Reported concentrations of arsenic, mercury and total DDT exceeded applicable environmental guideline values in various sample locations. No reported SPLP concentrations except copper exceeded applicable ANZECC 80% freshwater protection guideline values.

For further information from Environment Canterbury, contact Customer Services and refer to enquiry number ENQ139885.

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 and Environment Canterbury's Contaminated Land Information Management Strategy (ECan 2009).*

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Please contact and Environment Canterbury Contaminated Sites Officer if you wish to discuss the contents of the LLUR statement, or if you require additional information. For any other information regarding this land please contact Environment Canterbury Customer Services.

Yours sincerely

Contaminated Sites Team

Property Statement from the Listed Land Use Register

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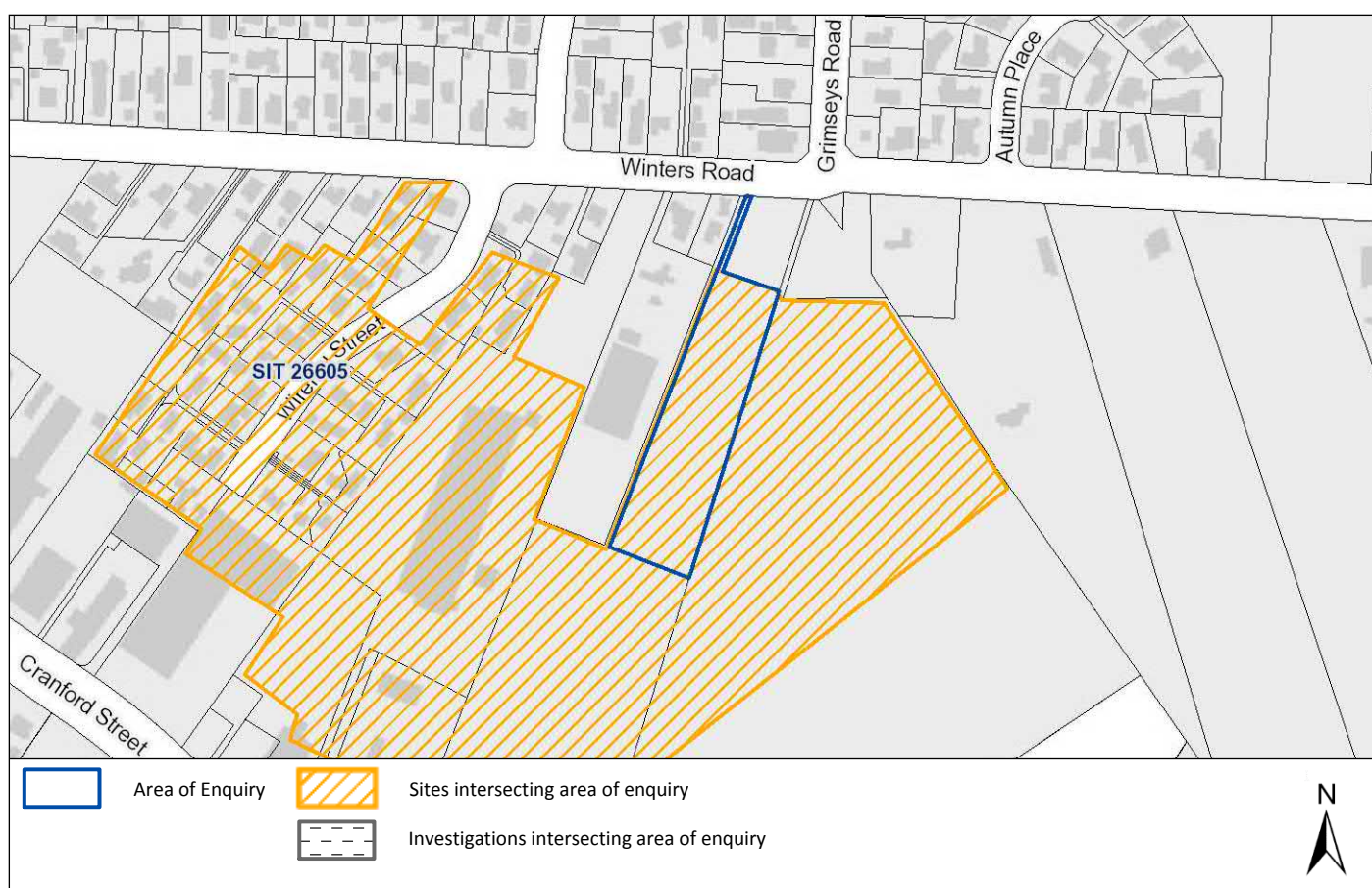
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F. 03 365 3194
E. ecinfo@ecan.govt.nz

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Date:	04 August 2016	
Land Parcels:	Lot 2 DP 69136	Valuation No(s): 2192405500



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Summary of sites:

Site ID	Site Name	Location	HAIL Activity(s)	Category
26605	26605	Wiremu Street, Redwood	A10 - Persistent pesticide bulk storage or use;	Not Investigated

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Information held about the sites on the Listed Land Use Register

Site 26605: 26605 (Intersects enquiry area.)

Site Address:	Wiremu Street, Redwood
Legal Description(s):	Lot 1 DP 14105, Lot 1 DP 305983, Lot 1 DP 58629, Lot 1 DP 79563, Lot 1 DP 81359, Lot 1 DP 83809, Lot 10 DP 40993, Lot 13 DP 40993, Lot 14 DP 40993, Lot 15 DP 40993, Lot 16 DP 40993, Lot 17 DP 40993, Lot 18

DP 40993, Lot 19 DP 40993, Lot 2 DP 305983, Lot 2 DP 471475, Lot 2 DP 50323, Lot 2 DP 52681, Lot 2 DP 58629, Lot 2 DP 69136, Lot 2 DP 79563, Lot 2 DP 80448, Lot 2 DP 83809, Lot 20 DP 40993, Lot 21 DP 40992, Lot 22 DP 40992, Lot 23 DP 40992, Lot 24 DP 40992, Lot 25 DP 40992, Lot 26 DP 40992, Lot 27 DP 40992, Lot 28 DP 40992, Lot 29 DP 40569, Lot 3 DP 40992, Lot 3 DP 52681, Lot 3 DP 69136, Lot 3 DP 79563, Lot 3 DP 80448, Lot 3 DP 83809, Lot 32 DP 40569, Lot 33 DP 40993, Lot 34 DP 40993, Lot 4 DP 40992, Lot 4 DP 79563, Lot 4 DP 80448, Lot 5 DP 40993, Lot 5 DP 80448, Lot 6 DP 40993, Lot 6 DP 80448, Lot 7 DP 40993, Lot 8 DP 40993, Lot 9 DP 40993, Part Lot 2 DP 40992, Part RS 1048

Site Category:

Not Investigated

Definition:

Verified HAIL has not been investigated.

Land Uses (from HAIL):

Period From	Period To	HAIL land use
Pre 1941	2011	Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds

Notes:

3 Oct 2013

Area defined from: 1941- 2011 ECan Aerial Photo

Note: Market garden plots were noted in aerial photographs reviewed.

Investigations:

There are no investigations associated with this site.

Information held about other investigations on the Listed Land Use Register

For further information from Environment Canterbury, contact Customer Services and refer to enquiry number ENQ139651.

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 and Environment Canterbury's Contaminated Land Information Management Strategy (ECan 2009).

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Yours sincerely

Contaminated Sites Team

Property Statement from the Listed Land Use Register

Visit www.ecan.govt.nz/HAIL for more information about land uses.



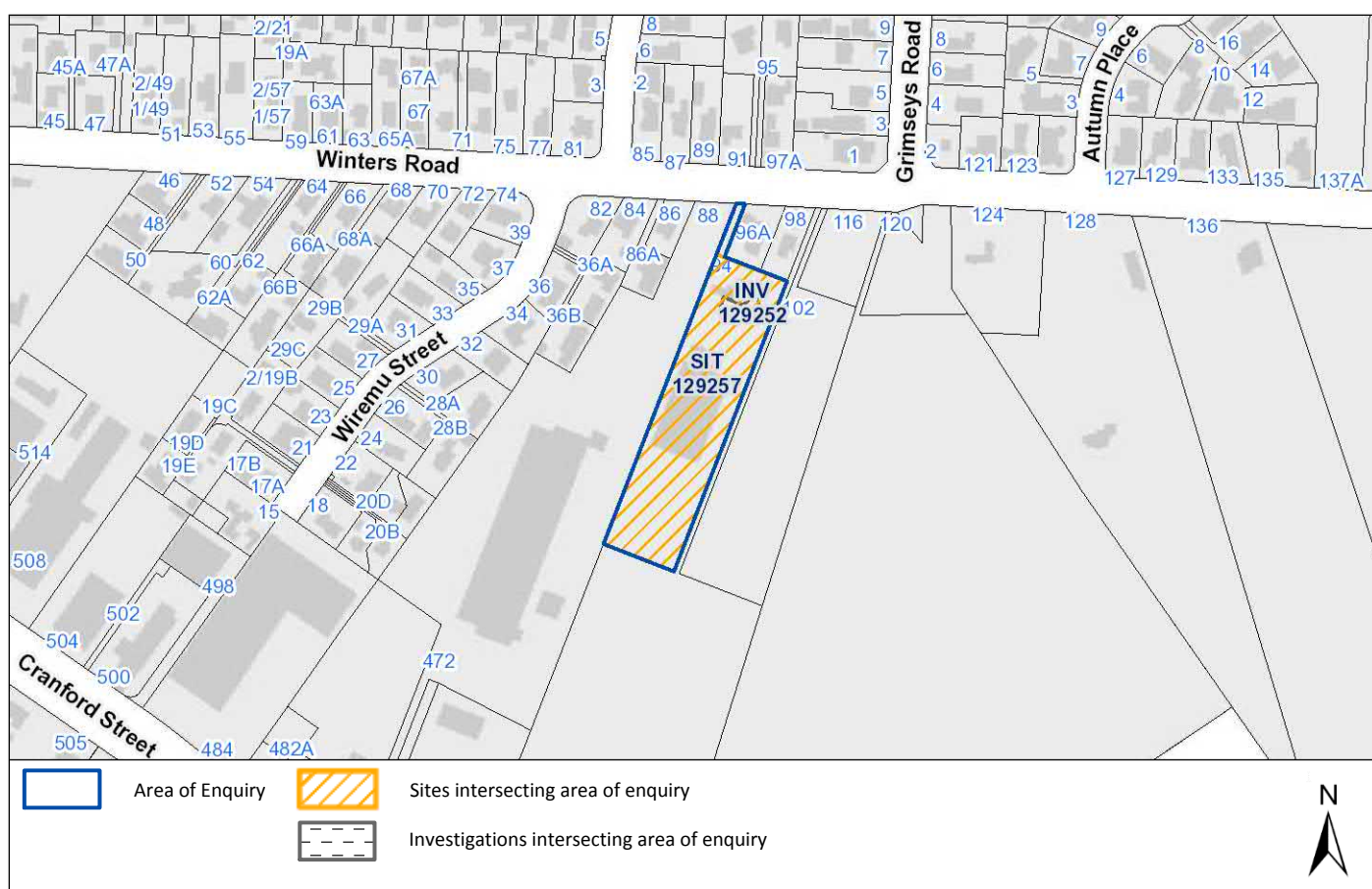
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PO Box 345
Christchurch 8140

P. 03 365 3828
F. 03 365 3194
E. ecinfo@ecan.govt.nz

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Date:	08 August 2016	
Land Parcels:	Lot 2 DP 74941	Valuation No(s): 2192405300



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Summary of sites:

Site ID	Site Name	Location	HAIL Activity(s)	Category
129257	94 Winters Road, Christchurch - Former Horticultural Site	94 Winters Road, Lot 2 DP 74941	A10 - Persistent pesticide bulk storage or use;	Review in Progress

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Information held about the sites on the Listed Land Use Register

Site 129257: 94 Winters Road, Christchurch - Former Horticultural Site (Intersects enquiry area.)

Site Address:	94 Winters Road, Lot 2 DP 74941
Legal Description(s):	Lot 2 DP 74941

Site Category:	Review in Progress
Definition:	Investigation reports have been received and are currently being reviewed to determine the most appropriate site category.

Land Uses (from HAIL):	Period From	Period To	HAIL land use
	Pre 1941	2011	Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds

Notes:

Investigations:

24 Mar 2016 **INV 129252: 94 Winters Road, Papanui, Christchurch Soil Contamination Investigation Report** (Detailed Site Investigation)
Tonkin and Taylor Ltd

Summary of investigation(s):

94 Winters Road, Papanui, Christchurch, Soil Contamination Investigation Report

In March, 2016, Tonkin and Taylor published the findings of a limited detailed site investigation (DSI) for the site. The DSI focussed solely on the area of land being disturbed for the repairs to the wastewater line immediately to the south and east of the dwelling. The property at 94 Winters Road was formerly part of a wider block of land that was used for horticultural purposes from at least 1941 to 2011. Aerial photography confirmed that market gardening, orcharding and glasshouse activities have also occurred within the area of proposed works. Some glasshouses are still present at the rear of the site.

Investigation objective:

The DSI was carried out to assess and test for key contaminants associated with horticultural use, and provide information on worker health and safety, resource consenting, and soil disposal options.

Results:

Near surface samples collected from 0.1m contained copper, lead and DDT levels above background levels, but below the rural residential/lifestyle block 25% produce soil contaminant standards for health (SCS). All deep sample results collected from 0.3m were below background levels for all metals and DDT.

Conclusions:

The DSI confirmed that there is copper, lead and DDT contamination above background levels in the surface layers of soil at the site. All results were below the rural residential/lifestyle block 25% produce SCS. Soil is suitable for disposal at Burwood landfill, but not in a cleanfill.

Justification for proposed category:

This assessment only refers to the area of land sampled around the dwelling for the wastewater line, so the proposed category is "partially investigated". There is evidence of glasshouses at the rear of the property, and further investigation may be required if soil disturbance/land use change occurs in this area in future.

Information held about other investigations on the Listed Land Use Register

For further information from Environment Canterbury, contact Customer Services and refer to enquiry number ENQ139875.

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Yours sincerely

Contaminated Sites Team

Property Statement from the Listed Land Use Register

Visit www.ecan.govt.nz/HAIL for more information about land uses.



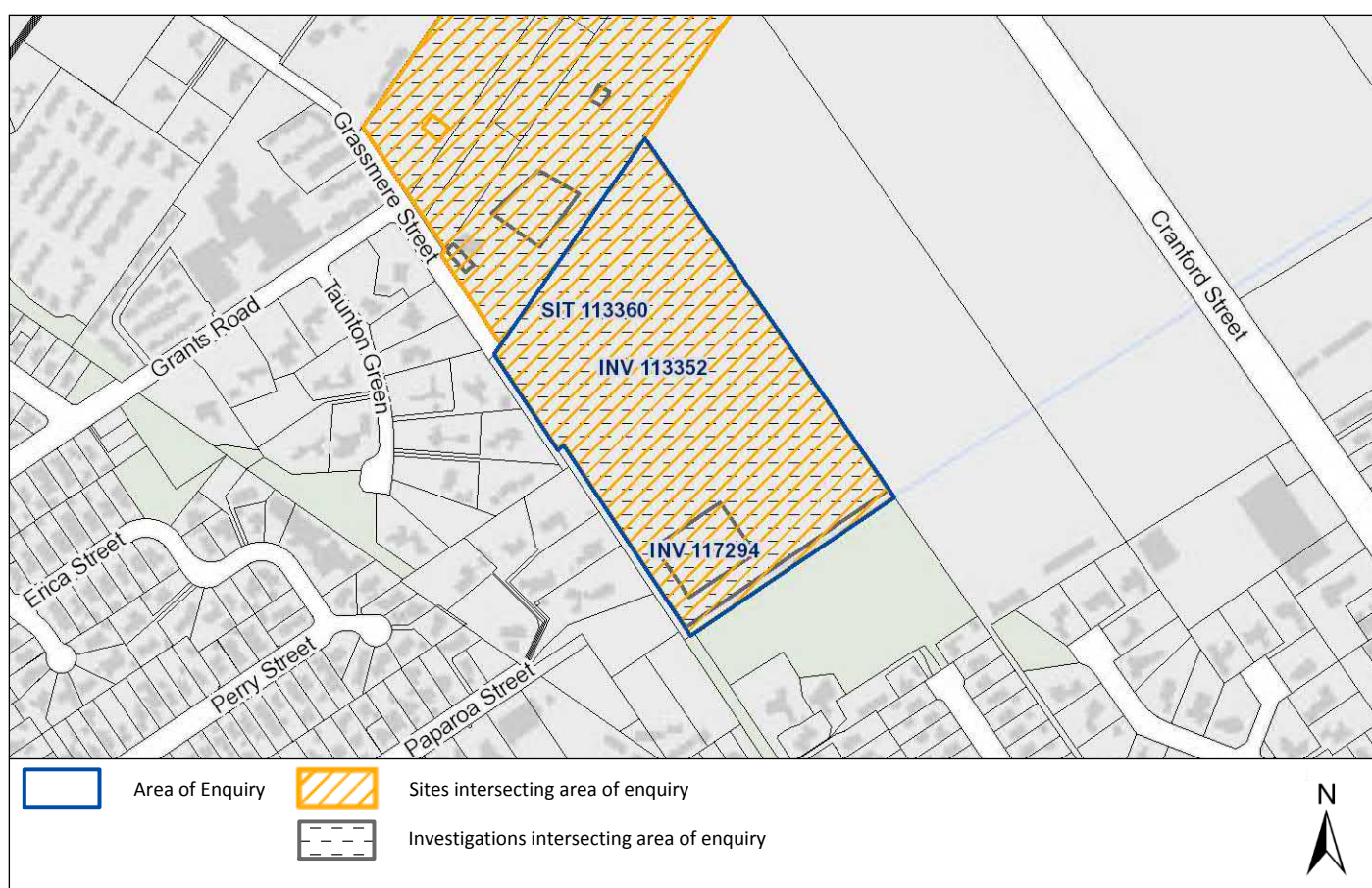
Customer Services
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PO Box 345
Christchurch 8140

P. 03 365 3828
F. 03 365 3194
E. ecinfo@ecan.govt.nz

www.ecan.govt.nz

Date:	04 August 2016
Land Parcels:	Lot 2 DP 427759 Valuation No(s): 2180029600



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Summary of sites:

Site ID	Site Name	Location	HAIL Activity(s)	Category
113360	59-63 Grassmere Street, Papanui, Christchurch	59-63 Grassmere Street, Papanui, Christchurch		Below guideline values - Residential

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Information held about the sites on the Listed Land Use Register

Site 113360: 59-63 Grassmere Street, Papanui, Christchurch (Intersects enquiry area.)

Site Address:	59-63 Grassmere Street, Papanui, Christchurch
Legal Description(s):	Lot 1 DP 7419, Lot 2 DP 1729, Lot 2 DP 427759, Part Lot 1 DP 1729, Part Lot 3 DP 1729, Part Lot 4 DP 1729, Part Lot 5 DP 1729, Part RS 308

Site Category:

Below guideline values - Residential

Definition:

Investigation results demonstrate that hazardous substances present at the site, but below applicable guidelines. - Residential

Land Uses (from HAIL):**Period From****Period To****HAIL land use****Notes:****Investigations:****19 Feb 2015****INV 113352: Detailed Site Investigation, 57, 59, 63 and 69 Grassmere Street, Papanui, Christchurch**
(Detailed Site Investigation)
KPES**Summary of investigation(s):**

At the time the investigation was undertaken in October 2014, fill had reportedly commenced at the Grassmere Street frontage, and fill was present between 0.6 and 1.2m deep. The assessment of the site history included a review of the Christchurch City Council file for the property, which reports that complaints were received about the site being filled in 2009, 2011 and 2014. The plans included with the report indicate that the frontage of 57 Grassmere Street, and almost two thirds of 63 Grassmere Street have been filled.

The soil sampling investigation was undertaken to assess whether the former horticultural activities had resulted in soil contamination. Soil samples were collected on a grid basis from surface soil in 56 locations across the cropped area, and analysed as 14 composite samples (each with four subsamples). Two further composite samples (also comprised of four subsamples) were collected from natural soil beneath the fill. Three composite samples were collected from within the fill material, with three discrete samples from the surface. In addition, seven targeted samples were collected from around the former house and garage area. The sampling strategy appears to be generally appropriate to characterise the site. However it is somewhat unclear how the sampling depths near the house were selected.

All samples from the formerly cropped areas were analysed for a suite of seven metals and organochlorine (OCPs), and organonitrogen and organophosphorus pesticides (ONOPs). The discrete samples, and two of the composite samples from filled areas were analysed for a suite of seven metals and polycyclic aromatic hydrocarbons (PAHs), and the remainder were analysed for a suite of seven metals. Note that the results table has transcribed some results incorrectly from the laboratory results - none of the fill samples were analysed for organochlorine pesticides. Samples from the house area were analysed for a suite of seven metals. Two of the samples from the garage area were analysed for a suite of seven metals, OCPs and ONOPs. The remaining sample from the garage was collected from a hydrocarbon stained area near a drum and was analysed for a suite of seven metals and total petroleum hydrocarbons.

Cropped areas - The reported concentrations of arsenic in all of the samples from the former cropped areas exceeded the NES Soil Contaminant Standard (SCS) for residential Land-use (when adjusted to allow for the compositing). Lead in one of the composite samples also exceeded the adjusted guideline value. The sub-samples have not been re-analysed to determine whether the individual results exceeded. While it is likely that some of the arsenic concentrations are a result of local background concentrations, the results are more variable than would be expected from naturally occurring background concentrations. It is noted that the background concentrations used by the report do not agree with those shown on Environment Canterbury's GIS, and in particular the arsenic concentration reported on the GIS is considerably lower than that used in the report. All ONOPs were below the laboratory limit of detection. OCPs were present at low but detectable levels. The report states that a number of samples exceed the value adopted for nickel, when adjusted for compositing. However information online indicates that this guideline value is no longer current. None of the nickel results exceed the NEPC Guideline on Investigation Levels for Soil and Groundwater (1999) for residential use, when adjusted for compositing.

Filled area - Reported concentrations of lead in two of the discrete samples collected from the fill area exceeded the NES SCS for residential land-use. The report states that the soil from this area has already been removed from the site. In addition, reported concentrations of lead in two of the composite samples also exceeded the NES SCS when adjusted for the compositing. The sub-samples have not been re-analysed and it is unclear whether the soil removal extended to this area. Only some of the soil samples from the fill material were analysed for PAHs, and the benzo(a)pyrene equivalent has not been calculated in the report. The reported concentrations in one of the samples exceeded the NES SCS for residential use when adjusted for compositing.

House area - Reported concentrations of lead in two samples collected from near the house exceeded the NES SCS for residential use, with one sample significantly exceeding (five times the guideline value). The remainder of the metals results were below the relevant guideline values for residential use. The elevated lead is likely to derive from lead paint on the structure.

Garage area - Reported concentrations of lead in one of the three samples exceeded the NES SCS for residential use, although all other metals were below the relevant guideline values for residential use. Low but detectable levels of OCPs were found in the two samples analysed. The sample analysed from the hydrocarbon stained soil near a large drum reportedly contained hydrocarbons in the C15-C36 band, although the concentrations did not exceed the Ministry for the Environment's Petroleum Hydrocarbon Guidelines (1999) for residential use or protection of groundwater quality.

The report concludes that the guideline exceedances are "of minor effect" and that the site meets the residential criteria. However this conclusion is at odds with the results reported. Lead in several locations close to the existing buildings exceeds guideline values for residential use, and it is recommended that these areas be described as "contaminated for residential use". The extent of contamination has not been delineated in this area.

20 Jan 2016

INV 117294: Addendum to Detailed Site Investigation, Grassmere Street, Papanui, Christchurch (Detailed Site Investigation)
KPES

Summary of investigation(s):

Based on the response from ECan and CCC to the detailed site investigation report, in December 2015 KPES performed additional sampling of the site using methodology previously agreed with ECan and CCC to further evaluate the contamination status of the site. A total of 13 discrete soil samples were collected in areas where contamination had been reported during the original detailed site investigation (INV 113352). No samples were collected from the vicinity of the house at 59 Grassmere Street. Samples were variously analysed for benzo(a)pyrene, lead, arsenic or total petroleum hydrocarbons depending on the location and previous investigation results. No concentrations of contaminants of concern were reported in excess of applicable soil contaminant standards or guideline values for residential land use in any sample.

Information held about other investigations on the Listed Land Use Register

For further information from Environment Canterbury, contact Customer Services and refer to enquiry number ENQ139628.

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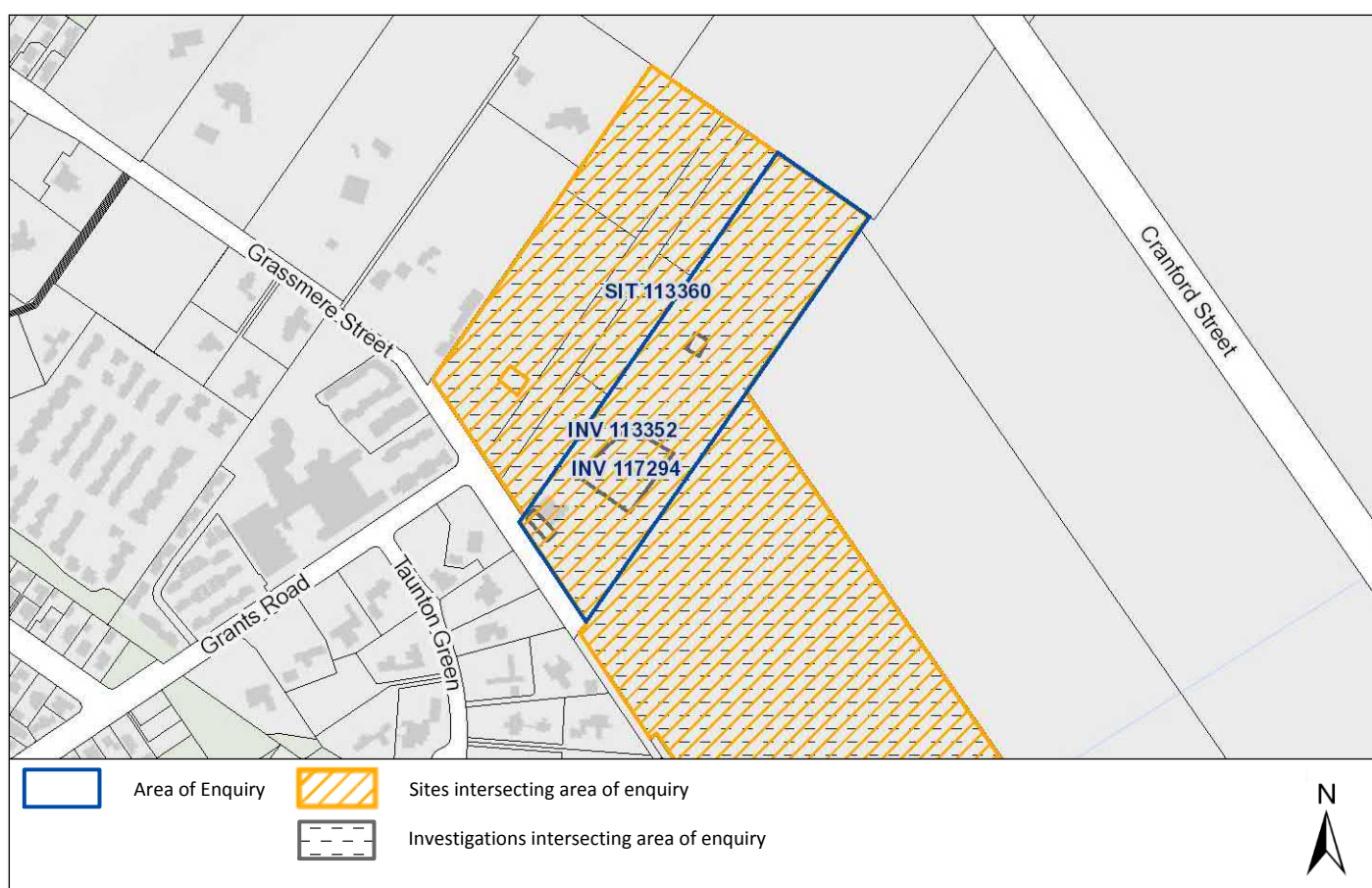
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PO Box 345
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Date:	04 August 2016
Land Parcels:	Lot 1 DP 7419 Valuation No(s): 2192401000



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Summary of sites:

Site ID	Site Name	Location	HAIL Activity(s)	Category
113360	59-63 Grassmere Street, Papanui, Christchurch	59-63 Grassmere Street, Papanui, Christchurch	A10 - Persistent pesticide bulk storage or use;	Below guideline values - Residential

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Site Category:

Below guideline values - Residential

Definition:

Investigation results demonstrate that hazardous substances present at the site, but below applicable guidelines. - Residential

Land Uses (from HAIL):

Period From	Period To	HAIL land use
Pre 1946	2011	Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds

Notes:**Investigations:**

19 Feb 2015 **INV 113352: Detailed Site Investigation, 57, 59, 63 and 69 Grassmere Street, Papanui, Christchurch**
 (Detailed Site Investigation)
 KPES

Summary of investigation(s):

At the time the investigation was undertaken in October 2014, fill had reportedly commenced at the Grassmere Street frontage, and fill was present between 0.6 and 1.2m deep. The assessment of the site history included a review of the Christchurch City Council file for the property, which reports that complaints were received about the site being filled in 2009, 2011 and 2014. The plans included with the report indicate that the frontage of 57 Grassmere Street, and almost two thirds of 63 Grassmere Street have been filled.

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20 Jan 2016 **INV 117294: Addendum to Detailed Site Investigation, Grassmere Street, Papanui, Christchurch (Detailed Site Investigation)**
KPES

Summary of investigation(s):

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Information held about other investigations on the Listed Land Use Register

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Property Statement from the Listed Land Use Register

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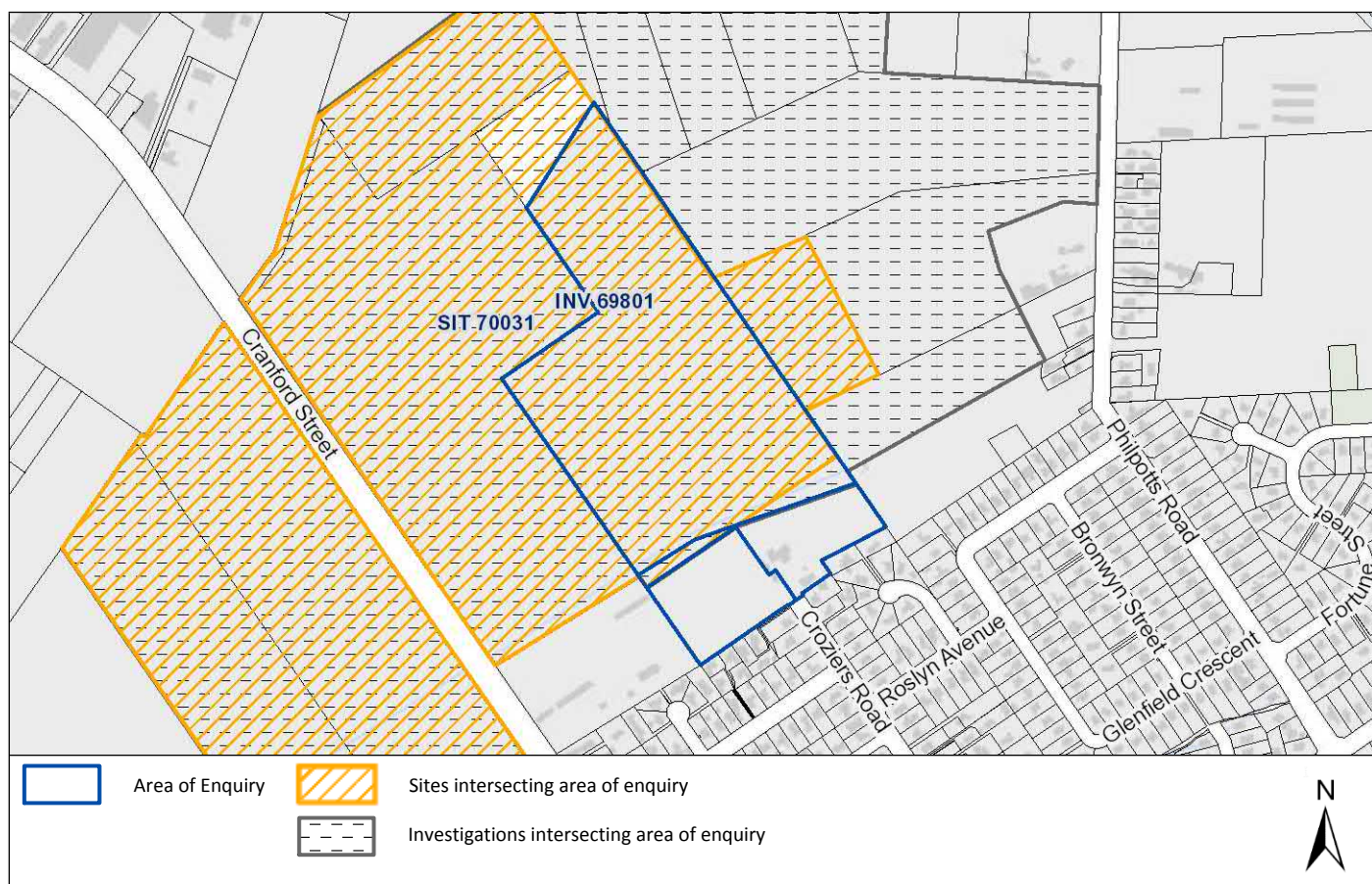
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Date:	04 August 2016	
Land Parcels:	Lot 3 DP 17794	Valuation No(s): 2180028600
	Lot 1 DP 491986	Valuation No(s): 2180028600
	Lot 2 DP 491986	Valuation No(s): 2180028600



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Summary of sites:

Site ID	Site Name	Location	HAIL Activity(s)	Category
70031	Northern Arterial Extension and Cranford Drainage Basin	Cranford Street, St Albans	A10 - Persistent pesticide bulk storage or use;	Below guideline values - Other

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Information held about the sites on the Listed Land Use Register

Site 70031: Northern Arterial Extension and Cranford Drainage Basin (Intersects enquiry area.)

Site Address:	Cranford Street, St Albans
----------------------	----------------------------

Legal Description(s):	Lot 1 DP 24638,Lot 1 DP 29952,Lot 1 DP 81359,Lot 2 DP 471475,Lot 2 DP 50323,Lot 8 DP 5998,Part RS 1048,Section 1 SO 461421,Section 2 SO 461421,Section 3 SO 461421,Section 4 SO 461421		
Site Category:	Below guideline values - Other		
Definition:	Investigation results demonstrate that hazardous substances present at the site, but below applicable guidelines. - Other		
Land Uses (from HAIL):	Period From	Period To	HAIL land use
	Pre 1941	2011	Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds

Notes:

Investigations:

4 Sep 2014 **INV 69801: Northern Arterial Extension and Cranford Stormwater Basin: Detailed Site Investigation (Contamination)** (Detailed Site Investigation)
Beca Limited

Summary of investigation(s):

The approximately 66 hectare site is located in St Albans/Mairehau on either side of Cranford Street and has been used for dairy farming and market gardening since the 1940s.

In March and April 2014 Beca performed a detailed site investigation of the site involving excavation of 46 hand auger bores with collection of soil samples for the surface and 0.4 metre below ground level (m bgl) in each borehole. Additional samples were collected from the vicinity of an above ground diesel storage tank (AST) and a reported herbicide spill. Thirty six samples were analysed for metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), organochlorine pesticides (OCP) and organonitro & phosphorus pesticides (ONPP). Two samples collected in the vicinity of the former AST were also analysed for total petroleum hydrocarbons (TPH) and six samples were additionally analysed for synthetic precipitate leaching procedure (SPLP).

No reported concentrations of metals or pesticides exceeded applicable NES soil contaminant standards for recreational land use. However, reported concentrations of various metals including arsenic, cadmium, copper, and mercury exceeded established background concentrations in numerous sample locations. Reported OCP and ONPP concentrations exceeded established Ministry for the Environment Christchurch background concentrations in numerous sample locations. Reported concentrations of arsenic, mercury and total DDT exceeded applicable environmental guideline values in various sample locations. No reported SPLP concentrations except copper exceeded applicable ANZECC 80% freshwater protection guideline values.

Information held about other investigations on the Listed Land Use Register

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Christchurch 8140

P. 03 365 3828
F. 03 365 3194
E. ecinfo@ecan.govt.nz

www.ecan.govt.nz

Date:	04 August 2016	
Land Parcels:	Part Lot 3 DP 1729	Valuation No(s): 2192401220
	Lot 2 DP 1729	Valuation No(s): 2192401220
	Part Lot 4 DP 1729	Valuation No(s): 2192401220
	Part Lot 5 DP 1729	Valuation No(s): 2192401220
	Part RS 308	Valuation No(s): 2192401220



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Summary of sites:

Site ID	Site Name	Location	HAIL Activity(s)	Category
113360	59-63 Grassmere Street, Papanui, Christchurch	59-63 Grassmere Street, Papanui, Christchurch	A10 - Persistent pesticide bulk storage or use;	Below guideline values - Residential

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Information held about the sites on the Listed Land Use Register

Site 113360: 59-63 Grassmere Street, Papanui, Christchurch (Intersects enquiry area.)

Site Address:	59-63 Grassmere Street, Papanui, Christchurch
Legal Description(s):	Lot 1 DP 7419, Lot 2 DP 1729, Lot 2 DP 427759, Part Lot 1 DP 1729, Part Lot 3 DP 1729, Part Lot 4 DP 1729, Part Lot 5 DP 1729, Part RS 308

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

Land Uses (from HAIL):	Period From	Period To	HAIL land use
	Pre 1946	2011	Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds

Notes:**Investigations:**

19 Feb 2015 **INV 113352: Detailed Site Investigation, 57, 59, 63 and 69 Grassmere Street, Papanui, Christchurch**
(Detailed Site Investigation)
KPES

Summary of investigation(s):

At the time the investigation was undertaken in October 2014, fill had reportedly commenced at the Grassmere Street frontage, and fill was present between 0.6 and 1.2m deep. The assessment of the site history included a review of the Christchurch City Council file for the property, which reports that complaints were received about the site being filled in 2009, 2011 and 2014. The plans included with the report indicate that the frontage of 57 Grassmere Street, and almost two thirds of 63 Grassmere Street have been filled.

The soil sampling investigation was undertaken to assess whether the former horticultural activities had resulted in soil contamination. Soil samples were collected on a grid basis from surface soil in 56 locations across the cropped area, and analysed as 14 composite samples (each with four subsamples). Two further composite samples (also comprised of four subsamples) were collected from natural soil beneath the fill. Three composite samples were collected from within the fill material, with three discrete samples from the surface. In addition, seven targeted samples were collected from around the former house and garage area. The sampling strategy appears to be generally appropriate to characterise the site. However it is somewhat unclear how the sampling depths near the house were selected.

All samples from the formerly cropped areas were analysed for a suite of seven metals and organochlorine (OCPs), and organonitrogen and organophosphorus pesticides (ONOPs). The discrete samples, and two of the composite samples from filled areas were analysed for a suite of seven metals and polycyclic aromatic hydrocarbons (PAHs), and the remainder were analysed for a suite of seven metals. Note that the results table has transcribed some results incorrectly from the laboratory results - none of the fill samples were analysed for organochlorine pesticides. Samples from the house area were analysed for a suite of seven metals. Two of the samples from the garage area were analysed for a suite of seven metals, OCPs and ONOPs. The remaining sample from the garage was collected from a hydrocarbon stained area near a drum and was analysed for a suite of seven metals and total petroleum hydrocarbons.

Cropped areas - The reported concentrations of arsenic in all of the samples from the former cropped areas exceeded the NES Soil Contaminant Standard (SCS) for residential Land-use (when adjusted to allow for the compositing). Lead in one of the composite samples also exceeded the adjusted guideline value. The sub-samples have not been re-analysed to determine whether the individual results exceeded. While it is likely that some of the arsenic concentrations are a result of local background concentrations, the results are more variable than would be expected from naturally occurring background concentrations. It is noted that the background concentrations used by the report do not agree with those shown on Environment Canterbury's GIS, and in particular the arsenic concentration reported on the GIS is considerably lower than that used in the report. All ONOPs were below the laboratory limit of detection. OCPs were present at low but detectable levels. The report states that a number of samples exceed the value adopted for nickel, when adjusted for compositing. However information online indicates that this guideline value is no longer current. None of the nickel results exceeded the NEPC Guideline on Investigation Levels for Soil and Groundwater (1999) for residential use, when adjusted for compositing.

Filled area - Reported concentrations of lead in two of the discrete samples collected from the fill area exceeded the NES SCS for residential land-use. The report states that the soil from this area has already been removed from the site. In addition, reported concentrations of lead in two of the composite samples also exceeded the NES SCS when adjusted for the compositing. The sub-samples have not been re-analysed and it is unclear whether the soil removal extended to this area. Only some of the soil samples from the fill material were analysed for PAHs, and the benzo(a)pyrene equivalent has not been calculated in the report. The reported concentrations in one of the samples exceeded the NES SCS for residential use when adjusted for compositing.

House area - Reported concentrations of lead in two samples collected from near the house exceeded the NES SCS for residential use, with one sample significantly exceeding (five times the guideline value). The remainder of the metals results were below the relevant guideline values for residential use. The elevated lead is likely to derive from lead paint on the structure.

Garage area - Reported concentrations of lead in one of the three samples exceeded the NES SCS for residential use, although all other metals were below the relevant guideline values for residential use. Low but detectable levels of OCPs were found in the two samples analysed. The sample analysed from the hydrocarbon stained soil near a large drum reportedly contained hydrocarbons in the C15-C36 band, although the concentrations did not exceed the Ministry for the Environment's Petroleum Hydrocarbon Guidelines (1999) for residential use or protection of groundwater quality.

The report concludes that the guideline exceedances are "of minor effect" and that the site meets the residential criteria. However this conclusion is at odds with the results reported. Lead in several locations close to the existing buildings exceeds guideline values for residential use, and it is recommended that these areas be described as "contaminated for residential use". The extent of contamination has not been delineated in this area.

Information held about other investigations on the Listed Land Use Register

For further information from Environment Canterbury, contact Customer Services and refer to enquiry number ENQ139622.

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Dear Sir/Madam

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The LLUR statement provided indicates the location of the land parcel(s) you enquired about and provides information regarding any LLUR sites within a radius specified in the statement of this land.

Please note that if a property is not currently entered 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 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; other information relevant to potential contamination may be held in other files (for example consent and enforcement files).

If your enquiry relates to a farm property, please note that many current and past activities undertaken on farms may not be listed on the LLUR. Activities such as the storage, formulation and disposal of pesticides, offal pits, foot rot troughs, animal dips and underground or above ground fuel tanks have the potential to cause contamination.

Please contact and Environment Canterbury Contaminated Sites Officer if you wish to discuss the contents of the LLUR statement, or if you require additional information. For any other information regarding this land please contact Environment Canterbury Customer Services.

Yours sincerely

Contaminated Sites Team

Property Statement from the Listed Land Use Register

Visit www.ecan.govt.nz/HAIL for more information about land uses.



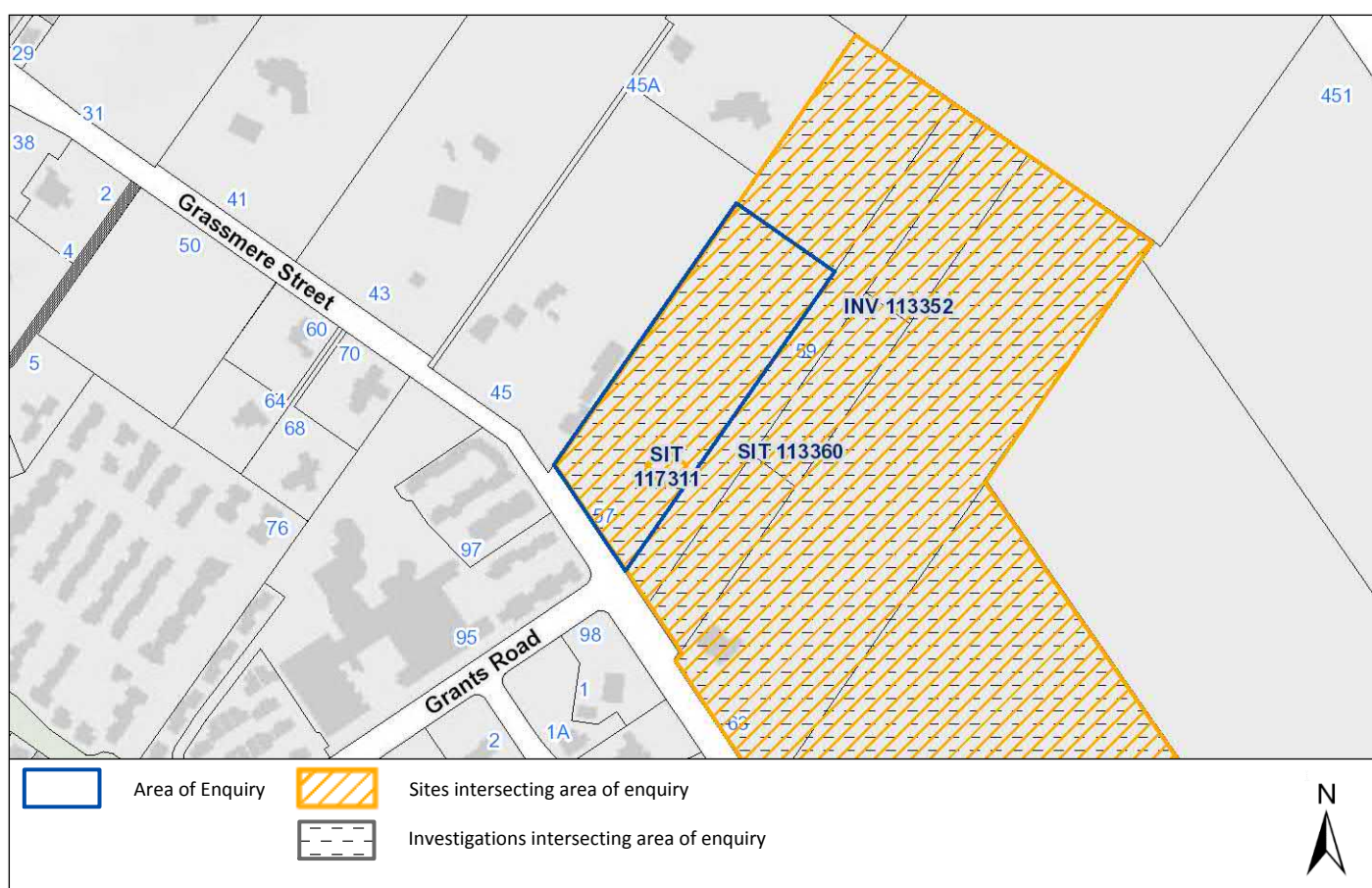
Customer Services
P. 03 353 9007 or 0800 324 636

PO Box 345
Christchurch 8140

P. 03 365 3828
F. 03 365 3194
E. ecinfo@ecan.govt.nz

www.ecan.govt.nz

Date:	04 August 2016
Land Parcels:	Part Lot 1 DP 1729 Valuation No(s): 2192401202



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Summary of sites:

Site ID	Site Name	Location	HAIL Activity(s)	Category
113360	59-63 Grassmere Street, Papanui, Christchurch	59-63 Grassmere Street, Papanui, Christchurch	A10 - Persistent pesticide bulk storage or use;	Below guideline values - Residential
117311	57 Grassmere Street, Papanui, Christchurch	57 Grassmere Street, Papanui, Christchurch		Contaminated - Residential

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Information held about the sites on the Listed Land Use Register

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Site Address:	59-63 Grassmere Street, Papanui, Christchurch
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Legal Description(s):	Lot 1 DP 7419, Lot 2 DP 1729, Lot 2 DP 427759, Part Lot 1 DP 1729, Part Lot 3 DP 1729, Part Lot 4 DP 1729, Part Lot 5 DP 1729, Part RS 308
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Site Category:	Below guideline values - Residential
Definition:	Investigation results demonstrate that hazardous substances present at the site, but below applicable guidelines. - Residential

Land Uses (from HAIL):	Period From	Period To	HAIL land use
	Pre 1946	2011	Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds

Notes:

Investigations:

19 Feb 2015 **INV 113352: Detailed Site Investigation, 57, 59, 63 and 69 Grassmere Street, Papanui, Christchurch**
(Detailed Site Investigation)
KPES

Summary of investigation(s):

At the time the investigation was undertaken in October 2014, fill had reportedly commenced at the Grassmere Street frontage, and fill was present between 0.6 and 1.2m deep. The assessment of the site history included a review of the Christchurch City Council file for the property, which reports that complaints were received about the site being filled in 2009, 2011 and 2014. The plans included with the report indicate that the frontage of 57 Grassmere Street, and almost two thirds of 63 Grassmere Street have been filled.

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The report concludes that the guideline exceedances are "of minor effect" and that the site meets the residential criteria. However this conclusion is at odds with the results reported. Lead in several locations close to the existing buildings exceeds guideline values for residential use, and it is recommended that these areas be described as "contaminated for residential use". The extent of contamination has not been delineated in this area.

Site 117311: 57 Grassmere Street, Papanui, Christchurch (Intersects enquiry area.)

Site Address:	57 Grassmere Street, Papanui, Christchurch
Legal Description(s):	Part Lot 1 DP 1729

Site Category:	Contaminated - Residential
Definition:	Site investigation demonstrates that the land is significantly contaminated.

Land Uses (from HAIL):	Period From	Period To	HAIL land use
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Notes:

Investigations:

19 Feb 2015 **INV 113352: Detailed Site Investigation, 57, 59, 63 and 69 Grassmere Street, Papanui, Christchurch**
(Detailed Site Investigation)
KPES

Summary of investigation(s):

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Information held about other investigations on the Listed Land Use Register

For further information from Environment Canterbury, contact Customer Services and refer to enquiry number ENQ139623.

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Please contact and Environment Canterbury Contaminated Sites Officer if you wish to discuss the contents of the LLUR statement, or if you require additional information. For any other information regarding this land please contact Environment Canterbury Customer Services.

Yours sincerely

Contaminated Sites Team

Property Statement from the Listed Land Use Register

Visit www.ecan.govt.nz/HAIL for more information about land uses.



Customer Services
P. 03 353 9007 or 0800 324 636

PO Box 345
Christchurch 8140

P. 03 365 3828
F. 03 365 3194
E. ecinfo@ecan.govt.nz

www.ecan.govt.nz

Date:	08 August 2016	
Land Parcels:	Lot 2 DP 3106	Valuation No(s): 2192401300
	Lot 1 DP 3106	Valuation No(s): 2192401300



Summary of sites:

There are no sites associated with the area of enquiry.

Information held about the sites on the Listed Land Use Register

There are no sites associated with the area of enquiry.

Information held about other investigations on the Listed Land Use Register

For further information from Environment Canterbury, contact Customer Services and refer to enquiry number ENQ139824.

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Date:	04 August 2016
Land Parcels:	Part RS 308 Valuation No(s): 2192401200



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Summary of sites:

Site ID	Site Name	Location	HAIL Activity(s)	Category
1712	Formerly B Hosking Ltd	45 Grassmere Street, Papanui, Christchurch	A17 - Storage tanks or drums for fuel, chemicals or liquid waste;	Not Investigated

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Information held about the sites on the Listed Land Use Register

Site 1712: Formerly B Hosking Ltd (Intersects enquiry area.)

Site Address:	45 Grassmere Street, Papanui, Christchurch
Legal Description(s):	Pt RS 308; Lot 1 DP 1729; Lot 2 DP 1729; Pt Lot 3 DP 1729; Pt Lot 4 DP 1729; Pt Lot 5 DP 1729

Site Category:

Not Investigated

Definition:

Verified HAIL has not been investigated.

Land Uses (from HAIL):

Period From	Period To	HAIL land use
?	1998	Storage tanks or drums for fuel, chemicals or liquid waste

Notes:**18 Jun 1999**

Christchurch City Council Dangerous Goods Licence list (1993): Two underground storage tanks (USTs) on site, one 4,500 L UST, 3(a) product and one 4,500 L UST, 3(c) product.

11 Feb 2005

CCC Webmap (2004) indicates that both tanks were removed in 1998, in good condition.

Investigations:

There are no investigations associated with this site.

Information held about other investigations on the Listed Land Use Register

For further information from Environment Canterbury, contact Customer Services and refer to enquiry number ENQ139645.

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Please contact and Environment Canterbury Contaminated Sites Officer if you wish to discuss the contents of the LLUR statement, or if you require additional information. For any other information regarding this land please contact Environment Canterbury Customer Services.

Yours sincerely

Contaminated Sites Team

Property Statement from the Listed Land Use Register

Visit www.ecan.govt.nz/HAIL for more information about land uses.



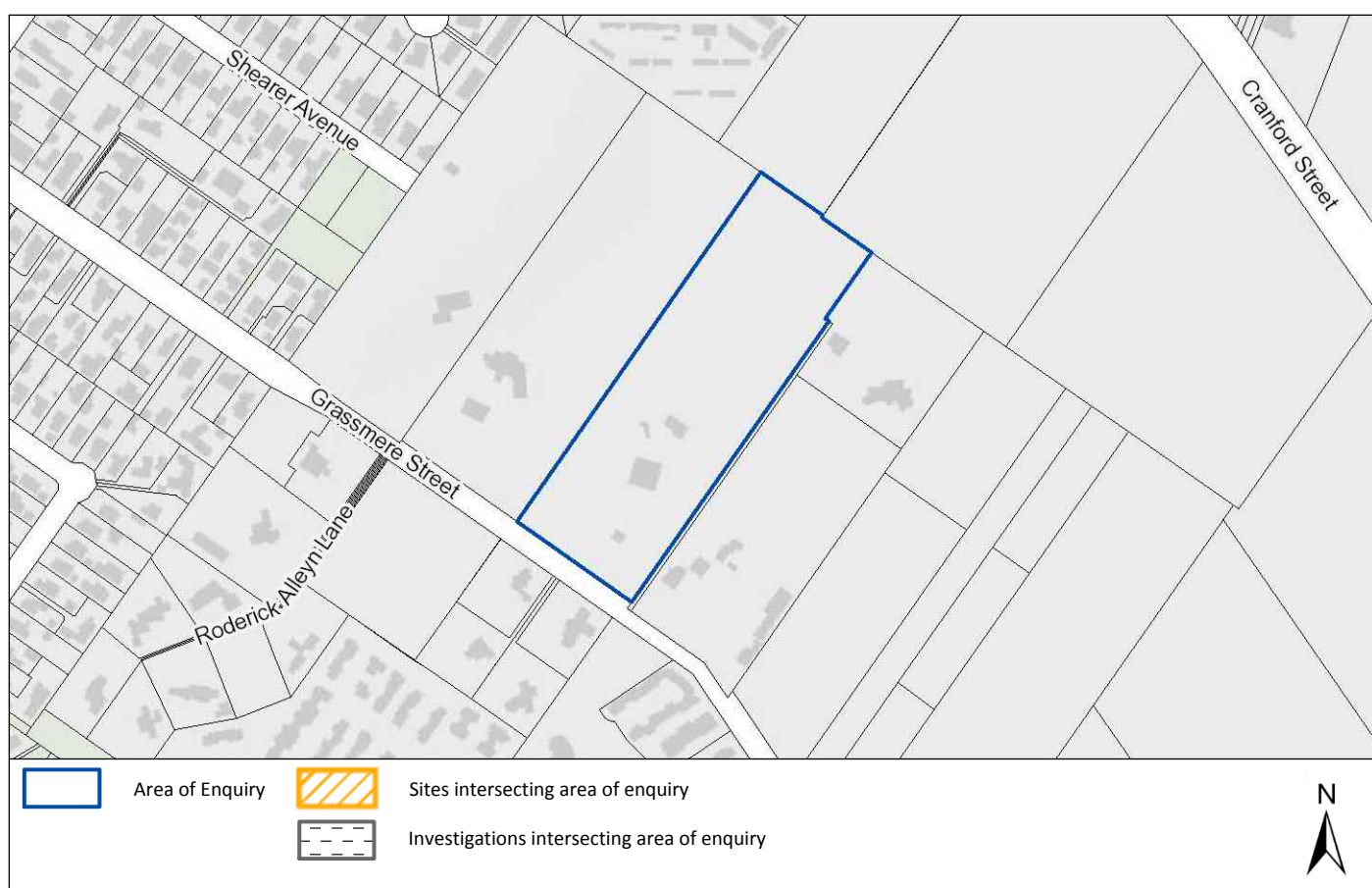
Customer Services
P. 03 353 9007 or 0800 324 636

PO Box 345
Christchurch 8140

P. 03 365 3828
F. 03 365 3194
E. ecinfo@ecan.govt.nz

www.ecan.govt.nz

Date:	04 August 2016	
Land Parcels:	Lot 2 DP 29576	Valuation No(s): 2192401400



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Summary of sites:

There are no sites associated with the area of enquiry.

Information held about the sites on the Listed Land Use Register

There are no sites associated with the area of enquiry.

Information held about other investigations on the Listed Land Use Register

For further information from Environment Canterbury, contact Customer Services and refer to enquiry number ENQ139646.

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 and Environment Canterbury's Contaminated Land Information Management Strategy (ECan 2009).*

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Yours sincerely

Contaminated Sites Team

Property Statement from the Listed Land Use Register

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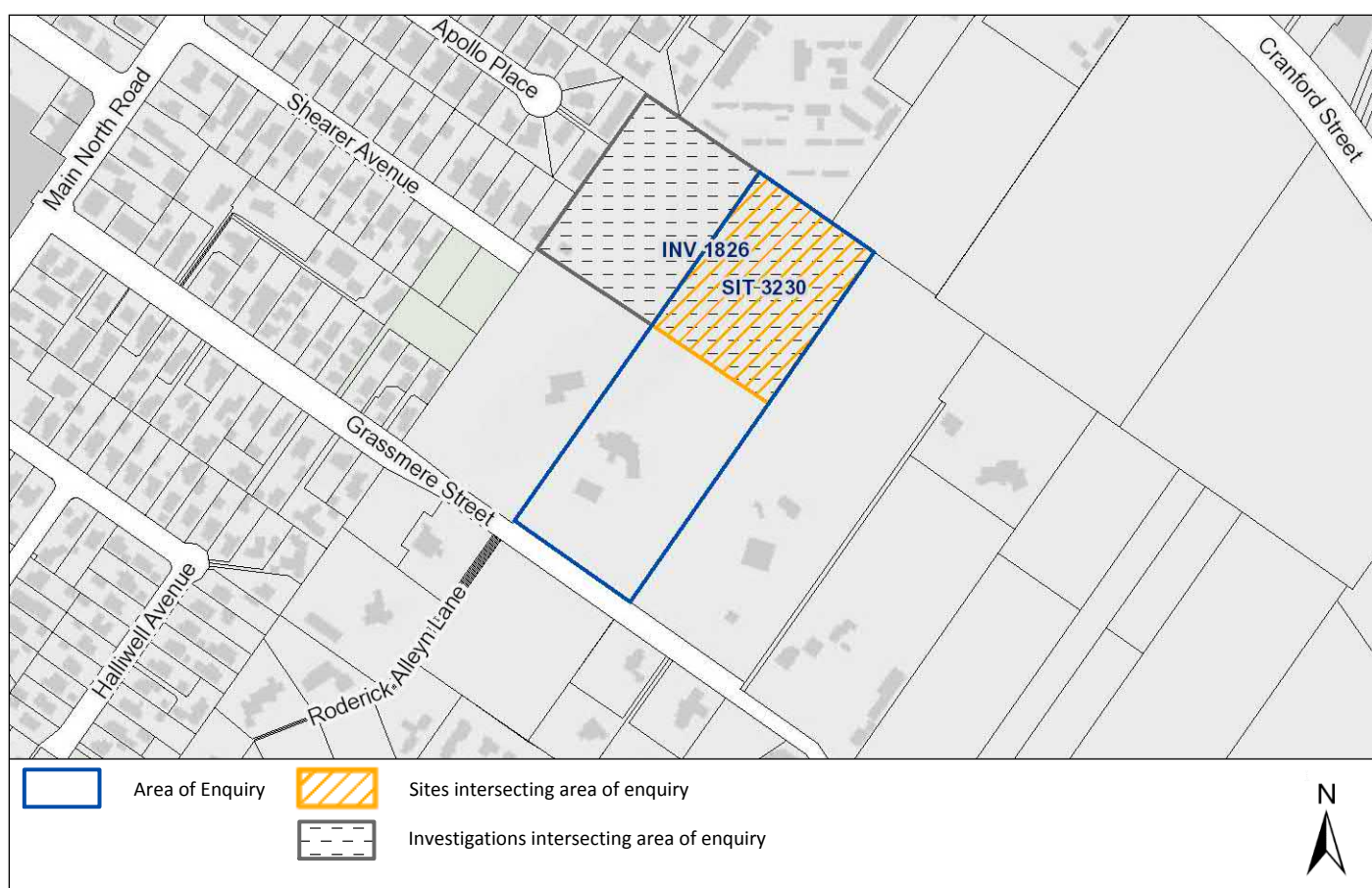
Customer Services
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PO Box 345
Christchurch 8140

P. 03 365 3828
F. 03 365 3194
E. ecinfo@ecan.govt.nz

www.ecan.govt.nz

Date:	08 August 2016	
Land Parcels:	Lot 1 DP 29576	Valuation No(s): 2192401500



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Summary of sites:

Site ID	Site Name	Location	HAIL Activity(s)	Category
3230	Meadow Park Holiday Park - Planned Extension	41 Grassmere Street, Papanui, Christchurch	A10 - Persistent pesticide bulk storage or use;	Review in Progress

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Information held about the sites on the Listed Land Use Register

Site 3230: Meadow Park Holiday Park - Planned Extension (Intersects enquiry area.)

Site Address:	41 Grassmere Street, Papanui, Christchurch
Legal Description(s):	Lot 1 DP 29576

Site Category:	Review in Progress
Definition:	Investigation reports have been received and are currently being reviewed to determine the most appropriate site category.

Land Uses (from HAIL):	Period From	Period To	HAIL land use
	?	?	Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds

Notes:

15 Jan 2008 An environmental investigation was carried by PDP in 2005 as historical aerial photography indicated that the northern portion of this land parcel was used for market gardening and pastoral farming purposes.

Investigations:

1 Apr 2005 **INV 1826: Preliminary Environmental Site Investigation at Land Adjacent to Meadow Park Holiday Park Ltd, Papanui, Christchurch** (Preliminary Site Investigation)
Pattle Delamore Partners Ltd

Summary of investigation(s):

In 2005, the land involved in the proposed extension of the Meadow Park Holiday Park was investigated due to Christchurch City Council's concern that surface soils may be impacted by agrichemicals from the historical use of the land for market gardening and pastoral purposes. The preliminary investigation was undertaken by Pattle Delamore Partners (PDP). While the land use history was not researched in detail, the agricultural activities were inferred from a review of aerial photographs.

The investigation assessed the quality of surface soils across a 3.3 ha area of agricultural land located to the south (2 ha), and to the east of the existing holiday park (1.3 ha). The ensuing expansion of the holiday park did not incorporate the proposed southern part, representing the rear yards at Lot 1 DP 29576 and Pt RS 308. This review pertains only to the sampling results available from the northern half of Lot 1 DP 29576 and Pt RS 308. The yards remain in use for small-scale pastoral farming.

The paddocks were sampled by collecting seven composite samples from near surface soils. One of the composite samples was collected in the vicinity of a shed and a stainless steel trough (possibly a foot rot bath) located at the south-western end of Pt RS 308. Appropriate analyses were selected for the collected samples, including metals (As, Cu, and Pb), organochlorine pesticides, organonitrogen pesticides, and organophosphorus pesticides. Unadjusted composite sample results were assessed against the residential land use criteria. While the applied compositing technique cannot adequately characterise the potential spatial variability of soil contaminant concentrations, it provides a valuable preliminary assessment of soil contamination.

No significant residual contamination was identified by the PDP investigation with all composite sample results being below the soil guideline values protective of residential land use. Due to the averaging effect of the compositing technique, it possible that some of the areas contain hot spots with higher contaminant loadings. The averaging of sample concentrations is considered acceptable for the current rural residential use. However, if the area were to be redeveloped into a more intensive residential use, additional work may be warranted to assess the contaminant distribution to a greater precision.

Information held about other investigations on the Listed Land Use Register

For further information from Environment Canterbury, contact Customer Services and refer to enquiry number ENQ139823.

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Yours sincerely

Contaminated Sites Team

Property Statement from the Listed Land Use Register

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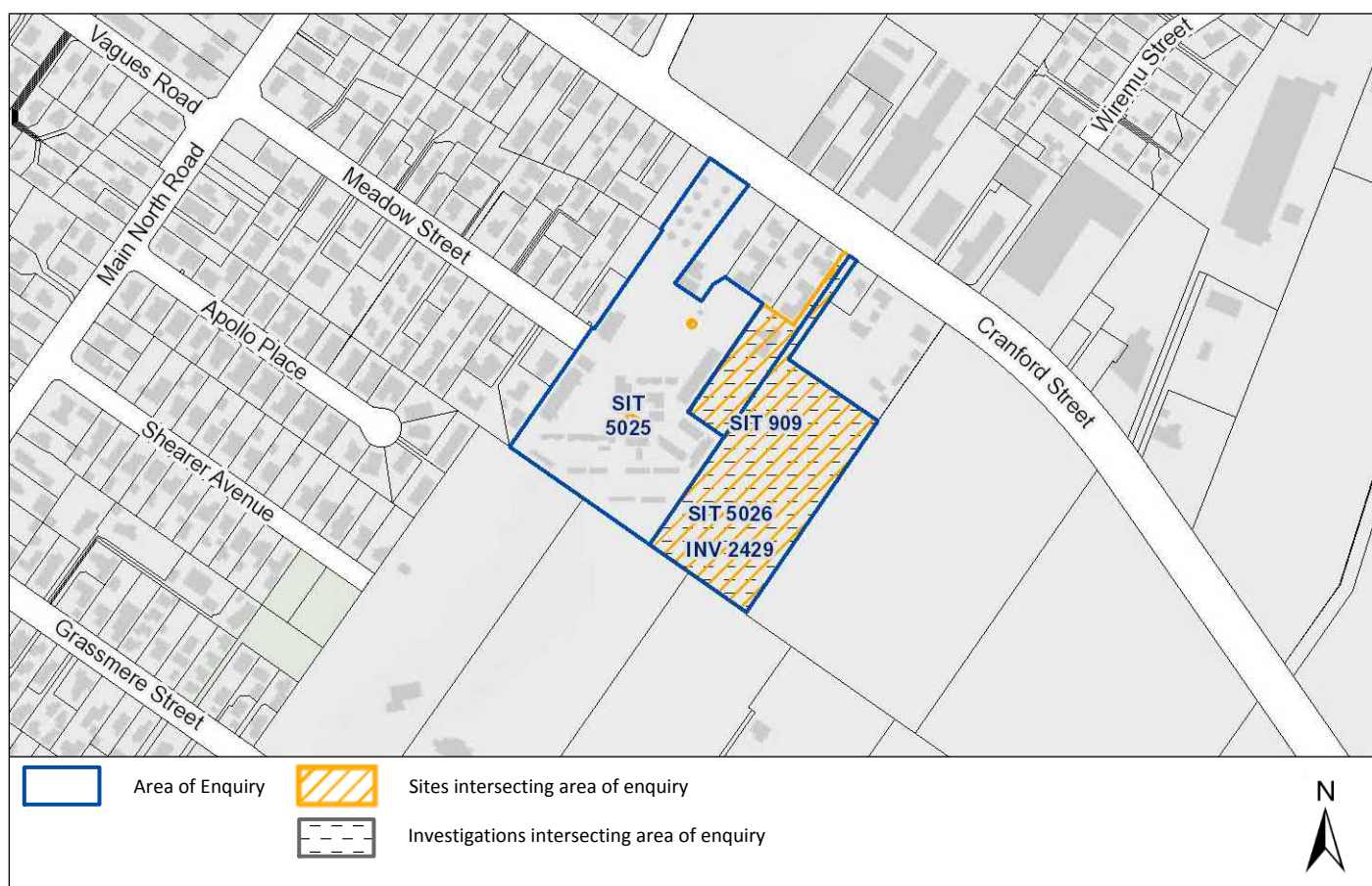
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Christchurch 8140

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F. 03 365 3194
E. ecinfo@ecan.govt.nz

www.ecan.govt.nz

Date:	04 August 2016	
Land Parcels:	Lot 2 DP 334194	Valuation No(s): 2192400200
	Lot 2 DP 369252	Valuation No(s): 2192400200



Summary of sites:

Site ID	Site Name	Location	HAIL Activity(s)	Category
909	Meadow Park Holiday Park	35 Meadow Street, Papanui, Christchurch	A17 - Storage tanks or drums for fuel, chemicals or liquid waste; A10 - Persistent pesticide bulk storage or use;	Partially Investigated
5025	Meadow Park Holiday Park	35 Meadow Street, Papanui, Christchurch	A17 - Storage tanks or drums for fuel, chemicals or liquid waste;	Not Investigated
5026	Meadow Park Holiday Park Extension	35 Meadow Street, Papanui, Christchurch	A10 - Persistent pesticide bulk storage or use;	Below guideline values - Other

Information held about the sites on the Listed Land Use Register

Site 909: Meadow Park Holiday Park (Intersects enquiry area.)

Site Address:	35 Meadow Street, Papanui, Christchurch
Legal Description(s):	Lot 2 DP 334194; Lot 5 DP 17113; Lot 2 DP 369252
Site Category:	Partially Investigated
Definition:	Verified HAIL has been partially investigated.

Land Uses (from HAIL):	Period From	Period To	HAIL land use
	?	Present	Storage tanks or drums for fuel, chemicals or liquid waste
	?	?	Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds

Notes:

4 Jun 1999	1993: One 6,000 L UST 3(c). The owner confirmed the presence of this UST (19/4/99). There are also two 300 L ASTs 3(c).
15 Jan 2008	The Meadow Park Holiday Park is undergoing expansion in the easterly and south easterly directions. Environmental investigations were carried out by PDP in 2005 and 2006 because historical aerial photography indicated that the land was formerly used for market gardening and pastoral farming purposes.
14 Jun 2010	Site split as the two activities were spatially exclusive.

Investigations:

1 Apr 2005	INV 2429: Preliminary Environmental Site Investigation at Land Adjacent to Meadow Park Holiday Park Ltd, Papanui, Christchurch (Preliminary Site Investigation) Pattle Delamore Partners Ltd
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Summary of investigation(s):

The land proposed for the extension of the Meadow Park Holiday Park was investigated due to the concern that surface soils may have become impacted by agrichemicals during its historical use for market gardening and pastoral purposes. While the land use history was not well researched, the above agricultural activities were inferred from a review of historical aerial photographs. Between the investigation and this audit, the holiday park has expanded in the eastern direction as proposed, annexing Lot 5 DP 17113 and Lot 2 DP 369252. Two other properties included within the proposed extension and the study area of a 2005 investigation, abutting the holiday park to the south, still remain separate.

Two preliminary investigations were undertaken by Pattle Delamore Partners. The first environmental investigation, completed in 2005, assessed the quality of surface soils across a 3.3 ha area of agricultural land located to the south (2 ha), and to the east of the then existing holiday park (1.3 ha). The block to the east has since been redeveloped as a camping ground. The two paddocks were sampled by collecting eleven composite samples from near surface soils. Additionally, composite samples were collected from a fenced-off depression in the property east of the holiday park, and in vicinity of a shed and a stainless steel trough (possibly a foot rot bath) located in the field south of the holiday park. The second investigation assessed a smaller property (Lot 5 DP 17113, 0.3 ha) north-east of the existing holiday park complex, containing a residential dwelling and in use by the park for provision of short term accommodation. The investigation was carried out in 2006, with eight samples obtained, seven of which were composited near-surface soil samples, the remaining sample being sediment from an on-site drain. Since the investigation, the property was redeveloped as a playground/recreational area. Appropriate analyses were selected for the collected samples, including metals (As, Cd, Cr, Cu, Ni, Pb and Zn), organochlorine pesticides, organonitrogen pesticides, and organophosphorous pesticides.

Some issues were identified in regards to the application of the compositing sampling technique. Because the soil samples were composited in the field, and particularly as soil at the site is mapped as peaty loam, it is possible that mixing of sub-samples was inadequate. Additionally, sub-samples were not kept for potential re-analysis. Furthermore, discrete samples were not collected and analysed to confirm the assumption of homogenous contaminant exposure, and neither was a justification provided for the use of unadjusted composite sample results in the preliminary risk assessment. In the reports, the sample results were assessed against the residential land use criteria without the produce consumption pathway, providing a conservative exposure scenario for the proposed use as a holiday park. Considering residential scenario to be overly conservative for a holiday park, the sample results were assessed against the guideline criteria protective of recreational/parkland use within this audit. Additionally, for areas where a spatial trend in contaminant concentrations was not discernable, the composite sample concentrations were adjusted for the number of sub-samples and the likely background concentrations (Environment Canterbury trace element background concentrations - Regional Level 2 levels for Organic Soils).

All composite sample results were within the guideline values protective of parkland/recreational land use. With exception of organophosphorous and organonitrogen pesticides, the analytes were detected above their likely background levels. Two zones of elevated contaminant concentrations were discernable within Lot 2 DP 369252, one being a fenced-off low lying area, formerly most likely used for disposal of agrichemicals, and the other representing the southern third of the land parcel, being a historically separate area of cropping affected by elevated lead concentrations. Based on the

limited sampling pool, the soil lead concentrations at the southern part of Lot 2 DP 369252 were less than the guideline value for parkland/recreational use (600 mg/kg, NEPC(1999)), but close to the criteria protective of residential land use (300 mg/kg NEPC(1999)). Due to the reliance on composite sampling and the small sample size, the presence of hot spots within the two zones cannot be excluded. Under any future changes to more sensitive exposure scenarios, such as residential, further delineation of the two zones would be required. It is proposed to register the park extension area as 'Below Environmental Guidelines' for the intended use as a holiday park (parkland/recreational scenario).

Site 5025: Meadow Park Holiday Park (Intersects enquiry area.)

Site Address:	35 Meadow Street, Papanui, Christchurch
Legal Description(s):	Lot 2 DP 334194

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

Land Uses (from HAIL):	Period From	Period To	HAIL land use
	?	Present	Storage tanks or drums for fuel, chemicals or liquid waste

Notes:

14 Jun 2010 1993: One 6,000 L UST 3(c). The owner confirmed the presence of this UST (19/4/99). There are also two 300 L ASTs 3(c).

Investigations:

There are no investigations associated with this site.

Site 5026: Meadow Park Holiday Park Extension (Intersects enquiry area.)

Site Address:	35 Meadow Street, Papanui, Christchurch
Legal Description(s):	Lot 2 DP 369252, Lot 5 DP 17113

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

Land Uses (from HAIL):	Period From	Period To	HAIL land use
	?	?	Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds

Notes:

14 Jun 2010 The Meadow Park Holiday Park had undergone expansion in the easterly direction. Environmental investigations were carried out by PDP in 2005 and 2006 because historical aerial photography indicated that the land was formerly used for market gardening and pastoral farming purposes.

Investigations:

1 Apr 2005 **INV 2429: Preliminary Environmental Site Investigation at Land Adjacent to Meadow Park Holiday Park Ltd, Papanui, Christchurch** (Preliminary Site Investigation)
Pattle Delamore Partners Ltd

Summary of investigation(s):

The land proposed for the extension of the Meadow Park Holiday Park was investigated due to the concern that surface soils may have become impacted by agrichemicals during its historical use for market gardening and pastoral purposes. While the land use history was not well researched, the above agricultural activities were inferred from a review of historical aerial photographs. Between the investigation and this audit, the holiday park has expanded in the eastern direction as proposed, annexing Lot 5 DP 17113 and Lot 2 DP 369252. Two other properties included within the proposed extension and the study area of a 2005 investigation, abutting the holiday park to the south, still remain separate.

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Some issues were identified in regards to the application of the compositing sampling technique. Because the soil samples were composited in the field, and particularly as soil at the site is mapped as peaty loam, it is possible that mixing of sub-samples was inadequate. Additionally, sub-samples were not kept for potential re-analysis. Furthermore, discrete samples were not collected and analysed to confirm the assumption of homogenous contaminant exposure, and neither was a justification provided for the use of unadjusted composite sample results in the preliminary risk assessment. In the reports, the sample results were assessed against the residential land use criteria without the produce consumption pathway, providing a conservative exposure scenario for the proposed use as a holiday park. Considering residential scenario to be overly conservative for a holiday park, the sample results were assessed against the guideline criteria protective of recreational/parkland use within this audit. Additionally, for areas where a spatial trend in contaminant concentrations was not discernable, the composite sample concentrations were adjusted for the number of sub-samples and the likely background concentrations (Environment Canterbury trace element background concentrations - Regional Level 2 levels for Organic Soils).

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Information held about other investigations on the Listed Land Use Register

For further information from Environment Canterbury, contact Customer Services and refer to enquiry number ENQ139625.

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Property Statement from the Listed Land Use Register

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Date:	08 August 2016
Land Parcels:	Part RS 308 Valuation No(s): 2192401600



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Summary of sites:

Site ID	Site Name	Location	HAIL Activity(s)	Category
3410	Meadow Park Holiday Park - Planned Extension	31 Grassmere Street, Papanui	A10 - Persistent pesticide bulk storage or use; A8 - Livestock dip or spray race operations;	Review in Progress

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Information held about the sites on the Listed Land Use Register

Site 3410: Meadow Park Holiday Park - Planned Extension (Intersects enquiry area.)

Site Address:	31 Grassmere Street, Papanui
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Legal Description(s): Pt RS 308

Site Category: Review in Progress
Definition: Investigation reports have been received and are currently being reviewed to determine the most appropriate site category.

Land Uses (from HAIL):	Period From	Period To	HAIL land use
	?	?	Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds
	?	?	Livestock dip or spray race operations

Notes:

29 Jun 2007 An environmental investigation was carried by PDP in 2005 as historical aerial photography indicated that the northern portion of this land parcel was used for market gardening and pastoral farming purposes. Additionally, a small stainless steel trough located on the site may have been used for treatment of foot rot in sheep.

Investigations:

1 Apr 2005 **INV 1826: Preliminary Environmental Site Investigation at Land Adjacent to Meadow Park Holiday Park Ltd, Papanui, Christchurch** (Preliminary Site Investigation)
Pattle Delamore Partners Ltd

Summary of investigation(s):

In 2005, the land involved in the proposed extension of the Meadow Park Holiday Park was investigated due to Christchurch City Council's concern that surface soils may be impacted by agrichemicals from the historical use of the land for market gardening and pastoral purposes. The preliminary investigation was undertaken by Pattle Delamore Partners (PDP). While the land use history was not researched in detail, the agricultural activities were inferred from a review of aerial photographs.

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The paddocks were sampled by collecting seven composite samples from near surface soils. One of the composite samples was collected in the vicinity of a shed and a stainless steel trough (possibly a foot rot bath) located at the south-western end of Pt RS 308. Appropriate analyses were selected for the collected samples, including metals (As, Cu, and Pb), organochlorine pesticides, organonitrogen pesticides, and organophosphorus pesticides. Unadjusted composite sample results were assessed against the residential land use criteria. While the applied compositing technique cannot adequately characterise the potential spatial variability of soil contaminant concentrations, it provides a valuable preliminary assessment of soil contamination.

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Information held about other investigations on the Listed Land Use Register

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Yours sincerely

Contaminated Sites Team

Property Statement from the Listed Land Use Register

Visit www.ecan.govt.nz/HAIL for more information about land uses.



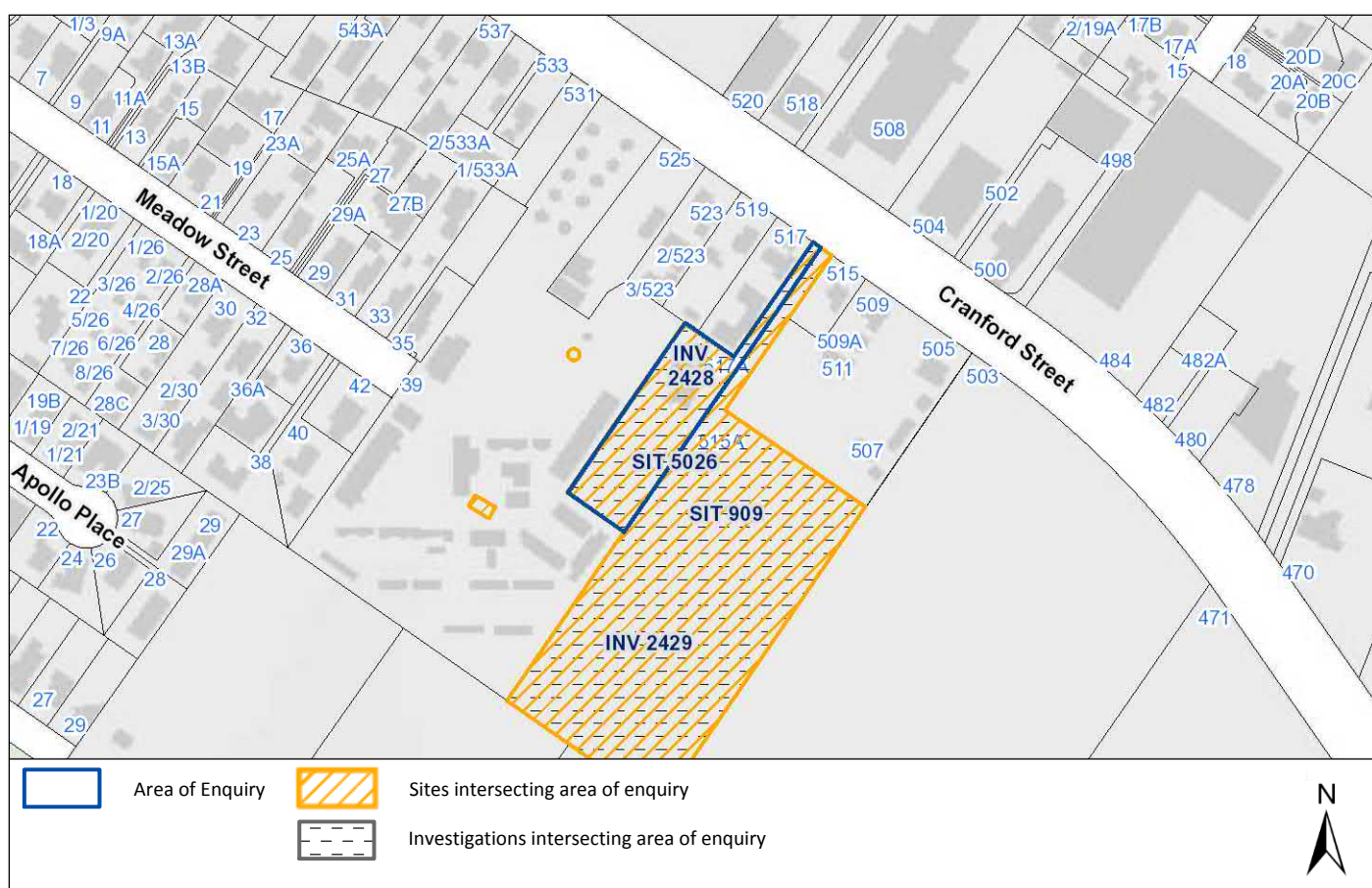
Customer Services
P. 03 353 9007 or 0800 324 636

PO Box 345
Christchurch 8140

P. 03 365 3828
F. 03 365 3194
E. ecinfo@ecan.govt.nz

www.ecan.govt.nz

Date:	04 August 2016
Land Parcels:	Lot 5 DP 17113
	Valuation No(s): 2192402200



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Summary of sites:

Site ID	Site Name	Location	HAIL Activity(s)	Category
909	Meadow Park Holiday Park	35 Meadow Street, Papanui, Christchurch	A10 - Persistent pesticide bulk storage or use;	Partially Investigated
5026	Meadow Park Holiday Park Extension	35 Meadow Street, Papanui, Christchurch	A10 - Persistent pesticide bulk storage or use;	Below guideline values - Other

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Information held about the sites on the Listed Land Use Register

Site 909: Meadow Park Holiday Park (Intersects enquiry area.)

Site Address:	35 Meadow Street, Papanui, Christchurch
---------------	---

Legal Description(s):	Lot 2 DP 334194; Lot 5 DP 17113; Lot 2 DP 369252		
Site Category:	Partially Investigated		
Definition:	Verified HAIL has been partially investigated.		
Land Uses (from HAIL):	Period From	Period To	HAIL land use
	?	?	Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds

Notes:

4 Jun 1999	1993: One 6,000 L UST 3(c). The owner confirmed the presence of this UST (19/4/99). There are also two 300 L ASTs 3(c).
15 Jan 2008	The Meadow Park Holiday Park is undergoing expansion in the easterly and south easterly directions. Environmental investigations were carried out by PDP in 2005 and 2006 because historical aerial photography indicated that the land was formerly used for market gardening and pastoral farming purposes.
14 Jun 2010	Site split as the two activities were spatially exclusive.

Investigations:

1 Apr 2005	INV 2429: Preliminary Environmental Site Investigation at Land Adjacent to Meadow Park Holiday Park Ltd, Papanui, Christchurch (Preliminary Site Investigation) Pattle Delamore Partners Ltd
24 Jul 2006	INV 2428: Preliminary Environmental Site Investigation at Land Adjacent to Meadow Park Holiday Park Ltd, 517a Cranford Street, Papanui, Christchurch (Preliminary Site Investigation) Pattle Delamore Partners Ltd

Summary of investigation(s):

The land proposed for the extension of the Meadow Park Holiday Park was investigated due to the concern that surface soils may have become impacted by agrichemicals during its historical use for market gardening and pastoral purposes. While the land use history was not well researched, the above agricultural activities were inferred from a review of historical aerial photographs. Between the investigation and this audit, the holiday park has expanded in the eastern direction as proposed, annexing Lot 5 DP 17113 and Lot 2 DP 369252. Two other properties included within the proposed extension and the study area of a 2005 investigation, abutting the holiday park to the south, still remain separate.

Two preliminary investigations were undertaken by Pattle Delamore Partners. The first environmental investigation, completed in 2005, assessed the quality of surface soils across a 3.3 ha area of agricultural land located to the south (2 ha), and to the east of the then existing holiday park (1.3 ha). The block to the east has since been redeveloped as a camping ground. The two paddocks were sampled by collecting eleven composite samples from near surface soils. Additionally, composite samples were collected from a fenced-off depression in the property east of the holiday park, and in vicinity of a shed and a stainless steel trough (possibly a foot rot bath) located in the field south of the holiday park. The second investigation assessed a smaller property (Lot 5 DP 17113, 0.3 ha) north-east of the existing holiday park complex, containing a residential dwelling and in use by the park for provision of short term accommodation. The investigation was carried out in 2006, with eight samples obtained, seven of which were composited near-surface soil samples, the remaining sample being sediment from an on-site drain. Since the investigation, the property was redeveloped as a playground/recreational area. Appropriate analyses were selected for the collected samples, including metals (As, Cd, Cr, Cu, Ni, Pb and Zn), organochlorine pesticides, organonitrogen pesticides, and organophosphorous pesticides.

Some issues were identified in regards to the application of the compositing sampling technique. Because the soil samples were composited in the field, and particularly as soil at the site is mapped as peaty loam, it is possible that mixing of sub-samples was inadequate. Additionally, sub-samples were not kept for potential re-analysis. Furthermore, discrete samples were not collected and analysed to confirm the assumption of homogenous contaminant exposure, and neither was a justification provided for the use of unadjusted composite sample results in the preliminary risk assessment. In the reports, the sample results were assessed against the residential land use criteria without the produce consumption pathway, providing a conservative exposure scenario for the proposed use as a holiday park. Considering residential scenario to be overly conservative for a holiday park, the sample results were assessed against the guideline criteria protective of recreational/parkland use within this audit. Additionally, for areas where a spatial trend in contaminant concentrations was not discernable, the composite sample concentrations were adjusted for the number of sub-samples and the likely background concentrations (Environment Canterbury trace element background concentrations - Regional Level 2 levels for Organic Soils).

All composite sample results were within the guideline values protective of parkland/recreational land use. With exception of organophosphorous and organonitrogen pesticides, the analytes were detected above their likely background levels. Two zones of elevated contaminant concentrations were discernable within Lot 2 DP 369252, one being a fenced-off low lying area, formerly most likely used for disposal of agrichemicals, and the other representing the southern third of the land parcel, being a historically separate area of cropping affected by elevated lead concentrations. Based on the limited sampling pool, the soil lead concentrations at the southern part of Lot 2 DP 369252 were less than the guideline value for parkland/recreational use (600 mg/kg, NEPC(1999)), but close to the criteria protective of residential land use (300 mg/kg NEPC(1999)). Due to the reliance on composite

sampling and the small sample size, the presence of hot spots within the two zones cannot be excluded. Under any future changes to more sensitive exposure scenarios, such as residential, further delineation of the two zones would be required. It is proposed to register the park extension area as 'Below Environmental Guidelines' for the intended use as a holiday park (parkland/recreational scenario).

Site 5026: Meadow Park Holiday Park Extension (Intersects enquiry area.)

Site Address:	35 Meadow Street, Papanui, Christchurch
Legal Description(s):	Lot 2 DP 369252, Lot 5 DP 17113
Site Category:	Below guideline values - Other
Definition:	Investigation results demonstrate that hazardous substances present at the site, but below applicable guidelines. - Other

Land Uses (from HAIL):	Period From	Period To	HAIL land use
	?	?	Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds

Notes:

14 Jun 2010 The Meadow Park Holiday Park had undergone expansion in the easterly direction. Environmental investigations were carried out by PDP in 2005 and 2006 because historical aerial photography indicated that the land was formerly used for market gardening and pastoral farming purposes.

Investigations:

1 Apr 2005 **INV 2429: Preliminary Environmental Site Investigation at Land Adjacent to Meadow Park Holiday Park Ltd, Papanui, Christchurch** (Preliminary Site Investigation)
Pattle Delamore Partners Ltd

24 Jul 2006 **INV 2428: Preliminary Environmental Site Investigation at Land Adjacent to Meadow Park Holiday Park Ltd, 517a Cranford Street, Papanui, Christchurch** (Preliminary Site Investigation)
Pattle Delamore Partners Ltd

Summary of investigation(s):

The land proposed for the extension of the Meadow Park Holiday Park was investigated due to the concern that surface soils may have become impacted by agrichemicals during its historical use for market gardening and pastoral purposes. While the land use history was not well researched, the above agricultural activities were inferred from a review of historical aerial photographs. Between the investigation and this audit, the holiday park has expanded in the eastern direction as proposed, annexing Lot 5 DP 17113 and Lot 2 DP 369252. Two other properties included within the proposed extension and the study area of a 2005 investigation, abutting the holiday park to the south, still remain separate.

Two preliminary investigations were undertaken by Pattle Delamore Partners. The first environmental investigation, completed in 2005, assessed the quality of surface soils across a 3.3 ha area of agricultural land located to the south (2 ha), and to the east of the then existing holiday park (1.3 ha). The block to the east has since been redeveloped as a camping ground. The two paddocks were sampled by collecting eleven composite samples from near surface soils. Additionally, composite samples were collected from a fenced-off depression in the property east of the holiday park, and in vicinity of a shed and a stainless steel trough (possibly a foot rot bath) located in the field south of the holiday park. The second investigation assessed a smaller property (Lot 5 DP 17113, 0.3 ha) north-east of the existing holiday park complex, containing a residential dwelling and in use by the park for provision of short term accommodation. The investigation was carried out in 2006, with eight samples obtained, seven of which were composited near-surface soil samples, the remaining sample being sediment from an on-site drain. Since the investigation, the property was redeveloped as a playground/recreational area. Appropriate analyses were selected for the collected samples, including metals (As, Cd, Cr, Cu, Ni, Pb and Zn), organochlorine pesticides, organonitrogen pesticides, and organophosphorous pesticides.

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Information held about other investigations on the Listed Land Use Register

For further information from Environment Canterbury, contact Customer Services and refer to enquiry number ENQ139649.

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Please contact and Environment Canterbury Contaminated Sites Officer if you wish to discuss the contents of the LLUR statement, or if you require additional information. For any other information regarding this land please contact Environment Canterbury Customer Services.

Yours sincerely

Contaminated Sites Team

Property Statement from the Listed Land Use Register

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Customer Services
P. 03 353 9007 or 0800 324 636

PO Box 345
Christchurch 8140

P. 03 365 3828
F. 03 365 3194
E. ecinfo@ecan.govt.nz

www.ecan.govt.nz

Date:	17 August 2016
Land Parcels:	Lot 1 DP 369252 Valuation No(s): 2192400100



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Summary of sites:

Site ID	Site Name	Location	HAIL Activity(s)	Category
25295	Cranford Street, Papanui, Christchurch	Cranford Street, Papanui, Christchurch	A10 - Persistent pesticide bulk storage or use;	Not Investigated

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Information held about the sites on the Listed Land Use Register

Site 25295: Cranford Street, Papanui, Christchurch (Intersects enquiry area.)

Site Address:	Cranford Street, Papanui, Christchurch
Legal Description(s):	Lot 1 DP 25100, Lot 1 DP 369252, Lot 2 DP 25100, Part RS 312

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

Land Uses (from HAIL):	Period From	Period To	HAIL land use
	Pre 1946	2011	Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds

Notes:

Investigations:

There are no investigations associated with this site.

Information held about other investigations on the Listed Land Use Register

For further information from Environment Canterbury, contact Customer Services and refer to enquiry number ENQ141548.

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Property Statement from the Listed Land Use Register

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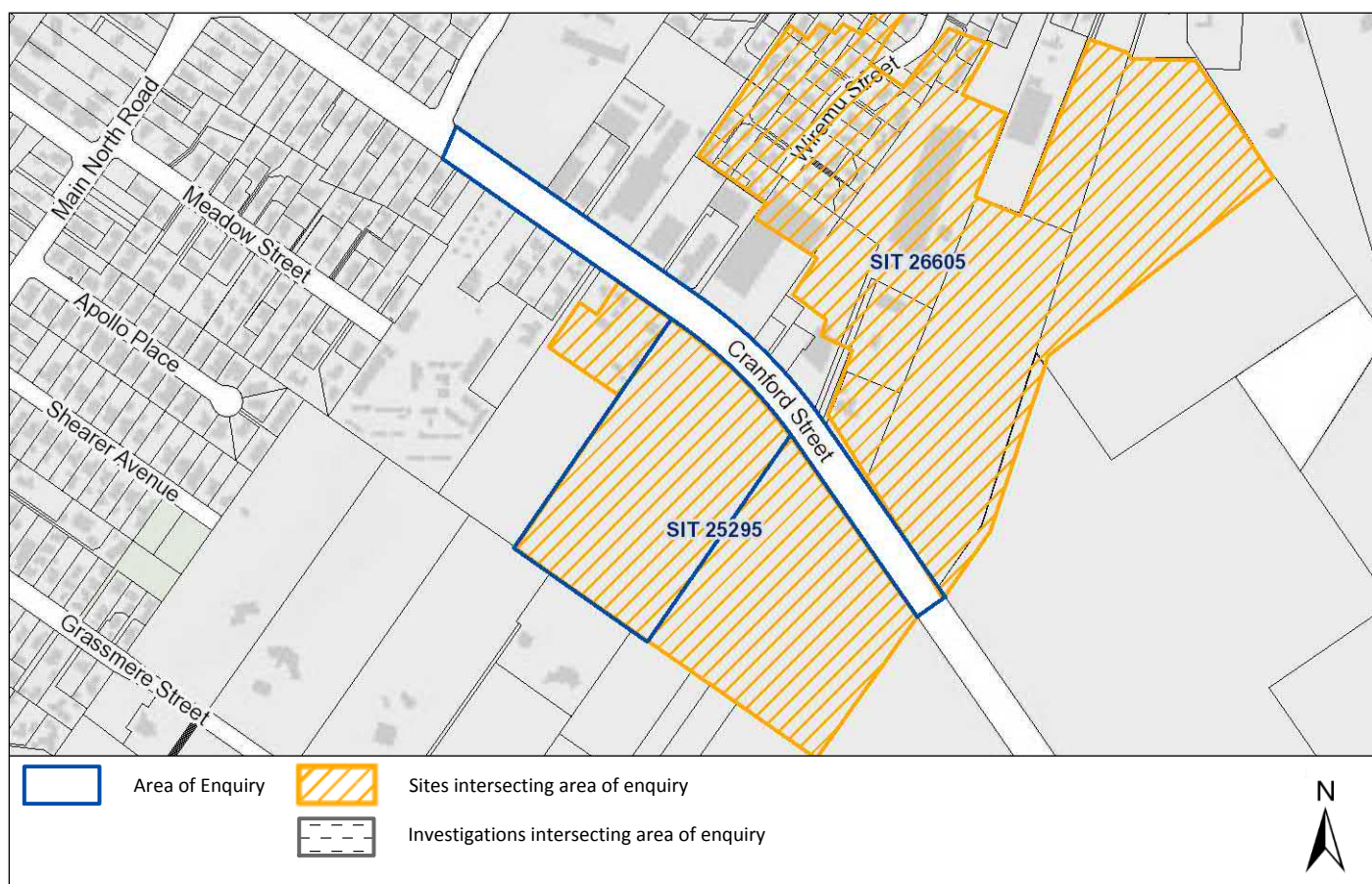
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PO Box 345
Christchurch 8140

P. 03 365 3828
F. 03 365 3194
E. ecinfo@ecan.govt.nz

www.ecan.govt.nz

Date:	17 August 2016		
Land Parcels:	Lot 1 DP 25100	Valuation No(s): 2192402501	
		Valuation No(s): 2192402501	



Summary of sites:

Site ID	Site Name	Location	HAIL Activity(s)	Category
25295	Cranford Street, Papanui, Christchurch	Cranford Street, Papanui, Christchurch	A10 - Persistent pesticide bulk storage or use;	Not Investigated
26605	26605	Wiremu Street, Redwood		Not Investigated

Information held about the sites on the Listed Land Use Register

Site 25295: Cranford Street, Papanui, Christchurch (Intersects enquiry area.)

Site Address:	Cranford Street, Papanui, Christchurch
---------------	--

Legal Description(s):	Lot 1 DP 25100,Lot 1 DP 369252,Lot 2 DP 25100,Part RS 312		
Site Category:	Not Investigated		
Definition:	Verified HAIL has not been investigated.		
Land Uses (from HAIL):	Period From	Period To	HAIL land use
	Pre 1946	2011	Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds

Notes:

Investigations:

There are no investigations associated with this site.

Site 26605: 26605 (Intersects enquiry area.)

Site Address:	Wiremu Street, Redwood
Legal Description(s):	Lot 1 DP 14105,Lot 1 DP 305983,Lot 1 DP 58629,Lot 1 DP 79563,Lot 1 DP 81359,Lot 1 DP 83809,Lot 10 DP 40993,Lot 13 DP 40993,Lot 14 DP 40993,Lot 15 DP 40993,Lot 16 DP 40993,Lot 17 DP 40993,Lot 18 DP 40993,Lot 19 DP 40993,Lot 2 DP 305983,Lot 2 DP 471475,Lot 2 DP 50323,Lot 2 DP 52681,Lot 2 DP 58629,Lot 2 DP 69136,Lot 2 DP 79563,Lot 2 DP 80448,Lot 2 DP 83809,Lot 20 DP 40993,Lot 21 DP 40992,Lot 22 DP 40992,Lot 23 DP 40992,Lot 24 DP 40992,Lot 25 DP 40992,Lot 26 DP 40992,Lot 27 DP 40992,Lot 28 DP 40992,Lot 29 DP 40569,Lot 3 DP 40992,Lot 3 DP 52681,Lot 3 DP 69136,Lot 3 DP 79563,Lot 3 DP 80448,Lot 3 DP 83809,Lot 32 DP 40569,Lot 33 DP 40993,Lot 34 DP 40993,Lot 4 DP 40992,Lot 4 DP 79563,Lot 4 DP 80448,Lot 5 DP 40993,Lot 5 DP 80448,Lot 6 DP 40993,Lot 6 DP 80448,Lot 7 DP 40993,Lot 8 DP 40993,Lot 9 DP 40993,Part Lot 2 DP 40992,Part RS 1048

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

Land Uses (from HAIL):	Period From	Period To	HAIL land use
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Notes:

3 Oct 2013

Area defined from: 1941- 2011 ECan Aerial Photo

Note: Market garden plots were noted in aeial photographs reviewed.

Investigations:

There are no investigations associated with this site.

Information held about other investigations on the Listed Land Use Register

For further information from Environment Canterbury, contact Customer Services and refer to enquiry number ENQ141546.

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Yours sincerely

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Property Statement from the Listed Land Use Register

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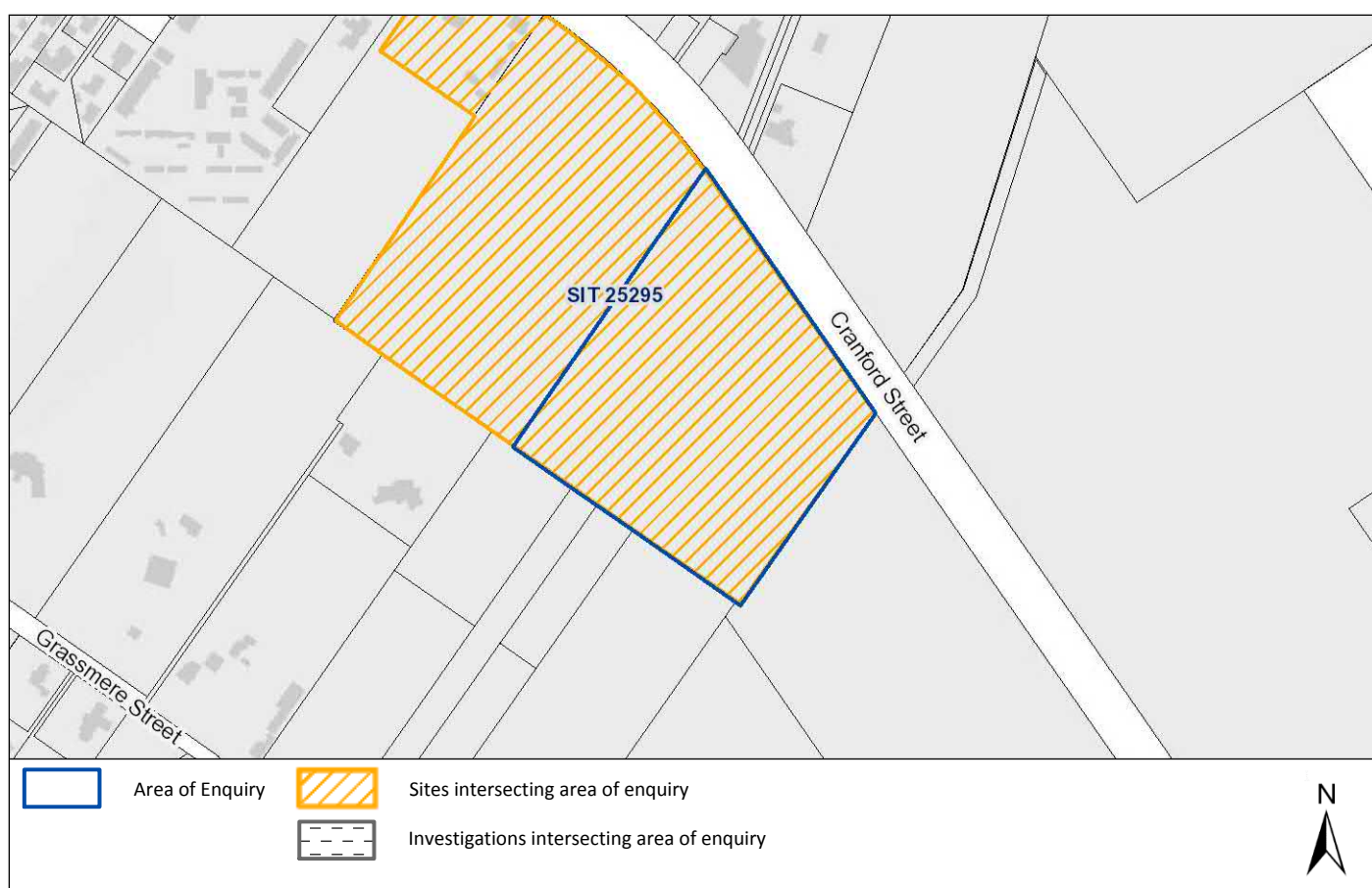
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E. ecinfo@ecan.govt.nz

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Date:	04 August 2016	
Land Parcels:	Lot 2 DP 25100	Valuation No(s): 2192402502



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Summary of sites:

Site ID	Site Name	Location	HAIL Activity(s)	Category
25295	Cranford Street, Papanui, Christchurch	Cranford Street, Papanui, Christchurch	A10 - Persistent pesticide bulk storage or use;	Not Investigated

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Information held about the sites on the Listed Land Use Register

Site 25295: Cranford Street, Papanui, Christchurch (Intersects enquiry area.)

Site Address:	Cranford Street, Papanui, Christchurch
Legal Description(s):	Lot 1 DP 25100, Lot 1 DP 369252, Lot 2 DP 25100, Part RS 312

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

Land Uses (from HAIL):	Period From	Period To	HAIL land use
	Pre 1946	2011	Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds

Notes:

Investigations:

There are no investigations associated with this site.

Information held about other investigations on the Listed Land Use Register

For further information from Environment Canterbury, contact Customer Services and refer to enquiry number ENQ139621.

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Please contact and Environment Canterbury Contaminated Sites Officer if you wish to discuss the contents of the LLUR statement, or if you require additional information. For any other information regarding this land please contact Environment Canterbury Customer Services.

Yours sincerely

Contaminated Sites Team

Property Statement from the Listed Land Use Register

Visit www.ecan.govt.nz/HAIL for more information about land uses.



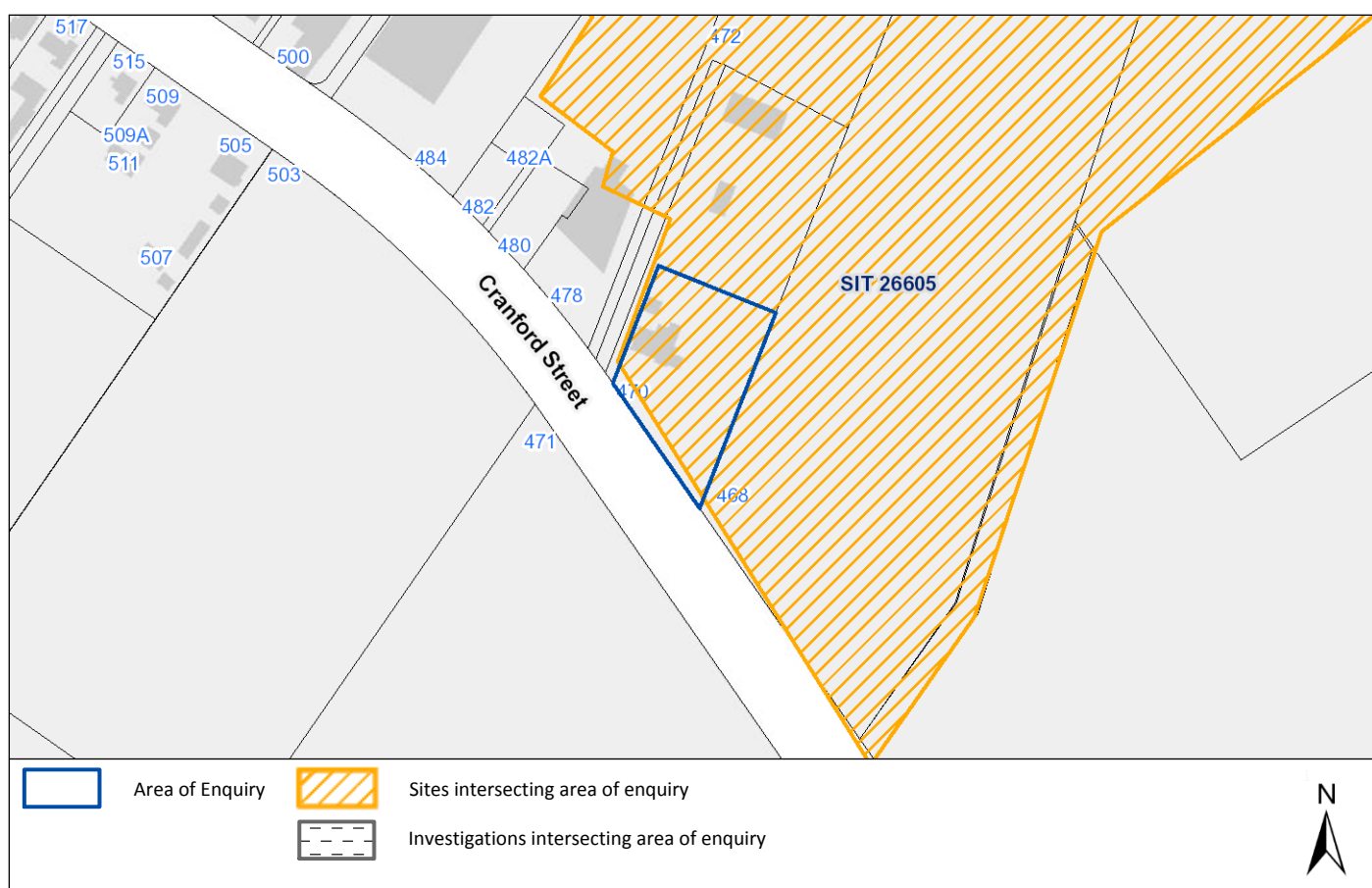
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PO Box 345
Christchurch 8140

P. 03 365 3828
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www.ecan.govt.nz

Date:	08 August 2016	
Land Parcels:	Lot 1 DP 305983	Valuation No(s): 2192402701



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Summary of sites:

Site ID	Site Name	Location	HAIL Activity(s)	Category
26605	26605	Wiremu Street, Redwood	A10 - Persistent pesticide bulk storage or use;	Not Investigated

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Information held about the sites on the Listed Land Use Register

Site 26605: 26605 (Intersects enquiry area.)

Site Address:	Wiremu Street, Redwood
Legal Description(s):	Lot 1 DP 14105, Lot 1 DP 305983, Lot 1 DP 58629, Lot 1 DP 79563, Lot 1 DP 81359, Lot 1 DP 83809, Lot 10 DP 40993, Lot 13 DP 40993, Lot 14 DP 40993, Lot 15 DP 40993, Lot 16 DP 40993, Lot 17 DP 40993, Lot 18

DP 40993, Lot 19 DP 40993, Lot 2 DP 305983, Lot 2 DP 471475, Lot 2 DP 50323, Lot 2 DP 52681, Lot 2 DP 58629, Lot 2 DP 69136, Lot 2 DP 79563, Lot 2 DP 80448, Lot 2 DP 83809, Lot 20 DP 40993, Lot 21 DP 40992, Lot 22 DP 40992, Lot 23 DP 40992, Lot 24 DP 40992, Lot 25 DP 40992, Lot 26 DP 40992, Lot 27 DP 40992, Lot 28 DP 40992, Lot 29 DP 40569, Lot 3 DP 40992, Lot 3 DP 52681, Lot 3 DP 69136, Lot 3 DP 79563, Lot 3 DP 80448, Lot 3 DP 83809, Lot 32 DP 40569, Lot 33 DP 40993, Lot 34 DP 40993, Lot 4 DP 40992, Lot 4 DP 79563, Lot 4 DP 80448, Lot 5 DP 40993, Lot 5 DP 80448, Lot 6 DP 40993, Lot 6 DP 80448, Lot 7 DP 40993, Lot 8 DP 40993, Lot 9 DP 40993, Part Lot 2 DP 40992, Part RS 1048

Site Category:

Not Investigated

Definition:

Verified HAIL has not been investigated.

Land Uses (from HAIL):

Period From	Period To	HAIL land use
Pre 1941	2011	Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds

Notes:

3 Oct 2013

Area defined from: 1941- 2011 ECan Aerial Photo

Note: Market garden plots were noted in aerial photographs reviewed.

Investigations:

There are no investigations associated with this site.

Information held about other investigations on the Listed Land Use Register

For further information from Environment Canterbury, contact Customer Services and refer to enquiry number ENQ139825.

Disclaimer:

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Dear Sir/Madam

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

The LLUR statement provided indicates the location of the land parcel(s) you enquired about and provides information regarding any LLUR sites within a radius specified in the statement of this land.

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Please contact and Environment Canterbury Contaminated Sites Officer if you wish to discuss the contents of the LLUR statement, or if you require additional information. For any other information regarding this land please contact Environment Canterbury Customer Services.

Yours sincerely

Contaminated Sites Team

Property Statement from the Listed Land Use Register

Visit www.ecan.govt.nz/HAIL for more information about land uses.



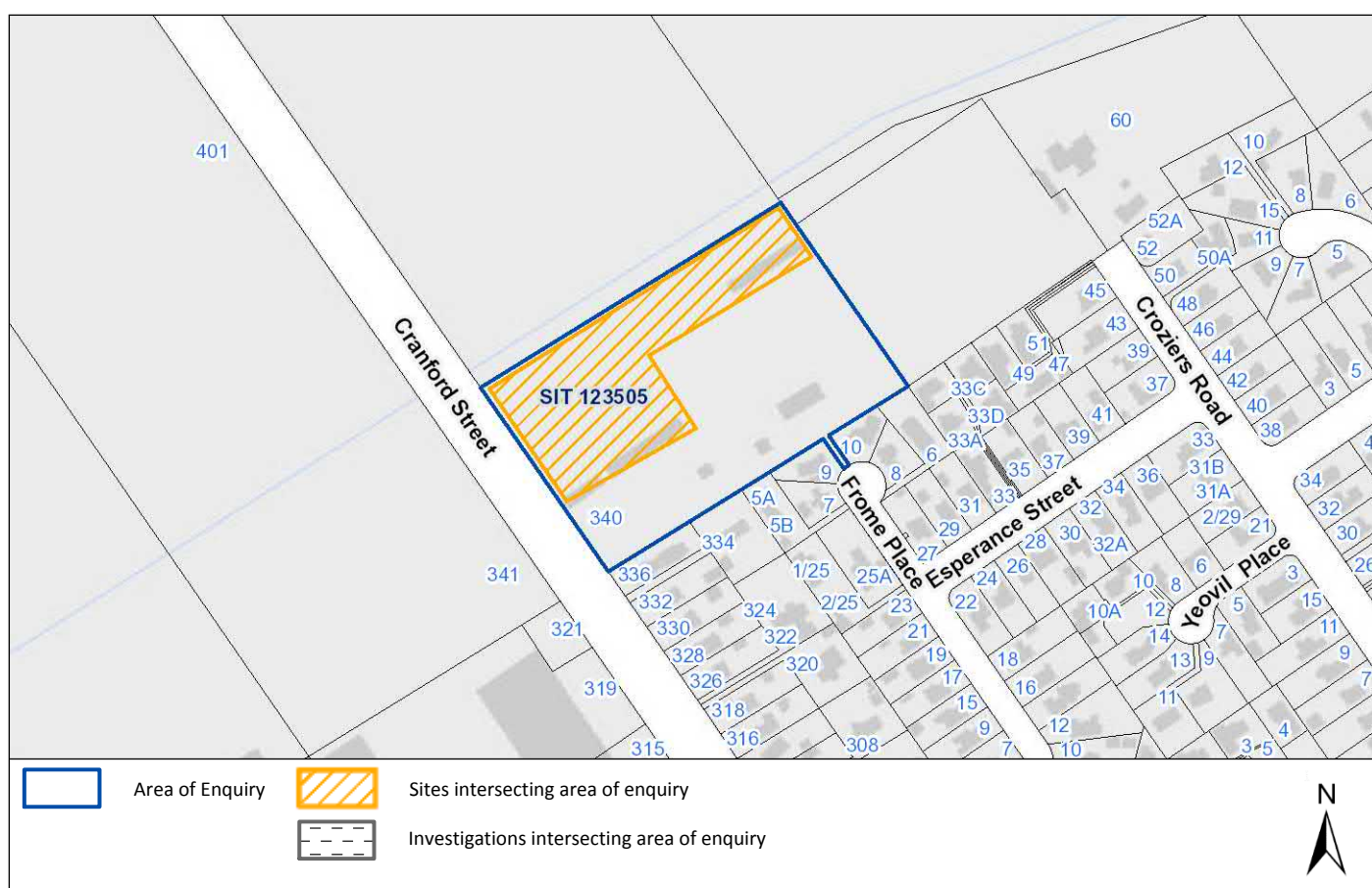
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F. 03 365 3194
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Date:	08 August 2016
Land Parcels:	Lot 1 DP 471475
	Valuation No(s): 2180028801



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Summary of sites:

Site ID	Site Name	Location	HAIL Activity(s)	Category
123505	340 Cranford Street	340 Cranford Street, Christchurch	A10 - Persistent pesticide bulk storage or use;	Not Investigated

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Information held about the sites on the Listed Land Use Register

Site 123505: 340 Cranford Street (Intersects enquiry area.)

Site Address:	340 Cranford Street, Christchurch
Legal Description(s):	Lot 1 DP 471475

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

Land Uses (from HAIL):	Period From	Period To	HAIL land use
	Pre 1941	2011	Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds

Notes:

Investigations:

There are no investigations associated with this site.

Information held about other investigations on the Listed Land Use Register

For further information from Environment Canterbury, contact Customer Services and refer to enquiry number ENQ139826.

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 and Environment Canterbury's Contaminated Land Information Management Strategy (ECan 2009).*

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Yours sincerely

Contaminated Sites Team

Property Statement from the Listed Land Use Register

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E. ecinfo@ecan.govt.nz

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Date:	08 August 2016		
Land Parcels:	Lot 1 DP 481306	Valuation No(s): 2180026900	
	Lot 2 DP 481306	Valuation No(s): 2180026900	



Summary of sites:

There are no sites associated with the area of enquiry.

Information held about the sites on the Listed Land Use Register

There are no sites associated with the area of enquiry.

Information held about other investigations on the Listed Land Use Register

4 Sep 2014 INV 69801: Northern Arterial Extension and Cranford Stormwater Basin: Detailed Site Investigation
(Contamination) (Detailed Site Investigation)
Beca Limited

Summary of investigation(s):

The approximately 66 hectare site is located in St Albans/Mairehau on either side of Cranford Street and has been used for dairy farming and market gardening since the 1940s.

In March and April 2014 Beca performed a detailed site investigation of the site involving excavation of 46 hand auger bores with collection of soil samples for the surface and 0.4 metre below ground level (m bgl) in each borehole. Additional samples were collected from the vicinity of an above ground diesel storage tank (AST) and a reported herbicide spill. Thirty six samples were analysed for metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), organochlorine pesticides (OCP) and organonitro & phosphorus pesticides (ONPP). Two samples collected in the vicinity of the former AST were also analysed for total petroleum hydrocarbons (TPH) and six samples were additionally analysed for synthetic precipitate leaching procedure (SPLP).

No reported concentrations of metals or pesticides exceeded applicable NES soil contaminant standards for recreational land use. However, reported concentrations of various metals including arsenic, cadmium, copper, and mercury exceeded established background concentrations in numerous sample locations. Reported OCP and ONPP concentrations exceeded established Ministry for the Environment Christchurch background concentrations in numerous sample locations. Reported concentrations of arsenic, mercury and total DDT exceeded applicable environmental guideline values in various sample locations. No reported SPLP concentrations except copper exceeded applicable ANZECC 80% freshwater protection guideline values.

5 Aug 2016 **INV 139818: Cranford Basin Bunds Detailed Site Investigation - Cranford Street, Christchurch** (Detailed Site Investigation)
GHD Limited

Summary of investigation(s):

Report(s) have not yet been audited.

For further information from Environment Canterbury, contact Customer Services and refer to enquiry number ENQ139882.

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 and Environment Canterbury's Contaminated Land Information Management Strategy (ECan 2009).*

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Yours sincerely

Contaminated Sites Team

Property Statement from the Listed Land Use Register

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PO Box 345
Christchurch 8140

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Date:	04 August 2016	
Land Parcels:	Part Lot 2 DP 2755	Valuation No(s): 2180026800



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Summary of sites:

There are no sites associated with the area of enquiry.

Information held about the sites on the Listed Land Use Register

There are no sites associated with the area of enquiry.

Information held about other investigations on the Listed Land Use Register

4 Sep 2014	INV 69801: Northern Arterial Extension and Cranford Stormwater Basin: Detailed Site Investigation (Contamination) (Detailed Site Investigation) Beca Limited
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Summary of investigation(s):

The approximately 66 hectare site is located in St Albans/Mairehau on either side of Cranford Street and has been used for dairy farming and market gardening since the 1940s.

In March and April 2014 Beca performed a detailed site investigation of the site involving excavation of 46 hand auger bores with collection of soil samples for the surface and 0.4 metre below ground level (m bgl) in each borehole. Additional samples were collected from the vicinity of an above ground diesel storage tank (AST) and a reported herbicide spill. Thirty six samples were analysed for metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), organochlorine pesticides (OCP) and organonitro & phosphorus pesticides (ONPP). Two samples collected in the vicinity of the former AST were also analysed for total petroleum hydrocarbons (TPH) and six samples were additionally analysed for synthetic precipitate leaching procedure (SPLP).

No reported concentrations of metals or pesticides exceeded applicable NES soil contaminant standards for recreational land use. However, reported concentrations of various metals including arsenic, cadmium, copper, and mercury exceeded established background concentrations in numerous sample locations. Reported OCP and ONPP concentrations exceeded established Ministry for the Environment Christchurch background concentrations in numerous sample locations. Reported concentrations of arsenic, mercury and total DDT exceeded applicable environmental guideline values in various sample locations. No reported SPLP concentrations except copper exceeded applicable ANZECC 80% freshwater protection guideline values.

For further information from Environment Canterbury, contact Customer Services and refer to enquiry number ENQ139637.

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Yours sincerely

Contaminated Sites Team

Property Statement from the Listed Land Use Register

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Date:	04 August 2016	
Land Parcels:	Lot 2 DP 5998	Valuation No(s): 2180026700



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Summary of sites:

There are no sites associated with the area of enquiry.

Information held about the sites on the Listed Land Use Register

There are no sites associated with the area of enquiry.

Information held about other investigations on the Listed Land Use Register

4 Sep 2014	INV 69801: Northern Arterial Extension and Cranford Stormwater Basin: Detailed Site Investigation (Contamination) (Detailed Site Investigation) Beca Limited
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Summary of investigation(s):

The approximately 66 hectare site is located in St Albans/Mairehau on either side of Cranford Street and has been used for dairy farming and market gardening since the 1940s.

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No reported concentrations of metals or pesticides exceeded applicable NES soil contaminant standards for recreational land use. However, reported concentrations of various metals including arsenic, cadmium, copper, and mercury exceeded established background concentrations in numerous sample locations. Reported OCP and ONPP concentrations exceeded established Ministry for the Environment Christchurch background concentrations in numerous sample locations. Reported concentrations of arsenic, mercury and total DDT exceeded applicable environmental guideline values in various sample locations. No reported SPLP concentrations except copper exceeded applicable ANZECC 80% freshwater protection guideline values.

For further information from Environment Canterbury, contact Customer Services and refer to enquiry number ENQ139636.

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Yours sincerely

Contaminated Sites Team

Property Statement from the Listed Land Use Register

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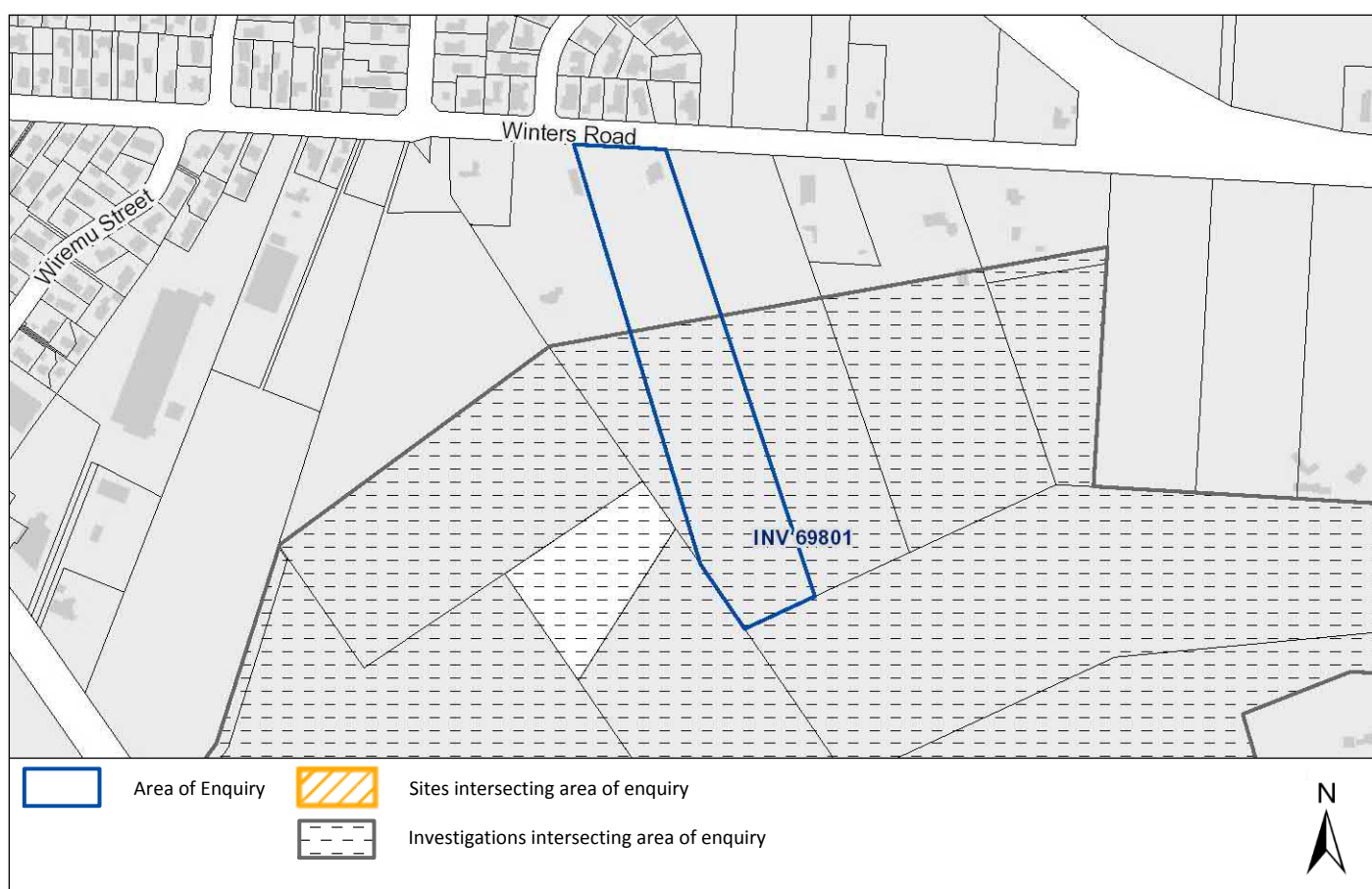
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Date:	08 August 2016	
Land Parcels:	Lot 1 DP 5998	Valuation No(s): 2180026600



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Summary of sites:

There are no sites associated with the area of enquiry.

Information held about the sites on the Listed Land Use Register

There are no sites associated with the area of enquiry.

Information held about other investigations on the Listed Land Use Register

4 Sep 2014	INV 69801: Northern Arterial Extension and Cranford Stormwater Basin: Detailed Site Investigation (Contamination) (Detailed Site Investigation) Beca Limited
------------	---

Summary of investigation(s):

The approximately 66 hectare site is located in St Albans/Mairehau on either side of Cranford Street and has been used for dairy farming and market gardening since the 1940s.

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No reported concentrations of metals or pesticides exceeded applicable NES soil contaminant standards for recreational land use. However, reported concentrations of various metals including arsenic, cadmium, copper, and mercury exceeded established background concentrations in numerous sample locations. Reported OCP and ONPP concentrations exceeded established Ministry for the Environment Christchurch background concentrations in numerous sample locations. Reported concentrations of arsenic, mercury and total DDT exceeded applicable environmental guideline values in various sample locations. No reported SPLP concentrations except copper exceeded applicable ANZECC 80% freshwater protection guideline values.

For further information from Environment Canterbury, contact Customer Services and refer to enquiry number ENQ139877.

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Yours sincerely

Contaminated Sites Team

Property Statement from the Listed Land Use Register

Visit www.ecan.govt.nz/HAIL for more information about land uses.



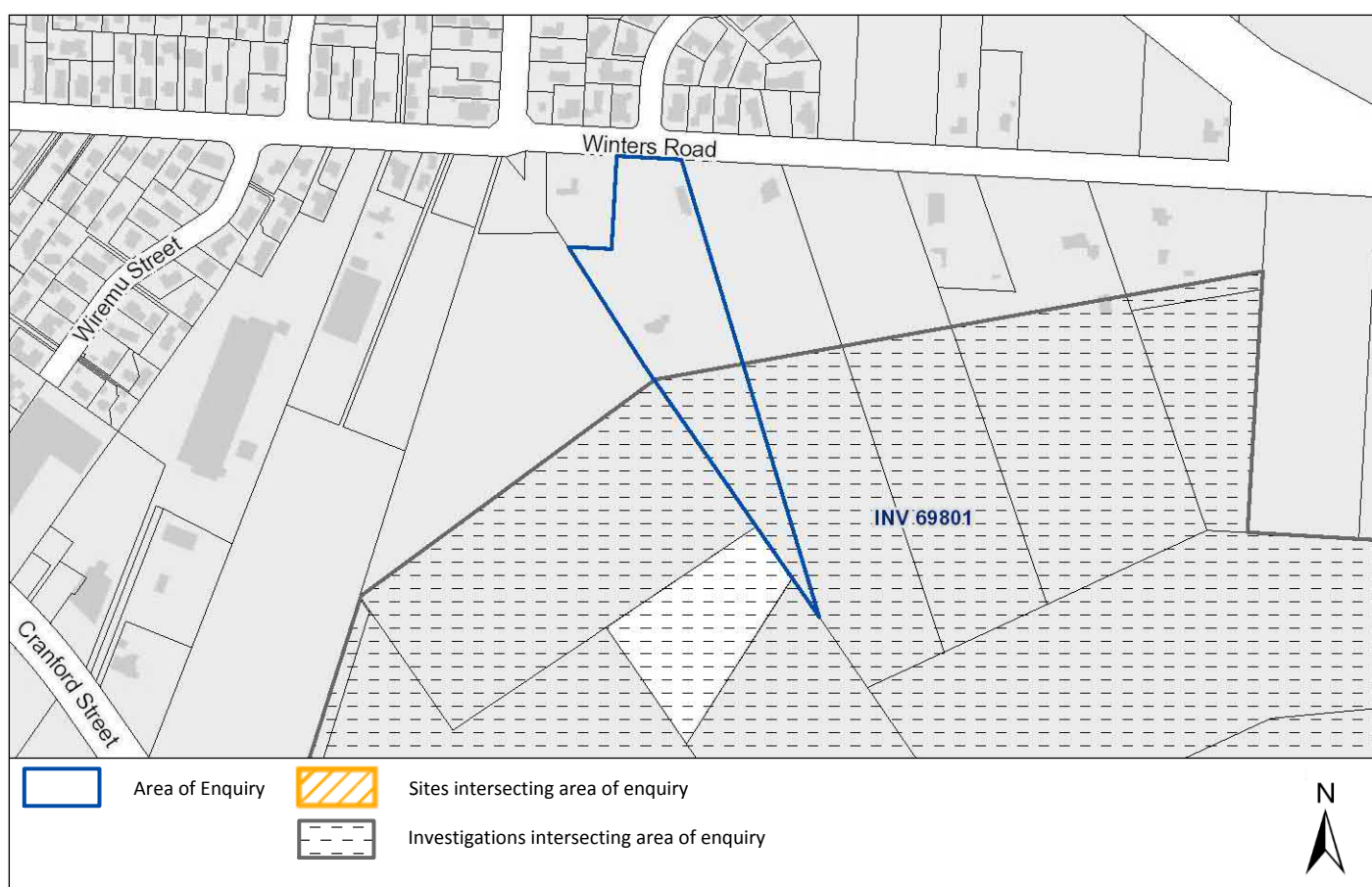
Customer Services
P. 03 353 9007 or 0800 324 636

PO Box 345
Christchurch 8140

P. 03 365 3828
F. 03 365 3194
E. ecinfo@ecan.govt.nz

www.ecan.govt.nz

Date:	08 August 2016	
Land Parcels:	Lot 2 DP 13111	Valuation No(s): 2180026500



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Summary of sites:

There are no sites associated with the area of enquiry.

Information held about the sites on the Listed Land Use Register

There are no sites associated with the area of enquiry.

Information held about other investigations on the Listed Land Use Register

4 Sep 2014 INV 69801: Northern Arterial Extension and Cranford Stormwater Basin: Detailed Site Investigation
(Contamination) (Detailed Site Investigation)
Beca Limited

Summary of investigation(s):

The approximately 66 hectare site is located in St Albans/Mairehau on either side of Cranford Street and has been used for dairy farming and market gardening since the 1940s.

In March and April 2014 Beca performed a detailed site investigation of the site involving excavation of 46 hand auger bores with collection of soil samples for the surface and 0.4 metre below ground level (m bgl) in each borehole. Additional samples were collected from the vicinity of an above ground diesel storage tank (AST) and a reported herbicide spill. Thirty six samples were analysed for metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), organochlorine pesticides (OCP) and organonitro & phosphorus pesticides (ONPP). Two samples collected in the vicinity of the former AST were also analysed for total petroleum hydrocarbons (TPH) and six samples were additionally analysed for synthetic precipitate leaching procedure (SPLP).

No reported concentrations of metals or pesticides exceeded applicable NES soil contaminant standards for recreational land use. However, reported concentrations of various metals including arsenic, cadmium, copper, and mercury exceeded established background concentrations in numerous sample locations. Reported OCP and ONPP concentrations exceeded established Ministry for the Environment Christchurch background concentrations in numerous sample locations. Reported concentrations of arsenic, mercury and total DDT exceeded applicable environmental guideline values in various sample locations. No reported SPLP concentrations except copper exceeded applicable ANZECC 80% freshwater protection guideline values.

For further information from Environment Canterbury, contact Customer Services and refer to enquiry number ENQ139876.

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 and Environment Canterbury's Contaminated Land Information Management Strategy (ECan 2009).*

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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