

Preliminary Site Investigation
Pocock Road
Springfield

Prepared for Ballymena Holdings Ltd
West Melton

August 2013



Tasman Environmental Management
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Quality Assurance

Title: Preliminary Site Investigation

Client: Ballymena Holdings Ltd

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Prepared By: Martyn O'Cain
Environmental Scientist

Signature:



Approved for Issue
by a qualified
practitioner as
prescribed under
the NES (2011)

Martyn O'Cain

Signature:



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Should anyone wish to discuss the content of this report with Tasman Environmental Management Ltd, they are welcome to contact us on 027 277 3566.

1. Introduction

Ballymena Holdings Ltd is proposing to subdivide a property located on the corner of Pocock Road and Annavale Road in Springfield.

With the introduction of the National Environmental Standard (NES) for Assessing and Managing Contaminants in Soil to Protect Human Health (2011) there is a requirement to assess a property that is undergoing a subdivision or change of land use. Before the local Council can authorise such changes a Preliminary Site Investigation (PSI) is usually required with regard to the regulations in the NES. The land use history of the site will be assessed against the Hazardous Activities and Industries List (HAIL). The HAIL is a list of activities and industries that have the potential to contaminate soil. The investigation will indicate whether or not the site is fit for the proposed purpose or additional information is required.

During the preparation of this report Information has been sought from Environment Canterbury, by viewing historical aerial photographs, interviewing current and former owners and by visiting the site.

2. Site Identification

Owners:	Ballymena Holdings Ltd
Site address:	Cnr Annavale Rd and Pocock Rd
Locality:	Springfield
Legal description:	Lot 2 DP 400509
Total Area:	30.32 ha
Map reference:	NZMS 260 L35 242259 576360 (Figure 1 & 2)
District Plan Zoning:	Outer Plains

3. Site Conditions and Surrounding Environment

The property being subdivided is located on the corner of Annavale Rd and Pocock Rd in Springfield. The site is immediately northwest of the Springfield residential area. The property is zoned 'Outer Plains' under the Selwyn District Plan.

The site is bound by Pocock Rd to the southeast and by Annavale Rd to the southwest. The western boundary is defined by an unnamed shingle road. The West Coast railway line provides the west and north boundaries of the property. The site is approximately 400 m above sea level.

The property is currently in pasture and used for stock grazing purposes. There are three main structures associated with the property. All three structures are located within a yard area in the southeast of the property. Two of the structures are used as storage sheds for hay or farm machinery. Attached to one of the sheds is a small workshop used for minor repairs to farm equipment. The third structure is a former dairy shed that is no longer used.

Figure 1 – Site location map

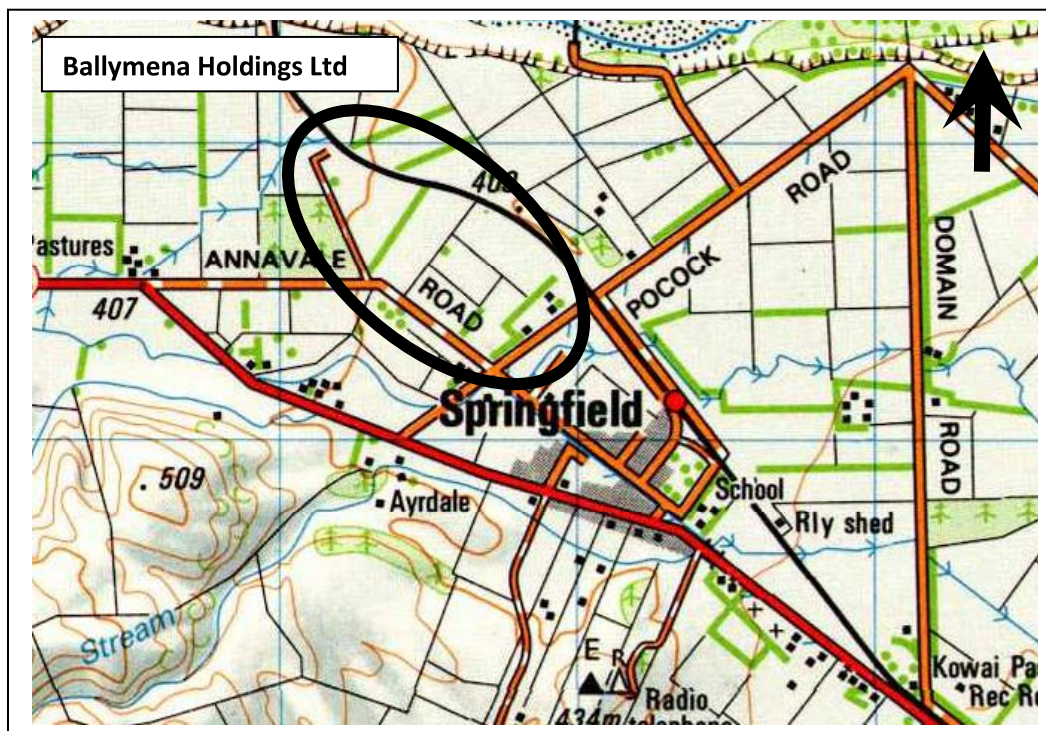
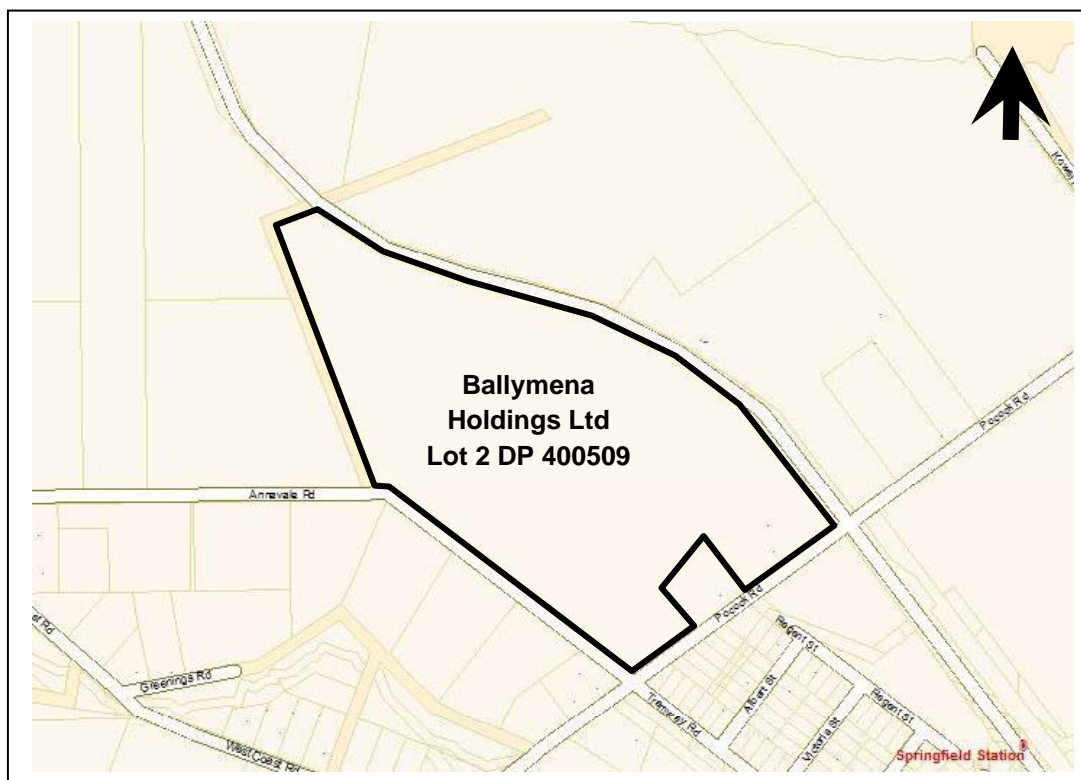


Figure 2 – Location map showing Ballymena Holdings Ltd



The regional geology associated with this area is described as 'river deposits – brownish grey river alluvium (1:250,000 Geological Map 16 – Christchurch). The Ecan online database describes the soils as Ashwick very stony silt loam in the north and Hororata shallow and stony silt loam, bouldery phase in the south of the property. The database indicates that groundwater may be around 5 to 10 m below the surface.

The surrounding properties are a mix of residential, rural residential and rural land uses. Towards the north, east and west is predominantly pastoral grazing land. South and southeast of the site is the Springfield Township. The site surrounds a rural residential property fronting Pocock Rd. The property is the site of the original homestead for the surrounding farm land which includes the proposed development area. The residential property is adjacent to the yard area described above but is not part of this investigation.

The Springfield railway station and associated yards are approximately 100 m southeast of the proposed development area. The Waimakariri River is about 500 m north of the site. Figure 3 shows an aerial of the site and surrounding area. Figure 4 shows the two implement sheds within the yard area; Figure 5 shows the small workshop and Figure 6 shows the former milking shed. Figure 7 shows the site looking east from the northwest corner.

Figure 3 – Aerial of the site and surrounding area.



Figure 4 – The two sheds located in the yard area



Figure 5 – The small workshop



Figure 6 – The former dairy shed



Figure 7 – The property looking towards the east.



4. Site History

Information on the recent history of the site has been obtained from historical aerial photographs, Environment Canterbury, Ministry of Agriculture and by interviewing current and former owners of the site.

The property was owned by the Yaxley family from 1955 to 2008. It originally included land on the northern side of the railway tracks however this land is not associated with the proposed subdivision. According to Mr Bob Yaxley the property was originally used for pastoral grazing however during the Yaxley ownership a small dairy operation was established. A milking shed is still located on the property and shown in Figure 6 above. The dairy operation stopped in the early 1980's.

Since the 1980's the Yaxley family introduced a mixed arable farming operation utilising a crop rotation system that included wheat, barley, potatoes, peas, clover and ryegrass. Appendix 1 shows examples of the crop rotation that was associated with the paddocks involved in the proposed development. The records have been sought from the Ministry of Agriculture viaASUREQuality Ltd.

Mr Yaxley has confirmed that the site has not been associated with a sheep dip and that there are no refuse pits located on the proposed subdivision area. Mr Yaxley has also stated that to his knowledge no organochlorine based pesticides have been used on the property. According to the former owner the only agrichemical used was Reglone. Reglone was used as a 'leaf burner' on the potatoes prior to harvest. According to the current owner, Mr Robert Logan, potatoes have not been grown since 2009.

There was a horse track behind the original homestead prior to the 1960's however it was removed over 50 years ago.

Previous land uses associated with the site can be visually tracked through historical aerial photographs if they are available. Figures 8 and 9 show the property in 1965 and 1976 respectively.

Both photos show the property being predominantly used for pastoral grazing. The 1965 photo shows a set of stockyards in the northeast corner of the property. Mr Logan has stated that these were cattle yards and confirmed with Mr Yaxley that no sheep dips have been associated with the property. Figure 10 shows the cattle yards as well as the existing implement shed and former dairy shed.

Mr Logan identified the location of where an above ground fuel tank once stood. The tank was located next to the existing workshop but was removed approximately 6 years ago. At the time of the investigation the tank was being stored behind the former dairy shed. It was empty at the time of the inspection. Figure 11 shows where the tank was located.

Figure 8 – Aerial photo of the site in 1965



Figure 9 – Aerial photo of the site in 1976



Figure 10 – Aerial photo of the site in 1965 showing the cattle yards, dairy shed and existing implement shed

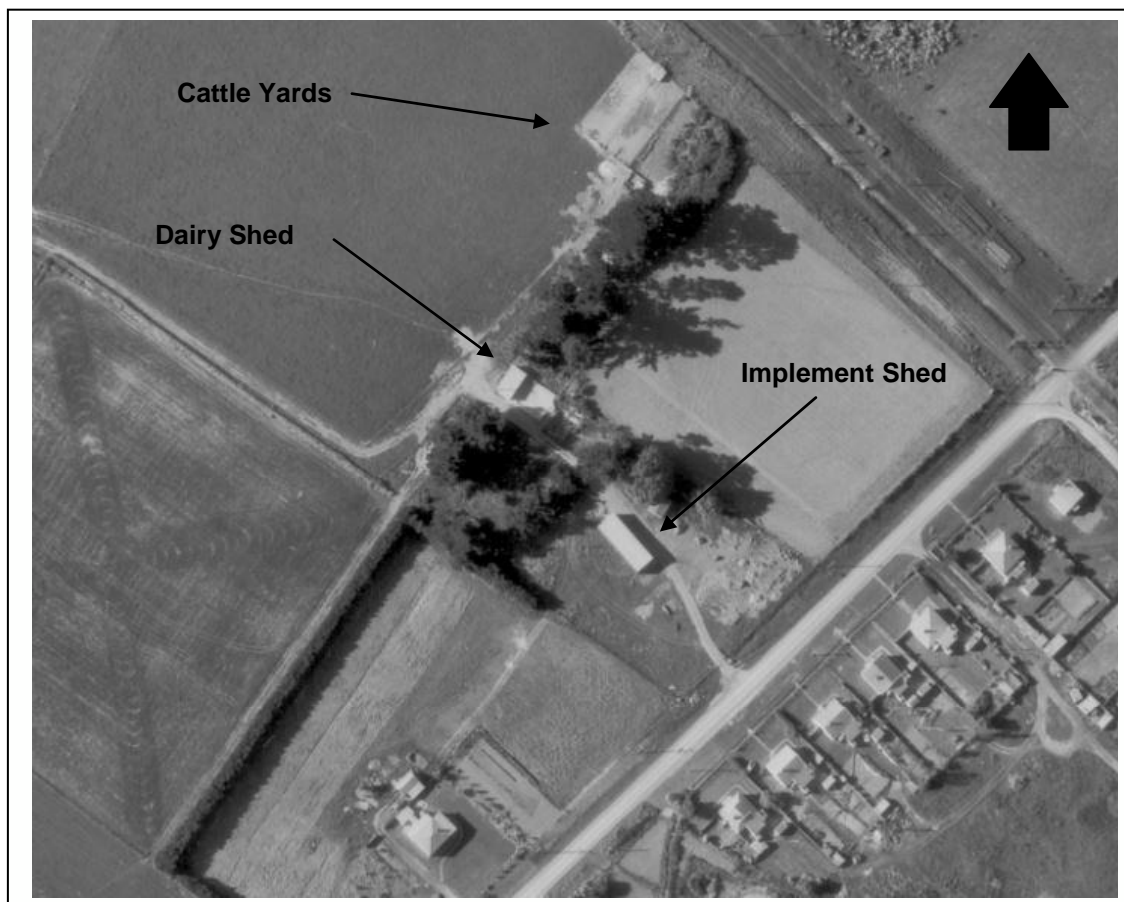


Figure 11 – Site of former above ground fuel tank



5. Conceptual Site Model

A conceptual site model helps to identify whether or not a complete exposure pathway exists. An exposure pathway must include a contaminant source, a transport mechanism and a receptor. If one of these components does not exist or can be removed then the exposure pathway is incomplete. If the exposure pathway is incomplete then there is little risk to human health at this location. Based on possible HAIL activities that may have been associated with this site the potential contaminant sources include bulk storage, use and disposal of persistent pesticides, fuel and oil storage and use, sheep dip sites and farm refuse pits. A conceptual site model has been prepared for the property and is included as Figure 12. An assessment of the exposure pathway will be discussed below in Section 8 – Site Characterisation.

6. Proposed Development

This PSI has been prepared to support an application for subdivision consent. The subdivision will create 13 new titles. The lot areas will vary between 1.8 ha and 3.5 ha. The existing yard area will be located within one 2 ha lot. A proposed scheme plan of the subdivision is attached as Appendix 2.

7. Resource Consents and Planning Information

According to the Environment Canterbury online database there are no Environment Canterbury resource consents or wells located on the proposed subdivision area.

A search of ECan's Listed Land Use Register (LLUR) showed that the site is not registered on their database as a contaminated site. The LLUR report is attached as Appendix 3

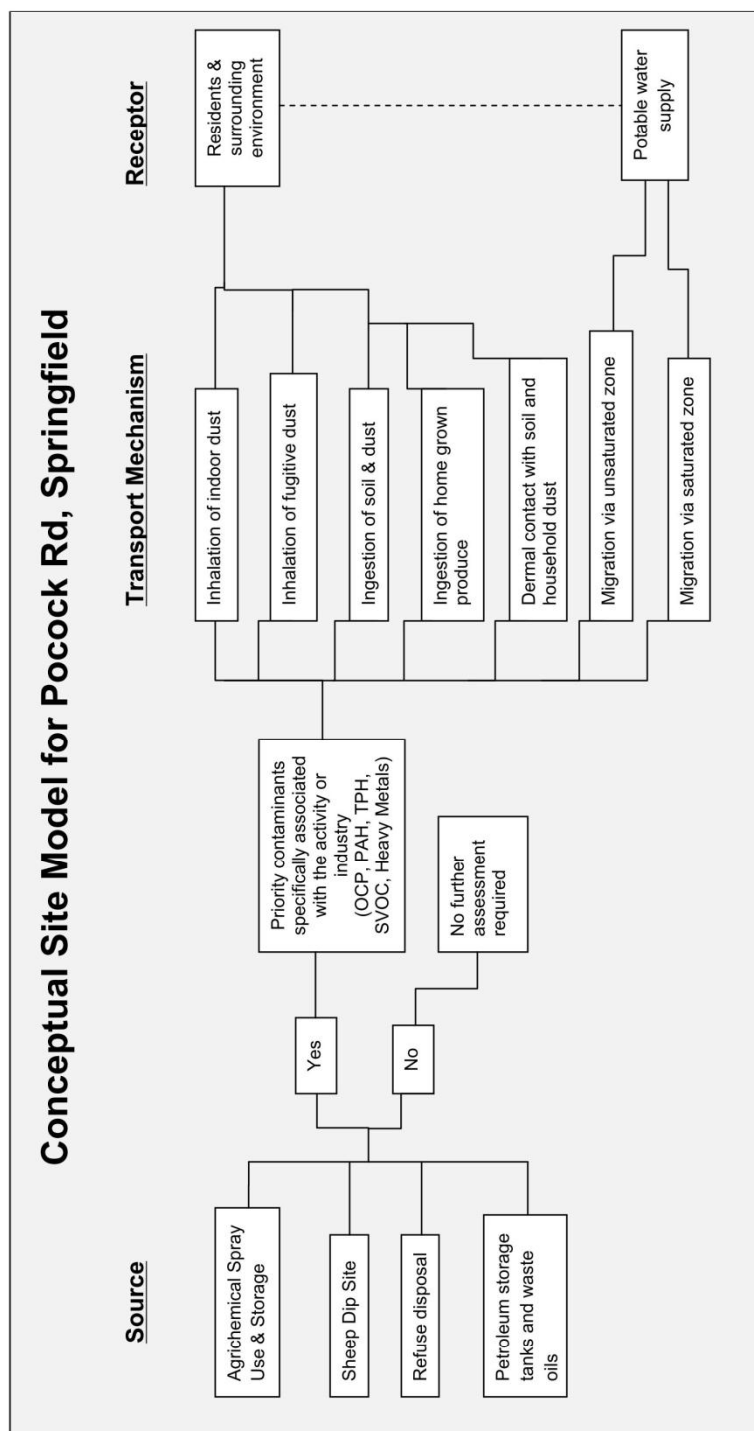
8. Site Characterisation

An assessment of the site history has identified a number of potential HAIL activities that could be associated with agricultural sites similar to Pocock Rd. Such activities are shown in the conceptual site model and include agriculture spray use, fuel and oil storage, sheep dips and refuse pits. However, the conceptual site model also identifies that for a complete exposure pathway to exist there must be a contaminant source at the site.

Petroleum hydrocarbon contamination can be caused by poorly managed workshops and fuel storage facilities through over filling, accidental spillage and poor disposal methods. A workshop and above ground storage tank were identified as being used on the site in recent years. Both sites did not show signs of staining or odorous material. The workshop was clean and tidy and had a concrete floor. It had been raining at the time of inspection and no oil sheen was seen at either site. There is no evidence of petroleum hydrocarbon contamination at these locations.

The former owner of the site, Mr Bob Yaxley, has stated that to the best of his knowledge there has never been a sheep dip on the site or any farm refuse pits.

Figure 12 – Conceptual site model for the Annavale Rd and Pocock Rd, Springfield.



Mr Yaxley also believes that no organochlorine pesticides have been used on the property. The only agrichemical he knows that was used on the property is Reglone. This is used to desiccate potato plants prior to harvest. Reglone is currently available as a non-residual herbicide.

The main active compound of Reglone is diquat dibromide. Diquat is strongly adsorbed to soil, is not taken up by plant roots and is not metabolically degraded by plants. Because of the strong adsorption of diquat to soil particles, the rate of degradation in soil is slow, but sufficient to ensure that diquat residues do not accumulate indefinitely (WHO, 2004). Diquat is rapidly absorbed and deactivated by soil. It has low bioavailability and bioaccumulation once it has adsorbed to soil particles. Reglone is not considered carcinogenic (Syngenta, 2010).

Given that Reglone is a common and readily available agrichemical; is not a priority contaminant under the NES (2011); is deactivated once adsorbed to soil and has only been used periodically on the property over the last 30 years, possible soil residual is unlikely to be a risk to human health.

The conceptual site model identifies that the most likely sources of contamination for an agricultural site such as this is from historical sheep dip sites, the bulk storage, use and disposal of persistent pesticides, the presence of farm refuse pits and the bulk storage, use and disposal of petroleum products. Based on the available historical photographs and information provided by the current and former owners, the property being assessed has primarily been used for grazing and arable farming only. The use of the agrichemical Reglone has been used on a limited basis in the past however it is unlikely to cause a risk to human health.

Based on the assessment of the possible HAIL activities associated with the site, there are no known contamination sources therefore the exposure pathway is incomplete. This property represents a typical greenfield site and should be suitable for the intended rural residential land use.

9. Conclusion

Ballymena Holdings Ltd is proposing to subdivide a 30 ha rural zoned property into 13 new rural residential lots on the outskirts of the Springfield Township. Under the NES (2011) a property being subdivided is required to undergo a preliminary site investigation to ensure that the site is fit for the intended purpose.

Based on the available information the site has primarily been used for stock grazing and rotational arable crops. The crop rotation has occurred mainly over the last 30 years and included peas and potatoes. The former owner of the property has stated that the only agrichemicals he is aware of that were used on the site is Reglone. Possible Reglone residue is not expected to cause a risk to human health. No HAIL activities that may cause significant soil contamination have been identified therefore this property represents a typical greenfield site and should be suitable for the intended rural residential land use.

10 References

NES (2011). National Environmental Standard (NES) for Assessing and Managing Contaminants in Soil to Protect Human Health.

Syngenta, 2010. Reglone: safety data sheet. Syngenta Crop Protection Pty Ltd.

WHO, 2004. Diquat in Drinking-water: Background document for development of WHO Guidelines for Drinking-water Quality. World Health Organisation WHO/SDE/WSH 03.04/91.

11 Disclaimer

While the information that has been sought as part of this investigation indicates that the site is unlikely to pose a risk to human health, it would be prudent to highlight to contractors undertaking earthworks on the site that if by discovery odorous, discoloured or uncontrolled fill is observed (including buried refuse) then the appropriate authorities should be contacted.

12 Limitations

This report has been prepared based on site conditions as they exist at the time of writing and the information that has been assessed. If subsequent investigations involving earthworks or remedial actions are undertaken from the date of this report then certain aspects of this report may no longer be relevant or require amendment. In addition, if HAIL activities occur on the site after the date of this report then the conclusions and recommendations presented in this report may no longer be relied on.

Individuals with a close association to the property have provided information with regard to certain activities that may or may not have been carried out on the site. The information they have provided is included in the assessment of the property and has been accepted in good faith by the author. TEM cannot be held responsible for any incorrect or erroneous information that has been provided.

This investigation was carried out solely for the purpose of assessing contaminants in the soil associated with the land being suitable for residential occupation only. It has purposely not assessed the possible impacts of contaminants on ecological values associated with the site. Any other investigations that are required to determine the suitability of this property are outside the scope of this report.

Appendix 1

Crop Rotation Plans

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Paddock History for Farm

Christchurch 1931

01/08/2013

J	Sown Year/Season		Sown Class	Result	MatRef	Sown In
	2002 S	POTATOES	1st Generation	Passed	200354577	J2
	2002 S	POTATOES	Basic	Passed	200354558	J1
	2001	Wheat	Inform			J2
	2001	Wheat	Inform			J1
	2000	White Clover	Basic			J1
	2000	White Clover	Basic			J2
	1999 A	White Clover	Basic	Passed	200153616	J
	1999 A	Italian Ryegrass	Basic	Passed	200052841	J
	1998	Barley	Inform			J
	1997	Pea	Inform			J
	1996	FALLOW	Inform			J
	1995	Wheat	Inform			J
	1995 A	Italian Ryegrass	Basic	Passed	603147	J
	1994	Barley	Inform			J
	1994	White Clover	Inform			J
	1993	Pea	Inform			J
	1992	Wheat	Inform			J
	1991	Grazing Brome	Inform			J
	1990	Grazing Brome	Inform			J
	1988 A	Perennial Ryegrass	1st Generation	Passed	900449	J
	1987	Barley	Inform			J
	1986	Barley	Inform			J
	1985	Wheat	Inform			J
	1984	Pea	Inform			J
	1983	Wheat	Inform			J
Paddock	J1	1.2 ha	Christchurch	1931 Paddock J	5.6 ha	15/01/2003

Paddock	H	6.4 ha	WAS	Christchurch	Paddock	ha
Sown						
Year/Season						
H	2009 S	POTATOES	Tiffany	Sown Class	Result	MatRef
	2009 S	POTATOES	Nadine	G3	Passed	201053946
	2009 S	POTATOES	Nadine	G5	Passed	201054490
	2008	Barley	Barley	G4	Passed	201053945
	2008	Barley	Barley	Inform	Inform	H3
	2008	Barley	Barley	Inform	Inform	H1
	2007	PASTURE	Barley	Inform	Inform	H2
	2007	PASTURE	PASTURE	Inform	Inform	H3
	2007	PASTURE	PASTURE	Inform	Inform	H1
	2006	PASTURE	PASTURE	Inform	Inform	H2
	2006	PASTURE	PASTURE	Inform	Inform	H3
	2006	PASTURE	PASTURE	Inform	Inform	H1
	2006	PASTURE	PASTURE	Inform	Inform	H2
	2005	PASTURE	PASTURE	Inform	Inform	H3
	2005	PASTURE	PASTURE	Inform	Inform	H2
	2005	PASTURE	PASTURE	Inform	Inform	H1
	2004	Barley	Barley	Inform	Inform	H3
	2004	PASTURE	PASTURE	Inform	Inform	H2
	2004	PASTURE	PASTURE	Inform	Inform	H1
	1995 A	White Clover	Grasslands Huia	Basic	Withdrawn	711613
					Entry	H

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Paddock History for Farm Christchurch 1931

01/08/2013

1995 A	Italian Ryegrass	'Grasslands Moata Tetraploid'	Basic	Entry	Passed	603148	H
1994	Wheat	Wheat		Inform			H
1993	Pea	PEAS		Inform			H
1992	Wheat	Wheat		Inform			H
1991	CLOVER	CLOVER		Inform			H
1990	PASTURE	PASTURE		Inform			H

Paddock	C2	12 ha	Temporary Split	WAS	Christchurch	1931 Paddock	C	15.2 ha	18/01/2010
Sown Year/Season									
C2	2009 S	POTATOES	Nadine						
	2008	Barley	Barley			Entry		201054491	C2
	2007	PASTURE	PASTURE			Inform			C2
	2006	PASTURE	PASTURE			Inform			C2
	2005	PASTURE	PASTURE			Inform			C2
	2004 A	Italian Ryegrass	Prime			Entry		200554152	C
Sown Class									
									G5
									Basic
Result									
									Passed

Paddock History for Farm Christchurch 1931

Paddock	E	5.4 ha	WAS	Christchurch	Paddock	ha	Result	MatRef	Sown In
Sown Year/Season									
	2003	Barley	Barley						C
	2002	Wheat	Wheat						C
	2001	Pea	PEAS						C
	2000	Barley	Barley						C
	1999	Wheat	Wheat						C
	1995 A	Italian Ryegrass	"Grasslands Moeta Tetraploid"					803149	B
	1995 A	White Clover	Grasslands Huia					711614	B
	1994	Wheat	Wheat						B
	1993	Pea	PEAS						B
	1992	Barley	Barley						B
	1991	CLOVER	CLOVER						B
	1990 A	Perennial Ryegrass	Ellett					116284	C
	1990	PASTURE	PASTURE						B
	1989 A	White Clover	Grasslands Huia					224250	C
	1989 A	White Clover	Grasslands Huia					224251	B
	1989 A	Perennial Ryegrass	Ellett					008570	B
	1988	POTATOES	POTATOES						C
	1988	Rape	Rape						B
	1987	Pea	PEAS						C
	1987	Barley	Barley						B
	1986	CLOVER	CLOVER						C
	1986	Pea	PEAS						B
	1985	Wheat	Wheat						B
	1985	Wheat	Wheat						C
	1984	CLOVER	CLOVER						B
Sown Class									
									Basic
Result									
									Passed

Appendix 2
Proposed Subdivision Scheme Plan

SCALE:
1:5,000

SPRINGFIELD "BALLYMENA HOLDINGS LTD."



PLAN DRAWN
BY JOHN COOK (26/10/12)

Appendix 3

LLUR Report

Statement from the Listed Land Use Register



58 Kilmore Street, PO Box 345, Christchurch

Customer services: 03 353 9007

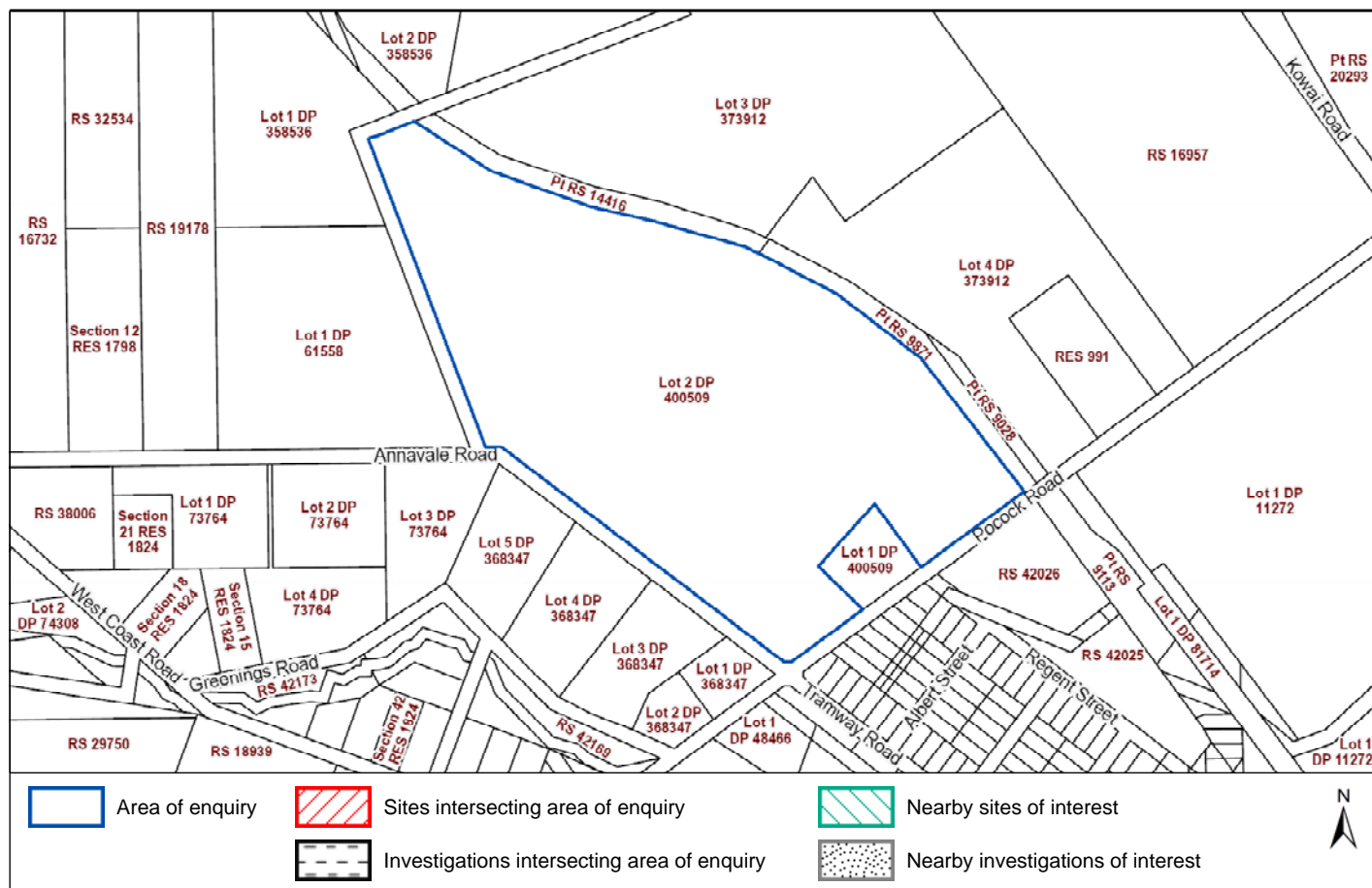
or: 0800 EC INFO (0800 324 636)

Website: www.ecan.govt.nz

21 December 2012

- Lot 2 DP 400509

Valuation No(s): 2421031702



Summary of sites:

There are no sites associated with the area of enquiry.

Please note that the above table represents a summary of sites intersecting the area of enquiry within a 100m buffer.

For further information from Environment Canterbury, contact the Contaminated Sites Officer and refer to enquiry number 14466.

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).

This information reflects Environment Canterbury's current understanding of this site, which is based only on the information thus far obtained by it and held on record concerning this site. It is released only as a copy of those records and is not intended to provide a full, complete or totally accurate assessment of the site. As a result, Environment Canterbury is not in a position to warrant that the information is complete or without error and accepts no liability for any inaccuracy in, or omission from, this information.

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