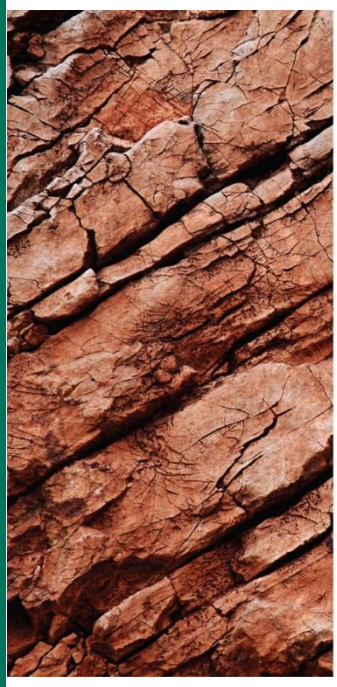
September 2013

DETAILED SITE INVESTIGATION

Faringdon Development, Rolleston, Christchurch

Submitted to:
Kelvin Back
Hughes Developments
8 Millbank Ln
Merivale,
Christchurch 8014



Report Number. 1278203872_007_R_Rev0

Distribution:

Hughes Developments

REPORT

Golder Associates

Summary

Hughes Developments Limited (Hughes) is proposing to redevelop and subdivide a 70Ha agricultural site in Rolleston, Canterbury for a residential subdivision.

The site was acquired by the Foster family for the purposes of sheep farming in 1937. Extensive gorse and broom covering the site was gradually cleared using a horse drawn swamp plough and a tractor and to provide more land for grazing. An Observatory tower was constructed on in the south west of the site in 1955 and then removed from site in the mid 1960s. Although the site was predominantly used for sheep farming, a field on the north east of the site was used for growing and harvesting barley and Lucerne.

The need for a Detailed Site Investigation (DSI) was triggered under the Ministry for the Environment (MfE) Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 (i.e., the NES) due to confirmation that the site has been used for activities which have the potential to cause contamination and are classified on the MfE Hazardous Activities and Industries List (HAIL).

The intrusive works programme was designed to determine whether site soils are suitable for the proposed residential land use, establish the potential for discharges of contaminants to the environment, and determine the requirement for remediation works and / or site management protocols to be implemented during the site redevelopment works.

The Preliminary Site Investigation (PSI) undertaken by Golder identified the lucerne field and the area surrounding the former observatory as areas of potential contaminant concern. The lucerne field was highlighted due to the use intermittent use pesticides on the field for the control of aphids. The observatory tower was constructed in the 1950's where lead paint and asbestos containing materials were commonly used in buildings.

One shallow sample (0.1m) and one deeper (0.2m) soil sample were collected from six locations from the lucerne field. The soil samples were analysed for potential contaminants of concern including arsenic, copper, lead, organonitrogen (ONP), organophosphate (OPP) and organochlorine (OCP).

One shallow sample (0.1m) and one deeper (0.2m) soil sample were collected from three locations immediately surrounding the former observatory. The soil samples were analysed for the potential contaminant of concern (lead). The surrounding soils were visually inspected for the presence of Potential Asbestos Containing Material (PACM).

Concentrations of in the samples collected from the site were well below trigger levels for the protection of human health of residential sites (NES 2012). The concentrations of pesticides in the sample collected from the lucerne field were below the laboratory levels of detection. No PACM was sighted during the site investigation.

With respect to regulation 9(3) of the NES, the redevelopment of the site for residential land use is a controlled activity. The matters over which Council control is reserved under this regulation are those associated with the adequacy of this DSI.

Table of Contents

TABLES

FIGURES

APPENDICES

1.0 INTRODUCTION

1.1 Background

Golder Associates (NZ) Limited (Golder) was engaged by Hughes Developments Limited (Hughes) to undertake a Detailed Site Investigation (DSI) at the Faringdon Development, Rolleston, Christchurch (the site). The site is currently production land and Hughes is proposing to subdivide and develop the site for residential land use. The site development layout and location are presented in Figure 1.

Historical land use activities at the site included pesticide spraying and buildings constructed using potential Asbestos Containing Materials (ACM). These activities are recorded on the Hazardous Activities and Industries List (HAIL), published by the Ministry for the Environment (MfE 2011a), as activities that have the potential to cause contamination due to use and/or storage of hazardous substances. The identification of historical HAIL activities on the site in conjunction with the proposed development activities (subdivision and change of land use) means that the development should be assessed against the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 (NES).

Under the NES Regulation 8(4), subdivision of land and change of land use are a permitted activity where it can be demonstrated that it is highly unlikely that there will be a risk to human health from the intended subdivision or land use change. In order to assess the potential risk to human health from the intended activities, the regulation requires that a Preliminary Site Investigation (PSI) is produced. A PSI (Golder 2012) was produced but it could not be demonstrated that it is highly unlikely that there will be a risk to human health. Therefore, a DSI was required under Regulation 9(3).

Whilst the site comprises nine stages, the PSI (Appendix B) recommended that only three stages (3, 4 and 9) required further investigation. Since the PSI was issued, the potential areas of concern identified in Stage 3 have been encompassed into the Foster Lot and removed from the development footprint leaving Stages 4 and 9 to be assessed.

1.2 Objectives

The objectives of the DSI are to:

- Determine whether site soils in Stages 4 and 9 of the development have been impacted by contaminants from historical HAIL activities.
- Determine if any contaminants in soils are at acceptable levels for the proposed residential land use.
- Determine if any contaminants in soils have the potential to result in a discharge of contaminants to land or water during development.
- Determine the requirement for any remediation works and/or site management plans to mitigate and/or manage soil contamination.

This report[1] constitutes a DSI and is prepared in accordance with the NES and the MfE (2011b) Contaminated Land Management Guideline No. 1: Reporting on Contaminated Sites in New Zealand.

The persons preparing and certifying this report are suitably qualified and experienced practitioners. We confirm that the DSI complies with regulation 3 of the NES and the DSI has been written and reviewed by suitably qualified and experienced practitioners.

[1] Your attention is drawn to the document, "Report Limitations", as attached in Appendix A. The statements presented in that document are intended to advise you of what your realistic expectations of this report should be, and to present you with recommendations on how to minimise the risks to which this report relates which are associated with this project. The document is not intended to exclude or otherwise limit the obligations necessarily imposed by law on Golder Associates (NZ) Limited, but rather to ensure that all parties who may rely on this report are aware of the responsibilities each assumes in so doing.

The persons preparing and certifying this report are suitably qualified and experienced practitioners. We confirm that the PSI element of the work complies with Clause 3 of the NES and the DSI and health risk assessment (HRA) work elements have been performed and reviewed by suitably qualified and experienced practitioners.

1.3 Scope of Works

The following scope of work was undertaken to achieve the above objectives:

- Collection of one shallow (0.1m below ground level (bgl)) soil sample and one deeper (0.2m bgl) soil sample from six locations across the lucerne field in Stage 4.
- Collection of one shallow (0.1m bgl) soil sample and one deeper (0.2m bgl) soil sample from three locations surrounding the area of the former observatory in Stage 9.
- Chemical laboratory analysis of the six shallow samples from the lucerne field for the following:
  - Selected metals (arsenic, copper and lead) – based on pesticide use.
  - Organonitrogen and organophosphorus pesticides (ONOP) and organochlorine pesticides (OCP).
- Chemical laboratory analysis of the three shallow samples from the area of the former observatory for lead – based on use of lead paint.
- Storage of all deeper samples for potential further analysis to delineate vertical soil contamination based on the analytical results of the shallower samples.
- The visual inspection of surface soils surrounding the former observatory for any potential (ACM).
- Production of this interpretive report.

2.0 SITE DESCRIPTION

2.1 Site Location and Layout

The site is located to the south of Dynes Road and east of Goulds Road, near the town of Rolleston in Canterbury Figure 1).

The site comprises seven lots (Figure 1) including: Lot 1 DP 8833, Lot 1 DP 372247 Lot 2 DP 372247, Lot 3 DP 372247, Lot 4 DP 372247, RS 12514 and RS 15710.

Since the PSI (Golder 2012) was issued, there have been a number of lot boundary adjustments. In May 2013, Hughes contacted Golder to confirm that the former landowners had adjusted the boundary of the Foster Lot to include an additional 0.6 ha from Stage 3. However, the boundary adjustments have no bearing on this DSI, as the areas being investigated are Stages 4 and 9.

For simplicity and to maintain consistency with the PSI report, the boundary descriptions will be those identified in the PSI, with the exception of the Foster Lot which has been amended. The site is undergoing development in stages, as follows:

- Stages 1, 2 and 3 of the development are currently underway.
- The balance of the site (Stages 4 – 9) will be developed once Stage 3 has been completed.

- The balance of the 'Foster Lot' is land retained by the Foster family for private use. This land covers an area of approximately 3.3 ha and is formed from land within RS12514 and Lot 1 DP8833. As the Foster Lot is retained for private use it will not form part of the proposed development.

The layout and the historical activities undertaken on each stage of the development are described in the PSI (Appendix B). A site layout plan is presented in Figure 2.

N

Dynes Road

Foster Lot

Stage 1

Stage 2

Stage 3

Stage 4

Stage 5

Stage 6

Stage 7

Stage 8

Stage 9

Goulds Road

East Maddisons Road

RS157510

RS12514

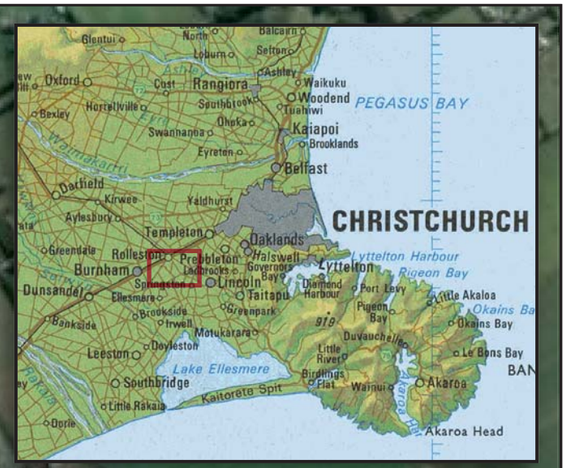
Lot 1 DP8833

Lot 3 DP372247

Lot 2 DP372247

Lot 4 DP372247

Lot 1 DP 372247



1. AERIAL IMAGE: Google Earth, 15.2.2011
2. MAP IMAGE: Memory Map, Copyright Reserved
3. DRAWN BY: SG REVIEWED BY: VC

0 50 100 150 200 250 Metres

Golder Associates

TITLE SITE LOCATION PLAN

SEPTEMBER 2013

PROJECT 1278103872_007

1

S:\Graphics\Projects-numbered\2012\12781x\03xxx\1278103_872_RDHughesDev_Farington\Aug13

N

Lucerne field

Foster Lot

Dynes Road

Stage 3

Stage 4

Approximate location of offal pit

Stage 1

Stage 5

Goulds Road

Stage 2

Stage 6

Stage 8

Stage 7

Stage 9

Former observatory tower building foot print

East Maddisons Road

Approximate location of offal pit

0 50 100 150 200 250 Metres

1. AERIAL IMAGE: Google Earth, 15.2.2011.
2. MAP IMAGE: Memory Map, Copyright Reserved
3. DRAWN BY: SG REVIEWED BY: VC

Golder Associates

TITLE BOUNDARY ADJUSTMENT AND POTENTIAL AREAS OF CONCERN

SEPTEMBER 2013

PROJECT 1278103872_007

2

S:\Graphics\Projects-numbered\2012\12781x\03xxx\1278103_872_RDHughesDev_Farington\Aug13

2.2 Geology and Hydrogeology

The geology beneath Rolleston is dominated by brownish grey river alluvium (Forsyth, Barrell and Jongens, 2008). Based on a review of the bore log for well M36/1849 located in the north of Stage 3 of the site, the strata in the vicinity of the site generally comprises gravels in a sand clay matrix to a depth of at least 49 m bgl.

Regional groundwater flow is in a south-easterly direction toward the Pacific Ocean (Christchurch Regional Council (CRC) GIS database). The only active/existing wells within the site are M36/1849 (in the north of stage 3), and M36/8312 located in the south west of Stage 9. Both of these wells have been used for irrigation purposes.

3.0 SUMMARY INFORMATION FROM THE PRELIMINARY SITE INVESTIGATION

The following sections provide a summary of pertinent information from the PSI (Golder 2012):

3.1 Site History

A detailed site history is included in the PSI (Appendix B). However, the following points are considered relevant to the investigation of potentially contaminated land on Stages 4 and 9 of the development:

- In 1937, the site was purchased by John Foster. The site was initially used for grazing sheep.
- In 1955, Ilam University constructed an astronomical observatory tower for research purposes. The tower was located in the south west of the site, in Stage 9 (Figure 2). The observatory was constructed on a concrete pad with weatherboard walls and a tin roof.
- In the late 1960's the observatory was removed and relocated to Mt John, Lake Tekapo. The remnants of the concrete pad are still visible in Stage 9 of the site.
- Post 1975, sheep grazing increased across the site. Barley and lucerne were grown and harvested in the north of Stage 4, referred to as the 'lucerne field' (Figure 2). Insecticides were used up to the 1990s to target aphids in the barely and lucerne field.
- The potential locations of three small offal pits were identified during an interview with the landowners. The issues relating to offal pit management have been addressed in a Site Management Plan (Golder, 2013).

3.2 Areas and Contaminants of Potential Concern

Based on historical and current land use activities, the following areas and contaminants of environmental concern were identified (Table 1). Identification of the areas outlined in Table 1 provided the basis for the design of the DSI.

Table 1: Potential areas and contaminants of environmental concern.

Potential source of contamination	Potential area of contamination	Contaminants of concern
Historical use of pesticides	The lucerne field in Stage 4.	Arsenic, copper, lead, OCP and ONOP pesticides.
Lead paint used on the former observatory	Area immediately surrounding the former observatory in Stage 9.	Lead
Potential ACM used in the construction of the former observatory	Area immediately surrounding the former observatory in Stage 9.	Asbestos

To manage any discharges to the environment and protect human health from the contents of offal pits, the PSI (Golder 2012) recommended that earthworks which may encounter offal pits should be undertaken in accordance with a site management plan. An Offal Pit Management Plan (Golder, 2013) was issued to Hughes in August 2013. A copy of the Offal Pit Management Plan is included in Appendix C.

4.0 INTRUSIVE INVESTIGATION

4.1 Health and Safety

A site specific health and safety and environmental plan (HaSEP) was prepared prior to undertaking the field work. The HaSEP documented the known and perceived hazards at the site associated with the proposed works and identified mitigation and/or management options to eliminate, manage or reduce the risks associated with the hazards.

Given the former agricultural use of the site, the presence of underground services was considered unlikely. However, all intrusive work was undertaken using hand tools rather than heavy machinery, and sampling depths did not exceed 0.2m bgl.

4.2 Overview of Field Investigation

To determine whether soils in Stages 4 and 9 of the development have been impacted by contaminants from historical HAIL activities, Golder completed the following investigations on 18 July 2013.

- Collection of one surface soil sample (0.05 – 0.1m bgl) and one deeper soil sample (approximately 0.2 m bgl) from six locations across the northern field of Stage 4. Sample locations were set out using a systematic grid methodology.
- Collection of one surface soil sample (0.05 – 0.1m bgl) and one deeper soil sample (approximately 0.2 m bgl) from three locations surrounding the footprint of the former observatory on Stage 9. Sample locations were set out using a random targeted methodology.
- Collection of two duplicate samples, one duplicate sample of the shallow soils in Stage 4 and a second duplicate sample of the shallow soils in Stage 9.

4.3 Soil Sampling

Six sample locations, nominated Faringdon 1 to Faringdon 6, were set out on a grid across the lucerne field in Stage 4 of the site (Figure 3). A large grid size (95x95m) was adopted as pesticides would typically be applied at a consistent rate across the area of crop growth.

Three sample locations, nominated Observatory 1 to Observatory 3, were targeted in the immediate vicinity of the former observatory footprint (3.9m in diameter) to assess the possible presence of flecks of lead based paint resulting from the removal or maintenance of the observatory.

Each sample was collected using a stainless steel trowel, cleaned between locations with decon 90 solution, and placed into laboratory prepared glass and plastic jars. Samples were placed in a chilly bin with ice and couriered to Hill Laboratories in Hamilton for analysis.

To comply with field quality assurance and quality control (QA/QC) procedures, one duplicate sample from the lucerne field and one duplicate sample from the area surrounding the former observatory were collected for analyses.

5.0 REGULATORY CONTEXT

5.1 National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health

The NES came into force on 1 January 2012 and is required to be enforced by territorial authorities, in this case Christchurch City Council.

The NES for Assessing and Managing Contaminants in Soil to Protect Human Health:

- Sets a standard at which land is considered safe for human health.
- Ensures land affected by contaminants in soil is appropriately identified and assessed at the time it is developed and if necessary remediated, or the contaminants contained, to make the land safe for human use.

The 12 soil contaminants ('priority contaminants') covered by the NES are; arsenic, boron, cadmium, chromium, copper, lead, mercury, benzo(a)pyrene, DDT, dieldrin, pentachlorophenol, and dioxin. Soil contaminant standards (SCS) for priority contaminants are prescribed for five different land uses – rural, residential, high density residential, recreational and commercial / industrial. Where the contaminant of concern is not a priority contaminant, the MfE (2011b) Contaminated Land Management Guidelines No. 2 Hierarchy and Application in New Zealand of Environmental Guideline Values is used to derive a threshold value.

The NES permits and controls certain activities on land affected or potentially affected by soil contaminants, including:

a) *"permitted activity status for subsurface investigations of land to determine the presence, extent and nature of any contamination*

b) *soil guideline values (SGVs) that define the concentrations at which the risk to human health is considered acceptable*

c) *permitted activity status for the use, development or subdivision of land where the risk to human health from soil contaminants is assessed as being acceptable for the intended land use*

d) *a restricted discretionary activity status for any use, development or subdivision of land where the risk to human health from soil contaminants is assessed as not being acceptable for the intended land use*

e) *a restricted discretionary activity status for any use, development or subdivision of land where there is insufficient information to confirm whether the risk to human health from soil contaminants is acceptable or not."*

Golder Associates

TITLE SAMPLE LOCATION PLAN

SEPTEMBER 2013

PROJECT 1278103872_007

3

S:\Graphics\Projects-numbered\2012\12781x\03xxx\1278103_872_RDHughesDev_Farington\Aug13

5.2 Assessment Criteria

One of the objectives of the DSI is to assess whether any contaminants present in site soils pose a potential risk to the environment or future site users. With respect to future site users, criteria for a residential land use with 10% produce uptake have been selected in accordance with the NES (2011).

Environment Canterbury's online GIS system (http://canterburymaps.co.nz) was used to identify the soil group for the site as 'Lismore stony silty loam'. The soil analysis results were compared to background concentrations developed by ECan. The background concentrations for a 'brown granular loam' soil type were adopted as they represent the closest match to site conditions.

6.0 FIELD INVESTIGATION RESULTS

6.1 Methodology

A total of 18 soil samples plus two duplicate samples were collected across the site. The sampling locations were excavated using a shovel to approximately 0.2m bgl. The ground conditions encountered during the sampling generally consisted of brown silt with minor rounded to subrounded gravel and rootlets to 0.2m bgl. There were no olfactory or visible indicators for contamination in any of the shallow excavations across the site.

Six soil samples and one duplicate sample from the lucerne field were analysed for arsenic, copper, lead, OCP, and ONOP pesticides. Three soil samples and one duplicate sample from around the former observatory were analysed for lead. Sample DUP-1 is a duplicate of Faringdon 6 0.05 - 0.1m', and DUP-2 a duplicate of 'Observatory 0.05-0.1m. The remaining samples were placed on hold at the laboratory.

6.2 Analysis Results

The analytical results from the soil sampling are summarised in Table 2. Analytes are only shown where the concentration in at least one sample exceeded the laboratory method detection limit. The complete results are presented in Appendix D.

The analytical results can be summarised as follows:

- The concentrations of arsenic, copper and lead in all samples analysed from the lucerne field were above the detection limit but below the NES SCS for protection of human health for residential land use.
- The concentrations of arsenic, copper and lead in all samples analysed from the lucerne field were below the adopted Environment Canterbury background soil concentrations.
- The concentrations of OCP (including DDT) and ONOP pesticides in all samples analysed from the lucerne field were below the laboratory limit of detection.
- The concentration of lead in all samples analysed from the area surrounding the former observatory was above the laboratory detection limit but below the NES SCS for residential land use.
- The concentration of lead in the samples from the area surrounding the former observatory was above the adopted Environment Canterbury background soil concentration.
- No potential ACM was observed during the site work.

Table 2: Summary of sample analysis results

Analyte (mg/kg)	Lucerne Field[1]						Former Observatory			NES[2] Residential 10 % Produce	ECan[3] Background Soils
	1	2	3	4	5	6	1	2	3		
Arsenic	3	3	3	3	3	3				20	6.5
Copper	4	3	4	3	4	3				>10,000	37.1
Lead	16.1	14.9	14.9	13.4	15.3	14.2	36	25	51	210	19.3
DDT	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	240	

Notes: [1]Soil samples reported in the laboratory analysis certificates as 'Faringdon'. [2]NES 2011. Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations. [3]ECan 2007. Background Concentrations of Selected Trace Elements in Canterbury Addendum 1.

6.3 Quality Assurance and Quality Control

Soil samples were collected from each location using a trowel, the trowel was washed in a solution of Decon 90 and water between sample locations. All samples were handled using clean disposable nitrile gloves.

Soil samples collected from the site were placed in a chilly bin and dispatched under chain of custody conditions to Hill Laboratories in Hamilton.

The two field duplicate samples collected from the site (i.e., DUP-1 a duplicate of 'Faringdon 6 0.05 - 0.1m', and DUP-2 a duplicate of 'Observatory 0.05-0.1m') generally showed good reproducibility (Relative Percentage Differences (RPDs) <19 %). Table 3 shows the RPDs for analytes detected above the limit of detection.

Table 3: Relative Percentage Differences

Contaminants	Faringdon 6 (mg/kg)	Duplicate 1 (mg/kg)	RPD (%)	Observatory 1 (mg/kg)	Duplicate 2 (mg/kg)	RPD (%)
Arsenic	3	3	0			
Copper	3	4	18.1			
Lead	14.2	15	3.6	14.2	15	3.8

7.0 DISCUSSION AND CONCLUSION

The DSI was designed to:

- Determine whether site soils are suitable for the proposed residential land use.
- Determine whether site soils posed an environmental (discharge of contaminants) risk during site development.
- Determine the requirement for remediation works and / or site management protocols to be implemented during the site development works.

As documented in Section 6.2, the analysis of selected soil samples for contaminants of concern returned concentrations of metals / metalloids, OCP and ONOP pesticides at concentrations below the SCS for the protection of human health at residential sites. No potential ACM was identified in the soils immediately surrounding the footprint of the former observatory.

Therefore, with respect to regulation 9(3) of the NES, the development of the site for residential land use requires consent as a controlled activity. Golder recommends a copy of this report is presented to Selwyn District Council in order to comply with regulation 9(3) of the NES.

8.0 REFERENCES

Forsyth PJ, Barrell DJA, Jongens R (compilers) 2008. Geology of the Christchurch Area. 1:250,000 scale. Institute of Geological and Nuclear Sciences, Geological Map 16.

Golder 2012. Preliminary Site investigation, Faringdon Development, Rolleston, Canterbury.

Golder 2013. Offal Pit Management Plan, Faringdon Development, Rolleston, Canterbury.

ECan 2007. Background Concentrations of Selected Trace Elements in Canterbury, Addendum 1. Canterbury Regional Council. New Zealand.

MfE 2011a. Hazardous Activities and Industries List (HAIL). Ministry for the Environment, Wellington.

MfE 2011b. Contaminated Land Management Guideline No. 2: Hierarchy and Application in New Zealand of Environmental Guideline Values. Ministry for the Environment, Wellington. Revised 2011.

MfE 2012. Users' Guide: National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment. April 2012.

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

APPENDIX A

Report Limitations

LIMITATIONS

This Document has been provided by Golder Associates (NZ) Ltd ("Golder") subject to the following limitations:

(i). This Document has been prepared for the particular purpose outlined in Golder's proposal and no responsibility is accepted for the use of this Document, in whole or in part, in other contexts or for any other purpose.

(ii). The scope and the period of Golder's Services are as described in Golder's proposal, and are subject to restrictions and limitations. Golder did not perform a complete assessment of all possible conditions or circumstances that may exist at the site referenced in the Document. If a service is not expressly indicated, do not assume it has been provided. If a matter is not addressed, do not assume that any determination has been made by Golder in regards to it.

(iii). Conditions may exist which were undetectable given the limited nature of the enquiry Golder was retained to undertake with respect to the site. Variations in conditions may occur between investigatory locations, and there may be special conditions pertaining to the site which have not been revealed by the investigation and which have not therefore been taken into account in the Document. Accordingly, additional studies and actions may be required.

(iv). In addition, it is recognised that the passage of time affects the information and assessment provided in this Document. Golder's opinions are based upon information that existed at the time of the production of the Document. It is understood that the Services provided allowed Golder to form no more than an opinion of the actual conditions of the site at the time the site was visited and cannot be used to assess the effect of any subsequent changes in the quality of the site, or its surroundings, or any laws or regulations.

(v). Any assessments, designs, and advice in this Document are based on the conditions indicated from published sources and the investigation described. No warranty is included, either express or implied, that the actual conditions will conform exactly to the assessments contained in this Document.

(vi). Where data supplied by the client or other external sources, including previous site investigation data, have been used, it has been assumed that the information is correct unless otherwise stated. No responsibility is accepted by Golder for incomplete or inaccurate data supplied by others.

(vii). The Client acknowledges that Golder may have retained subconsultants affiliated with Golder to provide Services for the benefit of Golder. Golder will be fully responsible to the Client for the Services and work done by all of its subconsultants and subcontractors. The Client agrees that it will only assert claims against and seek to recover losses, damages or other liabilities from Golder and not Golder's affiliated companies. To the maximum extent allowed by law, the Client acknowledges and agrees it will not have any legal recourse, and waives any expense, loss, claim, demand, or cause of action, against Golder's affiliated companies, and their employees, officers and directors.

(viii). This Document is provided for sole use by the Client and is confidential to it and its professional advisers. No responsibility whatsoever for the contents of this Document will be accepted to any person other than the Client. Any use which a third party makes of this Document, or any reliance on or decisions to be made based on it, is the responsibility of such third parties. Golder accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this Document.

APPENDIX B

Preliminary Site Investigation

October 2012

FARINGDON DEVELOPMENT

Preliminary Site Investigation, Faringdon Development, Rolleston, Canterbury

Submitted to:
RD Hughes Developments
8 Millbank Lane
Merivale, Christchurch 8014,
New Zealand

Report Number. **1278103872_002_R**_Rev0

Distribution:

RD Hughes Developments
Golder Associates (NZ) Limited

REPORT

Golder Associates

Summary

This report presents the results of a Preliminary Site Investigation (PSI) undertaken by Golder Associates (NZ) Limited (Golder) at the proposed RD Hughes Developments Limited (RDH) Faringdon subdivision, located in Rolleston, Canterbury. The proposed subdivision is approximately 70 hectares and generally comprises agricultural land. RDH has divided the subdivision into ten stages referred to as Stage 1- 9 and the Foster Lot. Stages 1 -9 of the redevelopment will comprise new residential lots ranging from 400m^2 to 982m^2, the Foster Lot is to be retained by the current land owners for private use.

The Ministry for the Environment (MfE) National Environmental Standards for Assessing and Managing Contaminants in Soil to Protect Human Health (i.e., the NES) took effect on 1 January 2012. The regulation users' guide states that changing land use is a permitted activity where it can be demonstrated that it is highly unlikely that there will be a risk to human health from the intended land use. In order to assess the potential risk to human health from the intended land use change, the regulations require that a PSI report is produced.

With respect to the NES, this PSI was required to support the application for rezoning and subdivision for Stage 2 – 9, and to assess the viability of the site from a contaminated land perspective, for the proposed residential development. Stage 1 was rezoned and subdivided prior to the NES coming into effect, and a PSI was originally not thought to have been required, RDH therefore started the redevelopment of Stage 1. However, RDH were subsequently informed by Selwyn District Council (SDC) that a building consent could only be issued for Stage 1 once a PSI has been completed.

This PSI included a desk top study of historic aerial photographs, a review of certificates of title, Canterbury Regional Council (CRC) information for the site, and the property files held by SDC. A site walk over and interview were also undertaken to supplement the desk top study.

Stages 1 to 9 is approximately 70 hectares and comprises the following seven lots: Lot 1 DP 8833, Lot 1 DP 372247, Lot 2 DP 372247, Lot 3 DP 372247, Lot 4 DP 372247, RS 12514 and RS 15710. A review of available information suggests that historically, site use was dominated by sheep grazing. The following list summarises the findings of the PSI:

- Stages 1, 2, 5, 7 and 8 - No areas or contaminants of environmental concern were identified within these stages of the development.
- Stage 3 - There is considered to be a **low** level of risk associated with the storage of vintage vehicles towards the centre of the northern stage boundary. There is considered to be a **medium** level of risk associated with the use of a mobile sheep dip in the vicinity of the sheep pens located in the north-eastern corner of the stage.
- Stage 4 – There is considered to be a **low** risk of residual agricultural chemicals being present in surface soils in the north of the stage associated with the intermittent use of pesticides on lucerne and barley. There is considered to be a **low** risk of biological contaminants associated with offal pit situated in the centre of the site.
- Stage 6 – **Low** risk of biological contaminants associated with offal pit situated in the south of the stage.
- Stage 9 - **Low** risk of biological contaminants associated with offal pit situated in the south of the stage and **low** risk of lead contamination surrounding the observatory in the south west.

The proposed subdivision and the identification of potential areas of environmental concern at the site triggers the application of the NES and indicates that a resource consent is likely to be required from the SDC. A detailed site investigation for Stages 3, 4, and 9 is required to determine whether site soils are suitable for the proposed end use or whether remediation or management is required. The status of the

consent application (i.e., whether controlled, restricted discretionary or discretionary) will be dependent upon the outcome of the detailed site investigation.

There is believed to be three small offal pits located on the site. These pits represent a low risk and should be removed and disposed of to a registered landfill facility if encountered during redevelopment earthworks. To ensure discharges to the environment are minimised and human health is protected, it is recommended that this work be undertaken in accordance with a site specific management plan.

Table of Contents

TABLES

FIGURES

APPENDICES

1.0 INTRODUCTION

1.1 Overview

RD Hughes Development Limited (RDH) is in the process of obtaining relevant resource consents associated with the proposed rezoning and subdivision of land located at Goulds Road and Dynes Road in Rolleston Canterbury. The proposed residential subdivision is approximately 70 hectares, and currently comprises pastoral agricultural land. RDH have divided the subdivision into ten stages, i.e., Stage 1- 9 and the Foster stage. Stages 1 – 9 will be redeveloped into residential lots ranging from 400m^2 to 982m^2, the Foster lot will remain with the current land owners (David and Annett Foster) and will not be redeveloped.

The Ministry for the Environment (MfE) National Environmental Standards for Assessing and Managing Contaminants in Soil to Protect Human Health (i.e., the NES) took effect on 1 January 2012. The regulation users' guide states that changing land use is a permitted activity where it can be demonstrated that it is highly unlikely that there will be a risk to human health from the intended land use. In order to assess the potential risk to human health from the intended land use change, the regulations require that a PSI report is produced.

Stage 1 was rezoned and subdivided prior to the NES coming into effect, and a PSI was originally not thought to have been required by Selwyn District Council (SDC). RDH therefore initiated the redevelopment of Stage 1 and earthworking has commenced. However, RDH were later informed by SDC that although the area had been rezoned and subdivided, building consent could only be issued for Stage 1 once a PSI have been completed and signed off by the council.

RDH commissioned Golder Associates (NZ) Limited (Golder) to complete a PSI to support the application for rezoning and subdivision for Stages 1-9, and to assess the viability of the site from a contaminated land perspective, for the proposed residential development. The redevelopment plan provided by RDH and presented in Figure 1, illustrates the stages.

1.2 Purpose

The aim of the PSI was to identify potential areas of contamination and contaminants of concern that may have resulted from historical and current land use activities, and to qualitatively define the Stages into areas of low, medium and high risk. The identified areas of risk would then be assigned a qualitative risk rating, being dependent on the potential for adverse effects on human health and/or the environment. Those areas identified as being medium - high risk would then be targeted in a subsequent field and laboratory based investigation (detailed site investigation).

The purpose of this report[1] is to document the findings of the desk top study completed for Stages 1 - 9. This report represents a PSI report prepared in accordance with the NES, and the MfE (2011a) Contaminated Land Management Guideline No. 1: Reporting on Contaminated Sites in New Zealand.

[1] This report is subject to the limitations in Appendix A.

1. BASE IMAGE: Davie Lovell Smith, Christchurch
2. DRAWN BY:SG REVIEWED BY: VG

Golder Associates

TITLE | OUTLINE DEVELOPMENT PLAN

OCTOBER 2012

PROJECT | 1278103872_000

1

S:\Graphics\Projects-numbered\2012\12781x\03xxx\1278103_872_RDHughesDev_Farington\Oct12

1.3 Scope of Works

The following scope of works were undertaken to achieve the above objective:

- Site walk over.
- Interviews with the current or previous owners/occupiers, where available.
- Review of available historical aerial photographs.
- Review of SDC and Canterbury Regional Council (CRC) property files.
- Review of Certificate of Titles.
- Review of site layout and drainage plans.
- Review of local geology and hydrogeology.
- Qualitative risk assessment and, where necessary, provision of recommendations for further work.
- Reporting.

2.0 SITE DESCRIPTION

2.1 Site Location and Layout

2.1.1 Overview

The site comprises seven lots (Figure 2) including: Lot 1 DP 8833, Lot 1 DP 372247 Lot 2 DP 372247, Lot 3 DP 372247, Lot 4 DP 372247, RS 12514 and RS 15710. All seven lots are privately owned by Mr and Mrs D. Foster.

The site is undergoing development in stages, as follows

- Stage 1 development is currently underway.
- Stage 2 is proposed for completion within the next three years.
- Stage 3 is proposed for completion within the next three years.
- Stages 4 to 9 are proposed for development within the next 10-15 years.
- Foster Lot – The balance of the land 'Foster Lot' is land retained by the Foster family for private use. This land covers an area of approximately 3 Ha and is formed from land within RS12514. As the Foster Lot will not form part of the proposed development, the investigation of this area is not a requirement of this PSI; i.e., it meets existing use rights under the NES.

The layout and activities undertaken on each stage of the development are described in the following sections, with a detailed site layout presented on Figure 2.

The descriptions provided in the following sections are based on a site walk over completed by an environmental scientist from Golder on 2 October 2012. Relevant photographs are provided in Appendix B.

2.1.2 Certificate of Titles

A review of the certificates of titles indicates that RDH are the proprietors of Stage 1. The remaining land is in the titles of Foster Holdings Limited or David Foster and Annette Foster (Appendix C). Although historical records of certificates of titles were requested only current certificates were provided.

2.1.3 Stage 1

- Stage 1 covers an area of 15 Ha and comprises land within Lot 1 DP 883 and Lot 4 DP372247.
- The section is bounded by Dynes Road to the north, pastoral agricultural land to the east, south and west and Goulds Road to the north-west.
- The land is predominantly flat.
- The property is currently under redevelopment after being granted consent for rezoning and subdivision prior to the NES becoming effective in 2012. At the time of this report the redevelopment works have comprised of the removal of topsoil from Stage 1 and the excavation of a sub-division sewer drainage system.
- No hazardous substances or dangerous goods are currently stored or used on the property.
- The property previously had a water race running through it, however, this has been temporarily redirected during the redevelopment stages of the project. An open surface water channel runs parallel with Goulds Road in the north-west of the site.

2.1.4 Stage 2

- Stage 2 covers an area of 6 Ha and comprises land within Lot 1 DP 883, Lot 3 DP372247 and Lot 4 DP372247.
- The stage is bounded by Goulds Road to the north-west, Stage 1 redevelopment to the north and to the east and pastoral agricultural land to the south and west.
- The stage currently comprised grassed land.
- No hazardous substances or dangerous goods are currently stored or used on the property.

2.1.5 Stage 3

- The stage covers an area of 7 Ha and comprises land within Lot 1 DP 883 and RS12514.
- The stage is bounded with Dynes Road to the north, the Foster lot to the east and pastoral agricultural land to the south and west.
- The property contains an old corrugated barn in the north adjacent to Dynes Road. A number (approximately 9) of dilapidated vintage vehicles have been left within and surrounding the barn. The barn is exposed to the north and the east and the floor of the barn is natural ground (grassed soil). Four historic sheep pens are located in the north-eastern corner of the stage, adjacent to Dynes Road; the pens are overgrown with grass.
- The southern part of Stage 3 site is currently pastoral agricultural land.

2.1.6 Stages 4 – 9

- The combined size of Stages 4 - 9 is approximately 52 Ha and comprises land within all seven Lots (i.e., Lot 1 DP 8833, Lot 1 DP 372247 Lot 2 DP 372247, Lot 3 DP 372247, Lot 4 DP 372247, RS 12514 and RS 15710).
- The stages are bounded by Stages 1 – 3, agricultural land to the north east, south and west.
- A remnant footpad of an observatory tower and a borehole are located in the south west corner of Stage 9.
- Lucerne is currently grown in the northern field of Stage 4, the remaining fields are used as pastoral agricultural land.

1. AERIAL IMAGE: Google Earth, 15.2.2011
2. MAP IMAGE: Memory Map, Copyright Reserved
3. DRAWN BY: SG REVIEWED BY: VC

Golder Associates

TITLE SITE LOCATION PLAN

OCTOBER 2012

PROJECT 1278103872_000

2

S:\Graphics\Projects-numbered\2012\12781x\03xxx\1278103_872_RDHughesDev_Farington\Oct12

2.2 Surrounding Land Use

The subject site is zoned “LZ” - Living Z under the SDC District Plan (June 2008).

CRC have one property within the vicinity of the site which has been registered on its Listed Land Use Register (LLUR). The property is located at 54 Dynes Road. CRC Land Information Report (LIR) (dated 28 September 2012) indicates that:

- The adjacent property at 54 Dynes Road, Rolleston (to the north of the site) has been verified on the Hazard Activities and Industries List (HAIL), due to the presence of an Underground Storage Tank (UST). The site was partly investigated by Tonkin and Taylor (T&T); the UST was removed in 2005 and used as an Aboveground Storage Tank (AST).

  SDC engaged T&T to undertake a PSI and intrusive sampling investigation at 54 Dynes Road for a proposed recreational development. The PSI identified the historical use of pesticides, a stockpile of uncharacterised soil from off site and the removal of a UST as potential areas of concern. The soil sampling identified that soils associated with the potential areas of concern ‘were compliant with guideline criteria protective of residential, recreational and industrial/commercial land use’ (LLUR). The site has been registered as ‘partially investigated’ on the LLUR register, as further sampling of the former tank location is required, and analysis is required to confirm the presence of lead based paint associated with an old dwelling on site.

The potentially contaminating activities undertaken at 54 Dynes Road is considered unlikely to impact the subject site as the activities were generally of a small scale and limited intrusive works completed to date have reportedly identified contaminants of concern within acceptable levels.

The Foster lot located between Stages 3 and 4 currently contains two above ground storages tanks, one is redundant the other is active. The active AST is approximately 3,000 – 4,000 litres containing petrol and is used for various vehicles and machines associated with the farm. Although not entered on the Listed Land Use Register (LLUR) the storage of hazardous chemicals in tanks and drums on the Foster lot is considered to be a HAIL activity. There is no record of spills or leaks, however the original AST caught fire in December 2010 and was replaced with a modern AST. The severity of fire would likely have resulted in the majority of the fuel being burnt off. The original tank location was approximately 50 meters from the west boundary of Stage 4. Due to the fire and the relatively flat topography it is unlikely that significant hydrocarbon contamination from the AST is present within the area of the proposed redevelopment.

Surrounding land use to the north, east, south and west consists of agricultural land and low density residential dwellings.

2.3 Geology, Hydrogeology and Hydrology

Rolleston geology is dominated by brownish grey river alluvium (Forsyth, Barrell and Jongens, 2008). Based on a review of the bore log for well M36/1849 located north of the site at 54 Dynes Road, the strata generally comprises gravels in a sand clay matrix to a depth of at least 49 m below ground level.

Regionally, groundwater flow is in a south-easterly direction toward the Pacific Ocean (CRC GIS database). The only active/existing wells in the vicinity of the site are M36/1849 located in the north of the site at 54 Dynes Road, and M36/8312 located in the south west of Stage 9. Both of these wells are used for irrigation purposes.

The closest surface water feature to the site is a water race running north to south through Stage 1 down through Stage 6.

3.0 DESK TOP INVESTIGATION

3.1 Overview

A desk top study was undertaken to identify and characterise the nature and location of potentially contaminating activities that may have been historically performed on the site and to identify potential contaminants of concern. Sections 3.2 through 3.4 summarise the historical information.

3.2 Aerial Photograph Review

A selection of historic aerial photographs of the site were reviewed to identify changes in land use activities on the site and potential areas of environmental concern; photographs have been reproduced in Appendix D.

Aerial photographs of the subject site taken during the following years were examined as part of the desktop study:

- 1961, 1974, 1984 and 1994 (NZ Aerial Mapping Limited, 2012).
- 2009, 2010 and 2011 (Google Earth, 2012).

Our salient findings of the historical aerial photograph review are summarised in Table 1.

Table 1: Summary of aerial photographs.

Photograph	Observations
9 October 1961 Black and white	The site appears to be grassed farmland divided into seven fields. Surrounding areas all appear to be grassed farmland with a residential dwelling situated to north and west of the site. To the south-east, south-west and north-west grassed farmland is evident. A small area of vegetation is located in the south east of Lot 1 DP8833 (Refer to photograph 1, Appendix D).
19 April 1974 Black and white	The site is similar to 1961 (i.e. only minor changes). A small barn is visible, in between some large trees, to the north of the site (in proposed Stage 3). A number of small residential dwellings are evident to the east of the site. The small area of vegetation located in the south east of Lot 1 DP8833 has been cleared (Refer to photograph 2, Appendix D).
28 September 1984 Black and white	The site and surrounds are similar to 1974 (i.e. only minor changes). An additional small barn is visible, in the north of the site in proposed Stage 3 (Refer to photograph 3, Appendix D).
26 November 1994 Black and white	The site and surrounds are similar to 1984 (i.e. only minor changes) (Refer to photograph 4, Appendix D).
13 July 2009 Google Earth, colour	The site is similar to 1984 (i.e. only minor changes). Increased residential properties are evident to the north-west of the site (Refer to photograph 5, Appendix D).
3 August 2010 Google Earth, colour	The site and surrounds are similar (i.e., minor changes only) to 2009 (Refer to photograph 6, Appendix D).
28 March 2011 Google Earth, colour	The site and surrounds are similar (i.e., minor changes only) to 2010 (Refer to photograph 7, Appendix D).

3.3 Anecdotal Information

The site has been owned by the Foster family since 1937, Annette Foster was available for interview, and provided the following salient information:

- In 1937 John Foster purchased the site, and additional farmland totalling 200 Ha. The site was covered with gorse and broom, small scale sheep grazing was undertaken on available land. The gorse and broom was initially cleared using a horse towed swamp plough, and in the later years using a tractor towing discs.
- In 1955 Ilam University invested in an Observatory for research purposes, the tower was located in the south west of the site (Stage 9). The Observatory was removed and relocated to Mt John in the late 1960's.. The Observatory was constructed of a concrete footpad with weatherboard walls and a tin roof. The remnants of the concrete footpad are still visible in Stage 9 of the site.
- The land was typically used for pastoral sheep farming, and in 1968 John Foster died and his son (David Foster) worked on the farm on behalf of the Estate. In 1975 David and Annette Foster purchased the farm from the Estate and increased the sheep farming numbers across the site. Barley and Lucerne were produced and harvested in the north of the Stage 4. Annette Foster made the comment that little to no pesticides were used and only in the area in the north of stage 4. Insecticides were generally not used on the site, although insecticides were used on Stage 4 to target aphids.
- David Foster established an agricultural spraying business in the early 1970s which closed by 1980. David bought in small containers of herbicide which he stored in the area now known as the Foster Lot. Only small quantities (one barrel) were brought in at a time due to the cost of buying the herbicide. The herbicides were reportedly not used, repackaged or mixed on Stages 1 to 9. No gorse or broom was sprayed on site.
- The farms main income was through sheep farming. A mobile sheep dipping contractor was brought onsite to treat the sheep until the early 1990's when the sheep were taken offsite to be treated. Sheep dipping occurred on the area now known as the Foster lot where a mobile sheep dip was set up. The sheep were held overnight post dipping in a paddock on the Foster lot. Land of Stages 4-9 is leased out to a local farmer, who grazes cattle across the site. The north of Stage 4 has Lucerne growing on it and is believed to be sporadically treated with a pesticide which targets aphids.
- A UST was removed from 54 Dynes Road and was stored as an AST on the Foster Lot. On 23 December 2010 a tree fell and struck the power lines running parallel with Dynes Road, which caused a fire that spread to the AST on the Foster Lot. The fire was eventually controlled by fire crews and helicopters. The AST was replaced with a modern AST which is still on the property. The fire was contained within the footprint of the Foster Lot and to the area north of Dynes Road.

3.4 Property Files

3.4.1 Canterbury Regional Council (CRC)

A land information request (including data on consents and compliance) was made to CRC to determine whether the site/s are listed on the Listed Land Use Register (LLUR).. This information was received in a Land Information Report (dated 28 September 2012) from which salient information is summarised below. The report has been reproduced in Appendix E.

- According to the records held by CRC no current resources consents have been issued for the site. However, RDH have applied for stormwater discharge consent (CRC130003) for Stage 1 of the development.
- RDH were granted a Certificate of Compliance to discharge residential stormwater to land (CRC130004), issued 26 July 2012.
- 57 Dynes Road was granted Permitted Activity Confirmation to discharge domestic waste water into land. However, this activity is associated with the Foster Lot area and is not associated with the proposed subdivision.

- Two historic land use consents were granted for the installation and alteration of two separate bores. Both consents have since lapsed.

The site is not on CRC's LLUR.

3.4.2 Selwyn District Council (SDC)

The property files held by SDC were obtained and reviewed for salient information, however only a property file for Lot 4 DP372247 (containing parts of Stage1, 2, 6 and 7) was available for viewing. The property file contained the following:

- SDC application to erect a temporary marquee February 2006.
- Lot valuation numbers.

4.0 RISK ASSESSMENT

Based on a synthesis of the information obtained through a review of the CRC information, SDC property files, certificates of title, historical aerial photographs, interviews, and a site visit, a qualitative risk assessment was completed for the site.

The qualitative risk assessment was made with regard to the following assumptions:

- Appendix E of the NES users guide identifies the hazardous substances associated with various activities or land uses. The historical land use/activities and associated potential contaminants of concern are as follows:
  - Sheep pens: Although sheep dipping occurred on the Foster Lot, sheep were held in the holding pens to the north of Stage 3 following dipping. MfE Guidelines for former sheep dip sites identify the likely contaminants would consist of arsenic, organochlorines, organophosphates and synthetic pyrethroids.
  - The storage of vintage vehicles: Due to the age and condition of the vehicles stored on the site a number contaminants associated with vehicle maintenance are considered to be of potential concern (including hydrocarbons, and metals which may be contained in waste oils).
  - Offal pits: Elevated Nitrate concentrations and biological hazard's are associated with the decomposition of animal remains contained in offal pits.
  - Observatory tower: Lead-based paint residues may be present around the location of the observatory tower in Stage 9. Until 1965, many paints on the New Zealand market had high lead content. This was particularly true of pre-1945 paints (Resene 2012). The observatory tower was constructed during a period when asbestos containing material (ACM) was frequently used in buildings. Although asbestos containing materials were not believed to have been used and the observatory tower was relocated rather than demolished, it would be prudent to visually inspect surface soils around the Observatory tower foundations to identify whether any potential asbestos containing material is present in the soils.
  - Horticultural activities: In this case the growing of barley and Lucerne. Potential contaminants of concern in surface soil in this area of the site may include organonitrogen pesticides, organochlorine pesticides, copper, arsenic and lead.

The results of the risk assessment are presented below and highlighted in Figure 3.

Stage 1

- No areas with HAIL activities were identified in Stage 1.

Stage 2

- No areas with HAIL activities were identified in Stage 2.

Stage 3

- There is considered to be a **low** level of risk associated with potential hydrocarbon and mineral oil contamination associated with the maintenance and storage of the vintage cars.
  - Although there were no signs of petroleum hydrocarbon staining on the soils beneath any of the vintage vehicles, the soil maybe impacted with hydrocarbon or mineral oils from leaking parts of the vintage vehicles.
- There is considered to be a **medium** level residual contaminants associated with sheep dipping in the sheep pens in the north-east of Stage 3.
  - Small sheep pens are located to the north-east of Stage 3 adjacent to where historically the mobile sheep dipping occurred, on the Foster Lot. The soil within the pens maybe impacted by residual contaminants associated with sheep dipping.

Stage 4

- There is considered to be a **low** level of risk associated with the fungicide spraying of barley, and pesticide spraying of Lucerne in the north of Stage 4.
  - Given the area was intermittently used for growing barley and has more recently been used for and growing lucerne, and anecdotal evidence indicates that the area was not heavily treated with pesticides, the potential risk is considered likely to be low.
- There is considered to be a **low** risk associated with the presence of an offal pit in the centre of the site.
  - Anecdotal information indicates a small offal pit lies along a tree boundary in the centre of Stage 4.

Stage 5

- No areas with HAIL activities were identified in Stage 5.

Stage 6

- There is considered to be a **low** level of risk associated with the offal pit.
  - Anecdotal information indicates a small offal pit lies along the southern boundary of Stage 6.

Stage 7

- No areas with HAIL activities were identified in Stage 7.

Stage 8

- No areas with HAIL activities were identified in Stage 7.

Stage 9

- There is considered to be a **low** level of risk associated with a former observatory tower.
  - Lead-based paint residues may be present around the location of the observatory tower in Stage 9. The observatory tower was present between at least 1955 until the late 1960's when the observatory was removed off-site. Until 1965, many paints on the New Zealand market had high lead levels. (Resene, 2012)
  - Potential ACM may be present in the surface soils surrounding the building footprint as a result of damage to the structure during tower relocation.
- There is considered to be a **low** risk associated with the presence of an offal pit.
  - Anecdotal information indicates a small offal pit lies along the southern boundary of Stage 9.

1. AERIAL IMAGE: Google Earth, 15.2.2011
2. MAP IMAGE: Memory Map, Copyright Reserved
3. DRAWN BY: SG REVIEWED BY: VC

Golder Associates

TITLE | POTENTIAL AREAS OF CONCERN

OCTOBER 2012

PROJECT | 1278103872_000

3

S:\Graphics\Projects-numbered\2012\12781x\03xxx\1278103_872_RDHughesDev_Farington\Oct12

5.0 DISCUSSION

The NES came into effect on 1 January 2012. All territorial authorities (district and city councils) are required to give effect to and enforce the NES. The NES regulations apply where a proposal meets particular 'land' and 'activity' criteria. The proposed change in land use and subdivision is considered to trigger the application of the NES due to the following:

1) The activity is subdividing and changing the land; and

2) Some of the activities undertaken on some of the properties within the investigation area are those which have the potential to cause contamination and are classified on the MfE Hazardous Activities and Industries List (HAIL). These activities include (a) livestock dip or spray operations, (b) application of agrichemicals (c) car maintenance.

Under the NES, and regulation 8(4) the subdivision of land is a permitted activity where the following requirement is met *'(b) the report on the preliminary site investigation must state that it is highly unlikely that there will be risk to human health if the activity is done to the piece of land.'*

As summarised in Section 4.0, there are some historic and current activities which may have resulted in soil and or groundwater contamination in particular areas of the site. This contamination, if present, is considered to represent a low to medium risk to future residential users. As the requirement of regulation 8(4) is not met, the proposed subdivision triggers the need for a resource consent application. The status of the consent (whether controlled, restricted discretionary or discretionary) will be dependent on the outcome of a detailed site investigation.

A detailed site investigation, where the areas of concern in Section 4.0 of this report are investigated, is required to determine whether site soils are suitable for the proposed end use or whether remediation or management is required.

It is not proposed to assess the offal pits, but to manage them during earthworks under a site specific management plan.

6.0 SUMMARY AND CONCLUSIONS

Golder was engaged by RDH to undertake a PSI at the proposed subdivision located between Gould Road and Dynes Road, Rolleston, Canterbury. The purpose of the PSI was to assess the viability of the site, from a contaminated land perspective, for residential subdivision. The PSI was also required in support of the subdivision consent application.

The PSI included a desk top study of aerial photographs, a review of certificates of title, CRC information for the site and the property files held by SDC. A site walk over and an interview with current landowners was also undertaken to identify potential contaminants and areas of environmental concern.

The site investigation area comprises predominately agricultural land, and is approximately 70 Ha. The proposed residential subdivision comprises 9 Stages.

Based on the information presented in the PSI, the following is a list of potential areas of environmental concern at the site (Figure 3):

- Stage 3 – Land to the north of the stage where historical vehicles are stored may have contaminated soils associated with fuel or motor oil leaks. Soil with sheep pens situated in the north-east of the stage may have been impacted with sheep dipping/spraying chemicals.
- Stage 4 – The north field of the stage where lucerne is grown has undergone historic pesticide spraying. Barley (also previously grown in this field) has been subjected to some fungicide spraying. A small historic offal pit is located in the centre of the site.

- Stage 6 – A small historic offal pit is located along the southern boundary of the site.
- Stage 9 - A small historic offal pit is located along the southern boundary of the site. The concrete foundations of a former observatory are located in the south west of the site. This former structure may have been constructed with ACM and painted with lead-based paint

The presence of properties that have been used, or are currently used for activities which have the potential to cause contamination, and their subdivision, triggers the application of the NES. Under the NES, resource consent for certain stages of the subdivision may therefore be required from SDC. A detailed site investigation, where the above areas of concern (excluding the offal pits) are investigated, is required to determine whether soil in these areas is suitable for the proposed residential end use or whether management or remediation is required. The status of the resource consent application (i.e., whether controlled, restricted discretionary or discretionary) will also be based on the outcome of the detailed site investigation.

As discussed above, there is believed to be three small offal pits located on the site. These pits represent a low risk and should be removed and disposed of to a registered landfill facility if encountered during redevelopment earthworks. To ensure discharges to the environment are minimised and human health is protected, it is recommended that this work be undertaken in accordance with a site specific management plan.

7.0 RECOMMENDATIONS

A number of areas were identified as potential sources of soil contamination at the site. These areas were located on Stage 3, 4, and 9 (Faringdon subdivision). It is recommended that the areas of concern be targeted in an intrusive Detailed Site Investigation (DSI) to determine potential risks to future residential users and to the environment. A Site Management Plan should also be developed to ensure that offal pits are removed from site such that potential risks to human health and the environment are minimised.

Although the Foster Lot does not form a part of this investigation, it should be noted that due to the subdivision it is likely that this portion of the site will also require a PSI.

8.0 REFERENCES

Forsyth PJ, Barrell DJA, Jongens R (compilers) 2008. Geology of the Christchurch Area. 1:250,000 scale. Institute of Geological and Nuclear Sciences, Geological Map 16.

Google Earth August 2012.

MfE 2011. Contaminated Land Management Guidelines No. 1 – Reporting on Contaminated Sites in New Zealand. Ministry for the Environment, Wellington, New Zealand.

MfE 2012. Users' Guide: National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment. April 2012.

Resene 2012. http://www.resene.co.nz/comn/safety/lead.htm.

APPENDIX A

Report Limitations

LIMITATIONS

This Document has been provided by Golder Associates (NZ) Ltd ("Golder") subject to the following limitations:

(i). This Document has been prepared for the particular purpose outlined in Golder's proposal and no responsibility is accepted for the use of this Document, in whole or in part, in other contexts or for any other purpose.

(ii). The scope and the period of Golder's Services are as described in Golder's proposal, and are subject to restrictions and limitations. Golder did not perform a complete assessment of all possible conditions or circumstances that may exist at the site referenced in the Document. If a service is not expressly indicated, do not assume it has been provided. If a matter is not addressed, do not assume that any determination has been made by Golder in regards to it.

(iii). Conditions may exist which were undetectable given the limited nature of the enquiry Golder was retained to undertake with respect to the site. Variations in conditions may occur between investigatory locations, and there may be special conditions pertaining to the site which have not been revealed by the investigation and which have not therefore been taken into account in the Document. Accordingly, additional studies and actions may be required.

(iv). In addition, it is recognised that the passage of time affects the information and assessment provided in this Document. Golder's opinions are based upon information that existed at the time of the production of the Document. It is understood that the Services provided allowed Golder to form no more than an opinion of the actual conditions of the site at the time the site was visited and cannot be used to assess the effect of any subsequent changes in the quality of the site, or its surroundings, or any laws or regulations.

(v). Any assessments, designs, and advice in this Document are based on the conditions indicated from published sources and the investigation described. No warranty is included, either express or implied, that the actual conditions will conform exactly to the assessments contained in this Document.

(vi). Where data supplied by the client or other external sources, including previous site investigation data, have been used, it has been assumed that the information is correct unless otherwise stated. No responsibility is accepted by Golder for incomplete or inaccurate data supplied by others.

(vii). The Client acknowledges that Golder may have retained subconsultants affiliated with Golder to provide Services for the benefit of Golder. Golder will be fully responsible to the Client for the Services and work done by all of its subconsultants and subcontractors. The Client agrees that it will only assert claims against and seek to recover losses, damages or other liabilities from Golder and not Golder's affiliated companies. To the maximum extent allowed by law, the Client acknowledges and agrees it will not have any legal recourse, and waives any expense, loss, claim, demand, or cause of action, against Golder's affiliated companies, and their employees, officers and directors.

(viii). This Document is provided for sole use by the Client and is confidential to it and its professional advisers. No responsibility whatsoever for the contents of this Document will be accepted to any person other than the Client. Any use which a third party makes of this Document, or any reliance on or decisions to be made based on it, is the responsibility of such third parties. Golder accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this Document.

APPENDIX B

Site Photographs

Photograph 1 – Sheep pens in the north of Stage 3.

Photograph 2 – Vintage vehicles stored in the hay barn in the north of Stage 3.

Photograph 3 – Vintage vehicles store in the north of Stage 3

Photograph 4 – Lucerne field in the north of Stage 4.

Photograph 5 – Footings from observatory in Stage 9.

APPENDIX C

Certificates of Title

COMPUTER FREEHOLD REGISTER
UNDER LAND TRANSFER ACT 1952

Search Copy

R.W. Muir
Registrar-General
of Land

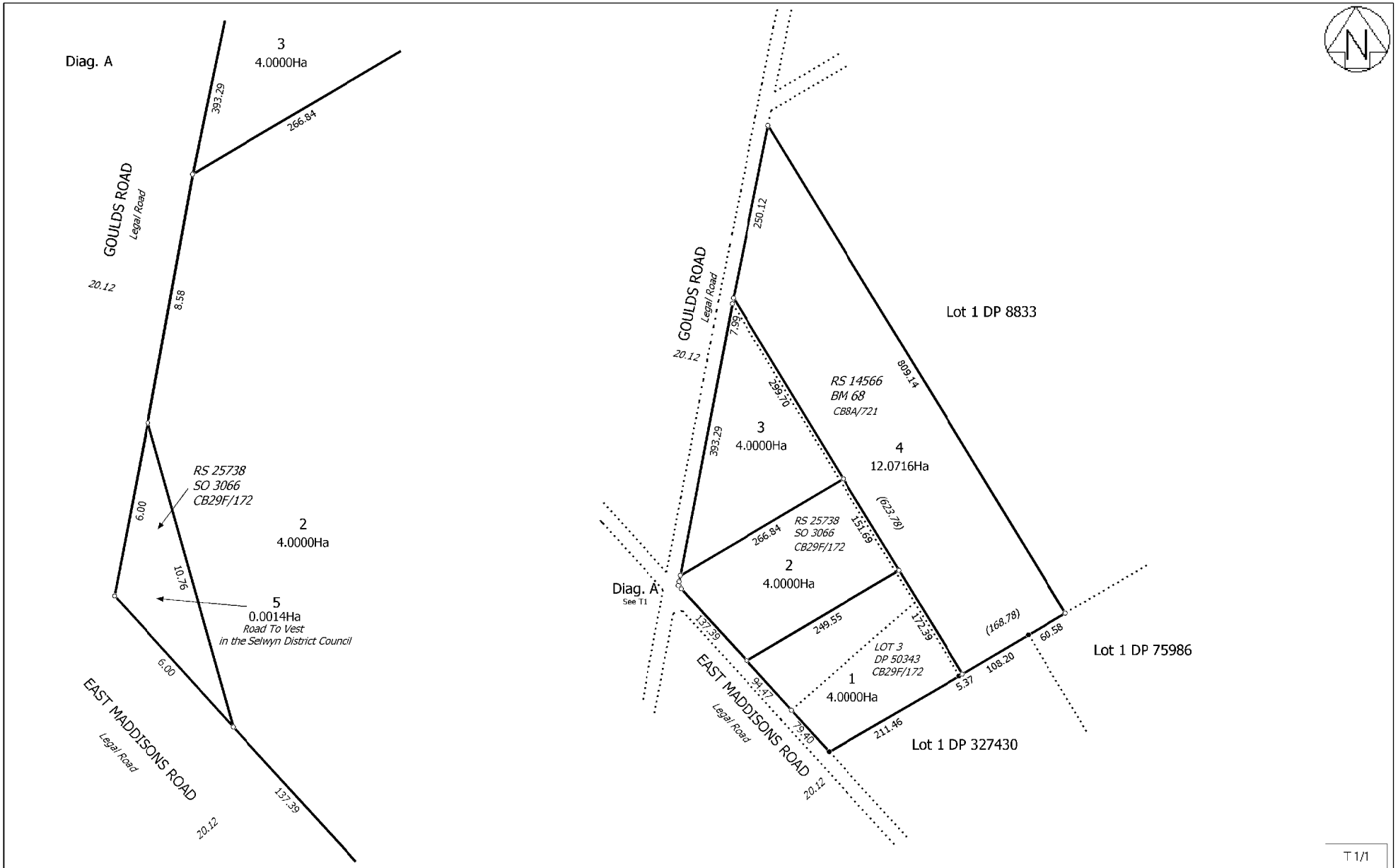
Identifier	**298232**
Land Registration District	**Canterbury**
Date Issued	02 August 2006

Prior References
CB29F/172 CB8A/721

Estate	Fee Simple
Area	4.0000 hectares more or less
Legal Description	Lot 2 Deposited Plan 372247

Proprietors
Foster Holdings Limited

Interests



Land District: Canterbury Digitally Generated Plan Generated on: 16/08/2006 10:41am Page 2 of 2	LOTS 1 - 5 BEING SUBDIVISION OF LOT 3 DP 50343, RS 25738 & RS 14566	Surveyor: Tania Rochelle Foster Firm: Middleton Williams & Co	Digital Title Plan DP 372247 Deposited on: 31/07/2006

COMPUTER FREEHOLD REGISTER
UNDER LAND TRANSFER ACT 1952

Search Copy

R.W. Muir
Registrar-General
of Land

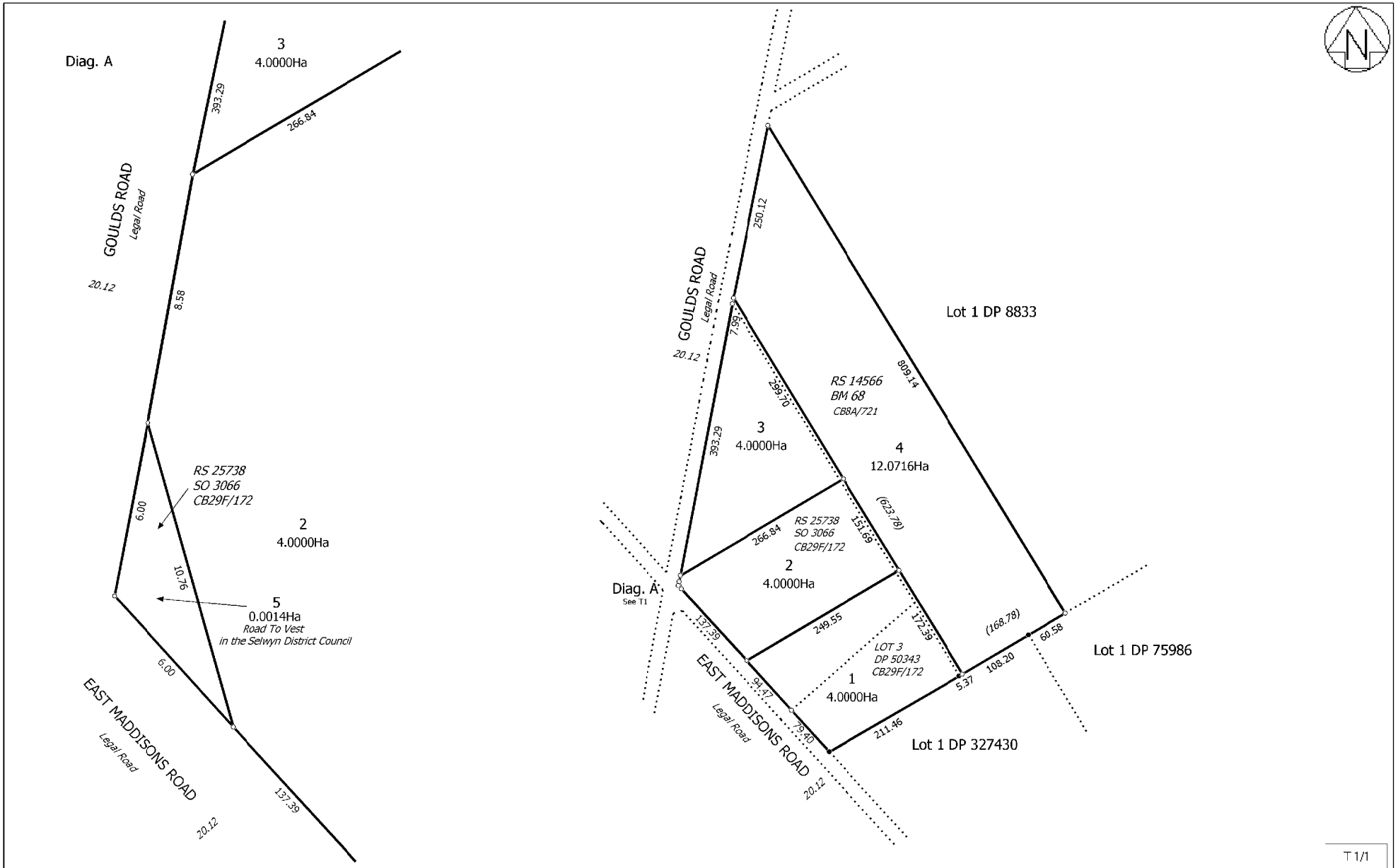
Identifier	**298231**
Land Registration District	**Canterbury**
Date Issued	02 August 2006

Prior References
CB29F/172 CB8A/721

Estate	Fee Simple
Area	4.0000 hectares more or less
Legal Description	Lot 1 Deposited Plan 372247

Proprietors
David John Foster as to a 1/2 share
Annette Pamela Foster as to a 1/2 share

Interests



T 1/1

Land District: Canterbury Digitally Generated Plan Generated on: 16/08/2006 10:41am Page 2 of 2	LOTS 1 - 5 BEING SUBDIVISION OF LOT 3 DP 50343, RS 25738 & RS 14566	Surveyor: Tania Rochelle Foster Firm: Middleton Williams & Co	Digital Title Plan DP 372247 Deposited on: 31/07/2006

COMPUTER FREEHOLD REGISTER
UNDER LAND TRANSFER ACT 1952

Search Copy

R.W. Muir
Registrar-General
of Land

Identifier	**535726**
Land Registration District	**Canterbury**
Date Issued	01 October 2010

Prior References
CB10K/1098

Estate	Fee Simple
Area	21.4482 hectares more or less
Legal Description	Rural Section 12514 and Rural Section 15710

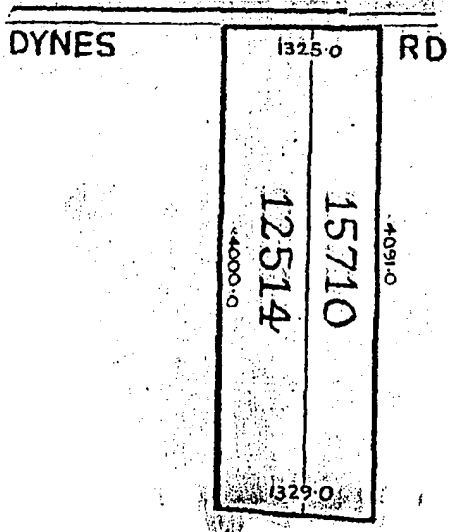
Proprietors
Foster Holdings Limited

Interests

Title Diagram 535726

Cpy – 01/01, Pgs – 001, 01/10/10, 13:54

DocID: 212679606



Area
21·4482ha

COMPUTER FREEHOLD REGISTER
UNDER LAND TRANSFER ACT 1952

Search Copy

R.W. Muir
Registrar-General
of Land

Identifier	**535726**
Land Registration District	**Canterbury**
Date Issued	01 October 2010

Prior References
CB10K/1098

Estate	Fee Simple
Area	21.4482 hectares more or less
Legal Description	Rural Section 12514 and Rural Section 15710

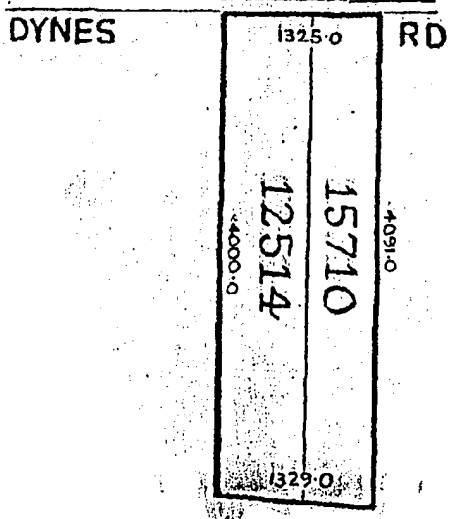
Proprietors
Foster Holdings Limited

Interests

Title Diagram 535726

Cpy – 01/01, Pgs – 001, 01/10/10, 13:54

DocID: 212679606



Area
21·4482ha

COMPUTER FREEHOLD REGISTER
UNDER LAND TRANSFER ACT 1952

Search Copy

R.W. Muir
Registrar-General
of Land

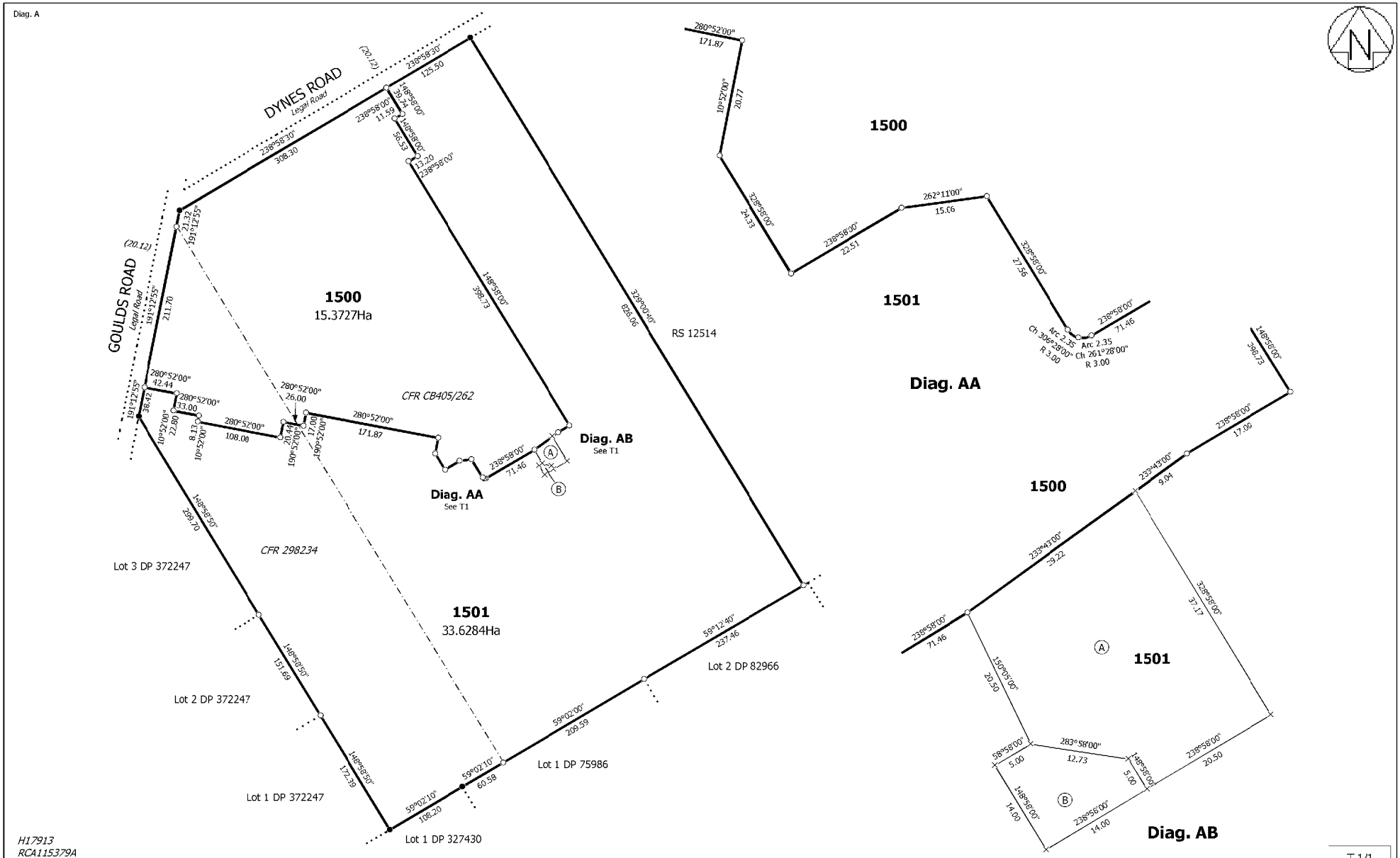
Identifier	**588304**
Land Registration District	**Canterbury**
Date Issued	23 August 2012

Prior References
298234 CB405/262

Estate	Fee Simple
Area	15.3727 hectares more or less
Legal Description	Lot 1500 Deposited Plan 456110

Proprietors
Hughes Developments Limited

Interests



Land District: Canterbury Digitally Generated Plan Generated on: 30/08/2012 12:13am Page 3 of 3	Lots 1500 and 1501 being Subdivision of Lot 1 DP 8833 and Lot 4 DP 372247	Surveyor: Kevin Martin Hayes Firm: Davie Lovell-Smith Ltd	Title Plan DP 456110 Deposited on: 23/08/2012

COMPUTER FREEHOLD REGISTER
UNDER LAND TRANSFER ACT 1952

Search Copy

R.W. Muir
Registrar-General
of Land

Identifier	**588305**
Land Registration District	**Canterbury**
Date Issued	23 August 2012

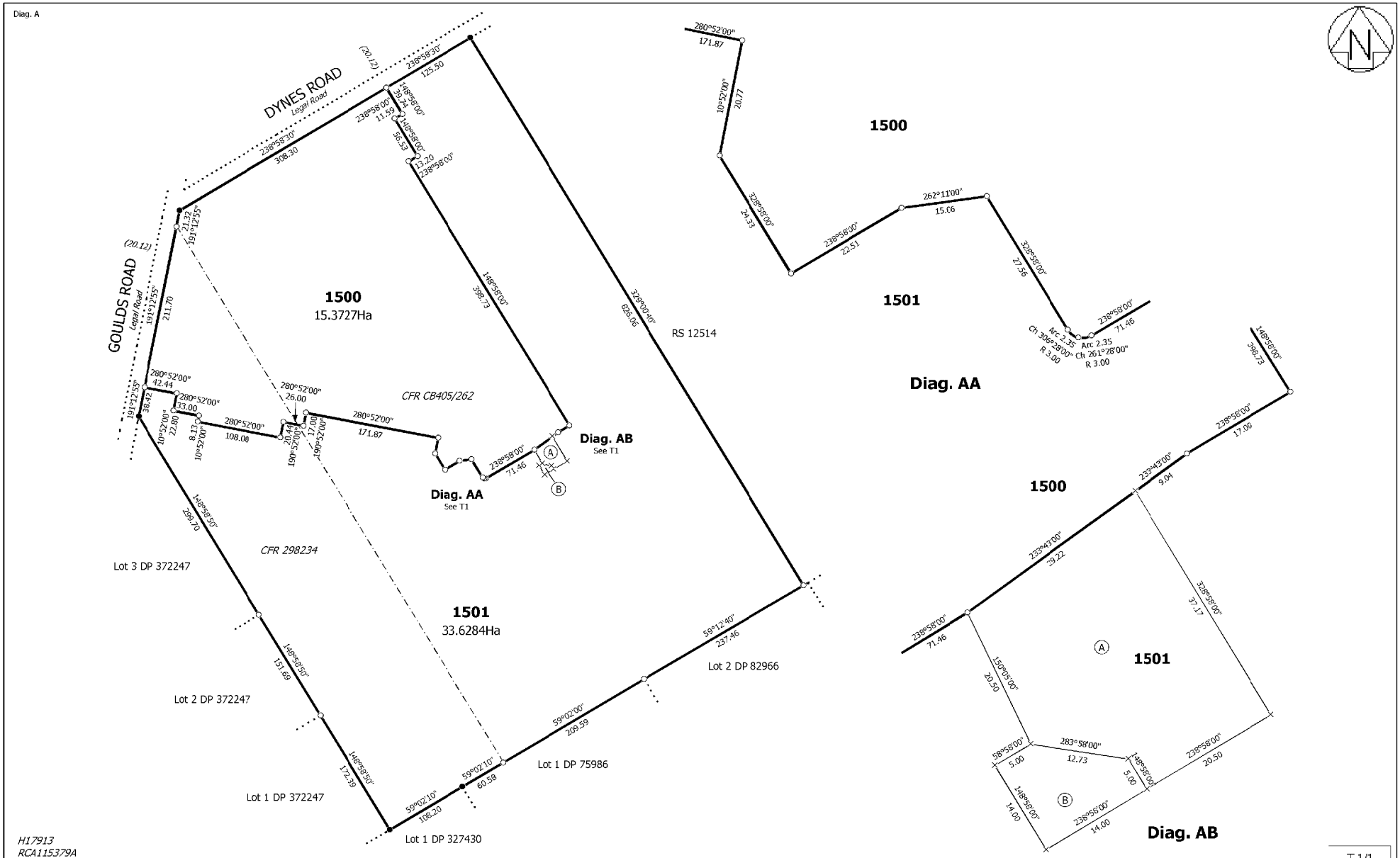
Prior References
298234 CB405/262

Estate	Fee Simple
Area	33.6284 hectares more or less
Legal Description	Lot 1501 Deposited Plan 456110

Proprietors
Foster Holdings Limited

Interests

Subject to a right (in gross) to drain sewage and a right to convey water & electricity over parts marked A & B on DP 456110 in favour of Hughes Developments Limited created by Easement Instrument 9142778.2 - 23.8.2012 at 5:25 pm



Land District: Canterbury Digitally Generated Plan Generated on: 30/08/2012 12:13am Page 3 of 3	Lots 1500 and 1501 being Subdivision of Lot 1 DP 8833 and Lot 4 DP 372247	Surveyor: Kevin Martin Hayes Firm: Davie Lovell-Smith Ltd	Title Plan DP 456110 Deposited on: 23/08/2012

COMPUTER FREEHOLD REGISTER
UNDER LAND TRANSFER ACT 1952

Search Copy

R.W. Muir
Registrar-General
of Land

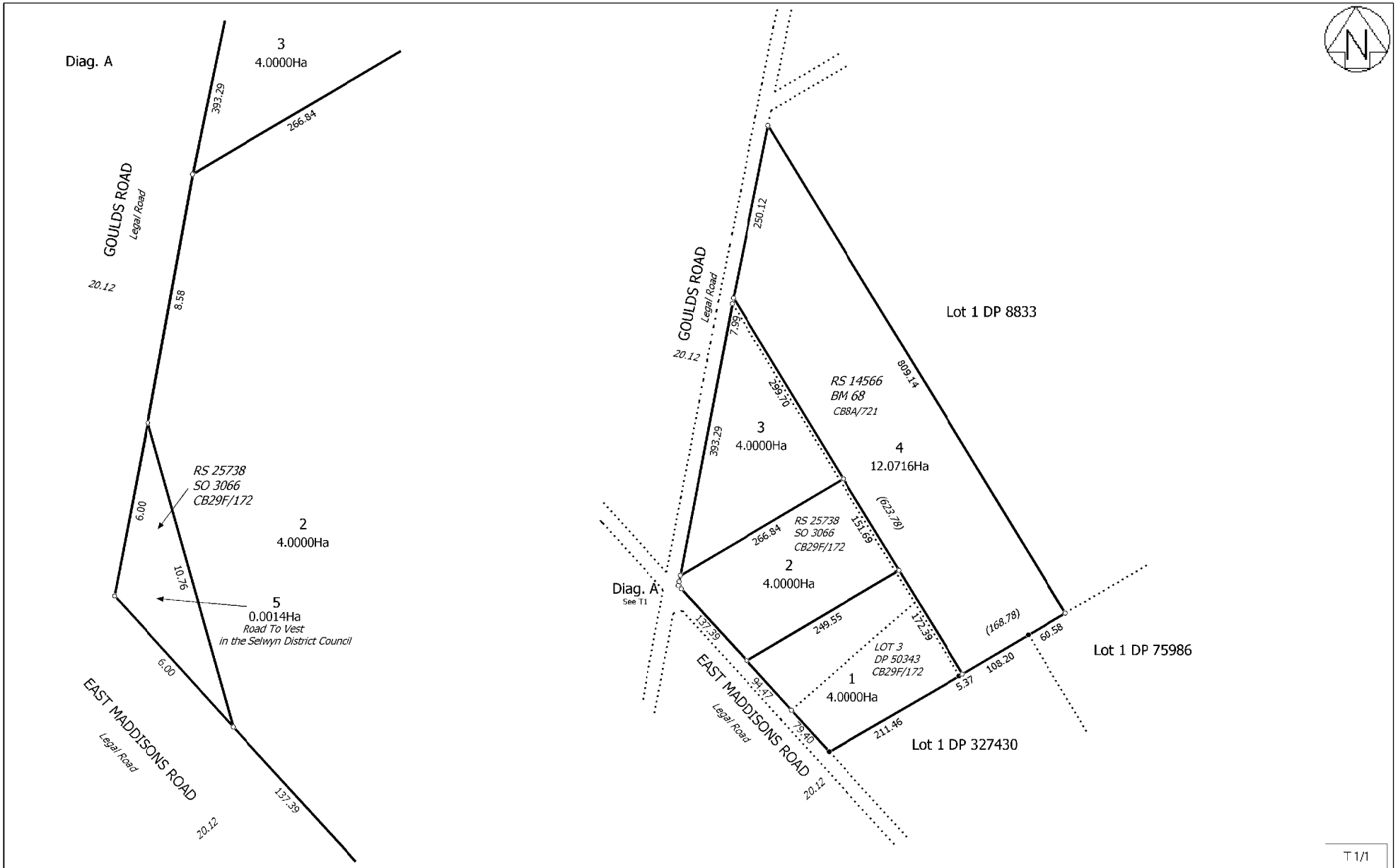
Identifier	**298233**
Land Registration District	**Canterbury**
Date Issued	02 August 2006

Prior References
CB29F/172 CB8A/721

Estate	Fee Simple
Area	4.0000 hectares more or less
Legal Description	Lot 3 Deposited Plan 372247

Proprietors
Foster Holdings Limited

Interests



T 1/1

Land District: Canterbury Digitally Generated Plan Generated on: 16/08/2006 10:41am Page 2 of 2	LOTS 1 - 5 BEING SUBDIVISION OF LOT 3 DP 50343, RS 25738 & RS 14566	Surveyor: Tania Rochelle Foster Firm: Middleton Williams & Co	Digital Title Plan DP 372247 Deposited on: 31/07/2006

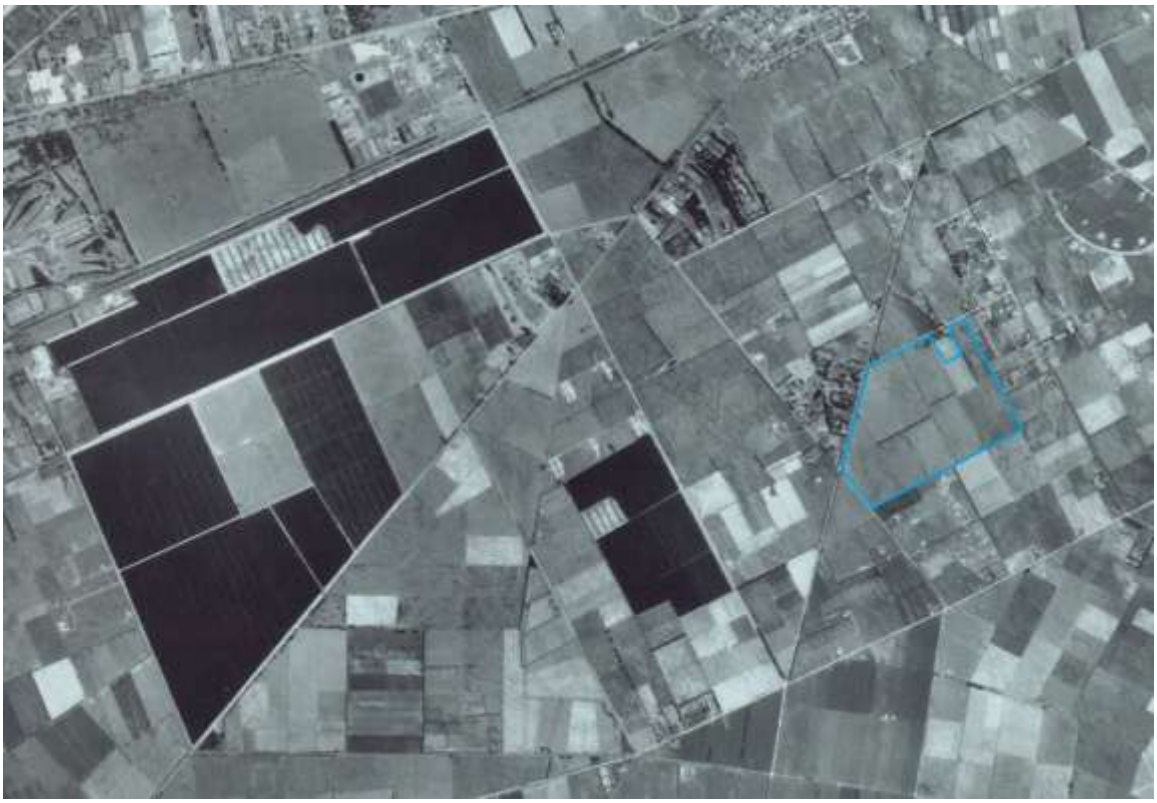
APPENDIX D

Aerial Photographs

Photograph 1: NZAM 9/10/1961 blue outline depicts approximate site area.

Photograph 2: NZAM 19/04/1974 blue outline depicts approximate site area.

Photograph 3: NZAM 28/09/1984 blue outline depicts approximate site area.



Photograph 4: NZAM 26/11/1994 blue outline depicts approximate site area.

Photograph 5: Google Earth 13/07/2009 blue outline depicts approximate site area.

Photograph 6: Google Earth 03/09/2010 blue outline depicts approximate site area.

Photograph 7: Google Earth28/03/2011 blue outline depicts approximate site area.

APPENDIX E

Canterbury Regional Council Land Information Report

Environment Canterbury
Regional Council
Kaunihera Taiao ki Waitaha

PO Box 345
Christchurch 8140
P. 03 365 3828
F. 03 365 3194
E. ecinfo@ecan.govt.nz
Customer Services
P. 03 353 9007 or 0800 324 636
www.ecan.govt.nz

28 September 2012

Attn: Tom Davies
Golders Associates (NZ) Limited
PO Box 2281
Christchurch 8140

Dear Tom

LAND INFORMATION REPORT: DYNES ROAD, ROLLESTON; LOTs 1-4 DP 372247, LOT 1 DP 8833 and RSs 12514 and 15710 ; VALUATION # 2405526000-4

Thank you for your enquiry requesting information on the above property.

Resource Consents

According to our records there are no resource consents, a Permitted Activity Authorisation and Certificate of Compliance associated with this property. Please refer to the information contained in the enclosed report. There is also an application for stormwater discharge consent relevant to this property, CRC130003. I have attached a copy of this application separately.

Note: Resource consents are granted to a person to carry out an activity and, with the exception of certain types of land use consents (for example, consents to install a bore), are not tied to the land to which the activity relates. If the land is sold and the new owners wish to continue carrying out the activity, the consent will need to be transferred. The Council has forms to ensure the correct information is provided to enable the transfer to take place without undue delay.

Compliance and Monitoring

Environment Canterbury holds compliance and monitoring information associated with the expired resource consents for bore installation on this property. Please refer to the information enclosed in this report.

Wells

According to our records there are no wells located on or within a 1km radius of the above property. Please refer to the information contained in the enclosed report.

The locations of wells in Environment Canterbury's Wells database are generally accurate to within a few hundred metres. Therefore, it is possible that any details of wells included in this response may not actually be on the property in question. Likewise, there may be other wells on the property that ECan does not have on record, or for which ECan has inaccurate location details. If you have more detailed information on wells on the property, please contact ECan staff.

Please also find following some information regarding wells in the vicinity of this property. Each well is given a number and this can be used to determine further information (yield, water levels, etc.) about a specific well from the corresponding table. I have also included a fact sheet that explains the terms found within this table.

Our Ref: CUST/OPS/LIR/2
Your Ref: LIR 3449
Contact: Jason McDonald

Ground Water

Quantity:
This property is located within the Selwyn-Waimakariri ground water allocation zone which is currently a red zone.

Demand for ground water in Canterbury has escalated in recent years. Notified in July 2004, Variation 1 of the Natural Resource Regional Plan (NRRP) established approaches for allocating ground water throughout the region. Variation 2 (notified November 2005) introduced a change to the determination of annual volumes – affecting the estimates of effective allocation. Variation 4 (notified June 2007) amended the approach for determining ground water allocation limits by including the actual allocation limits in the NRRP.

The Groundwater Allocation Limits technical report (Report No. U04/02) provides an important tool to assist in assessing the cumulative effects of existing and proposed abstractions. This report draws on existing and new information to identify zones where conservative assessments indicate that groundwater resources are already highly-allocated. On the tables showing the allocation limits and the estimates of water use there are three levels of allocation status identified: red, yellow and white.

Red zones are where the allocation is 100% or more, relative to the precautionary trigger levels.
Yellow zones are where ground water is 80% - 100% allocated, relative to the same levels.
White zones are where ground water is less than 80% allocated, relative to the same levels.

The more highly allocated a ground water zone becomes, the more difficult and costly a resource consent can be to process and have granted. For more information regarding ground water consents and allocation zones, please visit our website at www.ecan.govt.nz or contact Customer Services.

Quality:
Environment Canterbury holds only dated ground water quality data in its water quality database for wells within a 1km radius of this property. Each year, Environment Canterbury collects ground water samples from approximately 250 wells throughout Canterbury to assess the general quality of ground water by monitoring microbiological and chemical water indicators such as coliform bacteria and nitrate-nitrogen. Environment Canterbury also monitors pesticides and hydrocarbon contaminants in some parts of the region, and it conducts more detailed investigations in specific areas where contamination has been reported. A number of reports on ground water quality in Canterbury are held by Environment Canterbury, some of which may be relevant to your area.

If ground water quality is an important consideration in the purchase of this property and there is no data available for this property then you are advised to contact Environment Canterbury to see if information is available in the wider area, either in the form of reports or ground water quality data. Furthermore, Environment Canterbury recommends that you have your well water tested when you purchase a new property if the water is to be used for drinking purposes or where the quality of the water may affect the use of the water for other purposes.
Note: Ground water quality information for properties with a reticulated water supply should be obtained from the authority supplying the water.

Surface Water
Environment Canterbury does hold recent surface water quantity information, but only dated surface water quality information within a 1km radius of this property.

Note: Surface water quality information for properties with a reticulated water supply should be obtained from the authority supplying the water.

Flood/Erosion Hazard
Please refer to the information contained in the enclosed report.

Earthquake Hazard
Please refer to the information contained in the enclosed report.

Pest Enforcement

Plant Pest:
There are currently identified plant pest enforcement issues associated with this property. Access may be required by the Department of Conservation and/or Environment Canterbury staff for future inspections.

Animal Pest:
There are no currently identified animal pest enforcement issues associated with this property.

LLUR Status
This property is not recorded on the Listed Land Use Register. Please refer to the information contained in the enclosed report.

Air Quality
There is no specific information regarding air quality for this site. Please find enclosed some general information regarding air quality for the area.

If you require any further information please call Customer Services on 03 353 9007 or free phone 0800 EC INFO (0800 32 4636).

Yours sincerely

Jason McDonald
ADVISORY OFFICER

Land Information Request

Dynes Road

ROLLESTON

Prepared by
Environment Canterbury
Customer Services

September 2012

Environment Canterbury
Regional Council
Kaunihera Taiao ki Waitaha

Land Information Request #3449

24 Edward Street, Lincoln
PO Box 345
Christchurch
Phone (03) 365 3828
Fax (03) 365 3194

75 Church Street
PO Box 550
Timaru
Phone (03) 688 9069
Fax (03) 688 9067

Website: www.ecan.govt.nz
Customer Services Phone 0800 324 636

Table of Contents

Land Information Report
SUMMARY

Address: **Dynes Road, Rolleston**
Legal Description: **Lots 1-4 DP 372247, Lot 1 DP 8833 and RSs 12514 & 15710**
Valuation Number: **2405526000-4**

Resource Consents
According to our records there are no current resource consents associated with this property.

Compliance and Monitoring
Environment Canterbury holds compliance and monitoring information associated with the expired bore installation resource consents on this property. Please refer to the information contained in the enclosed report.

Wells
According to our records there is an unused well located on the above property.

Ground Water

Quantity:
This property is located within the Selwyn-Waimakariri ground water allocation zone which is currently a red zone.

Quality:
Environment Canterbury holds only dated ground water quality data in its water quality database for wells within a 1km radius of this property.

Surface Water
Environment Canterbury does hold recent surface water quantity information, but only dated surface water quality information within a 1km radius of this property.

Flood Hazard
Please refer to the information contained in the enclosed report.

Earthquake Hazard
Environment Canterbury does not hold earthquake hazard data particular to this property.

Pest Enforcement

Plant Pest:
There are currently identified plant pest enforcement issues associated with this property.

Animal Pest:
There are no currently identified animal pest enforcement issues associated with this property.

LLUR Status
This property is not recorded on the Listed Land Use Register. Please refer to the information contained in the enclosed report.

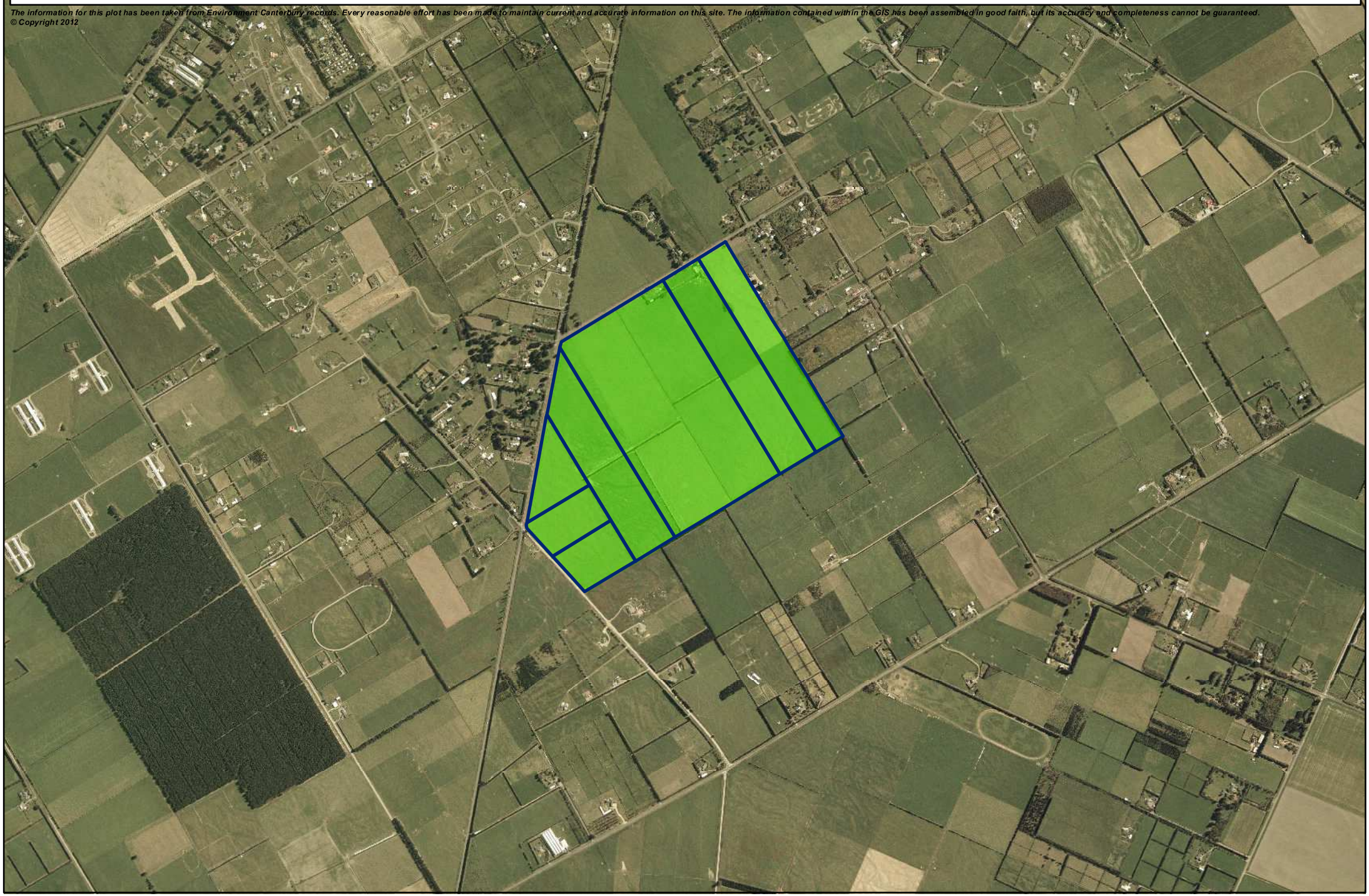
Air Quality
There is no specific information regarding air quality for this site, but general information regarding air quality for the area.

Environment Canterbury
Regional Council
Kaunihera Taiao ki Waitaha

Dynes Road Rolleston.

N

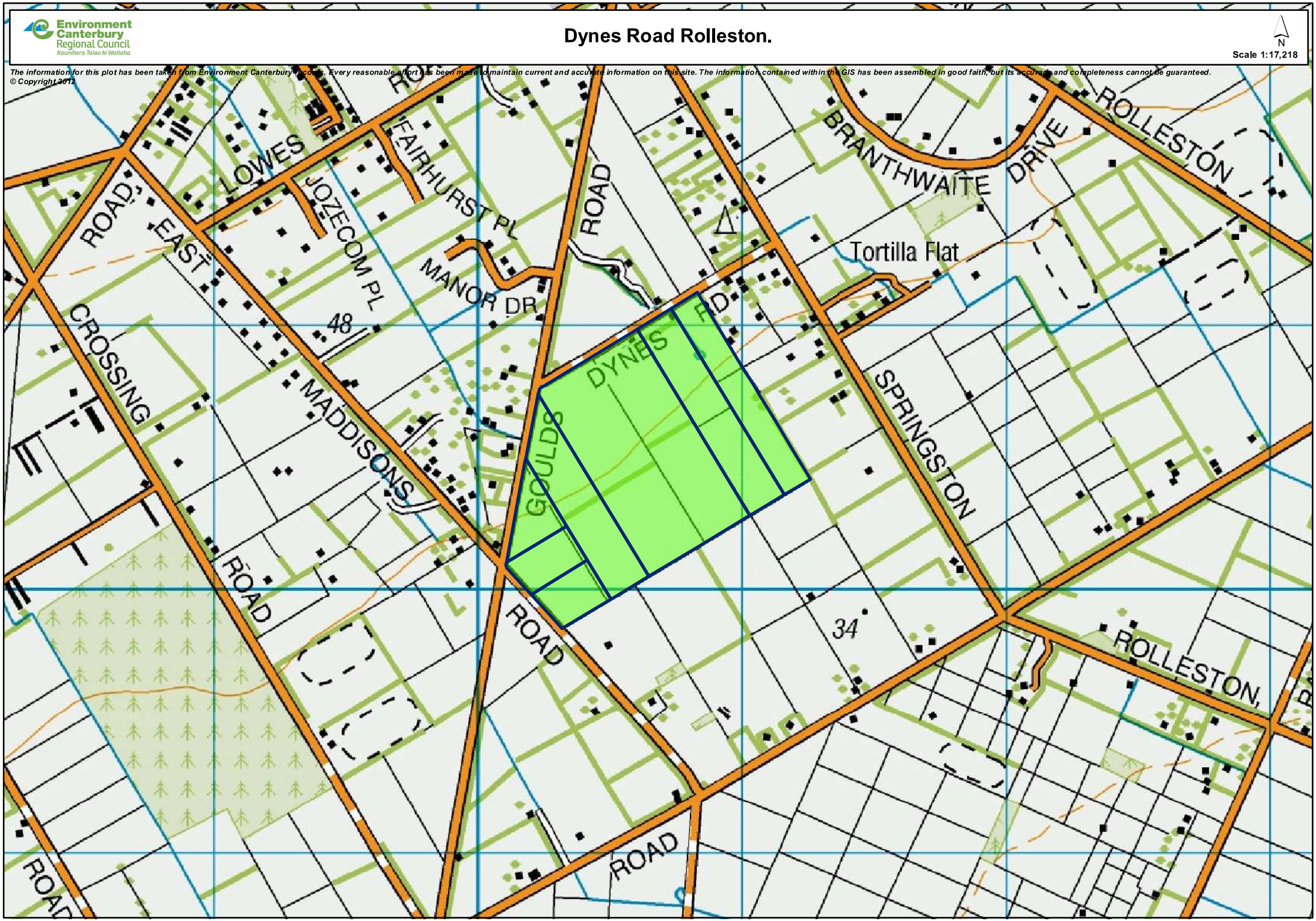
Scale 1:17,218



Dynes Road Rolleston.

Environment Canterbury Regional Council
Kaunihera Taiao ki Waitaha

Scale 1:17,218

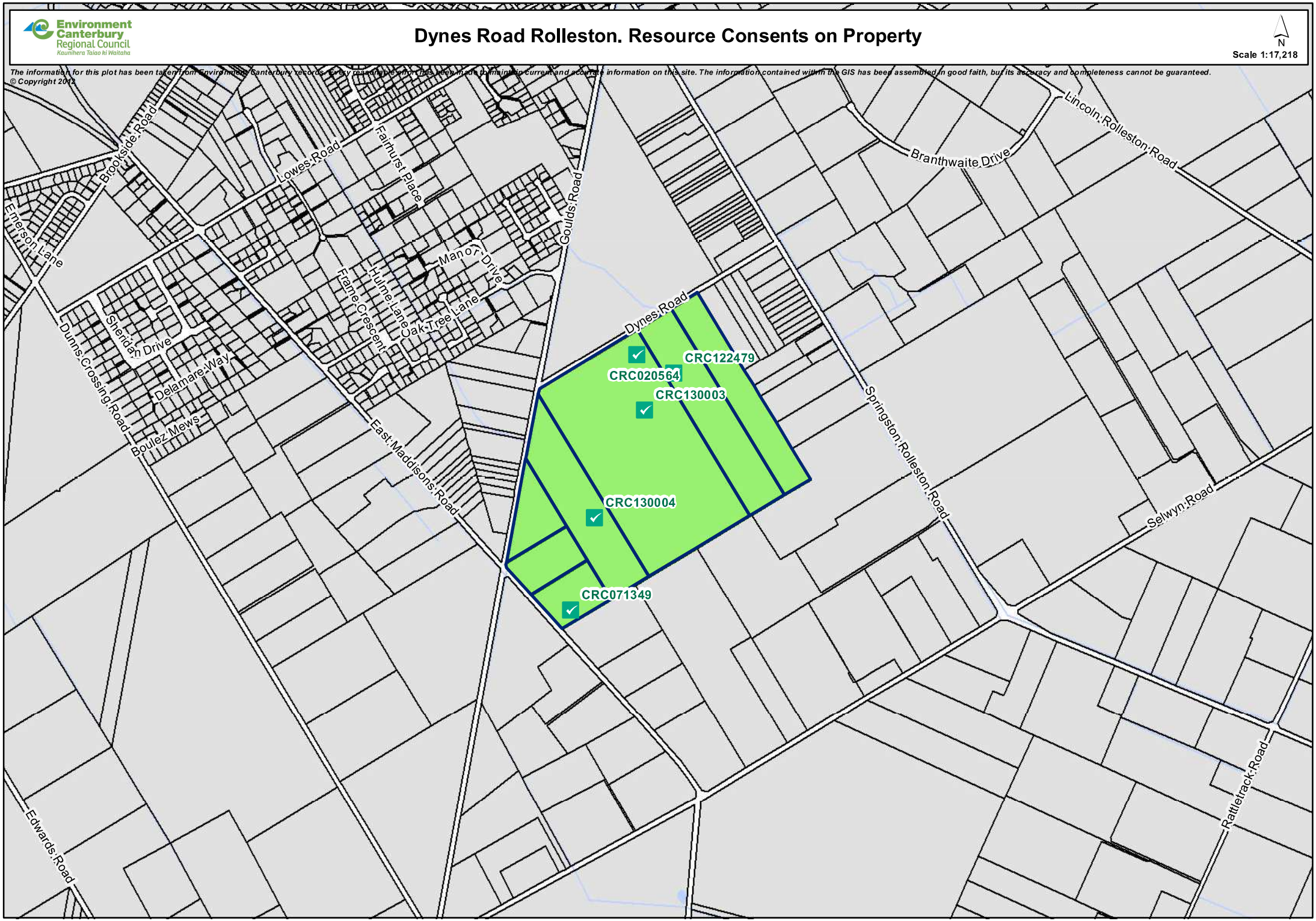


Environment Canterbury Regional Council
Kaunihera Taiao ki Waitaha

Dynes Road Rolleston. Resource Consents on Property

N

Scale 1:17,218

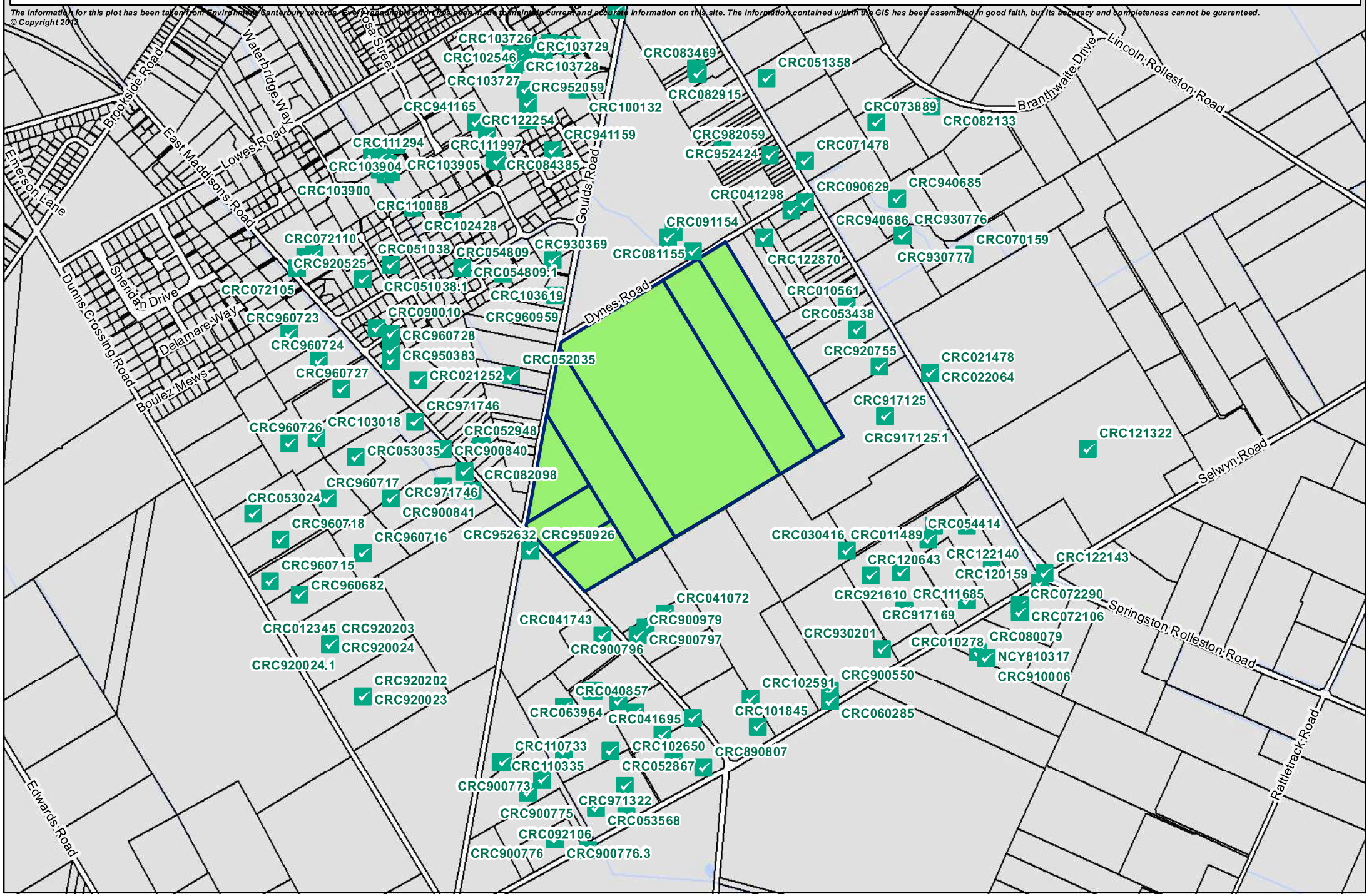


Environment Canterbury Regional Council
Kaunihera Taiao ki Waitaha

Dynes Road Rolleston. Resource Consents within 1km radius

N

Scale 1:17,218



Fact Sheet

February 2002

Consents plot

The following information is designed to accompany an Arcview plot showing consents data. It may not show consents which are being processed. A plot consists of a map showing consent locations and a report providing information regarding these consents.

The following information can currently be included in a consents report. As all of this information is seldom necessary, staff will often select the information they think is relevant to your enquiry. If you require a more comprehensive report, Customer Services are happy to provide this service for you.

ACTIVITY: what the consent is for (e.g. surface water take, groundwater take, etc.).

AREA: to which the activity relates, measured in hectares (ha).

CATCHMENT NO: river catchment number the consent relates to.

CLIENT NAME: name of the consent holder.

CLIENT NO: each client is given a number.

CONSENT NO: each resource consent is given a number (e.g. CRC927105).

CONSENT STATE: code used to identify the stage the application is at within the consent process. Codes are explained in the 'state description' column.

CONSENT TYPE: type of consent as described in the Resource Management Act 1991 (e.g. water permit, coastal permit, etc.).

CONTACT ADDRESS 1/2/3/4: consent holder's postal address.

CONTACT NAME: for this specific resource consent.

DATE DECISION: date decision was made regarding the consent application.

DATE EXPIRED: date consent expires.

DATE ISSUED: date resource consent document issued.

FILE NUMBER: where all information regarding the consent is stored in paper form at the Christchurch office.

GRID EAST: full easting grid reference from New Zealand map grid.

GRID NORTH: full northing grid reference from New Zealand map grid.

Customer Services
0800 EC INFO
(0800 32 4636)

P O Box 345, Christchurch
www.ecan.govt.nz

Environment Canterbury
Your regional council

Consents plot

GRID REFERENCE: co-ordinates to locate the consent on a map, obtained using the NZMS 260 1:50 000 map series.

MAX QUANTITY: that can be taken or discharged over the number of days specified in the 'usage days' column, measured in cubic metres (m^3).

MAX RATE: for abstractions and discharges, measured in litres per second (l/s).

NUMBER ON STREET: house number on road or street where activity is located.

ROAD OR STREET: where activity is located.

SALUTATION: used on correspondence.

STATE DESCRIPTION: description of the code used to identify the stage the application is at within the consent process.

USAGE DAYS: number of days over which the maximum quantity can be taken or discharged.

USE CODE 1/2: code to show what the consent is used for based on information provided when the consent application is lodged. Note - codes may not be updated if use changes. Up to two use codes can be shown. For an explanation of these codes, contact Customer Services.

Accuracy: Most consent locations are accurate up to ± 50 m. This information has been taken from Environment Canterbury records. It is supplied in good faith, but its accuracy or completeness is not guaranteed. If the information is relied on in support of a resource consent application it should be verified independently.

Customer Services
0800 EC INFO
(0800 32 4636)

P O Box 345, Christchurch
www.ecan.govt.nz

Environment Canterbury
Your regional council

Generated 28-Sep-2012

Record Number CRC020564
Record Type New Consent
Permit Type Land Use Consent
Record Holder David John Foster

Location Dynes Road, ROLLESTON
Description to alter bore M36/1849 at or about map reference NZMS 260 M36:6059-3250 for irrigation and stockwater purposes.
Commencement Date 27 Sep 2001
Expiry Date 26 Sep 2004
Lapse Date
Given Effect To
Expiry Date 26 Sep 2004
Trim File No CO6C/00652

Cond No	Text
1	The "Bore Completion Report" shall be completed and returned to the Canterbury Regional Council within three weeks after completion of drilling.
2	A concrete pad of at least 0.3 metres radius and 0.1 metres thickness is to be constructed around the bore head at ground or pumphouse floor level to prevent leakage around the casing. The concrete pad shall slope away from the bore.
3	The top of the bore shall be covered or capped to prevent contaminants entering the bore and underlying groundwater.
4	In the event of any disturbance of Koiwi Tangata (human bones) or taonga (treasured artefacts), the consent holder shall:(a) cease any further excavation for a period of at least 24 hours;(b) immediately advise the Canterbury Regional Council of the disturbance; and(c) immediately advise the Upoko Runanga of Taumutu, or his representative, of the disturbance.

Record Number CRC071349
Record Type New Consent
Permit Type Land Use Consent
Record Holder Kirk Devon Findlater

Location East Maddison Road, ROLLESTON
Description To install one bore.
Commencement Date 23 Nov 2006
Expiry Date 23 Nov 2009
Lapse Date 23 Nov 2009
Given Effect To
Expiry Date 23 Nov 2009
Trim File No CO6C/22612

Cond No	Text
1	Bore M36/8312 (proposed diameter shall not be more than 500 millimetres and proposed depth 38 metres beneath the ground surface) shall be located within the area marked on plan CRC071349 attached to this consent.
2	Only one aquifer or water-permeable zone shall be accessed by a single bore.
3	All aquifers and permeable zones of differing pressure, water quality, or temperature shall be sealed to prevent the interconnection or movement of groundwater between aquifers and permeable zones.
4	The annulus of the bore shall be sealed with grout to above the screen pack or one metre below ground level, whichever is the lesser, to prevent fluid movement down the sides of the casing into the screened collection layer.
5	The top of the bore shall be covered or capped to prevent contaminants entering the bore and underlying groundwater.
6	A concrete pad of at least 0.3 metres radius and 0.1 metres thickness shall be constructed around the bore head at ground or pumphouse floor level to prevent leakage of groundwater, any movement of the casing, and any material or surface water entering the bore or annulus. The concrete pad shall slope away from the bore.
7	A standard 15 or 25 millimetre socket and screw-in bung shall be installed on top of the bore to allow water level measurements to be taken using: (a) A water level probe where: (i) there is sufficient space for it between the riser pipe and the well casing (ii) the lowest pumped water level is less than 10 metres below the top of the bore. Otherwise (b) below applies. (b) If a water level probe cannot be used then: 1. a socket and bung of 25 millimetres diameter shall be connected to a 20 millimetre diameter pipe down the well so a water probe level can be inserted without being caught in cables or between the flanges of the riser pipe and casing. The pipe should extend to within two metres of the top of the pump. If unable to comply with (i) then (ii) applies. 2. a small pressure tube of not less than five millimetres shall be installed down the well to allow a pressure gauge to be used for a water level depth measurement. The depth at which the end of the pressure tube is installed shall be measured from the top of the casing to an accuracy of 0.05 metres. The pressure gauge dial shall be accurate to the nearest 0.1 metres. After lifting and re-placing the submersible pumps the pressure tube shall be replaced at the same depth or the difference shall be recorded in a notebook kept for that purpose.

8	The bore shall be easily identifiable by a permanent label, which may be welded or engraved on the casing, or on the equivalent fixed part of the well construction or associated building. The numbering on the label shall be the bore number assigned by Environment Canterbury and referred to in Condition (1).
9	In the event of any disturbance of Koiwi Tangata (human bones) or taonga (treasured artefacts), the consent holder shall: 1. Cease any further excavation for a period of at least 24 hours; 2. Immediately advise the Canterbury Regional Council of the disturbance; and 3. Immediately advise the Upoko Runanga of Taumutu, or his representative, of the disturbance . 4. The New Zealand Historic Places Trust shall be notified and a response obtained before work recommences.
10	The information requirements of the “Bore Completion Report” CRC071349 Parts 1 & 2 shall be completed and returned to Environment Canterbury within 20 working days of the completion of construction of the bore or water infiltration gallery.

Record Number CRC122479
Record Type Domestic Wastewater
Permit Type Permitted Activity Confirmatn
Record Holder Foster Holdings Limited

Location 57 Dynes Road, ROLLESTON
Description To discharge domestic wastewater into land.

Lapse Date
Given Effect To
Expiry Date
Trim File No RESC/PER/WWPA110432

Cond No	Text
	All Systems
1	The discharge shall be only wastewater.
2	The maximum volume of the discharge from a system shall not exceed two cubic metres per day.
3	There shall be no discharge of wastewater to surface water or into groundwater.
4	The discharge shall not result in wastewater flowing, seeping, or ponding on the surface of the ground.
5	There is no sewerage pipeline network available to collect the discharge. A connection shall be made to a sewerage pipeline network within six months of a network becoming available. For the purpose of this condition, “available” means: 1. a sewerage pipeline network system passes within 30 metres of the property boundary; and 2. the property from which the wastewater is generated is less than four hectares in area; and 3. the distance to the network from the building in which the wastewater is generated is less than 60 metres; and 4. the network operator will accept the discharge.
	Existing Systems
6	When there is an increase in the volume of the discharge, or any modification to the system, as a result of: 1. an alteration of a building that requires authorisation under the Building Act 2004; or 2. the connection to the system of a new or replacement building, or relocated building; or 3. any alteration to the existing system, excluding routine maintenance of the system; • the discharge shall comply with Conditions (1) to (5) and (8) to (20) inclusive of this rule.
7	Where the discharge occurs in a Community Drinking Water Supply Protection Zone for a well listed in Schedule WQL2, or within the Christchurch Groundwater Protection Zone 1, or Sub-Zones 1A, 1B, 1C or 1D, or Zone 2 the discharge shall comply with Conditions (1) to (5) and (8) to (19) inclusive of this rule by 1 November 2015.
	New systems

8	The discharge shall not occur: 1. within 20 metres of a river, lake, artificial watercourse, or the Coastal marine area; or 2. at an elevation higher than 1000 metres above sea level; or 3. on land with a slope greater than 20 degrees; or 4. on land: i. that is likely to be flooded from a river or lake in an event with an Annual Exceedance Probability of two percent (1 in 50 year event) or more; or ii. where water is known to pond for at least two hours in a rainfall event, on average, at lease once in every five years; or 5. within 20 metres of a wetland boundary.
9	The discharge shall not occur where the land is located over: 1. an unconfined or semi-confined aquifer, where the highest groundwater level, which can reasonably be expected at the point of discharge based upon relevant and available groundwater data is: i. less than two metres from the ground surface; and ii. less than six metres from the ground surface unless the land application consists of a drip irrigation system as described in Condition (12)(b); or 2. the Coastal Confined Gravel Aquifer System, and there is: i. less than two metres of undisturbed material between the point of discharge and the Aquifer 1; or ii. less than two metres of unsaturated sediment above any water table overlying Aquifer 1.
10	Separation distances shall be maintained: 1. between a well and a discharge system that occurs outside of a Community Drinking Water Supply Protection Zone, as specified in Part A of Schedule WQL6 ; and 2. between discharge systems, as specified in Part B of Schedule WQL6, unless the land application system consists of a drip irrigation system as described in Condition (12)(b), and the site in addition to all adjacent properties are either on a reticulated water supply or are one hectare or more in size.
11	The minimum separation distance between the land application system and a property boundary shall be: 1. 20 metres to the nearest down gradient boundary in the direction of groundwater flow at the site and five metres to any other property boundary; or 2. two metres to any property boundary if the land application system consists of a drip irrigation system as described in Condition (12)(b) and the discharge is into soil.

12	The land application system shall consist of either: 1. a treatment trench, bed or mound: i. with media of at least 600 millimetres thick; and, ii. of which the media shall be of a grade that fits within the 2A envelope on the diagram in Schedule WQL8; and iii. to which the discharge is pumped, or is dosed in fixed quantities, so that the effluent is applied to the treatment trench, bed or mound evenly at a rate of not more than 50 millimetres per day; or 2. a pressure compensating drip irrigation system through which the discharge is applied evenly, and at a rate which shall not exceed the value in Table 4.2A4 in the Australian/New Zealand Standard 1547:2000 On-site domestic wastewater management for the soil type at the site.
13	Where the land application system consists of a treatment trench, bed or mound, as specified in Condition (12)(a), there shall be sufficient additional land available on the property to allow a replacement land application system to be installed.
14	The wastewater shall pass through a proprietary effluent filter before discharge to the land application system.
15	A copy of the design plan of the treatment and land application system shall be submitted to Environment Canterbury at least twenty working days prior to the installation of the system.
16	When the construction of the treatment and land application system is completed: 1. the work shall be certified by a suitably qualified and competent person as having been carried out in accordance with the design plan; and 2. a copy of the certificate shall be forwarded to Environment Canterbury within twenty working days following completion of the work.
17	The treatment and land application system shall be operated and maintained in accordance with the system's design specification for maintenance.
18	The primary treatment tank or chamber shall: 1. have an access point or points for inspecting and maintaining the effluent filter, monitoring the accumulation of sludge and desludging the tank or chamber. The access point or points shall be accessible for these purposes at all times; and 2. be inspected at least once every three years and the depth of accumulated sludge in the primary treatment tank or chamber measured; and 3. be desludged when the accumulated scum and sludge occupy more than two thirds of the volume of the tank or chamber.
19	The following information shall be recorded, and a copy of these records made available to Environment Canterbury upon request: 1. maintenance of the treatment and land application system, including inspection, desludging or remedial work; and 2. date works are undertaken and the name of the company and person undertaking the work.
20	The discharge shall not occur within a Community Drinking Water Supply Protection Zone for a well listed in Schedule WQL2.

Record Summary

Generated 28-Sep-2012

Record Number CRC130004
Record Type New Certificate
Permit Type Certificate of Compliance
Record Holder Hughes Developments

Location

Description To discharge residential stormwater to land The discharge of stormwater into land.

The Canterbury Regional Council confirms that the activity is authorised under Rule WQL6 of the Natural Regional Resources Plan (NRRP) - Chapter 4 - Water Quality.

Issued Date 26 Jul 2012
Expiry Date
Lapse Date
Given Effect To
Expiry Date
Trim File No CO6C/33488

Cond No	Text

RecordNo	RecordType	StateText	ClientName	ActivityText
CRC010278	Consent	Consent Transferred (replaced by new record)	Mr & Mrs B G & H S Duxbury	Take Groundwater
CRC010879	Consent	Application withdrawn	Mr & Mrs G L & J M Meadows	Take Groundwater
CRC010997	Consent	Current	Mr & Ms R J & S E Silcock & Russell	Take Groundwater
CRC011288	Consent	Consent Transferred (replaced by new record)	Mr & Mrs J D & V A Willis	Take Groundwater
CRC012345	Consent	Current	Mr & Mrs L K & J C Blackmore	Take Groundwater
CRC022064	Consent	Current	Mr & Mrs R Geddes & Davis	Take Groundwater
CRC030416	Consent	Current	Mr A J Cartwright	Take Groundwater
CRC890807	Consent	Consent Surrendered	D J & M C Duthie	Take Groundwater
CRC900447	Consent	Expired	R J & C L Warren	Take Groundwater
CRC900549	Consent	Expired	S J & V L Sterne	Take Groundwater
CRC900773	Consent	Consent Transferred (replaced by new record)	B E & J F Fraser	Take Groundwater
CRC900796	Consent	Expired	Mr & Mrs G L & J M Meadows	Take Groundwater
CRC900840	Consent	Consent Surrendered	Mr & Mrs D T & J E Allan	Take Groundwater
CRC910006	Consent	Expired	Mr & Mrs B G & H S Duxbury	Take Groundwater
CRC916652	Consent	Expired	R P & E M Yates	Take Groundwater
CRC917125	Consent	Consent Transferred (replaced by new record)	Mr & Mrs C N & S M Thom	Take Groundwater
CRC920023	Consent	Expired	G J & F R Tyack	Take Groundwater
CRC920024	Consent	Consent Transferred (replaced by new record)	G J & F R Tyack	Take Groundwater
CRC921611	Consent	Consent Surrendered	Mr & Mrs J & M Mills	Take Groundwater
CRC930201	Consent	Consent Surrendered	Mr & Mrs J & M Mills	Take Groundwater
CRC930777	Consent	Expired	Mr & Mrs J D & V A Willis	Take Groundwater
CRC940686	Consent	Consent Transferred (replaced by new record)	Mr K G Bloomfield	Take Groundwater
CRC952632	Consent	Current, EP Driven - Possible Lapsed Record	Mr & Ms B N & J A Stevens & Gray	Take Groundwater
CRC971320	Consent	Current	Mr D B Irvine	Take Groundwater
NCY810317	Consent	Expired	Mr & Mrs B G & H S Duxbury	Take Groundwater
NCY820025	Consent	Expired	Mr D J Foster	Take Groundwater
CRC900773.1	Consent	Expired	Mr & Ms R J & S E Silcock & Russell	Take Groundwater
CRC917125.1	Consent	Expired	CJFA Holdings Limited	Take Groundwater
CRC920024.1	Consent	Consent Surrendered	Mr & Mrs L K & J C Blackmore	Take Groundwater
CRC940686.1	Consent	Current	Mr & Mrs J R & A J Forrest	Take Groundwater
CRC900775	Consent	Consent Transferred (replaced by new record)	B E & J F Fraser	Discharge of Human Effluent
CRC900776	Consent	Consent Transferred (replaced by new record)	B E & J F Fraser	Discharge of Human Effluent
CRC900797	Consent	Expired	Mr & Mrs G L & J M Meadows	Discharge of Human Effluent
CRC900798	Consent	Consent Transferred (replaced by new record)	Mr & Mrs G L & J M Meadows	Discharge of Human Effluent
CRC900841	Consent	Expired	Mr & Mrs D T & J E Allan	Discharge of Human Effluent
CRC900979	Consent	Expired	Mr & Mrs G L & J M Meadows	Discharge of Human Effluent
CRC900775.1	Consent	Expired	Mr & Ms R J & S E Silcock & Russell	Discharge of Human Effluent
CRC900776.1	Consent	Consent Transferred (replaced by new record)	J & S Prakash	Discharge of Human Effluent
CRC900776.2	Consent	Consent Transferred (replaced by new record)	Mr & Ms R J & S E Silcock & Russell	Discharge of Human Effluent
CRC900776.3	Consent	Expired	Messrs G B, A D, V Shadwell & B L Botherway	Discharge of Human Effluent
CRC900798.1	Consent	Consent Surrendered	I J & B A Burrell	Discharge of Human Effluent
CRC000616	Permitted	Activity Ceased	Mr D L Geddes	Discharge of Piggery Effluent
CRC900550	Consent	Expired	S J & V L Sterne	Discharge of Piggery Effluent
CRC052035	Permitted	Current	Mr & Mrs M J & N J Williams	Discharge of Human Effluent
CRC052128	Permitted	Current	Mr & Ms K P & D M GRAHAM	Discharge of Human Effluent

CRC053024	Permitted	Current	Mr & Ms J D & L Barclay	Discharge of Human Effluent
CRC053035	Permitted	Current	Ogon & Magnum Properties Ltd	Discharge of Human Effluent
CRC053568	Permitted	Current	Mr & Mrs G B & C E Prebble	Discharge of Human Effluent
CRC053438	Permitted	Current	Mr & Ms K B & F D Boon & Dulcie	Discharge of Human Effluent
CRC053545	Permitted	Current	Mr & Mrs G B & C E Prebble	Discharge of Human Effluent
CRC052504	Consent	Consent Conditions changed (replaced by new record)	Blue Waters (NZ) Limited	Discharge of Stormwater-Residential
CRC010278.1	Consent	Consent Transferred (replaced by new record)	Linston Limited	Take Groundwater
CRC052942	Consent	Current	R B & B M Chapman & Hamilton	Discharge of Human Effluent
CRC052948	Consent	Consent Transferred (replaced by new record)	Dellanie Developments Limited	Discharge of Human Effluent
CRC051038	Consent	Consent Conditions changed (replaced by new record)	Broadfield Estates Limited	Discharge of Stormwater-Residential
CRC060285	Consent	Application withdrawn	Mr R Brown	Take Groundwater
CRC060533	Consent	Current	Broadfield Estates Limited	Discharge of Stormwater-Residential
CRC054809	Consent	Consent Transferred (replaced by new record)	Jenco Developments Limited	Discharge of Stormwater-Residential
CRC062283	Cert Comply	Application withdrawn	Sanguine Surpassing Limited	Discharge of Stormwater-Residential
CRC062653	Permitted	Current	R P & E M Yates	Discharge of Human Effluent
CRC063262	Consent	Consent Partially Transferred (replaced by new record)	Sanguine Surpassing Limited	Discharge of Stormwater-Residential
CRC051038.1	Consent	Current	Broadfield Estates Limited	Discharge of Stormwater-Residential
CRC063824	Permitted	Application declined	Mr & Mrs J & M Baxter	Discharge of Human Effluent
CRC063964	Consent	Current	Mr & Mrs J L & M M Baxter	Discharge of Human Effluent
CRC070159	Permitted	Current	Mr G C Main & Mrs V L Eilken-Main	Discharge of Human Effluent
CRC070539	Cert Comply	Application declined	Mr R Jarvis	Discharge of Stormwater-Residential
CRC071478	Permitted	Current	Mr K A Stewart & Ms M E MacKay	Discharge of Human Effluent
CRC071676	Consent	Current	PM & CLG Thomas Limited	Discharge of Stormwater-Residential
CRC072105	Consent	Current	PM & CLG Thomas Limited	Discharge of Stormwater-Residential
CRC072110	Consent	Current	PM & CLG Thomas Limited	Discharge of Stormwater-Residential
CRC072290	Permitted	Current	Mr R G & Mrs D E Van Der Zwet	Discharge of Human Effluent
CRC073889	Permitted	Current	Mr R Jarvis	Discharge of Human Effluent
CRC052504.1	Consent	Current	Blue Waters (NZ) Limited	Discharge of Stormwater-Residential
CRC080079	Consent	Current	Mr P J & Mrs H M Rains	Discharge of Human Effluent
CRC010278.2	Consent	Current	P J & H M Rains Family Trust	Take Groundwater
CRC081460	Cert Comply	Application declined	R K George	Discharge of Stormwater-Residential
CRC082098	Permitted	Current	Mr & Ms B Smart & Wilkinson	Discharge of Human Effluent
CRC082133	Permitted	Current	Mr K & Mrs K Wills	Discharge of Human Effluent
CRC063262.1	Consent	Consent Partially Transferred (replaced by new record)	Sanguine Surpassing Limited	Discharge of Stormwater-Residential
CRC082364	Consent	Current	Mr G E & Mrs W S Peters	Discharge of Stormwater-Residential
CRC063262.2	Consent	Consent Partially Transferred (replaced by new record)	Sanguine Surpassing Limited	Discharge of Stormwater-Residential
CRC082366	Consent	Current	Mr M P & Mrs S E Warwick	Discharge of Stormwater-Residential
CRC063262.3	Consent	Consent Partially Transferred (replaced by new record)	Sanguine Surpassing Limited	Discharge of Stormwater-Residential
CRC082367	Consent	Current	Mr K F & Mrs T M Weston	Discharge of Stormwater-Residential
CRC063262.4	Consent	Current	Sanguine Surpassing Limited	Discharge of Stormwater-Residential
CRC082368	Consent	Current	Mr k G & Mrs T M Wright	Discharge of Stormwater-Residential
CRC082915	Consent	Consent Transferred (replaced by new record)	Mr W L & Mrs A M Hunter	Discharge of Human Effluent
CRC083469	Cert Comply	Consent Transferred (replaced by new record)	Ms A Atkins	Take Groundwater
CRC084385	De Minimis	Current	Mr R K George	Discharge of Stormwater-Residential
CRC090010	De Minimis	Application declined	Blue Waters (NZ) Limited	Discharge of Stormwater-Residential
CRC090143	De Minimis	Application declined	Sanguine Surpassing Limited	Discharge of Stormwater-Residential

CRC090354	Permitted	Current	Mr D A Miller	Discharge of Human Effluent
CRC090629	Permitted	Current	T Buhrs	Discharge of Human Effluent
CRC093529	Consent	Current	Ministry of Education - Christchurch	Discharge of Stormwater-Residential
CRC052948.1	Consent	Consent Transferred (replaced by new record)	Mr & Mrs F C & N Barton	Discharge of Human Effluent
CRC101167	Consent	Current	Selwyn District Council	Discharge of Stormwater-Residential
CRC100132	Consent	Current	Selwyn District Council	Discharge of Stormwater-Residential
CRC010561	Consent	Expired	Mr B N McIntyre	Install a Bore/Gallery
CRC011489	Consent	Expired	Mr A J Cartwright	Install a Bore/Gallery
CRC020564	Consent	Expired	Mr D J Foster	Install a Bore/Gallery
CRC021252	Consent	Expired	Mr J N Cherry	Install a Bore/Gallery
CRC021478	Consent	Expired	Mr & Mrs R G & B M Geddes	Install a Bore/Gallery
CRC917169	Consent	Expired	R P & E M Yates	Install a Bore/Gallery
CRC920202	Consent	Expired	G J & F R Tyack	Install a Bore/Gallery
CRC920203	Consent	Expired	G J & F R Tyack	Install a Bore/Gallery
CRC920525	Consent	Expired	P F & L M Burnell & Debenham	Install a Bore/Gallery
CRC920755	Consent	Expired	Mr & Mrs C N & S M Thom	Install a Bore/Gallery
CRC921610	Consent	Expired	Mr & Mrs J & M Mills	Install a Bore/Gallery
CRC930369	Consent	Expired	Mr & Mrs L J & J A Norton	Install a Bore/Gallery
CRC930776	Consent	Expired	Mr & Mrs J D & V A Willis	Install a Bore/Gallery
CRC940332	Consent	Consent Surrendered	B E & J F Fraser	Install a Bore/Gallery
CRC940685	Consent	Expired	Mr K G Bloomfield	Install a Bore/Gallery
CRC941159	Consent	Expired	B E & J F Fraser	Install a Bore/Gallery
CRC941165	Consent	Expired	Mr E C Britnell	Install a Bore/Gallery
CRC950383	Consent	Expired	Mr & Mrs C J & P E Hickman	Install a Bore/Gallery
CRC950926	Consent	Expired	Mr & Ms B N & J A Stevens & Gray	Install a Bore/Gallery
CRC952059	Consent	Expired	Mr & Mrs M J & N J Williams	Install a Bore/Gallery
CRC952424	Consent	Expired	Mr & Mrs A J & L A Mitchell	Install a Bore/Gallery
CRC960682	Consent	Expired	Kajens Trading & Development Limited	Install a Bore/Gallery
CRC960715	Consent	Expired	Kajens Trading & Development Limited	Install a Bore/Gallery
CRC960716	Consent	Expired	Kajens Trading & Development Limited	Install a Bore/Gallery
CRC960717	Consent	Expired	Kajens Trading & Development Limited	Install a Bore/Gallery
CRC960718	Consent	Expired	Kajens Trading & Development Limited	Install a Bore/Gallery
CRC960723	Consent	Expired	Kajens Trading & Development Limited	Install a Bore/Gallery
CRC960724	Consent	Expired	Kajens Trading & Development Limited	Install a Bore/Gallery
CRC960726	Consent	Expired	Kajens Trading & Development Limited	Install a Bore/Gallery
CRC960727	Consent	Expired	Kajens Trading & Development Limited	Install a Bore/Gallery
CRC960728	Consent	Expired	Kajens Trading & Development Limited	Install a Bore/Gallery
CRC960959	Consent	Expired	Mr & Mrs G R & K Payne	Install a Bore/Gallery
CRC971322	Consent	Expired	Mr D B Irvine	Install a Bore/Gallery
CRC971746	Consent	Expired	Mr D T Allan	Install a Bore/Gallery
CRC971746	Consent	Expired	Mr D T Allan	Install a Bore/Gallery
CRC982059	Consent	Expired	Mr R J A Bunker	Install a Bore/Gallery
CRC040857	Consent	Expired	Mr & Mrs A S & M M Baxter	Install a Bore/Gallery
CRC041072	Consent	Expired	Mr & Ms G K & P R Poole & Eastmond	Install a Bore/Gallery
CRC041298	Consent	Expired	Mr T Buhrs	Install a Bore/Gallery
CRC041695	Consent	Expired	Mr & Mrs D A & M G Miller	Install a Bore/Gallery

CRC041743	Consent	Expired	Mr & Ms P M & K I Tilling & Thompson	Install a Bore/Gallery
CRC051358	Consent	Expired	Mr A J Easton	Install a Bore/Gallery
CRC052867	Consent	Expired	R B & B M Chapman & Hamilton	Install a Bore/Gallery
CRC054414	Consent	Expired	R P & E M Yates	Install a Bore/Gallery
CRC071349	Consent	Expired	Mr K D Findlater	Install a Bore/Gallery
CRC072106	Consent	Expired	Mr R G & Mrs D E Van Der Zwet	Install a Bore/Gallery
CRC081155	Consent	Expired	Mr D J Foster	Install a Bore/Gallery
CRC091154	Consent	Expired	Mr & Mrs D J & A P Foster	Install a Bore/Gallery
CRC092106	Consent	Current	Messers M G Stephens A L Billborough & J R Scott	Install a Bore/Gallery
CRC054809.1	Consent	Current	Selwyn District Council	Discharge of Stormwater-Residential
CRC083469.1	Cert Comply	Current	Mr W L & Mrs A M Hunter	Take Groundwater
CRC101845	Consent	Current	I J & B A Burrell	Install a Bore/Gallery
CRC011288.1	Consent	Current	Mr G C Main & Mrs V L Eilken-Main	Take Groundwater
CRC102428	Consent	Current	Mrs M C Stevens	Discharge of Stormwater-Residential
CRC102591	Permitted	Current	Mr I J Burrell	Discharge of Human Effluent
CRC102650	Permitted	Current	Mr C I Hood	Discharge of Human Effluent
CRC103018	Consent	Current	K & S Dow	Discharge of Stormwater-Residential
CRC102408	Consent	Current	Ascot Park Limited	Discharge of Stormwater-Residential
CRC102534	Consent	Current	Ascot Park Limited	Discharge of Stormwater-Residential
CRC102546	Consent	Current	Ascot Park Limited	Discharge of Stormwater-Residential
CRC103582	Consent	Consent Transferred (replaced by new record)	Ascot Park Limited	Discharge of Stormwater-Residential
CRC103619	De Minimis	Current	Mr C G Shaw	Discharge of Stormwater-Residential
CRC103714	Consent	Consent Transferred (replaced by new record)	Ascot Park Limited	Discharge of Stormwater-Residential
CRC103717	Consent	Consent Transferred (replaced by new record)	Ascot Park Limited	Discharge of Stormwater-Residential
CRC103719	Consent	Current	Ascot Park Limited	Discharge of Stormwater-Residential
CRC103726	Consent	Consent Transferred (replaced by new record)	Ascot Park Limited	Discharge of Stormwater-Residential
CRC103727	Consent	Consent Transferred (replaced by new record)	Ascot Park Limited	Discharge of Stormwater-Residential
CRC103728	Consent	Consent Transferred (replaced by new record)	Ascot Park Limited	Discharge of Stormwater-Residential
CRC103729	Consent	Current	Ascot Park Limited	Discharge of Stormwater-Residential
CRC103393	Consent	Consent Changed (replaced by new record)	Twyn Vision Limited	Discharge of Stormwater-Residential
CRC103751	Consent	Consent Surrendered	Twyn Vision Limited	Discharge of Stormwater-Residential
CRC103898	Consent	Consent Surrendered	Twyn Vision Limited	Discharge of Stormwater-Residential
CRC103899	Consent	Consent Surrendered	Twyn Vision Limited	Discharge of Stormwater-Residential
CRC103900	Consent	Consent Surrendered	Twyn Vision Limited	Discharge of Stormwater-Residential
CRC103901	Consent	Consent Surrendered	Twyn Vision Limited	Discharge of Stormwater-Residential
CRC103902	Consent	Consent Surrendered	Twyn Vision Limited	Discharge of Stormwater-Residential
CRC103903	Consent	Consent Surrendered	Twyn Vision Limited	Discharge of Stormwater-Residential
CRC103904	Consent	Consent Surrendered	Twyn Vision Limited	Discharge of Stormwater-Residential
CRC103905	Consent	Consent Surrendered	Twyn Vision Limited	Discharge of Stormwater-Residential
CRC110088	De Minimis	Current	Mr S McLaren	Discharge of Stormwater-Residential
CRC110335	Consent	Current	Mr S A Baxter	Discharge of Human Effluent
CRC052948.2	Consent	Consent Transferred (replaced by new record)	K R & K M Brough	Discharge of Human Effluent
CRC110733	Consent	Current	Mr S A & Mrs M Baxter	Install a Bore/Gallery
CRC103726.1	Consent	Current	Mr G J & Mrs M J Stenhouse	Discharge of Stormwater-Residential
CRC111294	Consent	Consent Surrendered	Twyn Vision Limited	Discharge of Stormwater-Residential
CRC103393.1	Consent	Consent Surrendered	Twyn Vision Limited	Discharge of Stormwater-Residential

CRC111685	Consent	Current	Mr G M & Mrs N S Sole	Discharge of Human Effluent
CRC111997	De Minimis	Current	Department Of Building and Housing, Christchurch	Discharge of Stormwater-Residential
CRC120159	Consent	Current	Selwyn District Council	Install a Bore/Gallery
CRC103727.1	Consent	Current	Andrew Woods Properties Limited	Discharge of Stormwater-Residential
CRC103717.1	Consent	Current	Mr C B Goh & Ms S C Wong	Discharge of Stormwater-Residential
CRC103728.1	Consent	Current	C R Newman & M A Woods	Discharge of Stormwater-Residential
CRC120643	Consent	Current	Mr G M Sole	Install a Bore/Gallery
CRC052948.3	Consent	Current	Mr A J MacDonald & Ms M S Rosewarne	Discharge of Human Effluent
CRC082915.1	Consent	Current	Mr V J Lavery & Miss D M Walsh	Discharge of Human Effluent
CRC121322	Consent	Audit (Sec 42a Report), On hold awaiting affected party approval	Mr D L Geddes	Discharge of Dairy Effluent
CRC122143	Consent	Current	Selwyn District Council	Install a Bore/Gallery
CRC103582.1	Consent	Current	Mr W J & Mrs M N Brown	Discharge of Stormwater-Residential
CRC122254	Cert Comply	Current	Mr R & Mrs J Williams	Discharge of Stormwater-Residential
CRC122479	Permitted	Current	Foster Holdings Limited	Discharge of Human Effluent
CRC103714.1	Consent	Current	Mr D R Goss & Ms E A Weedon	Discharge of Stormwater-Residential
CRC122870	Permitted	Current	Mr R B Greig	Discharge of Human Effluent
CRC130004	Cert Comply	Current	Hughes Developments	Discharge of Stormwater-Residential
CRC122140	Consent	Current	Selwyn District Council	Excavate Material
CRC130003	Consent	Application Recommendation, On hold awaiting confirmation of draft conditions	Hughes Developments	Discharge of Stormwater-Industrial

Compliance and Monitoring

Compliance and Monitoring Information Related to Resource Consents on the Property

Consented Bores

Compliant, no site visit
CRC020564 - expired

Bore M36/1849 was installed at this property under resource consent CRC020564. The Bore Compliance Report and Bore Log have been received for this bore

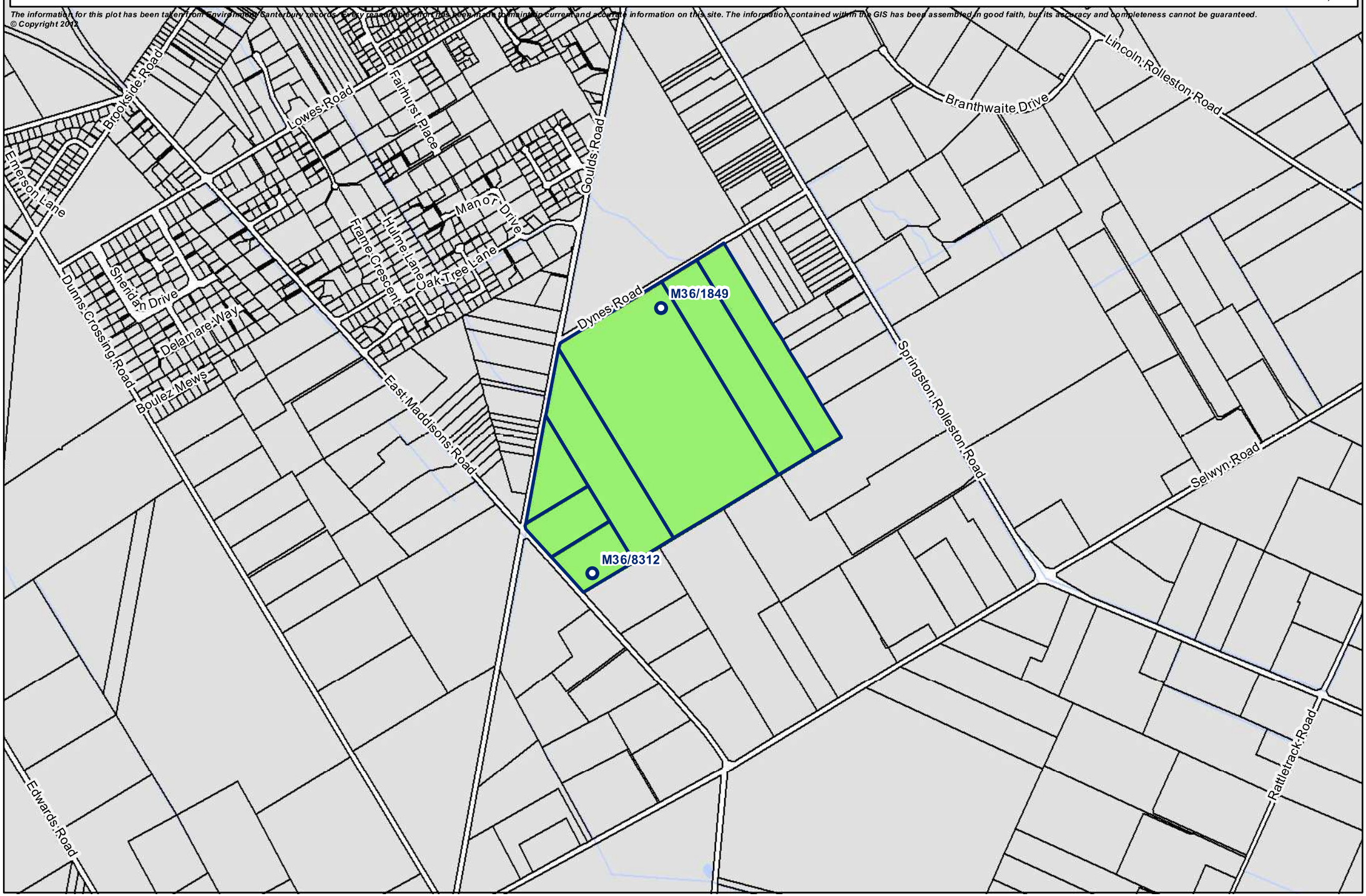
Not installed
CRC071349 - expired

Bore M36/8312 was proposed to be installed at this property under resource consent CRC071349. Bores are only authorised to be installed until the relevant resource consent expires and this consent expired on th 23rd November 2009.

Dynes Road Rolleston. Wells on Property

Environment Canterbury Regional Council
Kaunihera Taiao ki Waitaha

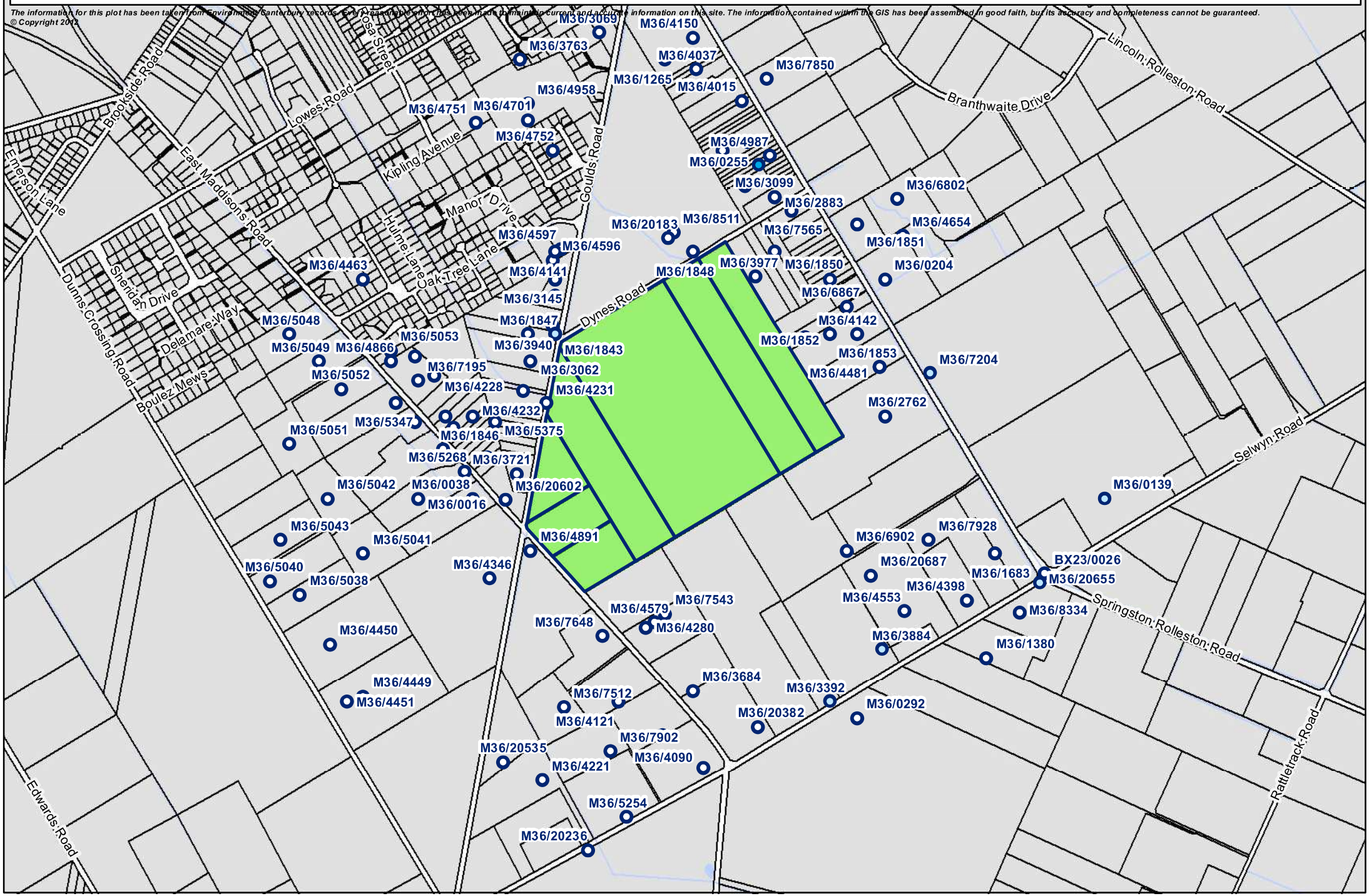
Scale 1:17,218



Dynes Road Rolleston. Wells within 1km radius

Environment Canterbury Regional Council
Kaunihera Taiao ki Waitaha

Scale 1:17,218



Fact Sheet

August 2005

Wells plot

The following information is designed to accompany a "wells plot". This plot consists of a map showing well locations and a report providing information regarding these wells.

The following information can currently be included in a wells report. As all of this information is seldom necessary, staff will often select the information they think is relevant to your enquiry. If you require a more comprehensive report Customer Services are happy to provide this service for you. Please note that a figure of 0.00 indicates there is no data for that particular category.

AQUIFER TESTS: number of aquifer tests that have been recorded in the database.

BOTTOM SCREEN 1/2/3: measurement from the top of the well casing to the bottom of the screen[1]. Up to three screens can be shown. Measured in metres (m).

CALC MIN WL: calculated minimum water level, available in some areas. Calculated from surrounding wells when the well has no water level measurements available. Measured in metres (m) from measuring point[2].

CONSENT NO: resource consent number of a groundwater take associated with well. Only shows one consent number (even if more than one consent is associated with the well).

CONSENT STATE: stage the consent specified in the 'consent no' column is at within the consent process. For an explanation of these codes, contact Customer Services.

DATE DRILLED: date that the well was drilled.

DATE EXPIRES: expiry date of the consent specified in the 'consent no' column.

DEPTH: of well, measured in metres (m) below ground level.

DIAMETER: of well, measured in millimetres (mm).

END READINGS: date of the last water level observation.

GRID EAST: full easting grid reference from New Zealand map grid.

GRID NORTH: full northing grid reference from New Zealand map grid.

GRID REFERENCE: co-ordinates to locate the well on a map, obtained using the NZMS 260 1:50 000 map series.

GROUND RL: ground reference level measures the height in metres (m) of the measuring point with respect to ground level. A negative value indicates that the ground level is below measuring point. A positive value indicates that the ground level is above measuring point

[1] A screen permits the entry of water and prevents the entry of sediment into the well. A well can have more than one screen.

[2] The measuring point is usually the top of the well casing.

Customer Services
0800 EC INFO
(0800 32 4636)

P O Box 345, Christchurch
www.ecan.govt.nz

Environment Canterbury
Your regional council

Wells plot

GW MONITORING TYPE: groundwater monitoring type code show wells currently monitored for water l evels.

C = CCC observation well
D, L, R = recorder network
M = monthly manual readings

HIGHEST/LOWEST WATER LEVEL: on record. A negative number indicates the water level is below the measuring point. A positive number indicates the water level is above the measuring point. Measured in metres (m) from measuring point. -1000.00 (-999.9) indicates no water recorded in well (i.e. well has run dry at some stage). 1000.00 (-999.999) indicates water flowing above ground (from an artesian well). Note in GIS output appears as –1000 but in fact is stored as –999.99

INITIAL SWL: initial water level, as measured by driller when well was drilled. Measured in metres (m) from measuring point. Not a very reliable level, indicative only.

ISOTOPE: A number that indicates the number of measurements that have been taken; zero indicates no data. Isotope and tracer data are measurements relating to the age of the water using natural isotopes like carbon 14 or tracer gases as CFC's.

MAXDRAWDOWN: amount that the water level droped when pumping from the well at the specified maximum yield (see 'maxyield' column). Measured in metres (m).

MAX RATE: that can be abstracted for the consent specified in the 'consent no' column. Measured in litres per second (l/s).

MAXYIELD: the maximum recorded tested volume discharged from a well, either by pumping or free flow. Measured in litres per second (l/s).

MSD: Mean Sea Level Datum (Lyttelton 1937)

OWNER: last known owner of the well.

QAR: see Quality Assurance Rating for grid reference accuracy (next page).

QAR RL: see Quality Assurance Rating for measuring point height in MSD* (next page).

QUALARC SITE NO: site identification number for water quality data.

READING COUNT: number of water level readings on record.

REFERENCE RL: reference level is the height of the water level measuring point, in relation to mean sea level datum. Measured/estimated in MSD.

SPECIFIC CAPACITY: discharge per unit drawdown of a well during pumping (yield ÷ drawdown). A high specific capacity usually indicates high yielding aquifers. A low specific capacity (especially values less than one) is associated with large drawdowns and low yielding areas or poorly constructed wells. Measured in litres per second per metre (l/s/m).

START READINGS: date of the first water level observation.

Customer Services
0800 EC INFO
(0800 32 4636)

P O Box 345, Christchurch
www.ecan.govt.nz

Environment Canterbury
Your regional council

Wells plot

STRATA: shows whether the geological log has been entered into the database. A number indicates the number of lines in the geological log; zero indicates no log available.

TOP SCREEN 1/2/3: measurement from the top of the well casing to the top of the screen. Up to three screens can be shown. Measured in metres (m).

USE CODE 1/2/3: use of well based on information provided when the well was drilled. May not be current if use has changed and no field visit has taken place. Up to three use codes can be shown. See well use codes (next page).

WELL NO: each well is given a number based on NZMS 260 1:50 000 map series.

WELL STATUS: code to show current status of the well. See well status codes (next page).

WELL TYPE: code to show type of well. See well type codes (next page).

WQ MONITORING TYPE: water quality monitoring type code show wells currently monitored for water quality.

A = annual
M = monthly
Q = quarterly
S = saltwater intrusion network

Accuracy: This information has been taken from Environment Canterbury records. It is supplied in good faith but its accuracy or completeness is not guaranteed. If the information is relied on in support of a resource consent application it should be verified independently (i.e. checking if the wells are located correctly, if wells exist and whether they are used). For information on accuracy of well locations, see below.

Quality Assurance Rating (QAR): Information in the Wells Database has been collected over a number of years to varying standards of measurement or observation. To address this, quality assurance rating (QAR) codes have been developed for well location.

The table below shows the accuracy of the different ratings for well locations and measuring point heights.

QAR Code	QAR Well location accurate to:	QAR Measuring Point Height
1	< 2 m (surveyed)	<0.1 Surveyed
2	Between 2-15 m GPS	<0.5m (GPS-d) or LIDAR
3	Between 10 and 50 meters	<2.5m LIDAR
4	Up to 300 m or with a grid refernce know to 100m accuracy only	<5meters estimated of topo map or DTM
5	Proposed	No height assigned

Customer Services
0800 EC INFO
(0800 32 4636)

P O Box 345, Christchurch
www.ecan.govt.nz

Environment Canterbury
Your regional council

Wells plot

Well Type Codes:

BO	Bore or well
CL	Well cluster
GA	Infiltration gallery
BG	Bore with attached gallery
RI	River Benchmark
TH	Thermal bore
PI	Excavated pit
WA	Water hole
UN	Unknown

Well Use Codes:

AC	Air conditioning
AT	Aquifer testing
CO	Commercial
DA	Dairy use
DE	Desalting
DO	Domestic supply
DS	Domestic and Stock
DW	Dewatering
ED	Effluent disposal
FI	Fire
FR	Frost protection
GA	Garden
GE	Geological research
GR	Groundwater remediation
IN	Industrial
IR	Irrigation
LQ	Liquifaction prevention
OB	Water level observation
PU	Public supply
RE	Recharge
SC	Small community public supply
SF	Sewage flushing
ST	Stock supply
SW	Swimming pool
TE	Foundation/investigation bore
WQ	Groundwater quality

Well Status Codes:

2A	Bore propsed to be altered
AL	Altered bore (new Number)
BU	Buried/unlikely well still exists
AE	Active-exists
CA	Capped (semi-permanent)
EX	Casing retrieved
FD	Filled in (plugged)
ND	Not drilled
NO	Not used
PR	Proposed
PL	Proposed Land Parcel Area
PW	Proposed grid reference for water permit
SE	Sealed/ grouted up

Resource Consents:

Before a new well is installed (e.g. drilled) or an existing well altered (e.g. deepened or filled in) you will need a resource consent (well permit) from Environment Canterbury. Permits to abstract water may also be required depending on the location of the well and quantity of water to be abstracted. This information can be found in Environment Canterbury's Resource Consent Information Series Booklet 10 - Bores and Groundwater.

Other Information:

Other useful Environment Canterbury resources include:

Your Well Water Might Be Making You Sick

What's in my well water?

These, and other resources, are available from Customer Services.

Customer Services
0800 EC INFO
(0800 32 4636)

P O Box 345, Christchurch
www.ecan.govt.nz

Environment Canterbury
Your regional council

Bore or Well No: M36/1849
Well Name:
Owner: FOSTER,D.M.

Environment Canterbury
Your regional council

Street of Well: DYNES ROAD
Locality: ROLLESTON
NZGM Grid Reference: M36:6059-3250 QAR 4
NZGM X-Y: 2460590 - 5732500
Location Description: SEE M36/1848
ECan Monitoring:
Well Status: Not Used

File No: CO6C/00652
Allocation Zone: Selwyn-Waimakariri
Uses: Irrigation

Drill Date: 01 Jan 2004
Well Depth: 48.00m -GL
Initial Water Depth: -11.50m -MP
Diameter: 200mm

Water Level Count: 0
Strata Layers: 8
Aquifer Tests: 0
Isotope Data: 0
Yield/Drawdown Tests: 1

Measuring Point Ait: 41.91m MSD QAR 3
GL Around Well: 0.00m -MP
MP Description:

Highest GW Level:
Lowest GW Level:
First Reading:
Last Reading:

Driller: Dynes Road Drilling
Drilling Method: Cable Tool
Casing Material: STEEL
Pump Type: Unknown
Yield: 16 l/s
Drawdown: 5 m
Specific Capacity: 3.04 l/s/m

Calc. Min. GWL: -13.30m -MP
Last Updated: 12 Nov 2007
Last Field Check:

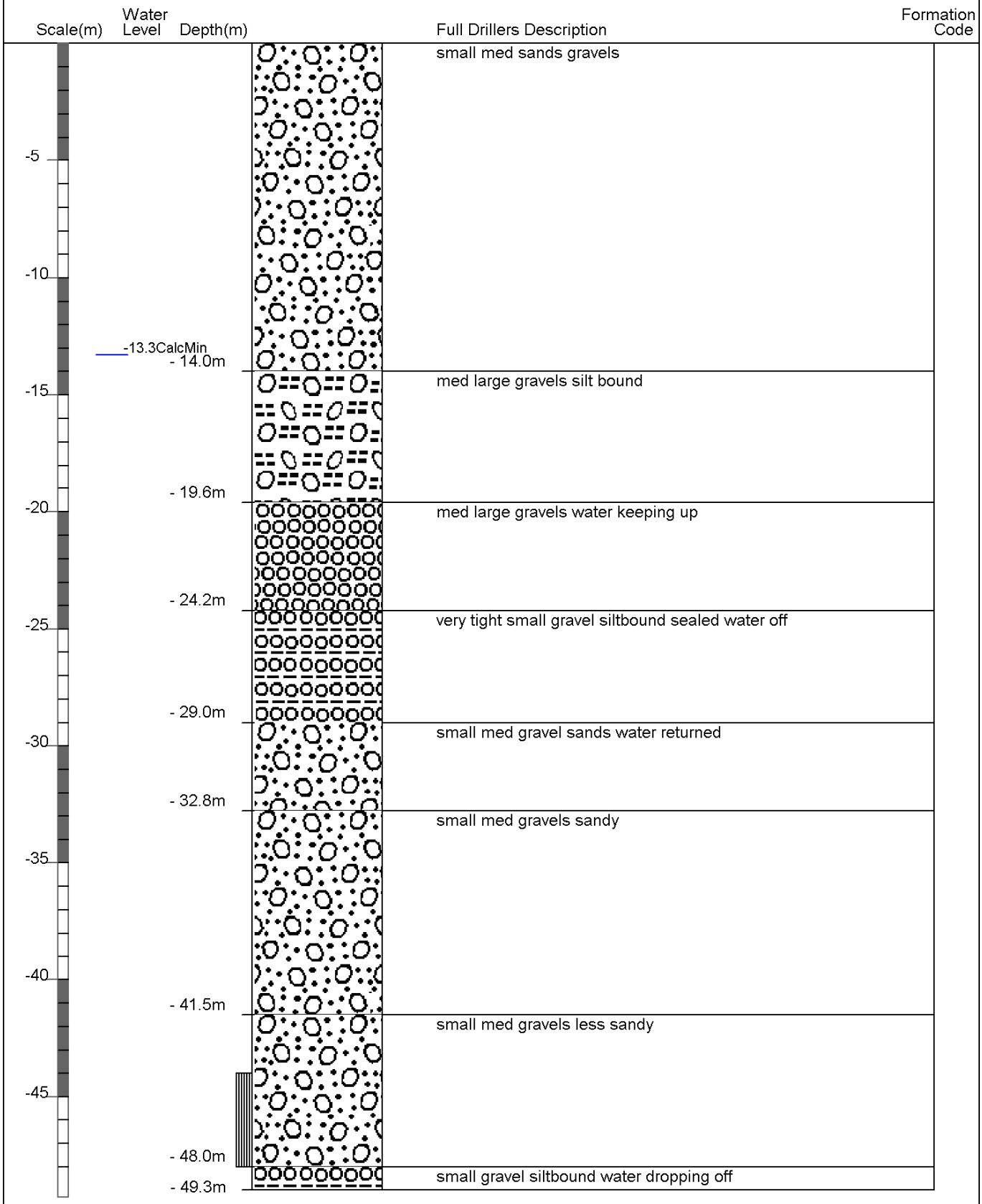
Screens:
Screen Type: Stainless steel
Top GL: 44.00m
Bottom GL: 48.00m

Aquifer Type: Unknown
Aquifer Name: Riccarton Gravel

Date	Comments
26 Sep 2001	ALSO M36/1848 Changed from 14m to 90m Application 26/09/01

Borelog for well M36/1849

Gridref: M36:6059-3250 Accuracy : 4 (1=high, 5=low)
Ground Level Altitude : 41.91 +MSD
Driller : Dynes Road Drilling
Drill Method : Cable Tool
Drill Depth : -49m Drill Date : 1/01/2004



Bore or Well No: M36/8312
Well Name:
Owner: MR K D FINDLATER

Environment Canterbury
Your regional council

Street of Well: EAST MADDISON ROAD
Locality: ROLLESTON
NZGM Grid Reference: M36:6034-3153 QAR 5
NZGM X-Y: 2460340 - 5731530
Location Description:
ECan Monitoring:
Well Status: Landparcel Proposed

File No: CO6C/26007
Allocation Zone: Selwyn-Waimakariri
Uses: Domestic and Stockwater

Drill Date:
Well Depth: 38.00m -GL
Initial Water Depth:
Diameter: 150mm

Measuring Point Ait: 36.70m MSD QAR 4
GL Around Well: 0.00m -MP
MP Description:

Driller: Dynes Road Drilling
Drilling Method: Rotary/Percussion
Casing Material:
Pump Type:
Yield:
Drawdown:
Specific Capacity:

Aquifer Type:
Aquifer Name:

Water Level Count: 0
Strata Layers: 0
Aquifer Tests: 0
Isotope Data: 0
Yield/Drawdown Tests: 0

Highest GW Level:
Lowest GW Level:
First Reading:
Last Reading:
Calc. Min. GWL:
Last Updated: 15 Nov 2006
Last Field Check:

Screens:
Screen Type:
Top GL:
Bottom GL:

WELL_NO	WELL_STATUS_DESC	WELL_OWNER	DEPTH	DIAMETER	USE_CODE_1_DESC
M36/0139	Active (exist, present)	GREENSLADE J.C.	65.80000305	203	Domestic and Stockwater
M36/4383	Active (exist, present)	WARMAN D.G.	24	150	Domestic Supply
M36/3392	Active (exist, present)	STERNE SJ & VL	34	150	Domestic Supply
M36/1852	Active (exist, present)	MAWHINNEY, D.	24.29999924	150	Domestic and Stockwater
M36/1468	Active (exist, present)	GILES B.J.	30	150	Stock Supply
M36/0292	Active (exist, present)		12.80000019	100	Domestic Supply
M36/4142	Active (exist, present)	DONALDSON J.D.	27.39999962	100	Domestic Supply
M36/1851	Not Used	DUNCAN	16	76	
M36/4481	Active (exist, present)	THOM C.N & S.M	30	150	Domestic and Stockwater
M36/1853	Active (exist, present)	KIDD P.R.	14	150	Domestic and Stockwater
M36/3884	Active (exist, present)	PALMER AG & ER	24	127	Domestic Supply
M36/2762	Not Used	THOM, C.N. & S.M.	24.29999924	200	Irrigation
M36/0204	Not Used	MOW	27.39999962	102	Domestic Supply
M36/6802	Active (exist, present)	Mr & Mrs J R & A J Forrest	36.40000153	150	Irrigation
M36/4654	Active (exist, present)	Mr G C Main & Mrs V L Eilken-Main	45.84999847	200	Small Community Supply
M36/4553	Not Used	MILLS .J	33	150	Irrigation
M36/4398	Active (exist, present)	YATES RP & EM	24.39999962	150	Domestic and Stockwater
M36/1380	Active (exist, present)	P J & H M Rains Family Trust	56.09999847	200	Irrigation
M36/1683	Active (exist, present)	YATES R.P.	13.10000038	150	Domestic and Stockwater
M36/4597	Not Used	NORTON L.J. & J.A.	18	76	
M36/3069	Active (exist, present)	BEHRNS T.C.	36	150	Domestic and Stockwater
M36/4121	Active (exist, present)	WARREN RJ & CL	21.5	152	Domestic and Stockwater
M36/5254	Active (exist, present)	Mr D B Irvine	36	150	Irrigation
M36/4280	Active (exist, present)	MEADOWS, G.L & J.M	25	150	Domestic and Stockwater
M36/4579	Not Used	MEADOWS, G.L.	23.5	150	
M36/1849	Not Used	FOSTER,D.M.	48	200	Irrigation
M36/1265	Active (exist, present)	A.B.ROBSON	24.39999962	76	Domestic Supply
M36/3684	Active (exist, present)	MEADOWS G.L.	19	150	Domestic and Stockwater
M36/1848	Not Used	FOSTER D.M.	24	200	Domestic Supply
M36/4150	Active (exist, present)	WILLETTS JR & RP	33	125	Domestic Supply
M36/4037	Active (exist, present)	Mr W L & Mrs A M Hunter	34.79999924	125	Domestic Supply
M36/4090	Active (exist, present)	DUTHIE D.J.M.	18.29999924	150	Domestic Supply
M36/5641	Active (exist, present)	BUNKER, RJA	36	125	Domestic Supply
M36/4015	Active (exist, present)	HURRELL G.A.	28	150	Domestic Supply
M36/3761	Active (exist, present)	BARNES M.R.	33.25	125	Domestic Supply
M36/3997	Active (exist, present)	COMMON A.D. H	42	125	Domestic Supply
M36/3977	Active (exist, present)	HOWDEN K.D.	34	150	Domestic Supply
M36/0255	Active (exist, present)	PETER VAN DER BERG	24.39999962	100	Water Level Observation
M36/4987	Active (exist, present)	MITCHELL, A.J. & L.A.	28	150	Domestic Supply
M36/1850	Active (exist, present)	WHITTINGTON, B.R.	18	150	Domestic and Stockwater
M36/2883	Active (exist, present)	SHEARER	21	150	Domestic Supply
M36/3099	Active (exist, present)	DEPT.LANDS & SURVEY	36	150	Domestic Supply
M36/5267	Active (exist, present)	GRAHAM, K.	38.5	150	Domestic Supply
M36/4707	Not Used	CHERRY, J.N.	24	83	

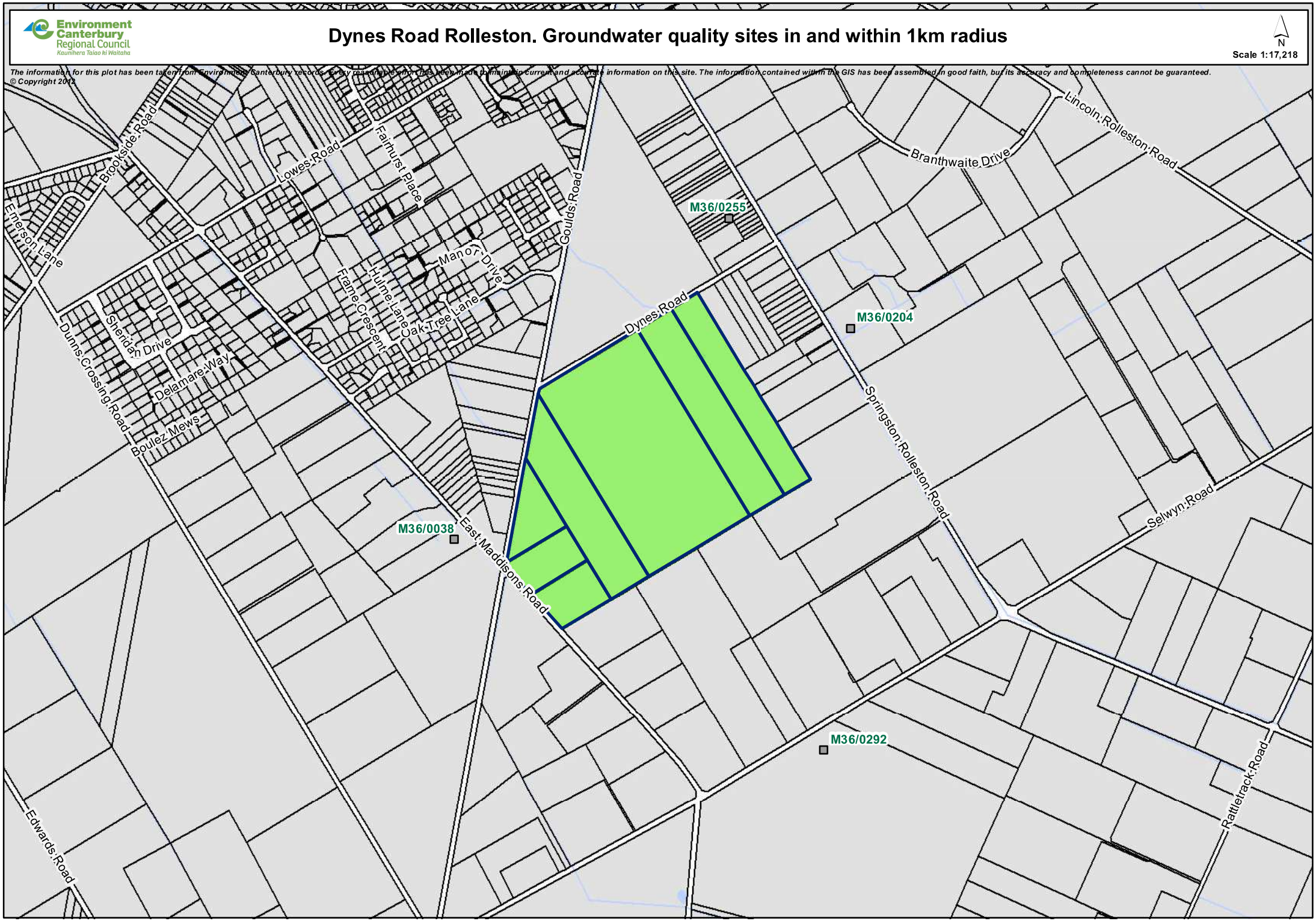
M36/0016	Not Used	WADE.A.	14	51	
M36/4228	Active (exist, present)	ANDREW J.J.	39.5	150	Domestic and Stockwater
M36/4291	Active (exist, present)	THOMAS, A.D.	36.59999847	150	Domestic Supply
M36/4140	Active (exist, present)	MACKENNA F & L	16.79999924	100	Domestic Supply
M36/4253	Active (exist, present)	BUNN DD & R	30	125	Domestic and Stockwater
M36/5268	Active (exist, present)	MACDONALD, K.	37	150	Domestic Supply
M36/0038	Active (exist, present)	M.W.D.	27.10000038	102	Domestic Supply
M36/1846	Active (exist, present)	BOS, G.	12	76	Domestic Supply
M36/4751	Active (exist, present)	BRITNELL, E.C.	33	125	Domestic Supply
M36/3041	Active (exist, present)	QUINTON, K.R.	24	150	Domestic Supply
M36/4346	Active (exist, present)	MAIN M.R.	26.79999924	150	Domestic Supply
M36/5375	Active (exist, present)	HAYWOOD, DH	21.45000076	76	Domestic Supply
M36/3721	Active (exist, present)	WILSON N.L.	19	150	Domestic Supply
M36/4231	Active (exist, present)	WHITE C.E.	35	150	Domestic Supply
M36/4232	Not Used	WHITE C.E.	None	51	
M36/3763	Active (exist, present)	FRASER .B.	31.70000076	150	Domestic and Stockwater
M36/0121	Not Used	WIDDERSON .J.	20.10000038	127	
M36/4701	Not Used	FRASER, B.E.	30	125	
M36/4958	Active (exist, present)	WILLIAMS, M.J. & N.J.	29	150	Domestic and Stockwater
M36/4891	Active (exist, present)	Mr & Ms B N & J A Stevens & Gray	25.25	150	Domestic and Stockwater
M36/3062	Active (exist, present)	MOSLEY NR & AL	36.5	150	Domestic and Stockwater
M36/4221	Active (exist, present)	Mr & Ms R J & S E Silcock & Russell	21.44000053	150	Irrigation
M36/3940	Active (exist, present)	WATSON .G.	32.40000153	150	Stock Supply
M36/4596	Active (exist, present)	NORTON L.J. & J.A.	39.79999924	150	Domestic and Stockwater
M36/4752	Active (exist, present)	FRASER, B.E.& J.F.	30	125	Domestic Supply
M36/1843	Active (exist, present)	STEEL M & SE	19	150	Domestic Supply
M36/1847	Active (exist, present)	MAYER IF & JK	19	150	Domestic Supply
M36/5063	Active (exist, present)	PAYNE, G.R.& K.	40	150	Domestic Supply
M36/3145	Active (exist, present)	GIRVAN RG & SC	35.40000153	125	Domestic and Stockwater
M36/4141	Active (exist, present)	NORTON L.J.	17.70000076	51	Domestic Supply
M36/5040	Active (exist, present)	KAJENS TRADING DEVELOPMENT LTD	34.5	150	Domestic Supply
M36/5043	Active (exist, present)	KAJENS TRADING DEVELOPMENT LTD	35.29999924	150	Domestic Supply
M36/5051	Active (exist, present)	KAJENS TRADING DEVELOPMENT LTD	33.59999847	150	Domestic Supply
M36/5048	Active (exist, present)	KAJENS TRADING DEVELOPMENT LTD	36	150	Domestic Supply
M36/5038	Active (exist, present)	KAJENS TRADING DEVELOPMENT LTD	32.09999847	150	Domestic Supply
M36/5049	Active (exist, present)	KAJENS TRADING DEVELOPMENTS LTD	36	150	Domestic Supply
M36/5042	Active (exist, present)	KAJENS TRADING DEVELOPMENT LTD	32.09999847	150	Domestic Supply
M36/4450	Active (exist, present)	Mr & Mrs L K & J C Blackmore	25.20000076	150	Irrigation
M36/5052	Active (exist, present)	KAJENS TRADING DEVELOPMENT LTD	34.20000076	150	Domestic Supply
M36/4451	Active (exist, present)	TYACK GJ & FR	None	None	Domestic Supply
M36/4449	Not Used	TYACK GJ & FR	24.20000076	150	Irrigation
M36/5041	Active (exist, present)	KAJENS TRADING DEVELOPMENT LTD	32	150	Domestic Supply
M36/4463	Active (exist, present)	BURNELL PF & LM	36	150	Domestic Supply
M36/4866	Active (exist, present)	HICKMAN, C.J.& P.E.	36	150	Domestic and Stockwater
M36/5053	Active (exist, present)	KAJENS TRADING DEVELOPMENT LTD	35.5	150	Domestic Supply

M36/5347	Not Used	KAJENS TRADING AND DEVELOPMENT	None	None		
M36/6867	Active (exist, present)	BN McIntyre		30	150	Domestic Supply
M36/6902	Active (exist, present)	Mr A J Cartwright		42	150	Domestic Supply
M36/7195	Active (exist, present)	MS J N CHERRY		42	150	Domestic and Stockwater
M36/7204	Active (exist, present)	Mr & Mrs R Geddes & Davis		114	200	Irrigation
M36/7512	Active (exist, present)	Mr & Mrs A S & M M Baxter		29	150	Domestic and Stockwater
M36/7543	Active (exist, present)	Mr & Ms G K & P R Poole & Eastmond		26	150	Domestic and Stockwater
M36/7565	Active (exist, present)	Mr & Mrs T & N Buhrs		35	150	Domestic Supply
M36/7639	Active (exist, present)	Mr & Mrs DA & MG Miller		32	150	Domestic and Stockwater
M36/7648	Active (exist, present)	Mr & Ms PM & KI Tilling & Thompson		26	150	Domestic and Stockwater
M36/7850	Active (exist, present)	Mr A J Easton		42	150	Domestic and Stockwater
M36/7902	Active (exist, present)	RB & BM CHAPMAN & HAMILTON		36	150	Domestic and Stockwater
M36/7928	Active (exist, present)	RP & EM YATES		37	150	Domestic and Stockwater
M36/8312	Landparcel Proposed	MR K D FINDLATER		38	150	Domestic and Stockwater
M36/8334	Active (exist, present)	MR & MRS VAN DER ZWET		48	150	Domestic and Stockwater
M36/8511	Landparcel Proposed	MR D J FOSTER		43	150	Domestic and Stockwater
M36/20183	Landparcel Proposed	MR & MRS D J & A P FOSTER		50	200	Domestic Supply
M36/20236	No Info Expired Boreconsent	Messers M G Stephens A L Billborough & J R Scott		80	300	Irrigation
M36/20382	Active (exist, present)	I J & B A BURRELL		36	150	Domestic and Stockwater
M36/20535	Active (exist, present)	Mr S & Mrs M Baxter		30	150	Domestic and Stockwater
M36/20602	Active (exist, present)	MR DAVID FOSKETT		36	150	Domestic Supply
M36/20655	Active (exist, present)	SELWYN DISTRICT COUNCIL		14.5	150	Water Level Observation
M36/20687	Active (exist, present)	MR G M SOLE		36	150	Domestic Supply
BX23/0026	Landparcel Proposed	SELWYN DISTRICT COUNCIL		20	110	Other - see comments

Dynes Road Rolleston. Groundwater quality sites in and within 1km radius

Environment Canterbury Regional Council
Kaunihera Taiao ki Waitaha

Scale 1:17,218



GROUND WATER QUALITY

Only dated ground water quality data is available (up to 10/8/1982) for wells within a 1km radius of this site. If you would like to see this historical data please contact Customer Services. The results relate to ground water quality in the well at the time that the sample was collected. However, it is important to note that ground water quality can change over time. The information is limited to the determinants that were analysed.

The locations of wells in Environment Canterbury's Wells database are generally accurate to within a few hundred metres. Therefore, it is possible that any details of wells included in this response may not actually be on the property in question. Likewise, there may be other wells on the property that Environment Canterbury does not have on record, or for which Environment Canterbury has inaccurate location details. If you have more detailed information on wells on the property, contact Environment Canterbury staff.

Each year, Environment Canterbury collects ground water samples from approximately 250 wells throughout Canterbury to assess the general quality of ground water by monitoring microbiological and chemical water indicators such as coliform bacteria and nitrate-nitrogen. Environment Canterbury also monitors pesticides and hydrocarbon contaminants in some parts of the region, and it conducts more detailed investigations in specific areas where contamination has been reported. A number of reports on ground water quality in Canterbury are held by Environment Canterbury, some of which may be relevant to your area.

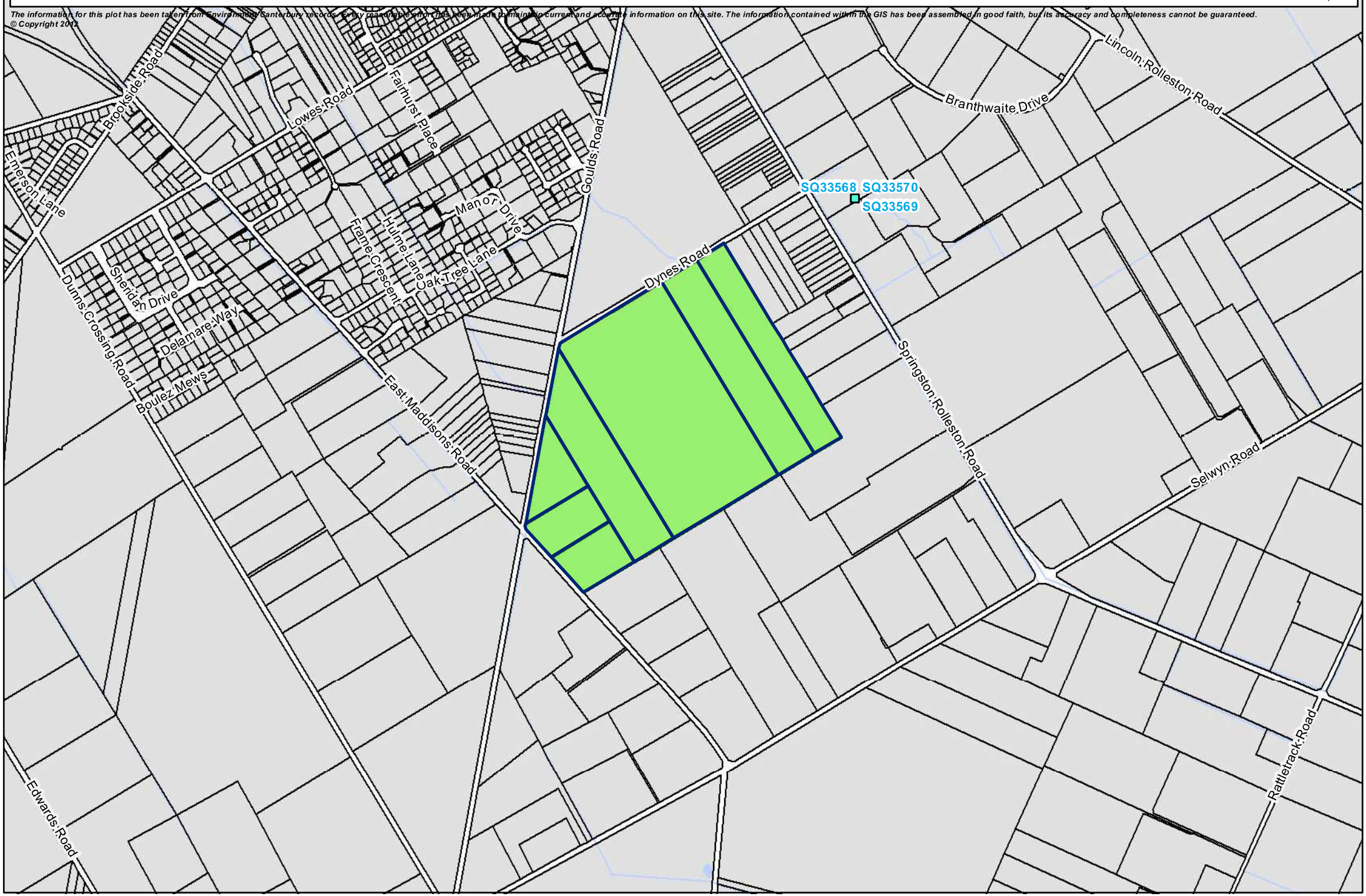
If ground water quality is an important consideration in the purchase of this property then you are advised to contact Environment Canterbury to see if any of this information is available, either in the form of reports or ground water quality data. Furthermore, Environment Canterbury recommends that you have your well water tested when you purchase a new property if the water is to be used for drinking purposes or where the quality of the water may affect the use of the water for other purposes.

Information is supplied on the basis that it is accurate to the best of the Environment Canterbury's knowledge and belief and is based on the information currently held by the Environment Canterbury. While Environment Canterbury has exercised all reasonable skill and care in controlling this information, Environment Canterbury accepts no liability in contract, tort or otherwise howsoever, for any loss, damage, injury or expense (whether direct, indirect or consequential) arising out of the provision of this information or its use by you.

Dynes Road Rolleston. Surface Water quality sites in and within 1km radius

Environment Canterbury Regional Council
Kaunihera Taiao ki Waitaha

Scale 1:17,218



SURFACE WATER QUALITY

Only dated surface water quality data is available (up to 7/11/1996) within a 1km radius of this site. If you would like to see this historical data please contact Customer Services. The results relate to water quality at the time that the sample was collected. However, it is important to note that water quality can change over time. The information is limited to the determinands that were analysed.

Environment Canterbury collects water quality samples from a number of sites throughout the region, which can change from year-to-year, and it conducts more detailed investigations in specific areas where contamination has been identified. A number of reports on surface water quality in Canterbury are held by Environment Canterbury, some of which may be relevant to water bodies in the greater area near your property.

Information is supplied on the basis that it is accurate to the best of the Environment Canterbury's knowledge and belief and is based on the information currently held by the Environment Canterbury. While Environment Canterbury has exercised all reasonable skill and care in controlling this information, Environment Canterbury accepts no liability in contract, tort or otherwise howsoever, for any loss, damage, injury or expense (whether direct, indirect or consequential) arising out of the provision of this information or its use by you.

Terms and conditions for the supply and use of Environment Canterbury information.

(Environment Canterbury is the promotional name for Canterbury Regional Council)

DESCRIPTION OF INFORMATION

Information supplied to: Tom Davies

Description of information to which these terms and conditions apply:

Daily Mean flows on the following site:

> 68002: Selwyn River at Coes Ford (Grid Reference: M36:632-228) from the 1st of January 2005 to the 16th of September 2012.

Data supplied as: Excel Spreadsheet

GENERAL TERMS AND CONDITIONS

1. Environment Canterbury owns the copyright on the information.
2. Environment Canterbury shall be acknowledged as the source of the information used in any reports, publications, media statements or other documents, or oral statements which include the information and are made available to third parties or the general public.
3. A copy of these terms and conditions shall accompany any of the attached information which is made available to third parties.
4. The user of the attached information agrees to indemnify Environment Canterbury for any losses sustained as a consequence of breach of any of these conditions.

DISCLAIMER

The attached information is supplied on the basis that it is accurate to the best of Environment Canterbury knowledge and belief and is based on the information currently held by Environment Canterbury. While Environment Canterbury has exercised all reasonable skill and care in controlling this information, Environment Canterbury accepts no liability in contract, tort or otherwise howsoever, for any loss, damage, injury or expense (whether direct, indirect or consequential) arising out of the provision of this information or its use by you.

NOTE ON PROVISIONAL INFORMATION

The attached information is *provisional/~~audited~~* **(see below)** information. Provisional information has not yet been checked using the Council's Quality Assurance audit procedures. Provisional information may be subject to significant changes and are not citeable until reviewed and approved by Environment Canterbury.

Information users are cautioned to consider carefully the nature of provisional information before using it for decisions that concern personal or public safety or the conduct of business that involves monetary or operational consequences.

Prepared by: Kerrie Osten	Date: 20th September 2012

~~~ NIWA Tideda ~~~ Environme Canterbury 20-Sep-12 9:40
~~~ PDAY ~~~ VER 1.9
Source is Y:\68002.mtd
24 hour periods beginning at midnight each day.
Daily means Year 2005 site 68002 Selwyn at Coes Ford
Flow l/s

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
1	1033	635	326	345	528	641	588	589	544	542	428	208	
2	1028	617	326	345	542	643	589	587	539	533	399	200	
3	1013	608	302	336	663	622	596	577	559	532	402	192	
4	1018	605	301	326	620	619	589	572	566	525	402	199	
5	991	596	288	319	597	638	589	569	564	554	372	240	
6	992	575	266	327	587	630	589	571	557	535	375	241	
7	995	545	298	334	578	616	589	577	540	536	356	273	
8	1057	542	295	333	654	621	593	661	537	587	335	253	
9	1376	498	290	367	684	616	593	634	537	570	329	244	
10	1182	458	297	372	645	616	589	625	530	616	300	238	
11	1112	468	323	364	624	616	589	614	529	680	287	242	
12	1080	504	306	362	603	616	589	605	524	615	300	231	
13	1058	508	301	353	595	609	584	590	523	578	334	291	
14	1028	508	304	355	587	611	584	586	518	557	408	297	
15	990	529	298	359	582	617	591	581	518	547	348	293	
16	967	482	306	368	602	616	589	576	515	533	332	238	
17	943	431	311	372	597	616	588	578	503	517	335	196	
18	930	403	305	369	602	614	594	582	499	513	310	187	
19	909	385	302	371	639	608	602	582	782	509	307	180	
20	888	379	294	368	643	608	613	580	920	507	277	164	
21	860	368	311	371	746	624	640	571	734	504	286	125	
22	833	361	324	376	766	619	625	569	665	501	311	126	
23	826	352	322	384	716	606	617	565	626	494	279	280	
24	804	362	317	491	684	602	608	564	602	481	270	229	
25	771	349	332	652	664	601	602	558	594	470	289	179	
26	749	347	348	594	649	638	601	559	592	464	286	251	
27	723	350	372	573	642	618	595	553	582	460	267	313	
28	713	340	351	565	631	609	589	552	581	435	251	215	
29	726	347	564	629	603	591	549	567	430	230	167		
30	691	356	540	616	597	590	548	555	446	208	138		
31	674	347	604	589	543	445	135						
Min	674	340	266	319	528	597	584	543	499	430	208	125	125
Mean	934	468	315	405	630	617	596	580	580	523	320	218	516
Max	1376	635	372	652	766	643	640	661	920	680	428	313	1376

Daily means Year 2006 site 68002 Selwyn at Coes Ford
Flow l/s

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	122	32	32	92	142	455	4780	2374	2475	1525	1239	1143
2	125	29	72	91	144	423	4366	2048	2413	1503	1223	1108
3	115	27	111	91	151	404	3809	1912	2241	1715	1208	1113
4	124	29	129	92	154	424	4311	1684	2191	4221	1171	1123
5	141	68	67	99	151	561	20293	1506	2148	2252	1160	1095
6	128	78	26	103	145	507	16629	1434	2087	1990	1158	1069
7	110	63	21	119	143	455	12075	2444	2024	1922	1384	1063
8	96	62	30	118	144	425	9315	5324	2009	1797	1446	1091
9	92	80	64	91	148	410	7453	8058	1986	1829	1357	1132
10	191	93	55	87	159	395	7142	8378	1946	1722	1257	1101
11	246	88	48	90	164	384	7557	7191	1913	1621	1215	1067
12	284	75	54	83	572	2704	7562	6346	1896	1582	1200	1059
13	285	59	56	86	508	2147	6582	5732	1883	1557	1189	1094
14	229	66	60	85	443	1397	5306	6537	1842	1511	1211	1059
15	174	64	62	82	924	2616	4010	9309	1839	1514	1157	1034
16	142	54	67	83	594	35024	3500	10687	1850	1462	1124	1027
17	124	50	77	74	417	66212	3015	8557	1820	1412	1138	1024
18	106	38	82	68	342	36483	2652	7139	1780	1405	1310	999
19	125	34	77	74	298	28408	2857	6119	1789	1422	1284	988
20	111	32	79	85	269	25200	25258	5329	1766	1358	1225	1100
21	95	34	90	71	254	17512	44525	4925	1747	1343	1188	1427
22	73	30	95	64	274	25589	26919	7099	1711	1315	1182	4825
23	67	29	95	61	453	25180	18818	5177	1672	1316	1171	6606
24	61	26	97	52	453	28781	13337	4497	1668	1351	1126	6976
25	60	26	94	148	560	21861	9218	4092	1657	1354	1103	5232
26	57	28	88	204	481	15844	6722	3688	1630	1317	1133	3827
27	53	34	94	154	553	11720	5448	3338	1571	1302	1156	2955
28	46	48	97	138	508	8812	4465	3098	1581	1293	1094	2160

29	41	93	134	507	6753	3751	2927	1587	1286	1057	1684			
30	28	92	147	580	5355	3330	2735	1562	1358	1115	2045			
31	28	92	507	2887	2613	1264	8451							
Min	28	26	21	52	142	384	2652	1434	1562	1264	1057	988	21	
Mean	119	49	74	99	359	12415	9609	4913	1876	1607	1199	2183	2887	
Max	285	93	129	204	924	66212	44525	10687	2475	4221	1446	8451	66212	

Daily means Year 2007 site 68002 Selwyn at Coes Ford
Flow l/s

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	10248	870	716	671	718	699	832	1007	870	758	689	414
2	7309	866	712	665	767	700	809	965	862	761	676	440
3	6360	884	702	656	829	697	1267	941	863	820	673	431
4	6140	861	698	655	763	699	1001	942	888	798	677	415
5	4995	848	699	653	743	704	957	1315	980	773	683	396
6	3794	866	680	652	727	705	1077	1145	948	744	671	383
7	2769	899	676	676	720	703	1040	1069	920	730	658	373
8	2139	879	680	679	716	702	974	1009	912	765	627	353
9	1722	872	668	674	715	701	936	986	894	760	604	347
10	1531	872	665	677	716	699	919	965	885	795	595	341
11	1413	864	663	680	717	700	918	954	875	1392	589	315
12	1338	853	660	712	714	701	965	945	855	1080	579	314
13	1279	851	693	706	713	699	945	978	847	960	579	346
14	1264	840	753	692	720	697	920	959	847	904	655	428
15	1216	832	755	685	722	695	912	942	836	856	614	393
16	1151	822	720	683	722	718	902	937	813	822	648	346
17	1128	787	702	680	719	726	897	945	799	795	783	308
18	1111	773	706	677	713	714	895	959	787	806	672	336
19	1076	778	709	670	710	710	881	942	785	781	565	351
20	1078	767	698	669	713	710	882	935	782	772	547	371
21	1084	760	694	672	714	720	895	930	779	759	548	369
22	1029	762	687	674	708	755	894	921	785	748	526	384
23	977	778	681	674	712	727	890	903	784	743	487	338
24	949	775	687	674	711	711	881	896	806	731	444	293
25	948	761	687	676	707	700	877	893	802	719	437	275
26	948	730	682	680	705	689	869	892	783	708	417	293
27	949	725	678	687	704	685	867	886	774	703	415	295
28	932	725	683	694	700	685	864	898	767	708	436	287
29	914	690	695	698	762	863	890	760	726	417	269	
30	897	691	704	699	1006	1162	886	758	711	408	272	
31	882	683	700	1076	877	700	262					
Min	882	725	660	652	698	685	809	877	758	700	408	262	262	
Mean	2244	818	693	678	721	717	938	958	835	801	577	346	863	
Max	10248	899	755	712	829	1006	1267	1315	980	1392	783	440	10248	

Daily means Year 2008 site 68002 Selwyn at Coes Ford
Flow l/s

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	259	84	143	101	198	289	763	203336	17310	3949	1529	842
2	243	70	170	122	210	292	659	53268	13355	3620	1442	849
3	228	65	172	126	523	300	594	39941	11570	3457	1421	786
4	218	77	161	113	721	298	813	36463	12254	3388	1444	743
5	205	82	158	104	478	293	1733	41229	37528	3147	1468	733
6	208	79	150	104	387	293	3610	34953	55887	2995	1399	728
7	228	81	148	107	350	340	1354	25436	33016	3107	1370	718
8	214	95	138	113	331	503	1071	19557	24089	3023	1333	732
9	205	81	134	119	307	417	866	21498	19076	2678	1346	776
10	191	64	136	120	299	372	771	17074	16578	2421	1330	784
11	181	64	140	119	292	353	730	13604	14684	2283	1286	746
12	162	68	140	123	285	345	717	12247	12786	2151	1245	769
13	137	81	142	125	287	331	649	13906	10967	2114	1231	731
14	117	84	145	124	278	326	623	12195	9678	2076	1194	688
15	112	302	144	129	270	319	599	10691	8638	1985	1171	707
16	111	754	139	132	280	312	586	9056	7857	1954	1123	713
17	104	612	145	146	269	313	574	7573	7324	1896	1126	700
18	91	316	133	156	272	310	571	7051	6776	1850	1101	672
19	94	244	128	226	291	306	595	7151	6226	1797	1070	651
20	85	209	111	219	283	311	620	6269	6124	1801	1048	1061
21	86	188	112	197	276	317	596	5480	5981	1743	1033	1404
22	102	178	115	184	282	328	589	4922	5332	1723	1039	1011
23	123	175	118	178	314	422	581	4380	4922	1682	1000	900

24	106	160	113	172	304	416	3993	4285	4501	1660	973	858	
25	100	137	109	170	314	385	35776	26186	4257	1692	955	849	
26	108	126	106	177	324	376	23702	153363	4353	1782	909	826	
27	103	120	105	184	313	368	12907	130780	4401	1696	905	786	
28	92	118	101	188	303	509	7138	67518	4228	1644	878	762	
29	88	119	99	180	296	2406	4907	41893	4177	1608	853	735	
30	89	94	180	296	1039	4938	30937	4183	1566	826	697		
31	93	94	289	77939	23889	1541	652						
Min	85	64	94	101	198	289	571	4285	4177	1541	826	651	64
Mean	145	167	130	148	320	440	6179	35037	12602	2259	1168	794	4990
Max	259	754	172	226	721	2406	77939	203336	55887	3949	1529	1404	203336

Daily means Year 2009 site 68002 Selwyn at Coes Ford
Flow l/s

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	609	231	348	344	535	6099	1631	2744	2512	1359	3968	956
2	564	233	308	325	494	4907	1639	2411	2953	1316	3273	1101
3	564	242	301	316	474	3782	2112	2149	2607	1308	2646	1110
4	568	245	303	305	465	3026	1997	2002	2306	1260	2211	1035
5	546	234	312	285	462	2660	1920	1877	2123	1228	1849	998
6	525	206	314	276	913	2351	2496	1766	1970	1237	1631	983
7	494	179	284	273	847	2044	10118	1733	1861	1241	1470	983
8	458	212	264	423	783	1875	11640	1712	1770	1261	1381	982
9	436	201	288	431	894	1801	8756	1688	1688	1503	1358	945
10	447	217	291	331	1262	1770	6223	1669	1646	1574	1343	909
11	437	260	350	308	2055	1728	4675	1656	1642	1443	1310	916
12	421	329	351	304	1184	1686	3820	1631	1598	1379	1248	913
13	435	337	337	308	964	2193	3865	1740	1543	1340	1210	852
14	423	293	318	310	848	2456	4476	1862	1517	1316	1191	862
15	406	265	314	310	795	2324	3592	1825	1492	1285	1162	941
16	386	267	312	310	739	2113	2967	1811	1462	1282	1138	910
17	371	275	312	310	701	1866	2736	1855	1456	1323	1101	881
18	397	271	318	318	678	1753	2574	1881	1448	1308	1072	874
19	467	288	306	327	674	1698	2289	2012	1416	1291	1062	862
20	425	333	303	355	1502	1688	1905	1888	1395	1315	1025	872
21	385	366	311	359	3074	1701	1710	1824	1395	1282	1025	905
22	362	326	318	359	1884	1701	1605	1827	1395	1249	1030	876
23	349	304	320	359	1997	1701	1487	1955	1395	1224	1016	846
24	334	333	327	359	4016	1701	4299	1924	1371	1212	975	797
25	312	330	322	362	80976	1680	12989	1884	1399	1200	912	708
26	305	319	319	363	54836	1687	8911	1924	1417	1228	866	684
27	328	321	339	355	29915	1687	6534	2341	1403	1505	848	719
28	344	333	329	361	17828	1658	5138	2868	1395	1968	876	743
29	335	318	485	10765	1634	4294	2565	1395	5463	915	732	
30	329	309	656	7592	1632	3670	2259	1386	7396	920	704	
31	276	315	6065	3155	2401	5197	686					
Min	276	179	264	273	462	1632	1487	1631	1371	1200	848	684	179
Mean	420	277	315	349	7620	2220	4362	1990	1679	1790	1401	880	1961
Max	609	366	351	656	80976	6099	12989	2868	2953	7396	3968	1110	80976

Daily means Year 2010 site 68002 Selwyn at Coes Ford
Flow l/s

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	614	477	269	180	245	15238	7614	4774	43326	3721	1582	1192
2	568	461	276	198	245	10710	6443	4295	26309	3481	1560	1205
3	561	456	285	201	249	8058	5614	3767	18154	3296	1536	1204
4	543	434	274	183	254	6153	4936	3712	19198	3063	1509	1166
5	514	417	274	207	268	4883	4364	3596	18931	2948	1752	1130
6	503	411	289	217	279	4281	3925	3328	15182	2888	1973	1097
7	506	411	273	231	279	5052	3664	3224	12417	2779	1773	1093
8	503	411	250	231	280	16666	3491	6872	11229	2749	1677	1088
9	482	406	236	226	285	16258	3455	99511	12811	2724	1622	1076
10	496	399	242	222	291	12397	3457	45652	12727	2660	1590	1078
11	585	403	260	214	297	9567	3209	23591	12199	2686	1551	1071
12	587	397	301	159	301	7598	3061	12846	10238	2566	1512	1024
13	570	380	320	127	308	6283	2993	9825	15822	2510	1455	1019
14	564	366	295	139	304	5467	2848	16122	19258	2444	1440	988
15	564	353	285	134	307	5278	2787	15652	16446	2376	1400	992
16	564	340	284	257	333	4641	2731	11450	13330	2348	1412	987
17	571	347	298	279	487	4075	2698	9381	11004	2283	1378	1043
18	574	397	294	252	560	3810	2625	10406	13439	2170	1370	1024

19	574	410	295	251	476	3604	2553	20841	11031	2085	1332	983
20	574	384	289	245	434	3402	2520	28557	9136	2088	1353	954
21	574	380	286	236	421	3592	2460	21915	8329	2063	1394	887
22	597	378	255	225	411	3523	2777	15857	7765	1925	1404	813
23	722	347	243	214	402	4843	3989	11848	7018	1891	1346	785
24	704	310	244	236	411	11270	37092	9417	6460	1897	1332	782
25	628	293	271	285	809	26736	27428	7801	5761	1837	1328	768
26	587	307	250	275	2641	29663	17108	6865	5137	1804	1296	755
27	580	288	230	273	56823	23351	12331	5752	4623	1807	1259	740
28	571	273	240	268	48115	16286	9349	4961	4515	1797	1238	908
29	558	240	256	34125	11768	7208	4464	4262	1731	1208	942	
30	528	238	253	31697	9267	5942	5915	3988	1681	1180	849	
31	499	199	25351	5267	35511	1591	842					
Min	482	273	199	127	245	3402	2460	3224	3988	1591	1180	740	127
Mean	567	380	267	222	6700	9791	6643	15087	12668	2384	1459	983	4785
Max	722	477	320	285	56823	29663	37092	99511	43326	3721	1973	1205	99511

Daily means Year 2011 site 68002 Selwyn at Coes Ford
Flow l/s

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	841	605	517	508	667	996	1134	1114	2269	1704	2326	1344
2	807	588	482	508	682	977	1103	1094	2097	1696	2292	1288
3	793	595	459	507	728	964	1093	1089	1984	1699	2137	1242
4	787	602	452	549	746	978	1083	1089	1904	2122	1979	1199
5	810	594	465	907	746	982	1092	1089	1857	2028	1892	1157
6	826	565	548	753	720	964	1102	1106	1846	1911	1840	1259
7	792	636	523	667	881	964	1060	1101	1828	1857	1806	2180
8	760	665	514	634	1393	962	1100	1067	1854	1851	1786	1775
9	732	643	502	619	1170	954	1088	1048	1844	1809	1812	1611
10	727	610	495	614	1097	1052	1054	1047	1830	1779	1875	1550
11	733	589	498	611	1071	1123	1063	1047	1837	1818	1802	1526
12	745	598	505	602	1050	1061	1043	1085	1857	1754	1845	1503
13	751	603	507	597	1025	1029	1014	1109	1836	1722	1798	1465
14	722	627	490	601	1020	1005	1010	1122	1858	1701	1738	1464
15	695	592	474	612	1005	994	1002	1220	1851	1692	1706	1462
16	666	564	476	638	1005	964	995	1976	1846	1667	1749	1727
17	679	539	496	694	988	958	979	6094	1829	1665	1687	1660
18	751	537	495	788	941	993	974	6975	1813	1677	1624	1538
19	793	541	477	729	934	1012	974	4633	1848	6144	1564	1482
20	704	538	491	702	934	1078	979	3097	1861	63779	1552	1439
21	695	496	513	686	934	1083	984	2514	1836	26812	1758	1399
22	709	534	521	685	934	1048	992	2198	1835	16089	1743	1363
23	720	589	519	678	940	1047	1003	2029	1803	11645	1645	1347
24	725	566	509	652	950	1027	1036	1943	1807	8341	1631	1322
25	704	571	502	638	954	1013	1125	1858	1829	6308	1568	1289
26	688	578	496	667	1135	1002	1220	1826	1796	4970	1503	1266
27	663	556	519	667	1282	1005	1250	3337	1767	3866	1486	1239
28	657	548	588	667	1137	1046	1268	3549	1745	3431	1485	1220
29	668	528	667	1059	1277	1221	3324	1715	3159	1423	1212	
30	637	509	667	1029	1189	1171	2966	1706	2777	1380	1222	
31	629	510	1015	1132	2546	2518	1238					
Min	629	496	452	507	667	954	974	1047	1706	1665	1380	1157	452
Mean	729	581	503	651	973	1025	1076	2171	1853	6193	1748	1419	1588
Max	841	665	588	907	1393	1277	1268	6975	2269	63779	2326	2180	63779

Daily means Year 2012 site 68002 Selwyn at Coes Ford
Flow l/s

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	1201	762	1201	809	812	908	978	1668	3652	?	?	?
2	1158	748	960	814	794	908	999	17602	3246	?	?	?
3	1143	729	1007	817	809	913	1036	39714	2980	?	?	?
4	1122	719	1029	829	820	904	1119	36735	2722	?	?	?
5	1077	725	913	816	828	944	1165	24329	2395	?	?	?
6	1057	726	855	791	850	1612	1174	14322	2105	?	?	?
7	1074	709	823	796	860	1283	1144	9396	1945	?	?	?
8	1039	689	818	791	869	1146	1108	8288	1821	?	?	?
9	1025	672	816	780	873	1090	1099	27509	1714	?	?	?
10	1020	669	830	761	891	1021	1108	25914	2486	?	?	?
11	996	677	844	944	899	993	1102	16443	2321	?	?	?
12	963	670	845	986	899	961	1102	12386	1955	?	?	?
13	983	682	809	913	904	942	1102	60482	1681	?	?	?

14	887	718	786	859	905	956	1106	143808	1515	?	?	?	
15	819	749	798	838	914	1017	1138	63914	1362	?	?	?	
16	798	721	788	832	911	1565	1135	43482	1265	?	?	?	
17	783	685	781	825	891	1327	1110	28249	?	?	?	?	
18	786	677	746	828	890	1268	1091	21350	?	?	?	?	
19	794	702	809	820	878	1215	1091	16825	?	?	?	?	
20	767	688	814	825	883	1150	1091	14780	?	?	?	?	
21	765	660	808	834	891	1092	1091	14166	?	?	?	?	
22	805	671	875	834	891	1060	1101	14967	?	?	?	?	
23	885	822	869	841	891	1051	1127	14841	?	?	?	?	
24	825	935	842	835	896	1123	1181	11814	?	?	?	?	
25	838	982	833	826	898	1130	1233	10054	?	?	?	?	
26	817	858	784	825	894	1093	1238	8505	?	?	?	?	
27	927	813	762	848	917	1044	1240	7471	?	?	?	?	
28	825	797	765	841	912	1025	1230	6389	?	?	?	?	
29	787	810	781	823	954	985	1237	5506	?	?	?	?	
30	781	791	829	927	971	1294	4687	?	?	?	?		
31	769	802	920	1695	4147	?	?						
Min	765	660	746	761	794	904	978	1668	1265	?	?	?	660
Mean	920	740	845	834	883	1090	1150	23540	2198	?	?	?	3699
Max	1201	982	1201	986	954	1612	1695	143808	3652	?	?	?	143808

End of process

20 September 2012

Memo to: Customer Services
Attention: Jason McDonald

Re: LIR#3449 – Flood Risk
For: Golder Associates (Tom Davies)

LOTS 1, 2, 3 & 4 DP 372247, LOT 1 DP 8833, RS 12514 & RS 15710 – DYNES ROAD, ROLLESTON

Flood Risk

The property is outside the recorded floodplains of the major rivers and areas recorded by Environment Canterbury as flood ponding areas. This assessment is based on historical flood records and floodplain studies held by Environment Canterbury.

Environment Canterbury and previously the North Canterbury Catchment Board have not monitored the locality to determine any extent of flooding resulting from localised rainfall events.

Environment Canterbury does not have sufficient information to comment on whether or not there is any risk of localised flooding by runoff from adjoining land or water-races or drains. Environment Canterbury staff have not inspected the property in order to ascertain any such risk.

Other possible sources of information would be local knowledge or the Selwyn District Council.

Nick Griffiths

HAZARD ANALYST

Our Ref: HAZA/FLD/ASS/CHC/12554
Your Ref:
Contact: Nick Griffiths

Environment Canterbury
Regional Council
Kaunihera Taiao ki Waitaha

28 September 2012

Memo to: Customer Services

Re: LIR 3449
For: Golder Associates attn: Mr Tom Davies
Property address: Dynes Road, Rolleston
Legal description: Lots 1,2,3 & 4 DP 372247, RS 12514 and RS 15710

EARTHQUAKE HAZARD

No specific earthquake hazard information or specific soils/foundation condition information is held by Environment Canterbury for this property.

Surface fault rupture hazard

There are no known earthquake faults at the ground surface on the property.

Ground shaking hazard

There are a number of known earthquake faults in the mid Canterbury area, mostly in the Southern Alps and foothills, that are capable of generating damaging earthquakes.

Regional-scale studies indicate that Modified Mercalli (MM) intensity 6-7 ground shaking is almost certain to occur in the Rolleston area within the next 50 years and there is a 10% chance of MM intensity 7-8 ground shaking within the next 50 years[1]. The MM intensity scale is a descriptive scale from 1-12 used to describe the "strength" of earthquake shaking at a particular location (in contrast, the magnitude of an earthquake measures the "size", or amount of energy released in an earthquake – intensity generally decreases with distance from the earthquake source). At MM intensity 6 ground shaking is felt by everyone, furniture moves and plaster cracks. At MM intensity 7 there is general alarm, it is difficult to stand, weak masonry buildings are damaged, windows crack and there are small landslides and rockfalls. At MM intensity 8 driving is difficult, ordinary masonry is damaged, chimneys fall, significant landsliding occurs in susceptible slopes and liquefaction occurs in susceptible sediments. At MM intensity 9 there is general panic, masonry and foundations are damaged or destroyed, some houses shift off foundations and landsliding is widespread.

Local ground conditions (soil type and depth) may influence ground shaking intensity by up to +/- 1.5 MM units.

Liquefaction hazard

The property is in a general area of very low liquefaction potential, determined primarily from geological information. However, because soil conditions can vary over short distances, actual liquefaction potential at a particular site can only be determined through a site specific investigation. Available mapping after the September 2010 Darfield (Canterbury) Earthquake

[1] Figures produced pre-September 2010. Revised ground shaking hazard is likely to be slightly higher over the next decade because of the Canterbury earthquakes.

shows there was evidence of liquefaction on the property, but there was no similar evidence mapped after the February 2011 Christchurch Earthquake.

Further information

Further information on earthquake hazards, the earthquake magnitude scale and the Modified Mercalli intensity scale can be found in the booklet *The Q Files: Earthquakes* which can be requested at no charge from Environment Canterbury Customer Services. General information on liquefaction can be found in the booklet *The Q Files: Liquefaction*, which is also available at no charge from Environment Canterbury Customer Services. These booklets can also be downloaded at www.ecan.govt.nz/qfiles.

Further regional-scale information on probabilistic ground shaking hazard (including peak ground acceleration and spectral acceleration data) is available in the report *Updated Probabilistic Seismic Hazard Assessment for the Canterbury Region* available from Environment Canterbury. Further district-scale information on ground shaking and liquefaction can be found in *Selwyn District Engineering Lifelines Project - Earthquake Hazard Assessment* available from Environment Canterbury or Selwyn District Council, and in *2010 Canterbury Earthquake Liquefaction Report – Selwyn District Council* available from Selwyn District Council or www.selwyn.govt.nz. Information on these reports can be found at www.ecan.govt.nz/hazards. District-scale liquefaction maps can be downloaded from the Environment Cantebury website at www.ecan.govt.nz/liq.

Information on Technical Categories for liquefaction can be found on the Canterbury Earthquake Recovery Authority website at cera.govt.nz/residential-green-zone-technical-categories.

Important notes

The earthquake hazard assessment methodologies, information compilation and presentation techniques used for this assessment include certain qualifications and limitations on the use of the earthquake hazard information.

1. Ground shaking is one effect of earthquakes and is generally greatest near the fault (earthquake source) that has generated the earthquake. Earthquakes can also cause ground damage through:

    - permanent displacement (rupture) of the ground surface along the fault
    - general deformation of the ground surface near the fault
    - local and regional scale uplift, subsidence and tilting
    - settlement of the ground surface through densification of dry sand
    - liquefaction (where saturated soil behaves like a liquid during very intense ground shaking), which can cause ground settlement, ejection of sand and water, lateral spreading (sideways movement of soil) near rivers and other water bodies, and flow failures (similar to a landslide but can occur on slopes with angles as low as 2 degrees).

2. The earthquake hazard information provided is regional in scope and cannot be substituted for a site-specific investigation. A suitably qualified and experienced practitioner should assess the site-specific potential for earthquake damage if necessary.

3. The hazard information provided is based on the best information available at the time of the studies and was supplied to Environment Canterbury under specific contract arrangements including financial and time constraints.

4. Environment Canterbury and other organisations may hold more detailed earthquake information than provided here. Any additional information held by Environment Canterbury may be provided on request.

5. The earthquake hazard information may be liable to change or review if new information is made available.

6. Selwyn District Council may hold site-specific soils/foundation condition information for this site or nearby sites.

7. The earthquake hazard information provided does not imply any actual level of damage to any particular structure, utility service or other infrastructure.

Marion Irwin
Hazard Analyst (Geological)

PLANT PEST REPORT

ASSESSMENT NUMBER(S): 2405526000 and 2405526004

The following information has been extracted from Environment Canterbury's plant pest database. The database matches inspections with valuation assessments therefore ALL assessment numbers for a 'property' must be searched.

A lack of data does not mean that a particular pest is not present; the assessment may not have been inspected.

A "yes" for compliance means that at the date of the inspection the property complied with the rules for the Regional Pest Management Strategy for that particular pest. That may be because no plant pests were found or it may be because the rules were being complied with. (Note: Rules do not require large areas of gorse, broom & Old Man's Beard to be removed). The property may not necessarily comply now.

A Notice of Direction is a legal notice requiring a land occupier to take specific action within a specific time. If not complied with Environment Canterbury may engage a contractor to undertake the work at the occupier's expense. Obligations may transfer to subsequent occupiers.

Pest	Compliance	Notice of Direction Issued	Additional Comments
Broom and gorse	Unknown	NO	Last inspected in 2003 when a request was made to clear the roadside by the water race (pests on roadsides are the responsibility of the adjoining land owner in this area. We recommend that a purchaser ensures that the roadside is clear before settlement.

If Plant Pests are present an annual control programme is required.

Please contact us for a copy of the rules of the Regional Pest Management Strategy if you are unfamiliar with them.

Plant Pests –
Broom
Gorse

Extracts from Regional Pest Management Strategy (2011)

7.5 Broom

7.5.1 Description

Common broom, *Cytisus scoparius,* is a branched perennial shrub up to 2.5 metres tall with bright yellow flowers. Montpellier broom, *Teline monspessulana*, and white broom, *Cytisus multiflorus*, while somewhat smaller in stature are, except for slightly smaller yellow flowers or red flecked white flowers respectively, very difficult to distinguish from common broom. They are therefore treated as one in association with common broom.

Broom is a widespread plant scattered across land throughout the region. Density varies from light to heavy depending upon the intensity of grazing management. It is most prevalent on lightly grazed and ungrazed areas.

7.5.2 Adverse effects

Broom seedlings are unable to compete with productive pasture. Where insufficient grazing pressure is exerted, the plants can establish dense stands that can shade out most other species and destroy pasture. The plants will spread from infested land onto clear land. Seed dispersal is mostly within ten metres of the parent plant unless assisted by other agents such as stock or water. Seed may survive in the soil for more than 50 years.

7.5.3 Objective

Over the duration of the Strategy, prevent broom from infesting land presently free from broom.

7.5.4 Principal measures to achieve the objective

The following principal measures will be undertaken.

(a) Land occupiers are responsible for controlling broom on the land they occupy.

(b) Environment Canterbury will regularly inspect land at risk to broom infestation to determine the presence and density of broom. The frequency of inspection will depend on the population dynamics of the plants and the proneness of the land to infestations. The activity may also include the removal of isolated plants where it is cost-effective to do so during inspection.

(c) Environment Canterbury will provide advice and education to the community to increase the awareness of broom, its infestation pathways and its control measures. Methods may include:

- (i) responding to public enquiries;
- (ii) discussions with runanga, participating in discussion groups, field days, Agricultural and Pastoral Association shows and other appropriate public events;
- (iii) providing information on control measures and alternatives to herbicides;
- (iv) producing and distributing pamphlets and using media opportunities to convey relevant information;
- (v) advising landowners on technical matters in association with inspections;
- (vi) mechanisms to formalise staged management programmes and development of stage controlled programmes in association with inspections; and
- (vii) encouraging group activities that will be of assistance in meeting the desired outcomes of this Strategy.

(d) Environment Canterbury will facilitate Community Initiative Programmes.

(e) Environment Canterbury will obtain and distribute biological control agents and will take action to ensure the effective and co-ordinated use of new control tools including new biological control agents.

(f) Environment Canterbury will facilitate the use of Government-funded employment initiatives where this could be an effective means for implementing the Strategy.

(g) Environment Canterbury will support continuing research into the development and application of new control tools including biological control.

(h) Environment Canterbury will monitor land with broom to determine whether the objective is being met.

(i) Environment Canterbury will administer rules where it is necessary to achieve the objective.

7.5.5 Strategy Rules for broom

(a) Land occupiers shall eliminate broom infestations that cover up to 50 square metres in area and are greater than five metres from other broom infestations exceeding 50 square metres in area on the land that they occupy.

For the purpose of this rule, eliminate means the permanent preclusion of the broom plant's ability to set viable seed.

(b) Land occupiers shall eliminate broom infestations on the land that they occupy within 10 metres of any adjoining property occupied by another land occupier where that adjoining property is clear of, or being cleared of, broom infestations within 10 metres of the boundary between the properties.

For the purpose of this rule eliminate means the permanent preclusion of the broom plant's ability to set viable seed.

(c) Land occupiers and other persons shall not sell, propagate or distribute any broom plant or part thereof.

A breach of any of these rules creates an offence under Section 154(r) of the Biosecurity Act 1993 and may initiate the regulatory procedures set out in Chapter 12.

Land occupiers are exempted from the provisions of these rules for the following:
(i) the requirement to eliminate broom when present as a hedge within a property; and
(ii) the requirement to eliminate broom when present as a hedge on a boundary provided that the top and sides of the hedge are trimmed each year after flowering but before seed set to minimise seeding.

Land occupiers may apply for an exemption from any of the above rules in accordance with the procedures set out in Chapter 12.

Explanation

The purpose of these rules is to provide a defined level at which landowners must carry out control of broom infestations and to prevent land becoming infested by broom through human-assisted activities. Examples of human assistance include selling plants commercially or at fairs, the multiplication of plants for personal or commercial use or any distribution through recreational uses or other uses of land.

Exemptions from the rules may be obtained where the landowner can agree with Environment Canterbury on a binding programme of broom control for a property that is consistent with the objective, and is carried out within a fixed time frame. Such a programme could include initially dealing with larger broom infestations ahead of smaller non-complying broom infestations.

7.6 Gorse

7.6.1 Description

This plant is a sharply spinous, woody, deeply rooted, leguminous perennial shrub able to grow almost anywhere. Gorse grows up to four metres tall with thick stems. It is a widespread plant scattered across land throughout the region. Density varies from light to heavy depending upon the intensity of grazing management. It is most prevalent on lightly grazed and ungrazed areas.

7.6.2 Adverse effects

Gorse forms dense thickets that prevent stock from grazing infested areas. Seeds can be ejected up to 5 metres from pods. Seed may be spread by water, birds, road-making, gravel extractions, animals and machinery. The plant may seed twice a year. Seed may survive in the soil for more than 50 years.

7.6.3 Objective

Over the duration of the Strategy, prevent gorse from infesting land presently free from gorse.

7.6.4 Principal measures to achieve the objective

The following principal measures will be undertaken.

(a) Land occupiers are responsible for controlling gorse on the land they occupy.

(b) Environment Canterbury will regularly inspect land at risk to gorse infestation to determine the presence and density of gorse. The frequency of inspection will depend on the population dynamics of the plants and the proneness of the land to infestations. The activity may also include the removal of isolated plants where it is cost-effective to do so during inspection.

(c) Environment Canterbury will provide advice and education to the community to increase the awareness of gorse, its infestation pathways and its control measures. Methods may include:

  (i) responding to public enquiries;

  (ii) discussions with runanga, participating in discussion groups, field days, Agricultural and Pastoral Association shows and other appropriate public events;

  (iii) providing information on control measures and alternatives to herbicides;

  (iv) producing and distributing pamphlets and using media opportunities to convey relevant information;

  (v) advising landowners on technical matters in association with inspections;

  (vi) mechanisms to formalise staged management programmes and development of stage controlled programmes in association with inspections;

  (vii) encouraging group activities that will be of assistance in meeting the desired outcomes of this Strategy.

(d) Environment Canterbury will facilitate Community Initiative Programmes.

(e) Environment Canterbury will obtain and distribute biological control agents and will take action to ensure the effective and co-ordinated use of new control tools including new biological control agents.

(f) Environment Canterbury will facilitate the use of Government-funded employment initiatives where this could be an effective means for implementing the Strategy.

(g) Environment Canterbury will support continuing research into the development and application of new control tools including biological control.

(h) Environment Canterbury will monitor land with gorse to determine whether the objective is being met.

(i) Environment Canterbury will administer rules where it is necessary to achieve the objective.

7.6.5 Strategy Rules for gorse

(a) Land occupiers shall eliminate gorse infestations that cover up to 50 square metres in area and are greater than five metres from other gorse infestations exceeding 50 square metres in area on the land that they occupy.

For the purpose of this rule eliminate means the permanent preclusion of the gorse plant's ability to set viable seed.

(b) Land occupiers shall eliminate gorse infestations on the land that they occupy within 10 metres of any adjoining property occupied by another land occupier where that adjoining property is clear of, or being cleared of, gorse infestations within 10 metres of the boundary between the properties.

For the purpose of this rule eliminate means the permanent preclusion of the gorse plant's ability to set viable seed.

(c) Land occupiers and other persons shall not sell, propagate or distribute any gorse plant or part thereof.

A breach of any of these rules creates an offence under Section 154(r) of the Biosecurity Act 1993 and may initiate the regulatory procedures set out in Chapter 12.

Land occupiers are exempted from the provisions of this rule for the following:

(i) the requirement to eliminate gorse when present as a hedge within a property; and

(ii) the requirement to eliminate gorse when present as a hedge on a boundary provided that the top and sides of the hedge are trimmed each year after flowering but before seed set to minimise seeding.

Land occupiers may apply for an exemption from any of the above rules in accordance with the procedures set out in Chapter 12.

Explanation

The purpose of these rules is to provide a defined level at which landowners must carry out control of gorse infestations and to prevent land becoming infested by gorse through human-assisted activities. Examples of human assistance include selling plants commercially or at fairs, the multiplication of plants for personal or commercial use or any distribution through recreational uses or other uses of land.

Exemptions from the rules may be obtained where the landowner can agree with Environment Canterbury on a binding programme of gorse control for a property that is consistent with the objective, and is carried out within a fixed time frame. Such a programme could include initially dealing with larger gorse infestations ahead of smaller non-complying gorse infestations.

ANIMAL PEST REPORT

ASSESSMENT NUMBER(S): 2405526000 and 2405526004

The following information has been extracted from Environment Canterbury's animal pest database. The database matches inspections with valuation assessments therefore ALL assessment numbers for a 'property' must be searched.

A lack of data does not mean that a particular animal is not present; the assessment may not have been inspected.

A "yes" for compliance means that at the date of the inspection the property complied with the rules for the Regional Pest Management Strategy for that particular pest. That may be because no animal pests were found or it may be because the rules were being complied with. The property may not necessarily comply now.

A Notice of Direction is a legal notice requiring a land occupier to take specific action within a specific time. If not complied with Environment Canterbury may engage a contractor to undertake the work at the occupier's expense. Obligations may transfer to subsequent occupiers.

Pest	Compliance	Notice of Direction Issued	Additional Comments
No inspection records	Unknown	NO	

If Animal Pests are present an annual control programme is required.

Please contact us for a copy of the rules of the Regional Pest Management Strategy if you are unfamiliar with them.

Environment Canterbury
Regional Council
Kaunihera Taiao ki Waitaha

PO Box 345
Christchurch 8140

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

Customer Services
P. 03 353 9007 or 0800 324 636

www.ecan.govt.nz

19 September 2012

Attn: Tom Davies
Golders Associates (NZ) Limited
PO Box 2281
Christchurch 8140

Dear Tom

Thank you for submitting your property enquiry. I have searched 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.

There are currently no LLUR sites located on the land parcel(s) you enquired about; however I have included information regarding a site (or sites) located nearby which may be of interest to you. The enclosed LLUR statement indicates the location of the site(s) relative to the land you enquired about, and details the information we currently hold for the site(s) on the register.

There are a number of hazardous activities (as defined by The Ministry for the Environment) associated with the land parcel covered by this enquiry:

1. Above ground storage tank (AST) located next to dwelling on south-western edge.
2. AST located on northern edge in the vicinity of sheep yards and implement sheds.
3. AST located on northern edge in the vicinity of sheep yards and implement sheds.

If the land is to be subdivided or undergo a change of land use a more detailed site investigation is recommended.

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 additional information and conduct our own investigations into current and historic land uses.

The LLUR does not contain all the information held by Environment Canterbury about a property, and 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 be aware that many current and past activities undertaken on farms (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 and these may not be listed on the LLUR.

Please note: Due to the Christchurch earthquake, Environment Canterbury has limited access to files. Even though we endeavour to keep our electronic files up to date, there may be more information on record that we are unable to provide at this time.

Yours sincerely

Jason McDonald
Advisory Officer

Davina McNickel
Team Leader Contaminated Sites

Encl:
Statement from Environment Canterbury's Listed Land Use Register
Listed Land Use Register Information Pamphlet

Our Ref: IN7C/4-1
Your Ref: 12849
Dynes Road, Rolleston

Statement from the Listed Land Use Register

Environment Canterbury Regional Council
Kaunihera Taiao ki Waitaha

58 Kilmore Street, PO Box 345, Christchurch
General enquiries: 03 365 3828 Customer services: 03 353 9007
Fax: 03 365 3194 or: 0800 EC INFO (0800 324 636)
Email: ecinfo@ecan.govt.nz Website: www.ecan.govt.nz

Date:	18 September 2012	
Land Parcels:	• RS 15710	Valuation No(s): 2405526000,2405526000A,2405526000B, 2405526000C
	• RS 12514	Valuation No(s): 2405526000,2405526000A,2405526000B, 2405526000C
	• Lot 1 DP 8833	Valuation No(s): 2405526000,2405526000A,2405526000B, 2405526000C
	• Lot 1 DP 372247	Valuation No(s): 2405526001
	• Lot 2 DP 372247	Valuation No(s): 2405526002
	• Lot 3 DP 372247	Valuation No(s): 2405526003
	• Lot 4 DP 372247	Valuation No(s): 2405526004

Summary of sites:

Site ID	Site Name	Location	HAIL Activity(s)	Category
5516	54 Dynes Road, Rolleston	54 Dynes Road, Rolleston	A17 - Storage tanks or drums for fuel, chemicals or liquid waste	Partially Investigated

Information held about the sites on the Listed Land Use Register

Site 5516: 54 Dynes Road, Rolleston (Within 100m of enquiry area.)

Site Address:	54 Dynes Road, Rolleston
Legal Description:	RS 9522

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

Land uses (from HAIL):

Period From	Period To	HAIL land use
?	2005	Storage tanks or drums for fuel, chemicals or liquid waste

Notes

18 Oct 2010

An underground fuel storage tank. Removed from the site in circa 2005, the tank continued to be used as an above ground storage tank at a neighbouring property. A soil sample collected from the fill point of the former underground storage tank location by Tonkin & Taylor in 2010 yielded acceptable concentrations of total petroleum hydrocarbons and BTEX compounds.

Investigations

1 Apr 2010 **INV 5125: 54 Dynes Road, Rolleston - Desk-based Ground Contamination Investigation with Limited Confirmatory Sampling**
Tonkin and Taylor Ltd

Summary of investigation(s)

Tonkin & Taylor were engaged by Selwyn District Council to undertake a preliminary site investigation and a limited intrusive soil sampling investigation at a 33.3 ha block of land at 54 Dynes Road, Rolleston, presently described as RS 23251, RS 9522 and RS 19792. According to the report, Selwyn District Council was considering purchase of the properties comprising the study area for the purpose of constructing a recreational facility (including sporting fields).

The study area was in use for rural residential and general agricultural purposes at the time of the investigation. Research undertaken as part of the preliminary site investigation included a review of historical certificates of title (1883-2007), historical aerial photographs (1942-2010) and regional and district council files, an interview with the property's owner for the last 35 years, and a site inspection.

The desktop review reported that the study area was historically used for sheep farming and cropping purposes. There were no sheep dips within the study area. The potential for significant residual contamination associated with the past agricultural use was therefore assessed as low. However, the historical use of persistent pesticides may have resulted in surface soil impact, particularly within plots previously used for vegetable gardening. A gravel extraction pit (600 square metres, 4 m deep) was observed on the eastern corner of the study area. A 100 cubic metre soil stockpile – reportedly sourced from a residential subdivision in Rolleston – was observed adjacent to the gravel pit. Two residential dwellings were identified at the site.

An underground fuel storage tank formerly existed within the study area. The tank was removed roughly 5 years prior to the investigation (i.e. 2005) and was still in use as an above ground storage tank at the neighbouring property. A Tonkin & Taylor report identifies the tank location, but the tank's capacity is unknown. Validation samples had not been collected at the time of the removal. Because storage of hazardous chemicals in tanks is a HAIL activity, the former tank location has been entered on the Listed Land Use Register (LLUR) as **Site 5516**.

In April 2010 a limited intrusive soil investigation was conducted to confirm that the historical use of the site for agricultural purposes has not resulted in significant soil contamination. The sampling pattern was designed to assess the presence of residual soil contamination from the general agricultural use, historical gardening, and the imported soil stockpile. While a single surface sample was collected at the fill point of the former underground storage tank, samples were not collected to characterise sub-surface soil at the former underground petroleum storage tank location. Furthermore, sampling was not undertaken in the vicinity of dwellings to determine presence, or otherwise, of lead impact.

Surficial (0.0-0.1 m) and deeper (0.2-0.5 m) soil were collected from 16 locations. A single discrete sample was collected from the imported soil stockpile, located adjacent to the gravel extraction pit. Only the surface samples were submitted for analysis. Based on the sampling location, the analysis was scheduled for heavy metals (arsenic, cadmium, chromium, copper, lead, nickel, and zinc), organochlorine pesticide, total petroleum hydrocarbons, BTEX compounds, and polycyclic aromatic hydrocarbons.

All sample results were compliant with the guideline criteria protective of residential, recreational and industrial/commercial land use. Soil cadmium, lead and zinc concentrations at a number of sampling locations were above the likely background levels (ECan, 2006). Petroleum hydrocarbons in the C15-C36 carbon band were detected marginally above the laboratory limits in the sample collected near the old underground storage tank location, recording a concentration of 32 mg/kg. Polycyclic aromatic hydrocarbon compounds were not recorded above the laboratory limits of detection in the sample collected from stockpiled soils.

Based on the information provided in the report, it is proposed to register LLUR **Site 5516** as 'Partially Investigated'. Based on the observations (i.e. continuing use of the former underground storage tank as an above ground storage tank at an adjacent property), and the analytical results of a single sample collected at the former tank fill point, the likelihood of significant soil contamination at the former tank location is low. However, further sampling at the former tank area should be carried out in support of this contention.

No analytical analysis was undertaken to confirm the presence, or otherwise, of lead-based paint on the old dwelling located within the study area.

1 Jan 2011 **INV 12787: Desk-Based Ground Contamination Assessment Plan Change 7 Area**
Tonkin and Taylor Ltd

Summary of investigation(s)

Report(s) have not yet been audited.

For further information from Environment Canterbury, contact the Contaminated Sites Officer and refer to enquiry number 12849.

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.

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

Statement from the Listed Land Use Register

Environment Canterbury Regional Council
Kaunihera Taiao ki Waitaha

58 Kilmore Street, PO Box 345, Christchurch
General enquiries: 03 365 3828 Customer services: 03 353 9007
Fax: 03 365 3194 or: 0800 EC INFO (0800 324 636)
Email: ecinfo@ecan.govt.nz Website: www.ecan.govt.nz

Date: 18 September 2012

Land Parcels:

• RS 15710	Valuation No(s): 2405526000,2405526000A,2405526000B, 2405526000C
• RS 12514	Valuation No(s): 2405526000,2405526000A,2405526000B, 2405526000C
• Lot 1 DP 8833	Valuation No(s): 2405526000,2405526000A,2405526000B, 2405526000C
• Lot 1 DP 372247	Valuation No(s): 2405526001
• Lot 2 DP 372247	Valuation No(s): 2405526002
• Lot 3 DP 372247	Valuation No(s): 2405526003
• Lot 4 DP 372247	Valuation No(s): 2405526004

Summary of sites:

Site ID	Site Name	Location	HAIL Activity(s)	Category
5516	54 Dynes Road, Rolleston	54 Dynes Road, Rolleston	A17 - Storage tanks or drums for fuel, chemicals or liquid waste	Partially Investigated

Information held about the sites on the Listed Land Use Register

Site 5516: 54 Dynes Road, Rolleston (Within 100m of enquiry area.)

Site Address:	54 Dynes Road, Rolleston
Legal Description:	RS 9522

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

Land uses (from HAIL):

Period From	Period To	HAIL land use
?	2005	Storage tanks or drums for fuel, chemicals or liquid waste

Notes

18 Oct 2010

An underground fuel storage tank. Removed from the site in circa 2005, the tank continued to be used as an above ground storage tank at a neighbouring property. A soil sample collected from the fill point of the former underground storage tank location by Tonkin & Taylor in 2010 yielded acceptable concentrations of total petroleum hydrocarbons and BTEX compounds.

Investigations

1 Apr 2010 **INV 5125: 54 Dynes Road, Rolleston - Desk-based Ground Contamination Investigation with Limited Confirmatory Sampling**
Tonkin and Taylor Ltd

Summary of investigation(s)

Tonkin & Taylor were engaged by Selwyn District Council to undertake a preliminary site investigation and a limited intrusive soil sampling investigation at a 33.3 ha block of land at 54 Dynes Road, Rolleston, presently described as RS 23251, RS 9522 and RS 19792. According to the report, Selwyn District Council was considering purchase of the properties comprising the study area for the purpose of constructing a recreational facility (including sporting fields).

The study area was in use for rural residential and general agricultural purposes at the time of the investigation. Research undertaken as part of the preliminary site investigation included a review of historical certificates of title (1883-2007), historical aerial photographs (1942-2010) and regional and district council files, an interview with the property's owner for the last 35 years, and a site inspection.

The desktop review reported that the study area was historically used for sheep farming and cropping purposes. There were no sheep dips within the study area. The potential for significant residual contamination associated with the past agricultural use was therefore assessed as low. However, the historical use of persistent pesticides may have resulted in surface soil impact, particularly within plots previously used for vegetable gardening. A gravel extraction pit (600 square metres, 4 m deep) was observed on the eastern corner of the study area. A 100 cubic metre soil stockpile – reportedly sourced from a residential subdivision in Rolleston – was observed adjacent to the gravel pit. Two residential dwellings were identified at the site.

An underground fuel storage tank formerly existed within the study area. The tank was removed roughly 5 years prior to the investigation (i.e. 2005) and was still in use as an above ground storage tank at the neighbouring property. A Tonkin & Taylor report identifies the tank location, but the tank's capacity is unknown. Validation samples had not been collected at the time of the removal. Because storage of hazardous chemicals in tanks is a HAIL activity, the former tank location has been entered on the Listed Land Use Register (LLUR) as **Site 5516**.

In April 2010 a limited intrusive soil investigation was conducted to confirm that the historical use of the site for agricultural purposes has not resulted in significant soil contamination. The sampling pattern was designed to assess the presence of residual soil contamination from the general agricultural use, historical gardening, and the imported soil stockpile. While a single surface sample was collected at the fill point of the former underground storage tank, samples were not collected to characterise sub-surface soil at the former underground petroleum storage tank location. Furthermore, sampling was not undertaken in the vicinity of dwellings to determine presence, or otherwise, of lead impact.

Surficial (0.0-0.1 m) and deeper (0.2-0.5 m) soil were collected from 16 locations. A single discrete sample was collected from the imported soil stockpile, located adjacent to the gravel extraction pit. Only the surface samples were submitted for analysis. Based on the sampling location, the analysis was scheduled for heavy metals (arsenic, cadmium, chromium, copper, lead, nickel, and zinc), organochlorine pesticide, total petroleum hydrocarbons, BTEX compounds, and polycyclic aromatic hydrocarbons.

All sample results were compliant with the guideline criteria protective of residential, recreational and industrial/commercial land use. Soil cadmium, lead and zinc concentrations at a number of sampling locations were above the likely background levels (ECan, 2006). Petroleum hydrocarbons in the C15-C36 carbon band were detected marginally above the laboratory limits in the sample collected near the old underground storage tank location, recording a concentration of 32 mg/kg. Polycyclic aromatic hydrocarbon compounds were not recorded above the laboratory limits of detection in the sample collected from stockpiled soils.

Based on the information provided in the report, it is proposed to register LLUR **Site 5516** as 'Partially Investigated'. Based on the observations (i.e. continuing use of the former underground storage tank as an above ground storage tank at an adjacent property), and the analytical results of a single sample collected at the former tank fill point, the likelihood of significant soil contamination at the former tank location is low. However, further sampling at the former tank area should be carried out in support of this contention.

No analytical analysis was undertaken to confirm the presence, or otherwise, of lead-based paint on the old dwelling located within the study area.

1 Jan 2011 **INV 12787: Desk-Based Ground Contamination Assessment Plan Change 7 Area**
Tonkin and Taylor Ltd

Summary of investigation(s)

Report(s) have not yet been audited.

For further information from Environment Canterbury, contact the Contaminated Sites Officer and refer to enquiry number 12849.

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.

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

At Golder Associates we strive to be the most respected global company providing consulting, design, and construction services in earth, environment, and related areas of energy. Employee owned since our formation in 1960, our focus, unique culture and operating environment offer opportunities and the freedom to excel, which attracts the leading specialists in our fields. Golder professionals take the time to build an understanding of client needs and of the specific environments in which they operate. We continue to expand our technical capabilities and have experienced steady growth with employees who operate from offices located throughout Africa, Asia, Australasia, Europe, North America, and South America.

Africa	+ 27 11 254 4800
Asia	+ 852 2562 3658
Australia & New Zealand	+ 61 7 3721 5400
Europe	+ 44 356 21 42 30 20
North America	+ 1 800 275 3281
South America	+ 55 21 3095 9500

solutions@golder.com
www.golder.com

AUCKLAND

Tel +64 9 486 8068
Fax +64 9 486 8072

Level 2
Nielsen Centre
129 Hurstmere Road
Takapuna
Auckland 0622

PO Box 33-849
Takapuna 0740

TAURANGA

Tel +64 7 928 5335
Fax +64 7 928 5336

78 Maunganui Road
Tauranga 3116

PO Box 13611
Tauranga Central
Tauranga 3141

HAMILTON

Tel +64 7 928 5335
Fax +64 7 928 5336

Ruakura AgResearch Centre
Room 31 in the Homestead
East Street
Hamilton 3214

PO Box 19-479
Hamilton 3244

NELSON

Tel +64 3 548 1707
Fax +64 3 548 1727

Level 3
295 Trafalgar Street
Nelson 7010

PO Box 1724
Nelson 7040

CHRISTCHURCH

Tel +64 3 377 5696
Fax +64 3 377 9944

Level 1
132 Tuam Street
Christchurch 8011

PO Box 2281
Christchurch 8140

DUNEDIN

Tel +64 3 479 0390
Fax +64 3 474 9642

Level 9A
John Wickliffe House
265 Princes Street
Dunedin 9016

PO Box 1087
Dunedin 9054

Golder Associates

APPENDIX C

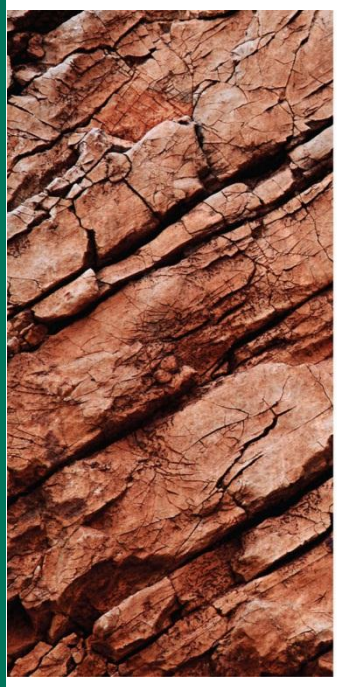
Offal Pit Management Plan

August 2013

FARINGDON DEVELOPMENT

Offal Pit Management Plan

Submitted to:
Kelvin Back
Hughes Developments
8 Millbank Lane
Merivale, Christchurch 8014,
New Zealand



Report Number. 1278103-872-006-R-Rev0

REPORT

Golder Associates

Table of Contents

FIGURES

APPENDICES

1.0 INTRODUCTION

1.1 Purpose

Hughes Development (Hughes) commissioned Golder Associates (NZ) Limited (Golder) on 3 July2013 to prepare an Offal Pit Management Plan[1] (OPMP) for the Faringdon Subdivision Development in Rolleston, Canterbury (the site). The OPMP has been prepared in accordance with the recommendations of a Preliminary Site Investigation (PSI) (Golder 2012) (Appendix B).

The purpose of this Offal Pit Management Plan (OPMP) is to document:

- The potential location of offal pits which may be present on site
- Potential risks and hazards associated with the discovery of historical offal pits
- Contingency plans if an offal pit is discovered during the development of the subdivision
- Monitoring requirements to mitigate any potential environmental and human health effects

Given Golder's understanding of the immediate future development activities proposed at the site, this OPMP has been prepared to manage risks associated with the discovery of offal pits whilst undertaking earthworks during the development.

1.2 Background

A PSI was undertaken by Golder in October 2012 (Golder 2012). The sites investigated comprised parcels of land that form the proposed Faringdon subdivision (Figure 1). The proposed subdivision is approximately 70 hectares and comprises predominantly agricultural grazing land. At the time of the PSI, Hughes had divided the subdivision into ten stages referred to as Stages 1- 9 and the Foster Lot. Stages 1 -9 of the redevelopment will comprise new residential lots ranging from 400m^2 to 982m^2, the Foster Lot is to be retained by the original land owners for private use (Figure 1).

The PSI included review of historical aerial photographs, certificates of title, Canterbury Regional Council (CRC) information for the site, and the property files held by Selwyn District Council (SDC). A site walk over and interview of the former land owners were also undertaken.

The construction of small offal pits on farms is a common practice, and offal pits may potentially be encountered anywhere on site. However, anecdotal information obtained during the PSI identified that historical offal pits are likely to be concentrated in three areas of the site (Figure 2). These areas are:

- A small offal pit lies along a tree boundary in the centre of Stage 4
- A small offal pit lies along the southern boundary of Stage 6
- A small offal pit lies along the southern boundary of Stage 9

Offal pits represent an environmental risk and, if encountered, they should be excavated and their contents removed and disposed of to a registered landfill facility. To manage any discharges to the environment and protect human health, the PSI recommended that redevelopment earthworks, which may encounter offal pits, is undertaken in accordance with a site management plan.

[1] This report is subject to Golder's report limitations statement in Appendix A.

1. AERIAL IMAGE: Google Earth, 15.2.2011
2. MAP IMAGE: Memory Map, Copyright Reserved
3. DRAWN BY: SG REVIEWED BY: VC

Golder Associates

TITLE SITE LOCATION PLAN

AUGUST 2013

PROJECT 1278103872_006

1

S:\Graphics\Projects-numbered\2012\12781x\03xxx\1278103_872_RDHughesDev_Farington\Oct12

Golder Associates

TITLE | POTENTIAL OFFAL PIT LOCATIONS

AUGUST 2013

PROJECT | 1278103872_006

2

S:\Graphics\Projects-numbered\2012\12781x\03xxx\1278103_872_RDHughesDev_Farington\Oct12

1.3 Site Description

The site is located to the south of Dynes Road and to the east of Goulds Road, near the town of Rolleston in Canterbury (Figure 1).

The site comprises seven lots (Figure 1) including: Lot 1 DP 8833, Lot 1 DP 372247 Lot 2 DP 372247, Lot 3 DP 372247, Lot 4 DP 372247, RS 12514 and RS 15710.

Since the PSI (Golder 2012) was issued in October 2012, there have been a number of lot boundary adjustments. In May 2013, Hughes contacted Golder to confirm that the former landowners had adjusted the boundary of the Foster Lot to include an additional 0.6 ha from Stage 3. However, the boundary adjustments have no bearing on this OPMP.

For simplicity and to maintain consistency with the PSI report, the boundary descriptions will be those identified in the PSI, with the exception of the Foster Lot which has been amended. The site is undergoing development in stages, as follows:

- Stages 1, 2 and 3 of the development are currently underway
- The balance of the site (Stages 4 – 9) will be developed once Stage 3 has been completed
- The balance of the "Foster Lot" is land retained by the Foster family for private use. This land covers an area of approximately 3.3 ha and is formed from land within RS12514 and Lot 1 DP8833. As the Foster Lot is retained for private use it will not form part of the proposed development.

2.0 OFFAL PIT RISK MANAGEMENT

2.1 Overview

An offal pit is a hole in the ground which has been excavated to dispose of dead stock or home kill wastes. Dead farm stock and offal requires effective and efficient management as fresh offal contains a number of potentially harmful organisms, chemicals and bacteria. Information sheet 14 of the Environment Canterbury, Resource Care Guide 2009 (Appendix C) suggests that an offal pit is typically a narrow trench or vertical pit, to a size no bigger than 30 cubic meters with the top of the pit covered with a heavy duty concrete slab at least 125mm thick.

Offal pits are a simple and cheap method of disposing of small quantities of dead stock. The Resource Care Guide states that offal pits should:

- Be located at least 50 m from waterways, wetlands, bores and property boundaries
- Avoid areas where the water table is high
- Be constructed to prevent surface water runoff from entering the pit
- Be constructed to prevent animals and rodents from accessing the pit
- Be located in area which is not prone to flooding (one in five year event)
- Not be covered with soils once the pits offal contents are within 1 m of the ground surface

The potential offal pits at the Faringdon subdivision would have been constructed prior to the publication of the Resource Care Guide. Although the exact construction details and contents of the offal pits are unknown, for the purpose of the OPMP an offal pit is considered to be a narrow or vertical shaft containing

dead stock or offal. The offal pit may also contain domestic rubbish or other farm waste including agrichemical or veterinary wastes.

This OPMP has been developed to be used when excavating in the areas identified in Stages 4, 6, and 9 (as outlined in Section 1.2 and Figure 2). However in the unlikely event of encountering an offal pit elsewhere on site during earthworks, this OPMP should be adopted and used as a contingency plan.

2.2 Potential Risks

Offal pits can contain significant numbers of harmful organisms such as salmonella, streptococcus and tuberculosis. These organisms can result in health risks to humans, stock and other animals. Health risks can occur via:

- Contamination of groundwater and nearby sources of domestic and stock drinking water
- Toxic gases such as hydrogen sulphide and carbon dioxide which can build up in carcasses
- Explosion from ignition of gases such as methane which is generated by the decomposition of offal
- While unlikely to be a health risk, odour may be a temporary nuisance

The decomposition of offal can also result in potential environmental risks:

- Oxygen demanding bacteria can result in the depletion of dissolved oxygen in waterways
- Faecal coliforms may enter groundwater or streams
- Nitrogen levels may be elevated in groundwater or streams

Other risks may also arise if the offal pit was used for disposing of domestic or farm rubbish such as chemicals.

2.3 Implementation and Training

The Offal Pit Health and Safety Plan (Section 2.4) and earthwork procedures relating to the discovery of offal pits (Section 3.0) shall be made available to all site workers, contractors, and their managers.

The potential adverse effects from offal pits on human health and the environment shall be communicated to all workers, associated with the redevelopment of the site, as part of the health and safety inductions.

2.4 Offal Pit Health and Safety

2.4.1 Overview

In accordance with The Health and Safety in Employment Act 1992, this section outlines procedures to maintain a safe working environment with respect to the discovery of offal pits during redevelopment of the site. This shall not be used as a standalone plan, but should be used to supplement the site contractor's health and safety plan.

2.4.2 Personal Protective Equipment

In areas where an offal pit is suspected or if an offal pit is encountered, all workers coming into contact with soil or groundwater shall wear the minimum personal protective equipment of:

- Disposable coveralls/overalls
- Impermeable (PVC) gloves
- Gumboots
- A half mask respirator (organic cartridges shall also be made available if needed)

2.4.3 Protocols

Eating, drinking, smoking and applying cosmetics shall only occur in a prescribed area away from the offal pit and after face and hands have been thoroughly washed.

Methane is a bi-product from the decomposition of offal. Methane may cause an explosion if it accumulates to concentrations within its explosive limits (5% to 15% by volume) in a confined space where it can be ignited. Whilst it is considered unlikely in this situation (offal pits in granular soils), as a precaution no smoking shall occur within the exclusion zone (Section 3.1).

Due to the potential for offal pits to contain asphyxiating or toxic gases, and reduced concentrations of oxygen, under no circumstances shall an excavated offal pit be entered.

3.0 DISCOVERY OF OFFAL PITS

The following methodology shall be adopted to manage the investigation and remediation of offal pits:

- **Identification** - Isolate the area and undertake an appraisal of the risk
- **Remediation** - Undertake any remedial works as required from the findings of the risk appraisal
- **Validation** - Validate the remedial works to confirm the area has been remediated
- **Recommence Earthworks**

3.1 Identification

All excavations in the three areas (Stages 4, 6 and 9) suspected to contain offal pits (Figure 2) shall proceed with caution. If an offal pit is encountered the following steps shall be followed:

- Upon discovery of an offal pit or suspected offal pit, all earthworks within the immediate vicinity of the pit shall cease and an exclusion zone set up. An offal pit is generally identified by one or more of the following: a concrete slab, strong odours (rotten egg smell) or the presence of decomposed carcasses, farm waste or domestic rubbish. The exclusion zone shall be in the order of 10 m from the area of discovery.
- The site manager shall be informed and if necessary, the site manager shall call a suitably qualified environmental scientist to seek further advice.

- Check any material already excavated from the offal pit for offal pit identifiers. Mark the area of the offal pit on a site plan. No further excavation of the offal pit shall be undertaken unless advised by the site manager.
- The offal pit shall be covered with a 0.5 m thick layer of clean soil to minimise risk of exposure.
- If necessary, contain any excavated offal pit contents to reduce the migration of potential contaminants to groundwater or surface water. Containment could include placing the contents in a skip or into a wagon, placing the contents on an impermeable sheet, or covering the contents with an impermeable sheet.
- Access to the cordoned area shall be restricted to appropriate site personnel or environmental scientists for investigation purposes.

3.2 Remediation

- If required, an appraisal of the offal pit together with any of the excavated contents shall be undertaken by a suitably qualified and experienced environmental scientist.
- Prior to any further excavation of the offal pit, an infrared biogas analyser shall be used to assess in-situ levels of methane, hydrogen sulphide and carbon dioxide. The concentrations of methane shall also be assessed in terms of the lower explosive limit.
- If concentrations exceed the lower explosive limit, the offal pit shall be allowed to passively vent until safe methane levels are confirmed.
- Once it is safe to excavate, the offal pit contents shall be removed and placed directly into a sealed and covered truck for off-site disposal to a suitably licensed landfill. Care shall be taken not to rupture any drums or containers of chemicals which may be in the pit. The offal pit contents shall not be stockpiled on site. If the offal pit contents comprise sludge, a liquid waste contractor shall be used to remove the material.
- The offal pit contents shall be excavated until all visual evidence of carcasses and sludge are removed and observations suggest that natural soil remains in the excavation.

3.3 Validation

- Once the offal pit has been remediated, the excavator shall scrape the sides and base of the pit, and soil samples shall be collected from the excavator bucket. The excavated pit may have reduced oxygen conditions and contain concentrations of hydrogen sulphide, carbon dioxide and methane. Under no circumstances is the excavated pit to be entered.
- The soil samples shall be analysed for contaminants of concern based on observations of the offal pit contents.
- If the offal pit is found to be of non-standard construction or design, and/or the contents contain evidence for a wider range of contaminants than expected, further site investigations may be required to:
    - Delineate the extent of the area of contamination
    - Quantify the nature of the contamination

3.4 Recommence Earthworks

Earthworks can recommence following the satisfactory remediation of the offal pit. Approval to recommence excavations shall be given by the site manager.

4.0 REFERENCES

Golder 2012. Preliminary Site Investigation, Faringdon Subdivision, Rolleston, Canterbury. Report prepared by Golder Associates (NZ) Limited for Hughes Developments, October 2012.

ECan 2009. Resource care guide, Info Sheet 14 – Dead stock and offal disposal. Environment Canterbury, June 2009.

APPENDIX A

Report Limitations

Report Limitations

This Report/Document has been provided by Golder Associates (NZ) Limited ("Golder") subject to the following limitations:

i) This Report/Document has been prepared for the particular purpose outlined in Golder's proposal and no responsibility is accepted for the use of this Report/Document, in whole or in part, in other contexts or for any other purpose.

ii) The scope and the period of Golder's Services are as described in Golder's proposal, and are subject to restrictions and limitations. Golder did not perform a complete assessment of all possible conditions or circumstances that may exist at the site referenced in the Report/Document. If a service is not expressly indicated, do not assume it has been provided. If a matter is not addressed, do not assume that any determination has been made by Golder in regards to it.

iii) Conditions may exist which were undetectable given the limited nature of the enquiry Golder was retained to undertake with respect to the site. Variations in conditions may occur between investigatory locations, and there may be special conditions pertaining to the site which have not been revealed by the investigation and which have not therefore been taken into account in the Report/Document. Accordingly, if information in addition to that contained in this report is sought, additional studies and actions may be required.

iv) The passage of time affects the information and assessment provided in this Report/Document. Golder's opinions are based upon information that existed at the time of the production of the Report/Document. The Services provided allowed Golder to form no more than an opinion of the actual conditions of the site at the time the site was visited and cannot be used to assess the effect of any subsequent changes in the quality of the site, or its surroundings, or any laws or regulations.

v) Any assessments, designs and advice made in this Report/Document are based on the conditions indicated from published sources and the investigation described. No warranty is included, either express or implied, that the actual conditions will conform exactly to the assessments contained in this Report/Document.

vi) Where data supplied by the client or other external sources, including previous site investigation data, have been used, it has been assumed that the information is correct unless otherwise stated. No responsibility is accepted by Golder for incomplete or inaccurate data supplied by others.

vii) The Client acknowledges that Golder may have retained subconsultants affiliated with Golder to provide Services for the benefit of Golder. Golder will be fully responsible to the Client for the Services and work done by all of its subconsultants and subcontractors. The Client agrees that it will only assert claims against and seek to recover losses, damages or other liabilities from Golder and not Golder's affiliated companies. To the maximum extent allowed by law, the Client acknowledges and agrees it will not have any legal recourse, and waives any expense, loss, claim, demand, or cause of action, against Golder's affiliated companies, and their employees, officers and directors.

viii) This Report/Document is provided for sole use by the Client and is confidential to it. No responsibility whatsoever for the contents of this Report/Document will be accepted to any person other than the Client. Any use which a third party makes of this Report/Document, or any reliance on or decisions to be made based on it, is the responsibility of such third parties. Golder accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this Report/Document.

APPENDIX B

Preliminary Site Investigation

October 2012

FARINGDON DEVELOPMENT

Preliminary Site Investigation, Faringdon Development, Rolleston, Canterbury

Submitted to:
RD Hughes Developments
8 Millbank Lane
Merivale, Christchurch 8014,
New Zealand

Report Number. **1278103872_002_R**_Rev0

Distribution:

RD Hughes Developments
Golder Associates (NZ) Limited

REPORT

Golder Associates

Summary

This report presents the results of a Preliminary Site Investigation (PSI) undertaken by Golder Associates (NZ) Limited (Golder) at the proposed RD Hughes Developments Limited (RDH) Faringdon subdivision, located in Rolleston, Canterbury. The proposed subdivision is approximately 70 hectares and generally comprises agricultural land. RDH has divided the subdivision into ten stages referred to as Stage 1- 9 and the Foster Lot. Stages 1 -9 of the redevelopment will comprise new residential lots ranging from 400m^2 to 982m^2, the Foster Lot is to be retained by the current land owners for private use.

The Ministry for the Environment (MfE) National Environmental Standards for Assessing and Managing Contaminants in Soil to Protect Human Health (i.e., the NES) took effect on 1 January 2012. The regulation users' guide states that changing land use is a permitted activity where it can be demonstrated that it is highly unlikely that there will be a risk to human health from the intended land use. In order to assess the potential risk to human health from the intended land use change, the regulations require that a PSI report is produced.

With respect to the NES, this PSI was required to support the application for rezoning and subdivision for Stage 2 – 9, and to assess the viability of the site from a contaminated land perspective, for the proposed residential development. Stage 1 was rezoned and subdivided prior to the NES coming into effect, and a PSI was originally not thought to have been required, RDH therefore started the redevelopment of Stage 1. However, RDH were subsequently informed by Selwyn District Council (SDC) that a building consent could only be issued for Stage 1 once a PSI has been completed.

This PSI included a desk top study of historic aerial photographs, a review of certificates of title, Canterbury Regional Council (CRC) information for the site, and the property files held by SDC. A site walk over and interview were also undertaken to supplement the desk top study.

Stages 1 to 9 is approximately 70 hectares and comprises the following seven lots: Lot 1 DP 8833, Lot 1 DP 372247, Lot 2 DP 372247, Lot 3 DP 372247, Lot 4 DP 372247, RS 12514 and RS 15710. A review of available information suggests that historically, site use was dominated by sheep grazing. The following list summarises the findings of the PSI:

- Stages 1, 2, 5, 7 and 8 - No areas or contaminants of environmental concern were identified within these stages of the development.
- Stage 3 - There is considered to be a **low** level of risk associated with the storage of vintage vehicles towards the centre of the northern stage boundary. There is considered to be a **medium** level of risk associated with the use of a mobile sheep dip in the vicinity of the sheep pens located in the north-eastern corner of the stage.
- Stage 4 – There is considered to be a **low** risk of residual agricultural chemicals being present in surface soils in the north of the stage associated with the intermittent use of pesticides on lucerne and barley. There is considered to be a **low** risk of biological contaminants associated with offal pit situated in the centre of the site.
- Stage 6 – **Low** risk of biological contaminants associated with offal pit situated in the south of the stage.
- Stage 9 - **Low** risk of biological contaminants associated with offal pit situated in the south of the stage and **low** risk of lead contamination surrounding the observatory in the south west.

The proposed subdivision and the identification of potential areas of environmental concern at the site triggers the application of the NES and indicates that a resource consent is likely to be required from the SDC. A detailed site investigation for Stages 3, 4, and 9 is required to determine whether site soils are suitable for the proposed end use or whether remediation or management is required. The status of the

consent application (i.e., whether controlled, restricted discretionary or discretionary) will be dependent upon the outcome of the detailed site investigation.

There is believed to be three small offal pits located on the site. These pits represent a low risk and should be removed and disposed of to a registered landfill facility if encountered during redevelopment earthworks. To ensure discharges to the environment are minimised and human health is protected, it is recommended that this work be undertaken in accordance with a site specific management plan.

Table of Contents

TABLES

FIGURES

APPENDICES

1.0 INTRODUCTION

1.1 Overview

RD Hughes Development Limited (RDH) is in the process of obtaining relevant resource consents associated with the proposed rezoning and subdivision of land located at Goulds Road and Dynes Road in Rolleston Canterbury. The proposed residential subdivision is approximately 70 hectares, and currently comprises pastoral agricultural land. RDH have divided the subdivision into ten stages, i.e., Stage 1- 9 and the Foster stage. Stages 1 – 9 will be redeveloped into residential lots ranging from 400m^2 to 982m^2, the Foster lot will remain with the current land owners (David and Annett Foster) and will not be redeveloped.

The Ministry for the Environment (MfE) National Environmental Standards for Assessing and Managing Contaminants in Soil to Protect Human Health (i.e., the NES) took effect on 1 January 2012. The regulation users' guide states that changing land use is a permitted activity where it can be demonstrated that it is highly unlikely that there will be a risk to human health from the intended land use. In order to assess the potential risk to human health from the intended land use change, the regulations require that a PSI report is produced.

Stage 1 was rezoned and subdivided prior to the NES coming into effect, and a PSI was originally not thought to have been required by Selwyn District Council (SDC). RDH therefore initiated the redevelopment of Stage 1 and earthworking has commenced. However, RDH were later informed by SDC that although the area had been rezoned and subdivided, building consent could only be issued for Stage 1 once a PSI have been completed and signed off by the council.

RDH commissioned Golder Associates (NZ) Limited (Golder) to complete a PSI to support the application for rezoning and subdivision for Stages 1-9, and to assess the viability of the site from a contaminated land perspective, for the proposed residential development. The redevelopment plan provided by RDH and presented in Figure 1, illustrates the stages.

1.2 Purpose

The aim of the PSI was to identify potential areas of contamination and contaminants of concern that may have resulted from historical and current land use activities, and to qualitatively define the Stages into areas of low, medium and high risk. The identified areas of risk would then be assigned a qualitative risk rating, being dependent on the potential for adverse effects on human health and/or the environment. Those areas identified as being medium - high risk would then be targeted in a subsequent field and laboratory based investigation (detailed site investigation).

The purpose of this report[1] is to document the findings of the desk top study completed for Stages 1 - 9. This report represents a PSI report prepared in accordance with the NES, and the MfE (2011a) Contaminated Land Management Guideline No. 1: Reporting on Contaminated Sites in New Zealand.

[1] This report is subject to the limitations in Appendix A.

1. BASE IMAGE: Davie Lovell Smith, Christchurch
2. DRAWN BY:SG REVIEWED BY: VG

Golder Associates

TITLE | OUTLINE DEVELOPMENT PLAN

OCTOBER 2012

PROJECT | 1278103872_000

1

S:\Graphics\Projects-numbered\2012\12781x\03xxx\1278103_872_RDHughesDev_Farington\Oct12

1.3 Scope of Works

The following scope of works were undertaken to achieve the above objective:

- Site walk over.
- Interviews with the current or previous owners/occupiers, where available.
- Review of available historical aerial photographs.
- Review of SDC and Canterbury Regional Council (CRC) property files.
- Review of Certificate of Titles.
- Review of site layout and drainage plans.
- Review of local geology and hydrogeology.
- Qualitative risk assessment and, where necessary, provision of recommendations for further work.
- Reporting.

2.0 SITE DESCRIPTION

2.1 Site Location and Layout

2.1.1 Overview

The site comprises seven lots (Figure 2) including: Lot 1 DP 8833, Lot 1 DP 372247 Lot 2 DP 372247, Lot 3 DP 372247, Lot 4 DP 372247, RS 12514 and RS 15710. All seven lots are privately owned by Mr and Mrs D. Foster.

The site is undergoing development in stages, as follows

- Stage 1 development is currently underway.
- Stage 2 is proposed for completion within the next three years.
- Stage 3 is proposed for completion within the next three years.
- Stages 4 to 9 are proposed for development within the next 10-15 years.
- Foster Lot – The balance of the land 'Foster Lot' is land retained by the Foster family for private use. This land covers an area of approximately 3 Ha and is formed from land within RS12514. As the Foster Lot will not form part of the proposed development, the investigation of this area is not a requirement of this PSI; i.e., it meets existing use rights under the NES.

The layout and activities undertaken on each stage of the development are described in the following sections, with a detailed site layout presented on Figure 2.

The descriptions provided in the following sections are based on a site walk over completed by an environmental scientist from Golder on 2 October 2012. Relevant photographs are provided in Appendix B.

2.1.2 Certificate of Titles

A review of the certificates of titles indicates that RDH are the proprietors of Stage 1. The remaining land is in the titles of Foster Holdings Limited or David Foster and Annette Foster (Appendix C). Although historical records of certificates of titles were requested only current certificates were provided.

2.1.3 Stage 1

- Stage 1 covers an area of 15 Ha and comprises land within Lot 1 DP 883 and Lot 4 DP372247.
- The section is bounded by Dynes Road to the north, pastoral agricultural land to the east, south and west and Goulds Road to the north-west.
- The land is predominantly flat.
- The property is currently under redevelopment after being granted consent for rezoning and subdivision prior to the NES becoming effective in 2012. At the time of this report the redevelopment works have comprised of the removal of topsoil from Stage 1 and the excavation of a sub-division sewer drainage system.
- No hazardous substances or dangerous goods are currently stored or used on the property.
- The property previously had a water race running through it, however, this has been temporarily redirected during the redevelopment stages of the project. An open surface water channel runs parallel with Goulds Road in the north-west of the site.

2.1.4 Stage 2

- Stage 2 covers an area of 6 Ha and comprises land within Lot 1 DP 883, Lot 3 DP372247 and Lot 4 DP372247.
- The stage is bounded by Goulds Road to the north-west, Stage 1 redevelopment to the north and to the east and pastoral agricultural land to the south and west.
- The stage currently comprised grassed land.
- No hazardous substances or dangerous goods are currently stored or used on the property.

2.1.5 Stage 3

- The stage covers an area of 7 Ha and comprises land within Lot 1 DP 883 and RS12514.
- The stage is bounded with Dynes Road to the north, the Foster lot to the east and pastoral agricultural land to the south and west.
- The property contains an old corrugated barn in the north adjacent to Dynes Road. A number (approximately 9) of dilapidated vintage vehicles have been left within and surrounding the barn. The barn is exposed to the north and the east and the floor of the barn is natural ground (grassed soil). Four historic sheep pens are located in the north-eastern corner of the stage, adjacent to Dynes Road; the pens are overgrown with grass.
- The southern part of Stage 3 site is currently pastoral agricultural land.

2.1.6 Stages 4 – 9

- The combined size of Stages 4 - 9 is approximately 52 Ha and comprises land within all seven Lots (i.e., Lot 1 DP 8833, Lot 1 DP 372247 Lot 2 DP 372247, Lot 3 DP 372247, Lot 4 DP 372247, RS 12514 and RS 15710).
- The stages are bounded by Stages 1 – 3, agricultural land to the north east, south and west.
- A remnant footpad of an observatory tower and a borehole are located in the south west corner of Stage 9.
- Lucerne is currently grown in the northern field of Stage 4, the remaining fields are used as pastoral agricultural land.

1. AERIAL IMAGE: Google Earth, 15.2.2011
2. MAP IMAGE: Memory Map, Copyright Reserved
3. DRAWN BY: SG REVIEWED BY: VC

Golder Associates

TITLE SITE LOCATION PLAN

OCTOBER 2012

PROJECT 1278103872_000

2

S:\Graphics\Projects-numbered\2012\12781x\03xxx\1278103_872_RDHughesDev_Farington\Oct12

2.2 Surrounding Land Use

The subject site is zoned “LZ” - Living Z under the SDC District Plan (June 2008).

CRC have one property within the vicinity of the site which has been registered on its Listed Land Use Register (LLUR). The property is located at 54 Dynes Road. CRC Land Information Report (LIR) (dated 28 September 2012) indicates that:

- The adjacent property at 54 Dynes Road, Rolleston (to the north of the site) has been verified on the Hazard Activities and Industries List (HAIL), due to the presence of an Underground Storage Tank (UST). The site was partly investigated by Tonkin and Taylor (T&T); the UST was removed in 2005 and used as an Aboveground Storage Tank (AST).

  SDC engaged T&T to undertake a PSI and intrusive sampling investigation at 54 Dynes Road for a proposed recreational development. The PSI identified the historical use of pesticides, a stockpile of uncharacterised soil from off site and the removal of a UST as potential areas of concern. The soil sampling identified that soils associated with the potential areas of concern ‘were compliant with guideline criteria protective of residential, recreational and industrial/commercial land use’ (LLUR). The site has been registered as ‘partially investigated’ on the LLUR register, as further sampling of the former tank location is required, and analysis is required to confirm the presence of lead based paint associated with an old dwelling on site.

The potentially contaminating activities undertaken at 54 Dynes Road is considered unlikely to impact the subject site as the activities were generally of a small scale and limited intrusive works completed to date have reportedly identified contaminants of concern within acceptable levels.

The Foster lot located between Stages 3 and 4 currently contains two above ground storages tanks, one is redundant the other is active. The active AST is approximately 3,000 – 4,000 litres containing petrol and is used for various vehicles and machines associated with the farm. Although not entered on the Listed Land Use Register (LLUR) the storage of hazardous chemicals in tanks and drums on the Foster lot is considered to be a HAIL activity. There is no record of spills or leaks, however the original AST caught fire in December 2010 and was replaced with a modern AST. The severity of fire would likely have resulted in the majority of the fuel being burnt off. The original tank location was approximately 50 meters from the west boundary of Stage 4. Due to the fire and the relatively flat topography it is unlikely that significant hydrocarbon contamination from the AST is present within the area of the proposed redevelopment.

Surrounding land use to the north, east, south and west consists of agricultural land and low density residential dwellings.

2.3 Geology, Hydrogeology and Hydrology

Rolleston geology is dominated by brownish grey river alluvium (Forsyth, Barrell and Jongens, 2008). Based on a review of the bore log for well M36/1849 located north of the site at 54 Dynes Road, the strata generally comprises gravels in a sand clay matrix to a depth of at least 49 m below ground level.

Regionally, groundwater flow is in a south-easterly direction toward the Pacific Ocean (CRC GIS database). The only active/existing wells in the vicinity of the site are M36/1849 located in the north of the site at 54 Dynes Road, and M36/8312 located in the south west of Stage 9. Both of these wells are used for irrigation purposes.

The closest surface water feature to the site is a water race running north to south through Stage 1 down through Stage 6.

3.0 DESK TOP INVESTIGATION

3.1 Overview

A desk top study was undertaken to identify and characterise the nature and location of potentially contaminating activities that may have been historically performed on the site and to identify potential contaminants of concern. Sections 3.2 through 3.4 summarise the historical information.

3.2 Aerial Photograph Review

A selection of historic aerial photographs of the site were reviewed to identify changes in land use activities on the site and potential areas of environmental concern; photographs have been reproduced in Appendix D.

Aerial photographs of the subject site taken during the following years were examined as part of the desktop study:

- 1961, 1974, 1984 and 1994 (NZ Aerial Mapping Limited, 2012).
- 2009, 2010 and 2011 (Google Earth, 2012).

Our salient findings of the historical aerial photograph review are summarised in Table 1.

Table 1: Summary of aerial photographs.

Photograph	Observations
9 October 1961 Black and white	The site appears to be grassed farmland divided into seven fields. Surrounding areas all appear to be grassed farmland with a residential dwelling situated to north and west of the site. To the south-east, south-west and north-west grassed farmland is evident. A small area of vegetation is located in the south east of Lot 1 DP8833 (Refer to photograph 1, Appendix D).
19 April 1974 Black and white	The site is similar to 1961 (i.e. only minor changes). A small barn is visible, in between some large trees, to the north of the site (in proposed Stage 3). A number of small residential dwellings are evident to the east of the site. The small area of vegetation located in the south east of Lot 1 DP8833 has been cleared (Refer to photograph 2, Appendix D).
28 September 1984 Black and white	The site and surrounds are similar to 1974 (i.e. only minor changes). An additional small barn is visible, in the north of the site in proposed Stage 3 (Refer to photograph 3, Appendix D).
26 November 1994 Black and white	The site and surrounds are similar to 1984 (i.e. only minor changes) (Refer to photograph 4, Appendix D).
13 July 2009 Google Earth, colour	The site is similar to 1984 (i.e. only minor changes). Increased residential properties are evident to the north-west of the site (Refer to photograph 5, Appendix D).
3 August 2010 Google Earth, colour	The site and surrounds are similar (i.e., minor changes only) to 2009 (Refer to photograph 6, Appendix D).
28 March 2011 Google Earth, colour	The site and surrounds are similar (i.e., minor changes only) to 2010 (Refer to photograph 7, Appendix D).

3.3 Anecdotal Information

The site has been owned by the Foster family since 1937, Annette Foster was available for interview, and provided the following salient information:

- In 1937 John Foster purchased the site, and additional farmland totalling 200 Ha. The site was covered with gorse and broom, small scale sheep grazing was undertaken on available land. The gorse and broom was initially cleared using a horse towed swamp plough, and in the later years using a tractor towing discs.
- In 1955 Ilam University invested in an Observatory for research purposes, the tower was located in the south west of the site (Stage 9). The Observatory was removed and relocated to Mt John in the late 1960's.. The Observatory was constructed of a concrete footpad with weatherboard walls and a tin roof. The remnants of the concrete footpad are still visible in Stage 9 of the site.
- The land was typically used for pastoral sheep farming, and in 1968 John Foster died and his son (David Foster) worked on the farm on behalf of the Estate. In 1975 David and Annette Foster purchased the farm from the Estate and increased the sheep farming numbers across the site. Barley and Lucerne were produced and harvested in the north of the Stage 4. Annette Foster made the comment that little to no pesticides were used and only in the area in the north of stage 4. Insecticides were generally not used on the site, although insecticides were used on Stage 4 to target aphids.
- David Foster established an agricultural spraying business in the early 1970s which closed by 1980. David bought in small containers of herbicide which he stored in the area now known as the Foster Lot. Only small quantities (one barrel) were brought in at a time due to the cost of buying the herbicide. The herbicides were reportedly not used, repackaged or mixed on Stages 1 to 9. No gorse or broom was sprayed on site.
- The farms main income was through sheep farming. A mobile sheep dipping contractor was brought onsite to treat the sheep until the early 1990's when the sheep were taken offsite to be treated. Sheep dipping occurred on the area now known as the Foster lot where a mobile sheep dip was set up. The sheep were held overnight post dipping in a paddock on the Foster lot. Land of Stages 4-9 is leased out to a local farmer, who grazes cattle across the site. The north of Stage 4 has Lucerne growing on it and is believed to be sporadically treated with a pesticide which targets aphids.
- A UST was removed from 54 Dynes Road and was stored as an AST on the Foster Lot. On 23 December 2010 a tree fell and struck the power lines running parallel with Dynes Road, which caused a fire that spread to the AST on the Foster Lot. The fire was eventually controlled by fire crews and helicopters. The AST was replaced with a modern AST which is still on the property. The fire was contained within the footprint of the Foster Lot and to the area north of Dynes Road.

3.4 Property Files

3.4.1 Canterbury Regional Council (CRC)

A land information request (including data on consents and compliance) was made to CRC to determine whether the site/s are listed on the Listed Land Use Register (LLUR).. This information was received in a Land Information Report (dated 28 September 2012) from which salient information is summarised below. The report has been reproduced in Appendix E.

- According to the records held by CRC no current resources consents have been issued for the site. However, RDH have applied for stormwater discharge consent (CRC130003) for Stage 1 of the development.
- RDH were granted a Certificate of Compliance to discharge residential stormwater to land (CRC130004), issued 26 July 2012.
- 57 Dynes Road was granted Permitted Activity Confirmation to discharge domestic waste water into land. However, this activity is associated with the Foster Lot area and is not associated with the proposed subdivision.

- Two historic land use consents were granted for the installation and alteration of two separate bores. Both consents have since lapsed.

The site is not on CRC's LLUR.

3.4.2 Selwyn District Council (SDC)

The property files held by SDC were obtained and reviewed for salient information, however only a property file for Lot 4 DP372247 (containing parts of Stage1, 2, 6 and 7) was available for viewing. The property file contained the following:

- SDC application to erect a temporary marquee February 2006.
- Lot valuation numbers.

4.0 RISK ASSESSMENT

Based on a synthesis of the information obtained through a review of the CRC information, SDC property files, certificates of title, historical aerial photographs, interviews, and a site visit, a qualitative risk assessment was completed for the site.

The qualitative risk assessment was made with regard to the following assumptions:

- Appendix E of the NES users guide identifies the hazardous substances associated with various activities or land uses. The historical land use/activities and associated potential contaminants of concern are as follows:
  - Sheep pens: Although sheep dipping occurred on the Foster Lot, sheep were held in the holding pens to the north of Stage 3 following dipping. MfE Guidelines for former sheep dip sites identify the likely contaminants would consist of arsenic, organochlorines, organophosphates and synthetic pyrethroids.
  - The storage of vintage vehicles: Due to the age and condition of the vehicles stored on the site a number contaminants associated with vehicle maintenance are considered to be of potential concern (including hydrocarbons, and metals which may be contained in waste oils).
  - Offal pits: Elevated Nitrate concentrations and biological hazard's are associated with the decomposition of animal remains contained in offal pits.
  - Observatory tower: Lead-based paint residues may be present around the location of the observatory tower in Stage 9. Until 1965, many paints on the New Zealand market had high lead content. This was particularly true of pre-1945 paints (Resene 2012). The observatory tower was constructed during a period when asbestos containing material (ACM) was frequently used in buildings. Although asbestos containing materials were not believed to have been used and the observatory tower was relocated rather than demolished, it would be prudent to visually inspect surface soils around the Observatory tower foundations to identify whether any potential asbestos containing material is present in the soils.
  - Horticultural activities: In this case the growing of barley and Lucerne. Potential contaminants of concern in surface soil in this area of the site may include organonitrogen pesticides, organochlorine pesticides, copper, arsenic and lead.

The results of the risk assessment are presented below and highlighted in Figure 3.

Stage 1

- No areas with HAIL activities were identified in Stage 1.

Stage 2

- No areas with HAIL activities were identified in Stage 2.

Stage 3

- There is considered to be a **low** level of risk associated with potential hydrocarbon and mineral oil contamination associated with the maintenance and storage of the vintage cars.
  - Although there were no signs of petroleum hydrocarbon staining on the soils beneath any of the vintage vehicles, the soil maybe impacted with hydrocarbon or mineral oils from leaking parts of the vintage vehicles.
- There is considered to be a **medium** level residual contaminants associated with sheep dipping in the sheep pens in the north-east of Stage 3.
  - Small sheep pens are located to the north-east of Stage 3 adjacent to where historically the mobile sheep dipping occurred, on the Foster Lot. The soil within the pens maybe impacted by residual contaminants associated with sheep dipping.

Stage 4

- There is considered to be a **low** level of risk associated with the fungicide spraying of barley, and pesticide spraying of Lucerne in the north of Stage 4.
  - Given the area was intermittently used for growing barley and has more recently been used for and growing lucerne, and anecdotal evidence indicates that the area was not heavily treated with pesticides, the potential risk is considered likely to be low.
- There is considered to be a **low** risk associated with the presence of an offal pit in the centre of the site.
  - Anecdotal information indicates a small offal pit lies along a tree boundary in the centre of Stage 4.

Stage 5

- No areas with HAIL activities were identified in Stage 5.

Stage 6

- There is considered to be a **low** level of risk associated with the offal pit.
  - Anecdotal information indicates a small offal pit lies along the southern boundary of Stage 6.

Stage 7

- No areas with HAIL activities were identified in Stage 7.

Stage 8

- No areas with HAIL activities were identified in Stage 7.

Stage 9

- There is considered to be a **low** level of risk associated with a former observatory tower.
  - Lead-based paint residues may be present around the location of the observatory tower in Stage 9. The observatory tower was present between at least 1955 until the late 1960's when the observatory was removed off-site. Until 1965, many paints on the New Zealand market had high lead levels. (Resene, 2012)
  - Potential ACM may be present in the surface soils surrounding the building footprint as a result of damage to the structure during tower relocation.
- There is considered to be a **low** risk associated with the presence of an offal pit.
  - Anecdotal information indicates a small offal pit lies along the southern boundary of Stage 9.

1. AERIAL IMAGE: Google Earth, 15.2.2011
2. MAP IMAGE: Memory Map, Copyright Reserved
3. DRAWN BY: SG REVIEWED BY: VC

Golder Associates

TITLE | POTENTIAL AREAS OF CONCERN

OCTOBER 2012

PROJECT | 1278103872_000

3

S:\Graphics\Projects-numbered\2012\12781x\03xxx\1278103_872_RDHughesDev_Farington\Oct12

5.0 DISCUSSION

The NES came into effect on 1 January 2012. All territorial authorities (district and city councils) are required to give effect to and enforce the NES. The NES regulations apply where a proposal meets particular 'land' and 'activity' criteria. The proposed change in land use and subdivision is considered to trigger the application of the NES due to the following:

1) The activity is subdividing and changing the land; and

2) Some of the activities undertaken on some of the properties within the investigation area are those which have the potential to cause contamination and are classified on the MfE Hazardous Activities and Industries List (HAIL). These activities include (a) livestock dip or spray operations, (b) application of agrichemicals (c) car maintenance.

Under the NES, and regulation 8(4) the subdivision of land is a permitted activity where the following requirement is met *'(b) the report on the preliminary site investigation must state that it is highly unlikely that there will be risk to human health if the activity is done to the piece of land.'*

As summarised in Section 4.0, there are some historic and current activities which may have resulted in soil and or groundwater contamination in particular areas of the site. This contamination, if present, is considered to represent a low to medium risk to future residential users. As the requirement of regulation 8(4) is not met, the proposed subdivision triggers the need for a resource consent application. The status of the consent (whether controlled, restricted discretionary or discretionary) will be dependent on the outcome of a detailed site investigation.

A detailed site investigation, where the areas of concern in Section 4.0 of this report are investigated, is required to determine whether site soils are suitable for the proposed end use or whether remediation or management is required.

It is not proposed to assess the offal pits, but to manage them during earthworks under a site specific management plan.

6.0 SUMMARY AND CONCLUSIONS

Golder was engaged by RDH to undertake a PSI at the proposed subdivision located between Gould Road and Dynes Road, Rolleston, Canterbury. The purpose of the PSI was to assess the viability of the site, from a contaminated land perspective, for residential subdivision. The PSI was also required in support of the subdivision consent application.

The PSI included a desk top study of aerial photographs, a review of certificates of title, CRC information for the site and the property files held by SDC. A site walk over and an interview with current landowners was also undertaken to identify potential contaminants and areas of environmental concern.

The site investigation area comprises predominately agricultural land, and is approximately 70 Ha. The proposed residential subdivision comprises 9 Stages.

Based on the information presented in the PSI, the following is a list of potential areas of environmental concern at the site (Figure 3):

- Stage 3 – Land to the north of the stage where historical vehicles are stored may have contaminated soils associated with fuel or motor oil leaks. Soil with sheep pens situated in the north-east of the stage may have been impacted with sheep dipping/spraying chemicals.
- Stage 4 – The north field of the stage where lucerne is grown has undergone historic pesticide spraying. Barley (also previously grown in this field) has been subjected to some fungicide spraying. A small historic offal pit is located in the centre of the site.

- Stage 6 – A small historic offal pit is located along the southern boundary of the site.
- Stage 9 - A small historic offal pit is located along the southern boundary of the site. The concrete foundations of a former observatory are located in the south west of the site. This former structure may have been constructed with ACM and painted with lead-based paint

The presence of properties that have been used, or are currently used for activities which have the potential to cause contamination, and their subdivision, triggers the application of the NES. Under the NES, resource consent for certain stages of the subdivision may therefore be required from SDC. A detailed site investigation, where the above areas of concern (excluding the offal pits) are investigated, is required to determine whether soil in these areas is suitable for the proposed residential end use or whether management or remediation is required. The status of the resource consent application (i.e., whether controlled, restricted discretionary or discretionary) will also be based on the outcome of the detailed site investigation.

As discussed above, there is believed to be three small offal pits located on the site. These pits represent a low risk and should be removed and disposed of to a registered landfill facility if encountered during redevelopment earthworks. To ensure discharges to the environment are minimised and human health is protected, it is recommended that this work be undertaken in accordance with a site specific management plan.

7.0 RECOMMENDATIONS

A number of areas were identified as potential sources of soil contamination at the site. These areas were located on Stage 3, 4, and 9 (Faringdon subdivision). It is recommended that the areas of concern be targeted in an intrusive Detailed Site Investigation (DSI) to determine potential risks to future residential users and to the environment. A Site Management Plan should also be developed to ensure that offal pits are removed from site such that potential risks to human health and the environment are minimised.

Although the Foster Lot does not form a part of this investigation, it should be noted that due to the subdivision it is likely that this portion of the site will also require a PSI.

8.0 REFERENCES

Forsyth PJ, Barrell DJA, Jongens R (compilers) 2008. Geology of the Christchurch Area. 1:250,000 scale. Institute of Geological and Nuclear Sciences, Geological Map 16.

Google Earth August 2012.

MfE 2011. Contaminated Land Management Guidelines No. 1 – Reporting on Contaminated Sites in New Zealand. Ministry for the Environment, Wellington, New Zealand.

MfE 2012. Users' Guide: National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment. April 2012.

Resene 2012. http://www.resene.co.nz/comn/safety/lead.htm.

APPENDIX A

Report Limitations

LIMITATIONS

This Document has been provided by Golder Associates (NZ) Ltd ("Golder") subject to the following limitations:

(i). This Document has been prepared for the particular purpose outlined in Golder's proposal and no responsibility is accepted for the use of this Document, in whole or in part, in other contexts or for any other purpose.

(ii). The scope and the period of Golder's Services are as described in Golder's proposal, and are subject to restrictions and limitations. Golder did not perform a complete assessment of all possible conditions or circumstances that may exist at the site referenced in the Document. If a service is not expressly indicated, do not assume it has been provided. If a matter is not addressed, do not assume that any determination has been made by Golder in regards to it.

(iii). Conditions may exist which were undetectable given the limited nature of the enquiry Golder was retained to undertake with respect to the site. Variations in conditions may occur between investigatory locations, and there may be special conditions pertaining to the site which have not been revealed by the investigation and which have not therefore been taken into account in the Document. Accordingly, additional studies and actions may be required.

(iv). In addition, it is recognised that the passage of time affects the information and assessment provided in this Document. Golder's opinions are based upon information that existed at the time of the production of the Document. It is understood that the Services provided allowed Golder to form no more than an opinion of the actual conditions of the site at the time the site was visited and cannot be used to assess the effect of any subsequent changes in the quality of the site, or its surroundings, or any laws or regulations.

(v). Any assessments, designs, and advice in this Document are based on the conditions indicated from published sources and the investigation described. No warranty is included, either express or implied, that the actual conditions will conform exactly to the assessments contained in this Document.

(vi). Where data supplied by the client or other external sources, including previous site investigation data, have been used, it has been assumed that the information is correct unless otherwise stated. No responsibility is accepted by Golder for incomplete or inaccurate data supplied by others.

(vii). The Client acknowledges that Golder may have retained subconsultants affiliated with Golder to provide Services for the benefit of Golder. Golder will be fully responsible to the Client for the Services and work done by all of its subconsultants and subcontractors. The Client agrees that it will only assert claims against and seek to recover losses, damages or other liabilities from Golder and not Golder's affiliated companies. To the maximum extent allowed by law, the Client acknowledges and agrees it will not have any legal recourse, and waives any expense, loss, claim, demand, or cause of action, against Golder's affiliated companies, and their employees, officers and directors.

(viii). This Document is provided for sole use by the Client and is confidential to it and its professional advisers. No responsibility whatsoever for the contents of this Document will be accepted to any person other than the Client. Any use which a third party makes of this Document, or any reliance on or decisions to be made based on it, is the responsibility of such third parties. Golder accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this Document.

APPENDIX B

Site Photographs

Photograph 1 – Sheep pens in the north of Stage 3.

Photograph 2 – Vintage vehicles stored in the hay barn in the north of Stage 3.

Photograph 3 – Vintage vehicles store in the north of Stage 3

Photograph 4 – Lucerne field in the north of Stage 4.

Photograph 5 – Footings from observatory in Stage 9.

APPENDIX C

Certificates of Title

COMPUTER FREEHOLD REGISTER
UNDER LAND TRANSFER ACT 1952

Search Copy

R.W. Muir
Registrar-General
of Land

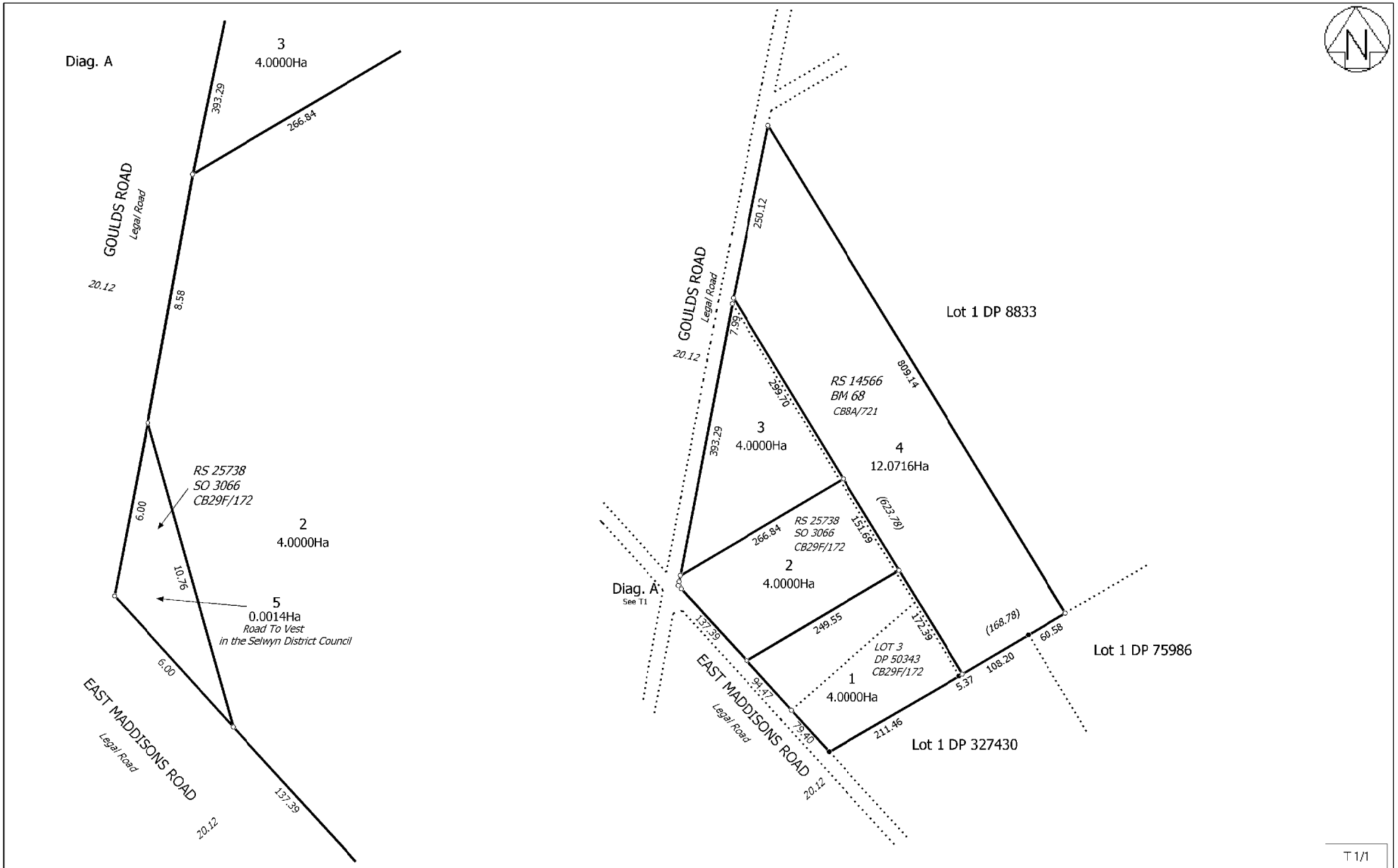
Identifier	**298232**
Land Registration District	**Canterbury**
Date Issued	02 August 2006

Prior References
CB29F/172 CB8A/721

Estate	Fee Simple
Area	4.0000 hectares more or less
Legal Description	Lot 2 Deposited Plan 372247

Proprietors
Foster Holdings Limited

Interests



Land District: Canterbury Digitally Generated Plan Generated on: 16/08/2006 10:41am Page 2 of 2	LOTS 1 - 5 BEING SUBDIVISION OF LOT 3 DP 50343, RS 25738 & RS 14566	Surveyor: Tania Rochelle Foster Firm: Middleton Williams & Co	Digital Title Plan DP 372247 Deposited on: 31/07/2006

COMPUTER FREEHOLD REGISTER
UNDER LAND TRANSFER ACT 1952

Search Copy

R.W. Muir
Registrar-General
of Land

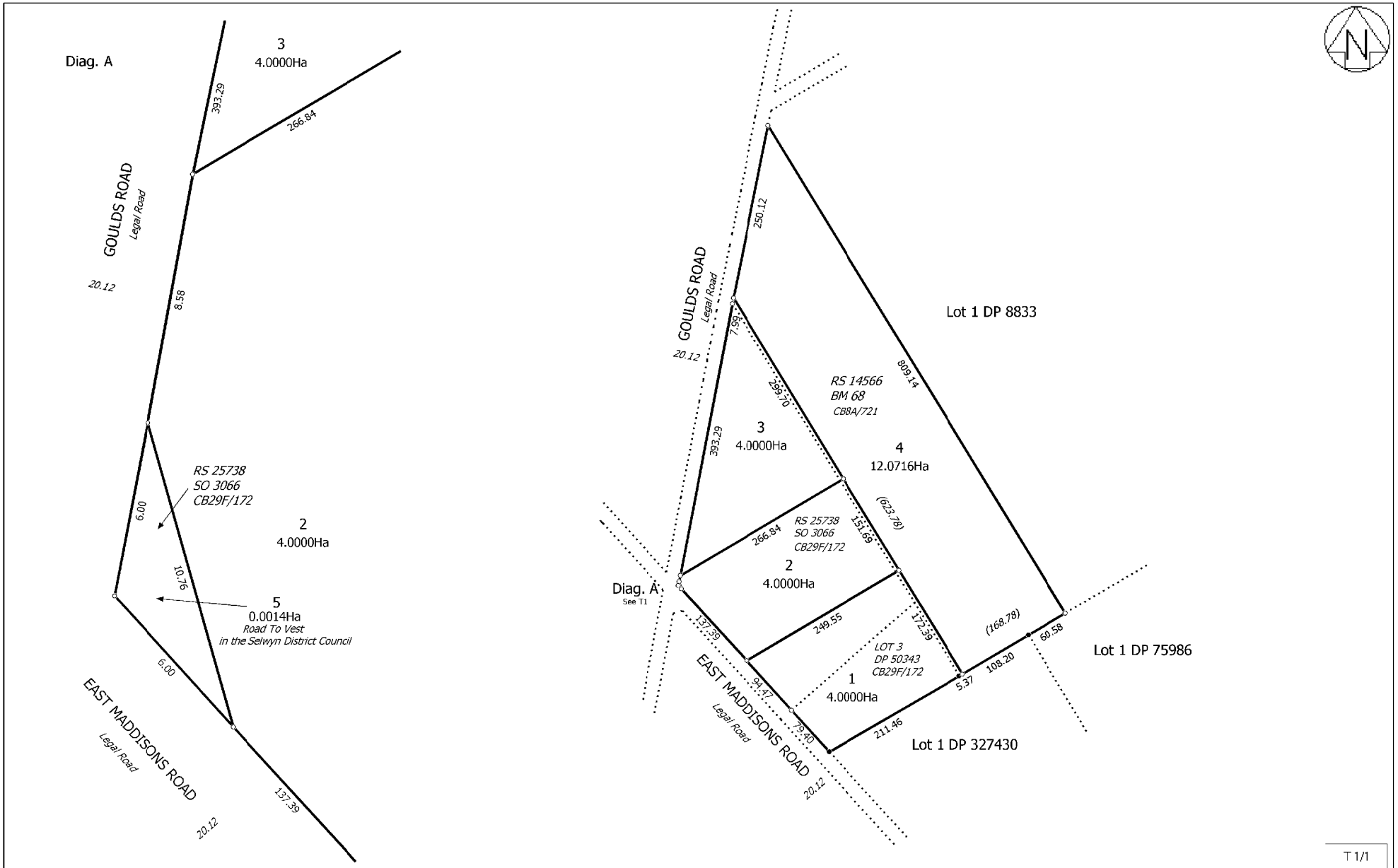
Identifier	**298231**
Land Registration District	**Canterbury**
Date Issued	02 August 2006

Prior References
CB29F/172 CB8A/721

Estate	Fee Simple
Area	4.0000 hectares more or less
Legal Description	Lot 1 Deposited Plan 372247

Proprietors
David John Foster as to a 1/2 share
Annette Pamela Foster as to a 1/2 share

Interests



T 1/1

Land District: Canterbury Digitally Generated Plan Generated on: 16/08/2006 10:41am Page 2 of 2	LOTS 1 - 5 BEING SUBDIVISION OF LOT 3 DP 50343, RS 25738 & RS 14566	Surveyor: Tania Rochelle Foster Firm: Middleton Williams & Co	Digital Title Plan DP 372247 Deposited on: 31/07/2006

COMPUTER FREEHOLD REGISTER
UNDER LAND TRANSFER ACT 1952

Search Copy

R.W. Muir
Registrar-General
of Land

Identifier	**535726**
Land Registration District	**Canterbury**
Date Issued	01 October 2010

Prior References
CB10K/1098

Estate	Fee Simple
Area	21.4482 hectares more or less
Legal Description	Rural Section 12514 and Rural Section 15710

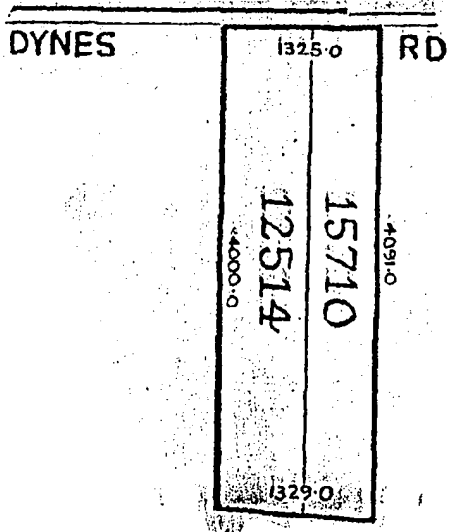
Proprietors
Foster Holdings Limited

Interests

Title Diagram 535726

Cpy – 01/01, Pgs – 001, 01/10/10, 13:54

DocID: 212679606



Area
21·4482ha

COMPUTER FREEHOLD REGISTER
UNDER LAND TRANSFER ACT 1952

Search Copy

R.W. Muir
Registrar-General
of Land

Identifier	**535726**
Land Registration District	**Canterbury**
Date Issued	01 October 2010

Prior References
CB10K/1098

Estate	Fee Simple
Area	21.4482 hectares more or less
Legal Description	Rural Section 12514 and Rural Section 15710

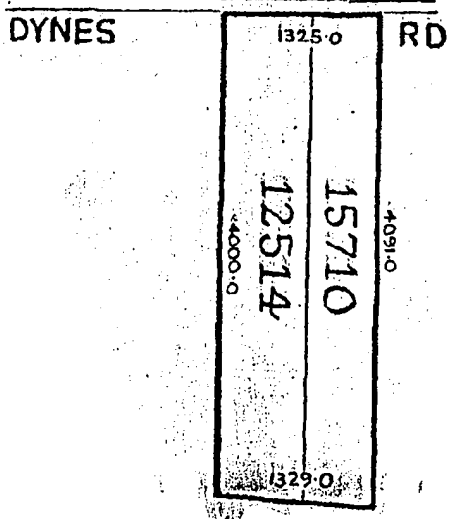
Proprietors
Foster Holdings Limited

Interests

Title Diagram 535726

Cpy – 01/01, Pgs – 001, 01/10/10, 13:54

DocID: 212679606



Area
21·4482ha

COMPUTER FREEHOLD REGISTER
UNDER LAND TRANSFER ACT 1952

Search Copy

R.W. Muir
Registrar-General
of Land

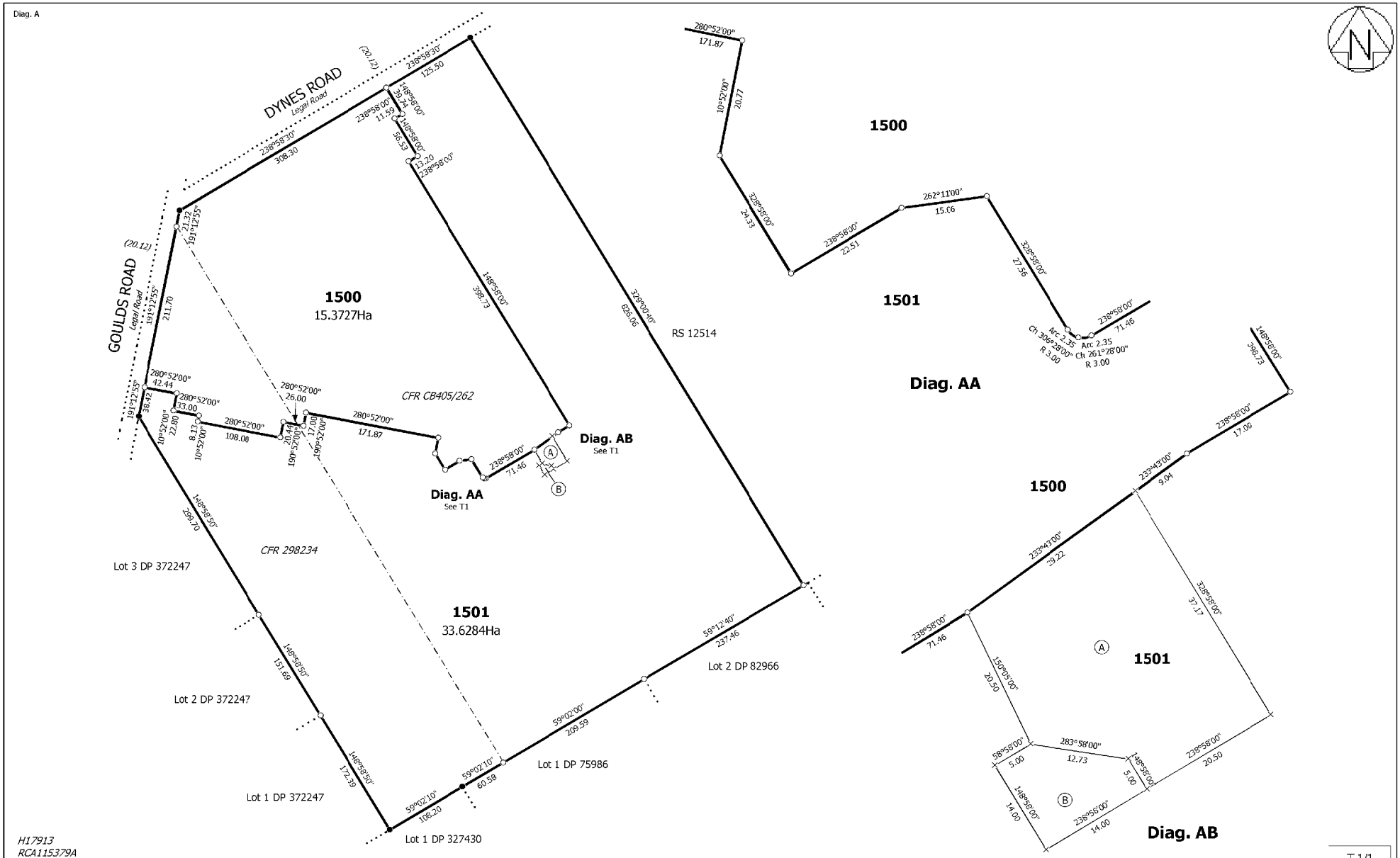
Identifier	**588304**
Land Registration District	**Canterbury**
Date Issued	23 August 2012

Prior References
298234 CB405/262

Estate	Fee Simple
Area	15.3727 hectares more or less
Legal Description	Lot 1500 Deposited Plan 456110

Proprietors
Hughes Developments Limited

Interests



Land District: Canterbury Digitally Generated Plan Generated on: 30/08/2012 12:13am Page 3 of 3	Lots 1500 and 1501 being Subdivision of Lot 1 DP 8833 and Lot 4 DP 372247	Surveyor: Kevin Martin Hayes Firm: Davie Lovell-Smith Ltd	Title Plan DP 456110 Deposited on: 23/08/2012

COMPUTER FREEHOLD REGISTER
UNDER LAND TRANSFER ACT 1952

Search Copy

R.W. Muir
Registrar-General
of Land

Identifier	**588305**
Land Registration District	**Canterbury**
Date Issued	23 August 2012

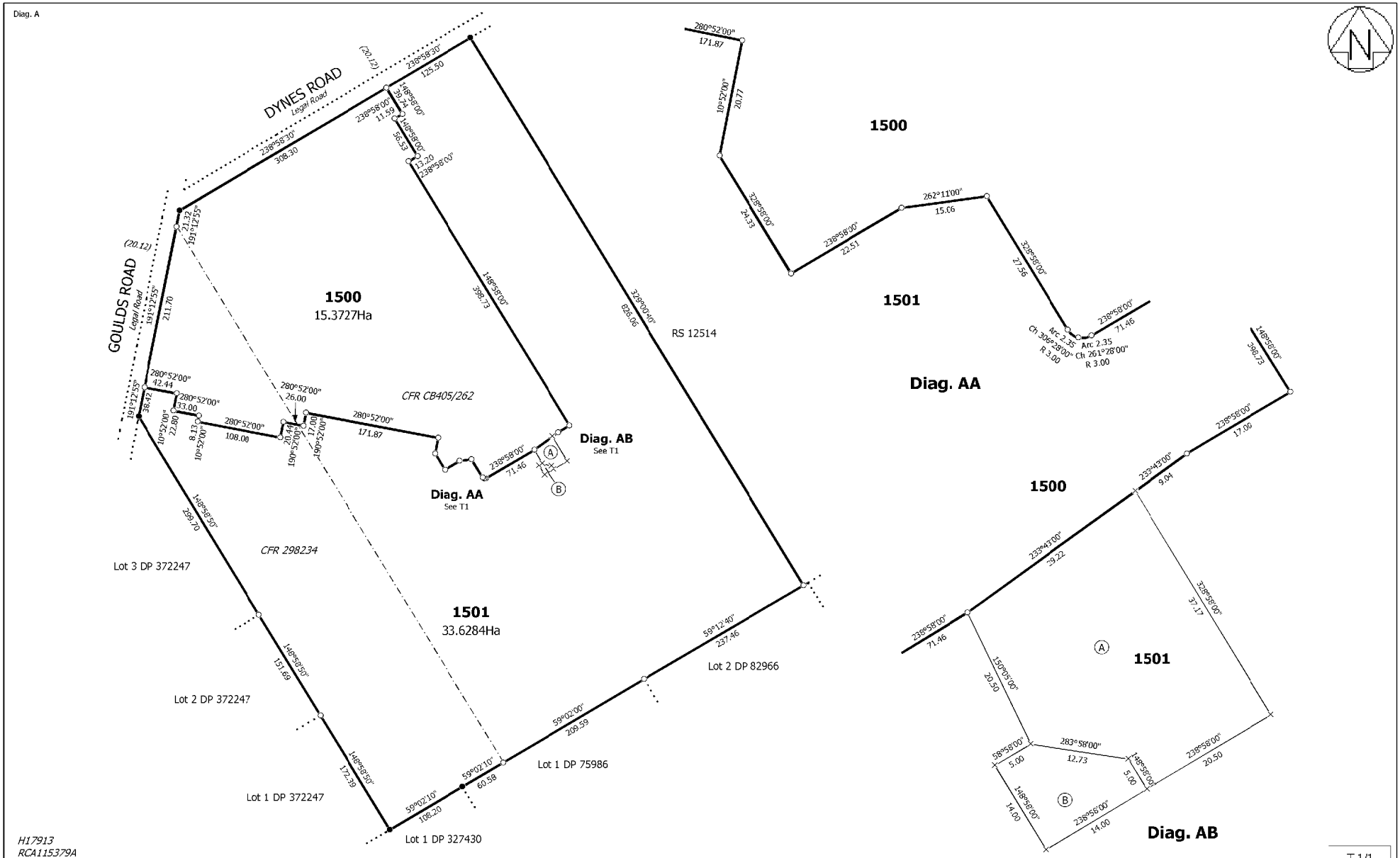
Prior References
298234 CB405/262

Estate	Fee Simple
Area	33.6284 hectares more or less
Legal Description	Lot 1501 Deposited Plan 456110

Proprietors
Foster Holdings Limited

Interests

Subject to a right (in gross) to drain sewage and a right to convey water & electricity over parts marked A & B on DP 456110 in favour of Hughes Developments Limited created by Easement Instrument 9142778.2 - 23.8.2012 at 5:25 pm



Land District: Canterbury Digitally Generated Plan Generated on: 30/08/2012 12:13am Page 3 of 3	Lots 1500 and 1501 being Subdivision of Lot 1 DP 8833 and Lot 4 DP 372247	Surveyor: Kevin Martin Hayes Firm: Davie Lovell-Smith Ltd	Title Plan DP 456110 Deposited on: 23/08/2012

COMPUTER FREEHOLD REGISTER
UNDER LAND TRANSFER ACT 1952

Search Copy

R.W. Muir
Registrar-General
of Land

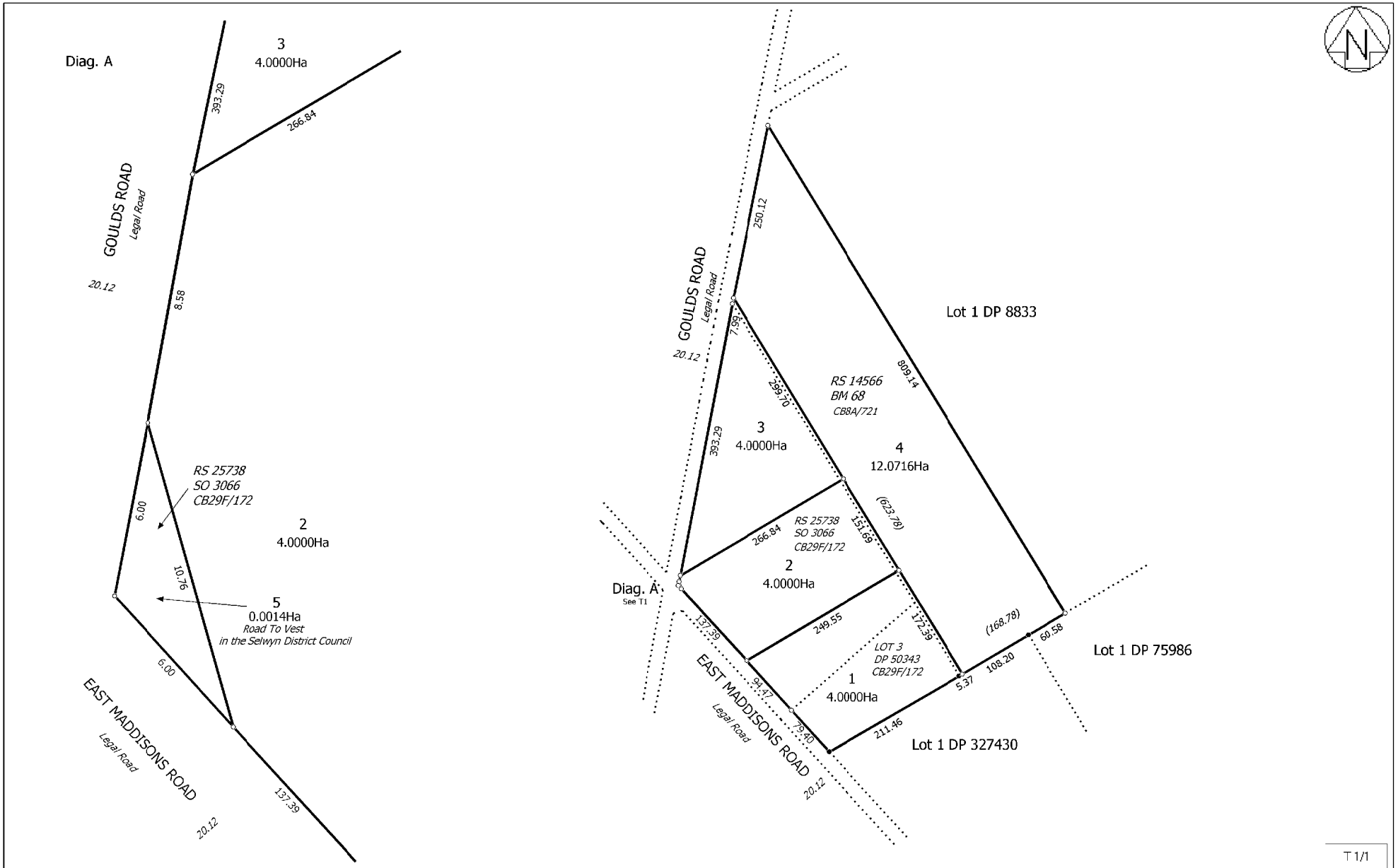
Identifier	**298233**
Land Registration District	**Canterbury**
Date Issued	02 August 2006

Prior References
CB29F/172 CB8A/721

Estate	Fee Simple
Area	4.0000 hectares more or less
Legal Description	Lot 3 Deposited Plan 372247

Proprietors
Foster Holdings Limited

Interests



T 1/1

Land District: Canterbury Digitally Generated Plan Generated on: 16/08/2006 10:41am Page 2 of 2	LOTS 1 - 5 BEING SUBDIVISION OF LOT 3 DP 50343, RS 25738 & RS 14566	Surveyor: Tania Rochelle Foster Firm: Middleton Williams & Co	Digital Title Plan DP 372247 Deposited on: 31/07/2006

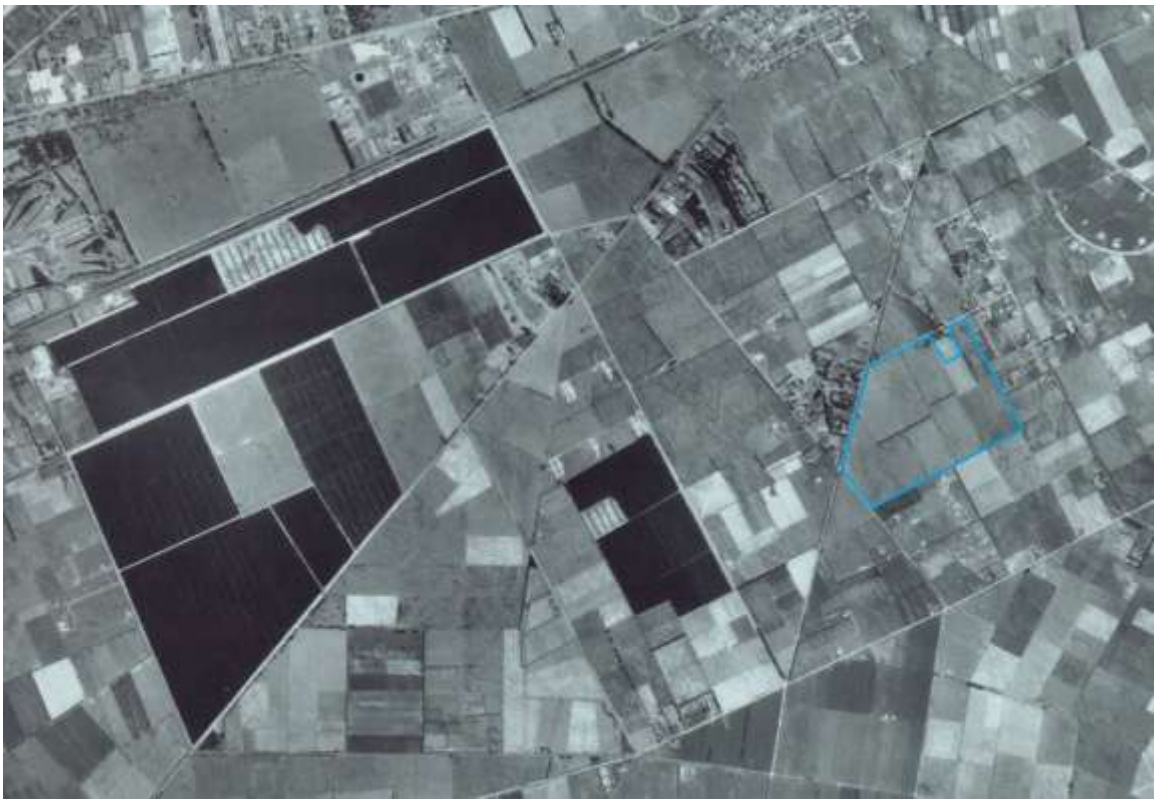
APPENDIX D

Aerial Photographs

Photograph 1: NZAM 9/10/1961 blue outline depicts approximate site area.

Photograph 2: NZAM 19/04/1974 blue outline depicts approximate site area.

Photograph 3: NZAM 28/09/1984 blue outline depicts approximate site area.



Photograph 4: NZAM 26/11/1994 blue outline depicts approximate site area.

Photograph 5: Google Earth 13/07/2009 blue outline depicts approximate site area.

Photograph 6: Google Earth 03/09/2010 blue outline depicts approximate site area.

Photograph 7: Google Earth28/03/2011 blue outline depicts approximate site area.

APPENDIX E

Canterbury Regional Council Land Information Report

Environment Canterbury
Regional Council
Kaunihera Taiao ki Waitaha

PO Box 345
Christchurch 8140
P. 03 365 3828
F. 03 365 3194
E. ecinfo@ecan.govt.nz
Customer Services
P. 03 353 9007 or 0800 324 636
www.ecan.govt.nz

28 September 2012

Attn: Tom Davies
Golders Associates (NZ) Limited
PO Box 2281
Christchurch 8140

Dear Tom

LAND INFORMATION REPORT: DYNES ROAD, ROLLESTON; LOTs 1-4 DP 372247, LOT 1 DP 8833 and RSs 12514 and 15710 ; VALUATION # 2405526000-4

Thank you for your enquiry requesting information on the above property.

Resource Consents

According to our records there are no resource consents, a Permitted Activity Authorisation and Certificate of Compliance associated with this property. Please refer to the information contained in the enclosed report. There is also an application for stormwater discharge consent relevant to this property, CRC130003. I have attached a copy of this application separately.

Note: Resource consents are granted to a person to carry out an activity and, with the exception of certain types of land use consents (for example, consents to install a bore), are not tied to the land to which the activity relates. If the land is sold and the new owners wish to continue carrying out the activity, the consent will need to be transferred. The Council has forms to ensure the correct information is provided to enable the transfer to take place without undue delay.

Compliance and Monitoring

Environment Canterbury holds compliance and monitoring information associated with the expired resource consents for bore installation on this property. Please refer to the information enclosed in this report.

Wells

According to our records there are no wells located on or within a 1km radius of the above property. Please refer to the information contained in the enclosed report.

The locations of wells in Environment Canterbury's Wells database are generally accurate to within a few hundred metres. Therefore, it is possible that any details of wells included in this response may not actually be on the property in question. Likewise, there may be other wells on the property that ECan does not have on record, or for which ECan has inaccurate location details. If you have more detailed information on wells on the property, please contact ECan staff.

Please also find following some information regarding wells in the vicinity of this property. Each well is given a number and this can be used to determine further information (yield, water levels, etc.) about a specific well from the corresponding table. I have also included a fact sheet that explains the terms found within this table.

Our Ref: CUST/OPS/LIR/2
Your Ref: LIR 3449
Contact: Jason McDonald

Ground Water

Quantity:
This property is located within the Selwyn-Waimakariri ground water allocation zone which is currently a red zone.

Demand for ground water in Canterbury has escalated in recent years. Notified in July 2004, Variation 1 of the Natural Resource Regional Plan (NRRP) established approaches for allocating ground water throughout the region. Variation 2 (notified November 2005) introduced a change to the determination of annual volumes – affecting the estimates of effective allocation. Variation 4 (notified June 2007) amended the approach for determining ground water allocation limits by including the actual allocation limits in the NRRP.

The Groundwater Allocation Limits technical report (Report No. U04/02) provides an important tool to assist in assessing the cumulative effects of existing and proposed abstractions. This report draws on existing and new information to identify zones where conservative assessments indicate that groundwater resources are already highly-allocated. On the tables showing the allocation limits and the estimates of water use there are three levels of allocation status identified: red, yellow and white.

Red zones are where the allocation is 100% or more, relative to the precautionary trigger levels.
Yellow zones are where ground water is 80% - 100% allocated, relative to the same levels.
White zones are where ground water is less than 80% allocated, relative to the same levels.

The more highly allocated a ground water zone becomes, the more difficult and costly a resource consent can be to process and have granted. For more information regarding ground water consents and allocation zones, please visit our website at www.ecan.govt.nz or contact Customer Services.

Quality:
Environment Canterbury holds only dated ground water quality data in its water quality database for wells within a 1km radius of this property. Each year, Environment Canterbury collects ground water samples from approximately 250 wells throughout Canterbury to assess the general quality of ground water by monitoring microbiological and chemical water indicators such as coliform bacteria and nitrate-nitrogen. Environment Canterbury also monitors pesticides and hydrocarbon contaminants in some parts of the region, and it conducts more detailed investigations in specific areas where contamination has been reported. A number of reports on ground water quality in Canterbury are held by Environment Canterbury, some of which may be relevant to your area.

If ground water quality is an important consideration in the purchase of this property and there is no data available for this property then you are advised to contact Environment Canterbury to see if information is available in the wider area, either in the form of reports or ground water quality data. Furthermore, Environment Canterbury recommends that you have your well water tested when you purchase a new property if the water is to be used for drinking purposes or where the quality of the water may affect the use of the water for other purposes.
Note: Ground water quality information for properties with a reticulated water supply should be obtained from the authority supplying the water.

Surface Water
Environment Canterbury does hold recent surface water quantity information, but only dated surface water quality information within a 1km radius of this property.

Note: Surface water quality information for properties with a reticulated water supply should be obtained from the authority supplying the water.

Flood/Erosion Hazard
Please refer to the information contained in the enclosed report.

Earthquake Hazard
Please refer to the information contained in the enclosed report.

Pest Enforcement

Plant Pest:
There are currently identified plant pest enforcement issues associated with this property. Access may be required by the Department of Conservation and/or Environment Canterbury staff for future inspections.

Animal Pest:
There are no currently identified animal pest enforcement issues associated with this property.

LLUR Status
This property is not recorded on the Listed Land Use Register. Please refer to the information contained in the enclosed report.

Air Quality
There is no specific information regarding air quality for this site. Please find enclosed some general information regarding air quality for the area.

If you require any further information please call Customer Services on 03 353 9007 or free phone 0800 EC INFO (0800 32 4636).

Yours sincerely

Jason McDonald
ADVISORY OFFICER

Land Information Request

Dynes Road

ROLLESTON

Prepared by
Environment Canterbury
Customer Services

September 2012

Environment Canterbury
Regional Council
Kaunihera Taiao ki Waitaha

Land Information Request #3449

24 Edward Street, Lincoln
PO Box 345
Christchurch
Phone (03) 365 3828
Fax (03) 365 3194

75 Church Street
PO Box 550
Timaru
Phone (03) 688 9069
Fax (03) 688 9067

Website: www.ecan.govt.nz
Customer Services Phone 0800 324 636

Table of Contents

Land Information Report
SUMMARY

Address: **Dynes Road, Rolleston**
Legal Description: **Lots 1-4 DP 372247, Lot 1 DP 8833 and RSs 12514 & 15710**
Valuation Number: **2405526000-4**

Resource Consents
According to our records there are no current resource consents associated with this property.

Compliance and Monitoring
Environment Canterbury holds compliance and monitoring information associated with the expired bore installation resource consents on this property. Please refer to the information contained in the enclosed report.

Wells
According to our records there is an unused well located on the above property.

Ground Water

Quantity:
This property is located within the Selwyn-Waimakariri ground water allocation zone which is currently a red zone.

Quality:
Environment Canterbury holds only dated ground water quality data in its water quality database for wells within a 1km radius of this property.

Surface Water
Environment Canterbury does hold recent surface water quantity information, but only dated surface water quality information within a 1km radius of this property.

Flood Hazard
Please refer to the information contained in the enclosed report.

Earthquake Hazard
Environment Canterbury does not hold earthquake hazard data particular to this property.

Pest Enforcement

Plant Pest:
There are currently identified plant pest enforcement issues associated with this property.

Animal Pest:
There are no currently identified animal pest enforcement issues associated with this property.

LLUR Status
This property is not recorded on the Listed Land Use Register. Please refer to the information contained in the enclosed report.

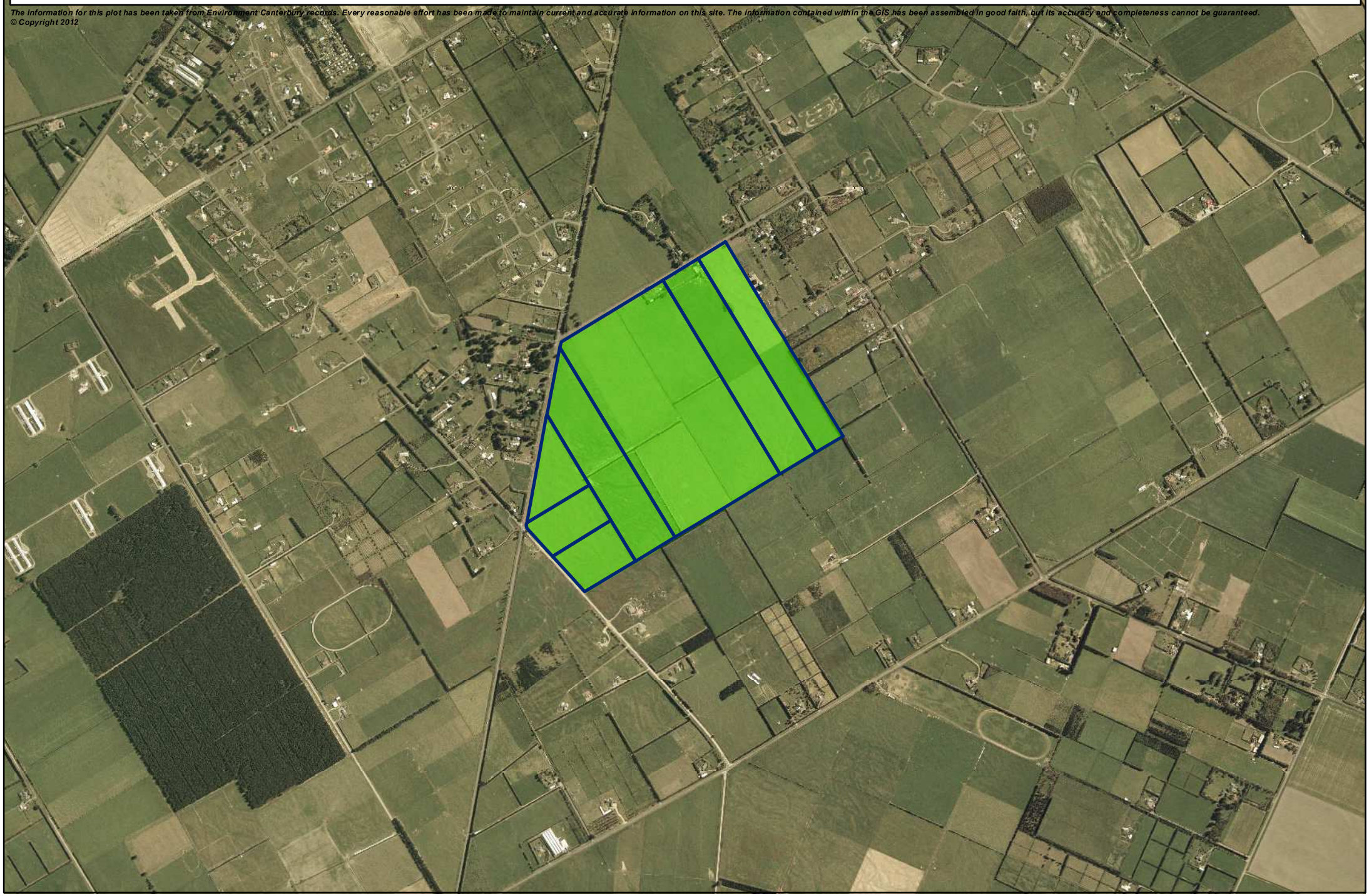
Air Quality
There is no specific information regarding air quality for this site, but general information regarding air quality for the area.

Environment Canterbury
Regional Council
Kaunihera Taiao ki Waitaha

Dynes Road Rolleston.

N

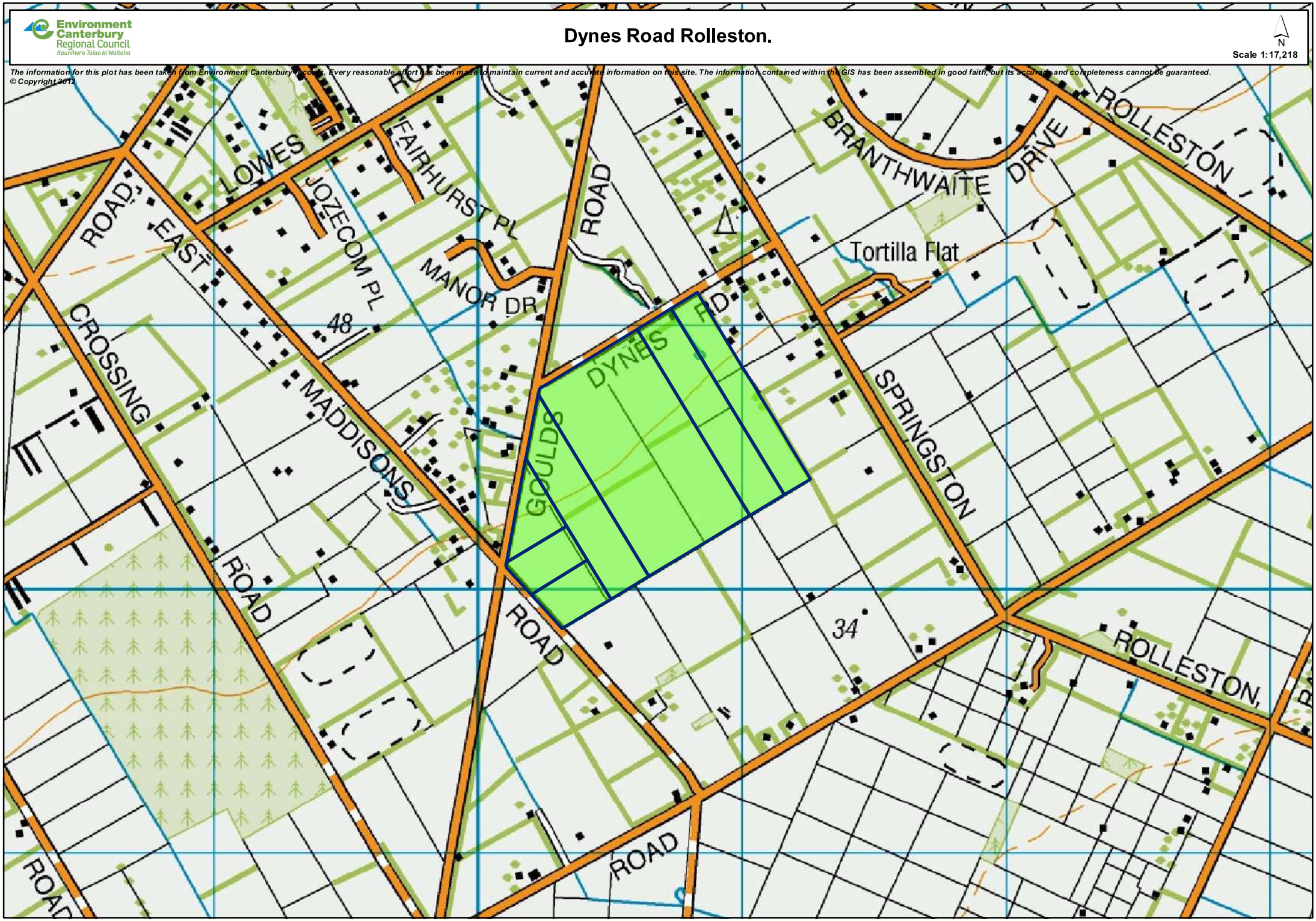
Scale 1:17,218



Dynes Road Rolleston.

Environment Canterbury Regional Council
Kaunihera Taiao ki Waitaha

Scale 1:17,218

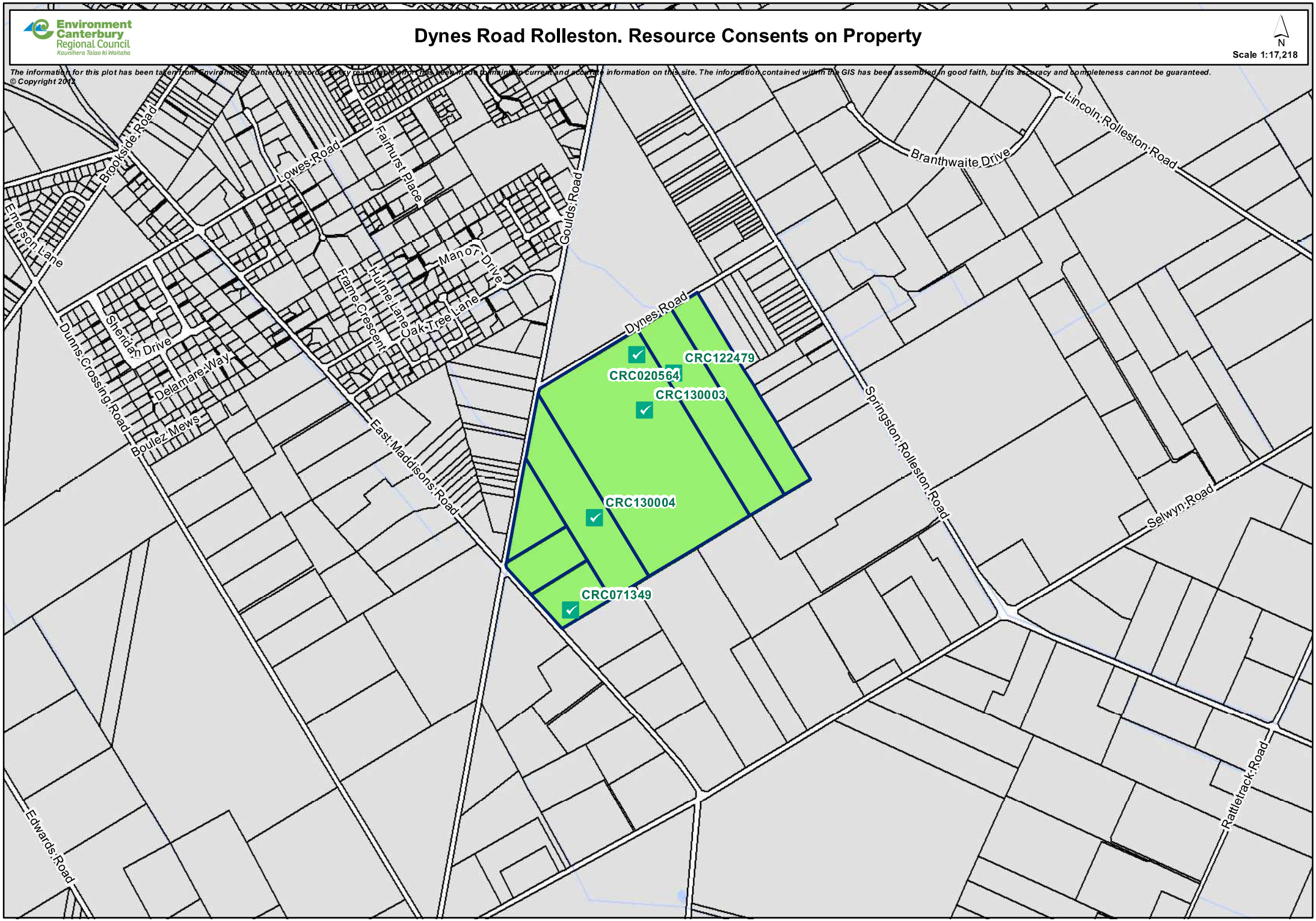


Environment Canterbury Regional Council
Kaunihera Taiao ki Waitaha

Dynes Road Rolleston. Resource Consents on Property

N

Scale 1:17,218

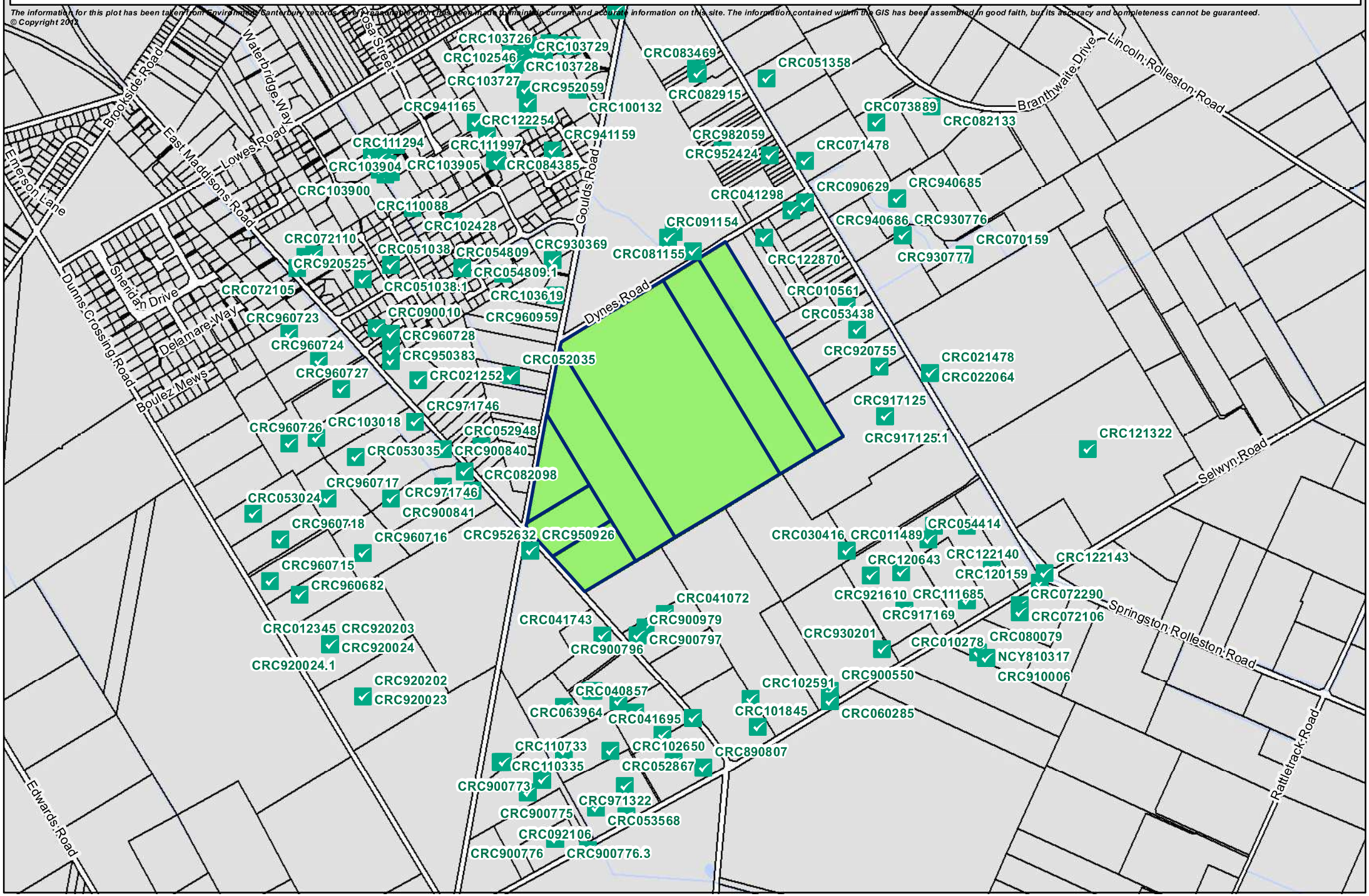


Environment Canterbury Regional Council
Kaunihera Taiao ki Waitaha

Dynes Road Rolleston. Resource Consents within 1km radius

N

Scale 1:17,218



Fact Sheet

February 2002

Consents plot

The following information is designed to accompany an Arcview plot showing consents data. It may not show consents which are being processed. A plot consists of a map showing consent locations and a report providing information regarding these consents.

The following information can currently be included in a consents report. As all of this information is seldom necessary, staff will often select the information they think is relevant to your enquiry. If you require a more comprehensive report, Customer Services are happy to provide this service for you.

ACTIVITY: what the consent is for (e.g. surface water take, groundwater take, etc.).

AREA: to which the activity relates, measured in hectares (ha).

CATCHMENT NO: river catchment number the consent relates to.

CLIENT NAME: name of the consent holder.

CLIENT NO: each client is given a number.

CONSENT NO: each resource consent is given a number (e.g. CRC927105).

CONSENT STATE: code used to identify the stage the application is at within the consent process. Codes are explained in the 'state description' column.

CONSENT TYPE: type of consent as described in the Resource Management Act 1991 (e.g. water permit, coastal permit, etc.).

CONTACT ADDRESS 1/2/3/4: consent holder's postal address.

CONTACT NAME: for this specific resource consent.

DATE DECISION: date decision was made regarding the consent application.

DATE EXPIRED: date consent expires.

DATE ISSUED: date resource consent document issued.

FILE NUMBER: where all information regarding the consent is stored in paper form at the Christchurch office.

GRID EAST: full easting grid reference from New Zealand map grid.

GRID NORTH: full northing grid reference from New Zealand map grid.

Customer Services
0800 EC INFO
(0800 32 4636)

P O Box 345, Christchurch
www.ecan.govt.nz

Environment Canterbury
Your regional council

Consents plot

GRID REFERENCE: co-ordinates to locate the consent on a map, obtained using the NZMS 260 1:50 000 map series.

MAX QUANTITY: that can be taken or discharged over the number of days specified in the 'usage days' column, measured in cubic metres (m^3).

MAX RATE: for abstractions and discharges, measured in litres per second (l/s).

NUMBER ON STREET: house number on road or street where activity is located.

ROAD OR STREET: where activity is located.

SALUTATION: used on correspondence.

STATE DESCRIPTION: description of the code used to identify the stage the application is at within the consent process.

USAGE DAYS: number of days over which the maximum quantity can be taken or discharged.

USE CODE 1/2: code to show what the consent is used for based on information provided when the consent application is lodged. Note - codes may not be updated if use changes. Up to two use codes can be shown. For an explanation of these codes, contact Customer Services.

Accuracy: Most consent locations are accurate up to ± 50 m. This information has been taken from Environment Canterbury records. It is supplied in good faith, but its accuracy or completeness is not guaranteed. If the information is relied on in support of a resource consent application it should be verified independently.

Customer Services
0800 EC INFO
(0800 32 4636)

P O Box 345, Christchurch
www.ecan.govt.nz

Environment Canterbury
Your regional council

Generated 28-Sep-2012

Record Number CRC020564
Record Type New Consent
Permit Type Land Use Consent
Record Holder David John Foster

Location Dynes Road, ROLLESTON
Description to alter bore M36/1849 at or about map reference NZMS 260 M36:6059-3250 for irrigation and stockwater purposes.
Commencement Date 27 Sep 2001
Expiry Date 26 Sep 2004
Lapse Date
Given Effect To
Expiry Date 26 Sep 2004
Trim File No CO6C/00652

Cond No	Text
1	The "Bore Completion Report" shall be completed and returned to the Canterbury Regional Council within three weeks after completion of drilling.
2	A concrete pad of at least 0.3 metres radius and 0.1 metres thickness is to be constructed around the bore head at ground or pumphouse floor level to prevent leakage around the casing. The concrete pad shall slope away from the bore.
3	The top of the bore shall be covered or capped to prevent contaminants entering the bore and underlying groundwater.
4	In the event of any disturbance of Koiwi Tangata (human bones) or taonga (treasured artefacts), the consent holder shall:(a) cease any further excavation for a period of at least 24 hours;(b) immediately advise the Canterbury Regional Council of the disturbance; and(c) immediately advise the Upoko Runanga of Taumutu, or his representative, of the disturbance.

Record Number CRC071349
Record Type New Consent
Permit Type Land Use Consent
Record Holder Kirk Devon Findlater

Location East Maddison Road, ROLLESTON
Description To install one bore.
Commencement Date 23 Nov 2006
Expiry Date 23 Nov 2009
Lapse Date 23 Nov 2009
Given Effect To
Expiry Date 23 Nov 2009
Trim File No CO6C/22612

Cond No	Text
1	Bore M36/8312 (proposed diameter shall not be more than 500 millimetres and proposed depth 38 metres beneath the ground surface) shall be located within the area marked on plan CRC071349 attached to this consent.
2	Only one aquifer or water-permeable zone shall be accessed by a single bore.
3	All aquifers and permeable zones of differing pressure, water quality, or temperature shall be sealed to prevent the interconnection or movement of groundwater between aquifers and permeable zones.
4	The annulus of the bore shall be sealed with grout to above the screen pack or one metre below ground level, whichever is the lesser, to prevent fluid movement down the sides of the casing into the screened collection layer.
5	The top of the bore shall be covered or capped to prevent contaminants entering the bore and underlying groundwater.
6	A concrete pad of at least 0.3 metres radius and 0.1 metres thickness shall be constructed around the bore head at ground or pumphouse floor level to prevent leakage of groundwater, any movement of the casing, and any material or surface water entering the bore or annulus. The concrete pad shall slope away from the bore.
7	A standard 15 or 25 millimetre socket and screw-in bung shall be installed on top of the bore to allow water level measurements to be taken using: (a) A water level probe where: (i) there is sufficient space for it between the riser pipe and the well casing (ii) the lowest pumped water level is less than 10 metres below the top of the bore. Otherwise (b) below applies. (b) If a water level probe cannot be used then: 1. a socket and bung of 25 millimetres diameter shall be connected to a 20 millimetre diameter pipe down the well so a water probe level can be inserted without being caught in cables or between the flanges of the riser pipe and casing. The pipe should extend to within two metres of the top of the pump. If unable to comply with (i) then (ii) applies. 2. a small pressure tube of not less than five millimetres shall be installed down the well to allow a pressure gauge to be used for a water level depth measurement. The depth at which the end of the pressure tube is installed shall be measured from the top of the casing to an accuracy of 0.05 metres. The pressure gauge dial shall be accurate to the nearest 0.1 metres. After lifting and re-placing the submersible pumps the pressure tube shall be replaced at the same depth or the difference shall be recorded in a notebook kept for that purpose.

8	The bore shall be easily identifiable by a permanent label, which may be welded or engraved on the casing, or on the equivalent fixed part of the well construction or associated building. The numbering on the label shall be the bore number assigned by Environment Canterbury and referred to in Condition (1).
9	In the event of any disturbance of Koiwi Tangata (human bones) or taonga (treasured artefacts), the consent holder shall: 1. Cease any further excavation for a period of at least 24 hours; 2. Immediately advise the Canterbury Regional Council of the disturbance; and 3. Immediately advise the Upoko Runanga of Taumutu, or his representative, of the disturbance . 4. The New Zealand Historic Places Trust shall be notified and a response obtained before work recommences.
10	The information requirements of the “Bore Completion Report” CRC071349 Parts 1 & 2 shall be completed and returned to Environment Canterbury within 20 working days of the completion of construction of the bore or water infiltration gallery.

Record Number CRC122479
Record Type Domestic Wastewater
Permit Type Permitted Activity Confirmatn
Record Holder Foster Holdings Limited

Location 57 Dynes Road, ROLLESTON
Description To discharge domestic wastewater into land.

Lapse Date
Given Effect To
Expiry Date
Trim File No RESC/PER/WWPA110432

Cond No	Text
	All Systems
1	The discharge shall be only wastewater.
2	The maximum volume of the discharge from a system shall not exceed two cubic metres per day.
3	There shall be no discharge of wastewater to surface water or into groundwater.
4	The discharge shall not result in wastewater flowing, seeping, or ponding on the surface of the ground.
5	There is no sewerage pipeline network available to collect the discharge. A connection shall be made to a sewerage pipeline network within six months of a network becoming available. For the purpose of this condition, “available” means: 1. a sewerage pipeline network system passes within 30 metres of the property boundary; and 2. the property from which the wastewater is generated is less than four hectares in area; and 3. the distance to the network from the building in which the wastewater is generated is less than 60 metres; and 4. the network operator will accept the discharge.
	Existing Systems
6	When there is an increase in the volume of the discharge, or any modification to the system, as a result of: 1. an alteration of a building that requires authorisation under the Building Act 2004; or 2. the connection to the system of a new or replacement building, or relocated building; or 3. any alteration to the existing system, excluding routine maintenance of the system; • the discharge shall comply with Conditions (1) to (5) and (8) to (20) inclusive of this rule.
7	Where the discharge occurs in a Community Drinking Water Supply Protection Zone for a well listed in Schedule WQL2, or within the Christchurch Groundwater Protection Zone 1, or Sub-Zones 1A, 1B, 1C or 1D, or Zone 2 the discharge shall comply with Conditions (1) to (5) and (8) to (19) inclusive of this rule by 1 November 2015.
	New systems

8	The discharge shall not occur: 1. within 20 metres of a river, lake, artificial watercourse, or the Coastal marine area; or 2. at an elevation higher than 1000 metres above sea level; or 3. on land with a slope greater than 20 degrees; or 4. on land: i. that is likely to be flooded from a river or lake in an event with an Annual Exceedance Probability of two percent (1 in 50 year event) or more; or ii. where water is known to pond for at least two hours in a rainfall event, on average, at lease once in every five years; or 5. within 20 metres of a wetland boundary.
9	The discharge shall not occur where the land is located over: 1. an unconfined or semi-confined aquifer, where the highest groundwater level, which can reasonably be expected at the point of discharge based upon relevant and available groundwater data is: i. less than two metres from the ground surface; and ii. less than six metres from the ground surface unless the land application consists of a drip irrigation system as described in Condition (12)(b); or 2. the Coastal Confined Gravel Aquifer System, and there is: i. less than two metres of undisturbed material between the point of discharge and the Aquifer 1; or ii. less than two metres of unsaturated sediment above any water table overlying Aquifer 1.
10	Separation distances shall be maintained: 1. between a well and a discharge system that occurs outside of a Community Drinking Water Supply Protection Zone, as specified in Part A of Schedule WQL6 ; and 2. between discharge systems, as specified in Part B of Schedule WQL6, unless the land application system consists of a drip irrigation system as described in Condition (12)(b), and the site in addition to all adjacent properties are either on a reticulated water supply or are one hectare or more in size.
11	The minimum separation distance between the land application system and a property boundary shall be: 1. 20 metres to the nearest down gradient boundary in the direction of groundwater flow at the site and five metres to any other property boundary; or 2. two metres to any property boundary if the land application system consists of a drip irrigation system as described in Condition (12)(b) and the discharge is into soil.

12	The land application system shall consist of either: 1. a treatment trench, bed or mound: i. with media of at least 600 millimetres thick; and, ii. of which the media shall be of a grade that fits within the 2A envelope on the diagram in Schedule WQL8; and iii. to which the discharge is pumped, or is dosed in fixed quantities, so that the effluent is applied to the treatment trench, bed or mound evenly at a rate of not more than 50 millimetres per day; or 2. a pressure compensating drip irrigation system through which the discharge is applied evenly, and at a rate which shall not exceed the value in Table 4.2A4 in the Australian/New Zealand Standard 1547:2000 On-site domestic wastewater management for the soil type at the site.
13	Where the land application system consists of a treatment trench, bed or mound, as specified in Condition (12)(a), there shall be sufficient additional land available on the property to allow a replacement land application system to be installed.
14	The wastewater shall pass through a proprietary effluent filter before discharge to the land application system.
15	A copy of the design plan of the treatment and land application system shall be submitted to Environment Canterbury at least twenty working days prior to the installation of the system.
16	When the construction of the treatment and land application system is completed: 1. the work shall be certified by a suitably qualified and competent person as having been carried out in accordance with the design plan; and 2. a copy of the certificate shall be forwarded to Environment Canterbury within twenty working days following completion of the work.
17	The treatment and land application system shall be operated and maintained in accordance with the system's design specification for maintenance.
18	The primary treatment tank or chamber shall: 1. have an access point or points for inspecting and maintaining the effluent filter, monitoring the accumulation of sludge and desludging the tank or chamber. The access point or points shall be accessible for these purposes at all times; and 2. be inspected at least once every three years and the depth of accumulated sludge in the primary treatment tank or chamber measured; and 3. be desludged when the accumulated scum and sludge occupy more than two thirds of the volume of the tank or chamber.
19	The following information shall be recorded, and a copy of these records made available to Environment Canterbury upon request: 1. maintenance of the treatment and land application system, including inspection, desludging or remedial work; and 2. date works are undertaken and the name of the company and person undertaking the work.
20	The discharge shall not occur within a Community Drinking Water Supply Protection Zone for a well listed in Schedule WQL2.

Record Summary

Generated 28-Sep-2012

Record Number CRC130004
Record Type New Certificate
Permit Type Certificate of Compliance
Record Holder Hughes Developments

Location

Description To discharge residential stormwater to land The discharge of stormwater into land.

The Canterbury Regional Council confirms that the activity is authorised under Rule WQL6 of the Natural Regional Resources Plan (NRRP) - Chapter 4 - Water Quality.

Issued Date 26 Jul 2012
Expiry Date
Lapse Date
Given Effect To
Expiry Date
Trim File No CO6C/33488

Cond No	Text

RecordNo	RecordType	StateText	ClientName	ActivityText
CRC010278	Consent	Consent Transferred (replaced by new record)	Mr & Mrs B G & H S Duxbury	Take Groundwater
CRC010879	Consent	Application withdrawn	Mr & Mrs G L & J M Meadows	Take Groundwater
CRC010997	Consent	Current	Mr & Ms R J & S E Silcock & Russell	Take Groundwater
CRC011288	Consent	Consent Transferred (replaced by new record)	Mr & Mrs J D & V A Willis	Take Groundwater
CRC012345	Consent	Current	Mr & Mrs L K & J C Blackmore	Take Groundwater
CRC022064	Consent	Current	Mr & Mrs R Geddes & Davis	Take Groundwater
CRC030416	Consent	Current	Mr A J Cartwright	Take Groundwater
CRC890807	Consent	Consent Surrendered	D J & M C Duthie	Take Groundwater
CRC900447	Consent	Expired	R J & C L Warren	Take Groundwater
CRC900549	Consent	Expired	S J & V L Sterne	Take Groundwater
CRC900773	Consent	Consent Transferred (replaced by new record)	B E & J F Fraser	Take Groundwater
CRC900796	Consent	Expired	Mr & Mrs G L & J M Meadows	Take Groundwater
CRC900840	Consent	Consent Surrendered	Mr & Mrs D T & J E Allan	Take Groundwater
CRC910006	Consent	Expired	Mr & Mrs B G & H S Duxbury	Take Groundwater
CRC916652	Consent	Expired	R P & E M Yates	Take Groundwater
CRC917125	Consent	Consent Transferred (replaced by new record)	Mr & Mrs C N & S M Thom	Take Groundwater
CRC920023	Consent	Expired	G J & F R Tyack	Take Groundwater
CRC920024	Consent	Consent Transferred (replaced by new record)	G J & F R Tyack	Take Groundwater
CRC921611	Consent	Consent Surrendered	Mr & Mrs J & M Mills	Take Groundwater
CRC930201	Consent	Consent Surrendered	Mr & Mrs J & M Mills	Take Groundwater
CRC930777	Consent	Expired	Mr & Mrs J D & V A Willis	Take Groundwater
CRC940686	Consent	Consent Transferred (replaced by new record)	Mr K G Bloomfield	Take Groundwater
CRC952632	Consent	Current, EP Driven - Possible Lapsed Record	Mr & Ms B N & J A Stevens & Gray	Take Groundwater
CRC971320	Consent	Current	Mr D B Irvine	Take Groundwater
NCY810317	Consent	Expired	Mr & Mrs B G & H S Duxbury	Take Groundwater
NCY820025	Consent	Expired	Mr D J Foster	Take Groundwater
CRC900773.1	Consent	Expired	Mr & Ms R J & S E Silcock & Russell	Take Groundwater
CRC917125.1	Consent	Expired	CJFA Holdings Limited	Take Groundwater
CRC920024.1	Consent	Consent Surrendered	Mr & Mrs L K & J C Blackmore	Take Groundwater
CRC940686.1	Consent	Current	Mr & Mrs J R & A J Forrest	Take Groundwater
CRC900775	Consent	Consent Transferred (replaced by new record)	B E & J F Fraser	Discharge of Human Effluent
CRC900776	Consent	Consent Transferred (replaced by new record)	B E & J F Fraser	Discharge of Human Effluent
CRC900797	Consent	Expired	Mr & Mrs G L & J M Meadows	Discharge of Human Effluent
CRC900798	Consent	Consent Transferred (replaced by new record)	Mr & Mrs G L & J M Meadows	Discharge of Human Effluent
CRC900841	Consent	Expired	Mr & Mrs D T & J E Allan	Discharge of Human Effluent
CRC900979	Consent	Expired	Mr & Mrs G L & J M Meadows	Discharge of Human Effluent
CRC900775.1	Consent	Expired	Mr & Ms R J & S E Silcock & Russell	Discharge of Human Effluent
CRC900776.1	Consent	Consent Transferred (replaced by new record)	J & S Prakash	Discharge of Human Effluent
CRC900776.2	Consent	Consent Transferred (replaced by new record)	Mr & Ms R J & S E Silcock & Russell	Discharge of Human Effluent
CRC900776.3	Consent	Expired	Messrs G B, A D, V Shadwell & B L Botherway	Discharge of Human Effluent
CRC900798.1	Consent	Consent Surrendered	I J & B A Burrell	Discharge of Human Effluent
CRC000616	Permitted	Activity Ceased	Mr D L Geddes	Discharge of Piggery Effluent
CRC900550	Consent	Expired	S J & V L Sterne	Discharge of Piggery Effluent
CRC052035	Permitted	Current	Mr & Mrs M J & N J Williams	Discharge of Human Effluent
CRC052128	Permitted	Current	Mr & Ms K P & D M GRAHAM	Discharge of Human Effluent

CRC053024	Permitted	Current	Mr & Ms J D & L Barclay	Discharge of Human Effluent
CRC053035	Permitted	Current	Ogon & Magnum Properties Ltd	Discharge of Human Effluent
CRC053568	Permitted	Current	Mr & Mrs G B & C E Prebble	Discharge of Human Effluent
CRC053438	Permitted	Current	Mr & Ms K B & F D Boon & Dulcie	Discharge of Human Effluent
CRC053545	Permitted	Current	Mr & Mrs G B & C E Prebble	Discharge of Human Effluent
CRC052504	Consent	Consent Conditions changed (replaced by new record)	Blue Waters (NZ) Limited	Discharge of Stormwater-Residential
CRC010278.1	Consent	Consent Transferred (replaced by new record)	Linston Limited	Take Groundwater
CRC052942	Consent	Current	R B & B M Chapman & Hamilton	Discharge of Human Effluent
CRC052948	Consent	Consent Transferred (replaced by new record)	Dellanie Developments Limited	Discharge of Human Effluent
CRC051038	Consent	Consent Conditions changed (replaced by new record)	Broadfield Estates Limited	Discharge of Stormwater-Residential
CRC060285	Consent	Application withdrawn	Mr R Brown	Take Groundwater
CRC060533	Consent	Current	Broadfield Estates Limited	Discharge of Stormwater-Residential
CRC054809	Consent	Consent Transferred (replaced by new record)	Jenco Developments Limited	Discharge of Stormwater-Residential
CRC062283	Cert Comply	Application withdrawn	Sanguine Surpassing Limited	Discharge of Stormwater-Residential
CRC062653	Permitted	Current	R P & E M Yates	Discharge of Human Effluent
CRC063262	Consent	Consent Partially Transferred (replaced by new record)	Sanguine Surpassing Limited	Discharge of Stormwater-Residential
CRC051038.1	Consent	Current	Broadfield Estates Limited	Discharge of Stormwater-Residential
CRC063824	Permitted	Application declined	Mr & Mrs J & M Baxter	Discharge of Human Effluent
CRC063964	Consent	Current	Mr & Mrs J L & M M Baxter	Discharge of Human Effluent
CRC070159	Permitted	Current	Mr G C Main & Mrs V L Eilken-Main	Discharge of Human Effluent
CRC070539	Cert Comply	Application declined	Mr R Jarvis	Discharge of Stormwater-Residential
CRC071478	Permitted	Current	Mr K A Stewart & Ms M E MacKay	Discharge of Human Effluent
CRC071676	Consent	Current	PM & CLG Thomas Limited	Discharge of Stormwater-Residential
CRC072105	Consent	Current	PM & CLG Thomas Limited	Discharge of Stormwater-Residential
CRC072110	Consent	Current	PM & CLG Thomas Limited	Discharge of Stormwater-Residential
CRC072290	Permitted	Current	Mr R G & Mrs D E Van Der Zwet	Discharge of Human Effluent
CRC073889	Permitted	Current	Mr R Jarvis	Discharge of Human Effluent
CRC052504.1	Consent	Current	Blue Waters (NZ) Limited	Discharge of Stormwater-Residential
CRC080079	Consent	Current	Mr P J & Mrs H M Rains	Discharge of Human Effluent
CRC010278.2	Consent	Current	P J & H M Rains Family Trust	Take Groundwater
CRC081460	Cert Comply	Application declined	R K George	Discharge of Stormwater-Residential
CRC082098	Permitted	Current	Mr & Ms B Smart & Wilkinson	Discharge of Human Effluent
CRC082133	Permitted	Current	Mr K & Mrs K Wills	Discharge of Human Effluent
CRC063262.1	Consent	Consent Partially Transferred (replaced by new record)	Sanguine Surpassing Limited	Discharge of Stormwater-Residential
CRC082364	Consent	Current	Mr G E & Mrs W S Peters	Discharge of Stormwater-Residential
CRC063262.2	Consent	Consent Partially Transferred (replaced by new record)	Sanguine Surpassing Limited	Discharge of Stormwater-Residential
CRC082366	Consent	Current	Mr M P & Mrs S E Warwick	Discharge of Stormwater-Residential
CRC063262.3	Consent	Consent Partially Transferred (replaced by new record)	Sanguine Surpassing Limited	Discharge of Stormwater-Residential
CRC082367	Consent	Current	Mr K F & Mrs T M Weston	Discharge of Stormwater-Residential
CRC063262.4	Consent	Current	Sanguine Surpassing Limited	Discharge of Stormwater-Residential
CRC082368	Consent	Current	Mr k G & Mrs T M Wright	Discharge of Stormwater-Residential
CRC082915	Consent	Consent Transferred (replaced by new record)	Mr W L & Mrs A M Hunter	Discharge of Human Effluent
CRC083469	Cert Comply	Consent Transferred (replaced by new record)	Ms A Atkins	Take Groundwater
CRC084385	De Minimis	Current	Mr R K George	Discharge of Stormwater-Residential
CRC090010	De Minimis	Application declined	Blue Waters (NZ) Limited	Discharge of Stormwater-Residential
CRC090143	De Minimis	Application declined	Sanguine Surpassing Limited	Discharge of Stormwater-Residential

CRC090354	Permitted	Current	Mr D A Miller	Discharge of Human Effluent
CRC090629	Permitted	Current	T Buhrs	Discharge of Human Effluent
CRC093529	Consent	Current	Ministry of Education - Christchurch	Discharge of Stormwater-Residential
CRC052948.1	Consent	Consent Transferred (replaced by new record)	Mr & Mrs F C & N Barton	Discharge of Human Effluent
CRC101167	Consent	Current	Selwyn District Council	Discharge of Stormwater-Residential
CRC100132	Consent	Current	Selwyn District Council	Discharge of Stormwater-Residential
CRC010561	Consent	Expired	Mr B N McIntyre	Install a Bore/Gallery
CRC011489	Consent	Expired	Mr A J Cartwright	Install a Bore/Gallery
CRC020564	Consent	Expired	Mr D J Foster	Install a Bore/Gallery
CRC021252	Consent	Expired	Mr J N Cherry	Install a Bore/Gallery
CRC021478	Consent	Expired	Mr & Mrs R G & B M Geddes	Install a Bore/Gallery
CRC917169	Consent	Expired	R P & E M Yates	Install a Bore/Gallery
CRC920202	Consent	Expired	G J & F R Tyack	Install a Bore/Gallery
CRC920203	Consent	Expired	G J & F R Tyack	Install a Bore/Gallery
CRC920525	Consent	Expired	P F & L M Burnell & Debenham	Install a Bore/Gallery
CRC920755	Consent	Expired	Mr & Mrs C N & S M Thom	Install a Bore/Gallery
CRC921610	Consent	Expired	Mr & Mrs J & M Mills	Install a Bore/Gallery
CRC930369	Consent	Expired	Mr & Mrs L J & J A Norton	Install a Bore/Gallery
CRC930776	Consent	Expired	Mr & Mrs J D & V A Willis	Install a Bore/Gallery
CRC940332	Consent	Consent Surrendered	B E & J F Fraser	Install a Bore/Gallery
CRC940685	Consent	Expired	Mr K G Bloomfield	Install a Bore/Gallery
CRC941159	Consent	Expired	B E & J F Fraser	Install a Bore/Gallery
CRC941165	Consent	Expired	Mr E C Britnell	Install a Bore/Gallery
CRC950383	Consent	Expired	Mr & Mrs C J & P E Hickman	Install a Bore/Gallery
CRC950926	Consent	Expired	Mr & Ms B N & J A Stevens & Gray	Install a Bore/Gallery
CRC952059	Consent	Expired	Mr & Mrs M J & N J Williams	Install a Bore/Gallery
CRC952424	Consent	Expired	Mr & Mrs A J & L A Mitchell	Install a Bore/Gallery
CRC960682	Consent	Expired	Kajens Trading & Development Limited	Install a Bore/Gallery
CRC960715	Consent	Expired	Kajens Trading & Development Limited	Install a Bore/Gallery
CRC960716	Consent	Expired	Kajens Trading & Development Limited	Install a Bore/Gallery
CRC960717	Consent	Expired	Kajens Trading & Development Limited	Install a Bore/Gallery
CRC960718	Consent	Expired	Kajens Trading & Development Limited	Install a Bore/Gallery
CRC960723	Consent	Expired	Kajens Trading & Development Limited	Install a Bore/Gallery
CRC960724	Consent	Expired	Kajens Trading & Development Limited	Install a Bore/Gallery
CRC960726	Consent	Expired	Kajens Trading & Development Limited	Install a Bore/Gallery
CRC960727	Consent	Expired	Kajens Trading & Development Limited	Install a Bore/Gallery
CRC960728	Consent	Expired	Kajens Trading & Development Limited	Install a Bore/Gallery
CRC960959	Consent	Expired	Mr & Mrs G R & K Payne	Install a Bore/Gallery
CRC971322	Consent	Expired	Mr D B Irvine	Install a Bore/Gallery
CRC971746	Consent	Expired	Mr D T Allan	Install a Bore/Gallery
CRC971746	Consent	Expired	Mr D T Allan	Install a Bore/Gallery
CRC982059	Consent	Expired	Mr R J A Bunker	Install a Bore/Gallery
CRC040857	Consent	Expired	Mr & Mrs A S & M M Baxter	Install a Bore/Gallery
CRC041072	Consent	Expired	Mr & Ms G K & P R Poole & Eastmond	Install a Bore/Gallery
CRC041298	Consent	Expired	Mr T Buhrs	Install a Bore/Gallery
CRC041695	Consent	Expired	Mr & Mrs D A & M G Miller	Install a Bore/Gallery

CRC041743	Consent	Expired	Mr & Ms P M & K I Tilling & Thompson	Install a Bore/Gallery
CRC051358	Consent	Expired	Mr A J Easton	Install a Bore/Gallery
CRC052867	Consent	Expired	R B & B M Chapman & Hamilton	Install a Bore/Gallery
CRC054414	Consent	Expired	R P & E M Yates	Install a Bore/Gallery
CRC071349	Consent	Expired	Mr K D Findlater	Install a Bore/Gallery
CRC072106	Consent	Expired	Mr R G & Mrs D E Van Der Zwet	Install a Bore/Gallery
CRC081155	Consent	Expired	Mr D J Foster	Install a Bore/Gallery
CRC091154	Consent	Expired	Mr & Mrs D J & A P Foster	Install a Bore/Gallery
CRC092106	Consent	Current	Messers M G Stephens A L Billborough & J R Scott	Install a Bore/Gallery
CRC054809.1	Consent	Current	Selwyn District Council	Discharge of Stormwater-Residential
CRC083469.1	Cert Comply	Current	Mr W L & Mrs A M Hunter	Take Groundwater
CRC101845	Consent	Current	I J & B A Burrell	Install a Bore/Gallery
CRC011288.1	Consent	Current	Mr G C Main & Mrs V L Eilken-Main	Take Groundwater
CRC102428	Consent	Current	Mrs M C Stevens	Discharge of Stormwater-Residential
CRC102591	Permitted	Current	Mr I J Burrell	Discharge of Human Effluent
CRC102650	Permitted	Current	Mr C I Hood	Discharge of Human Effluent
CRC103018	Consent	Current	K & S Dow	Discharge of Stormwater-Residential
CRC102408	Consent	Current	Ascot Park Limited	Discharge of Stormwater-Residential
CRC102534	Consent	Current	Ascot Park Limited	Discharge of Stormwater-Residential
CRC102546	Consent	Current	Ascot Park Limited	Discharge of Stormwater-Residential
CRC103582	Consent	Consent Transferred (replaced by new record)	Ascot Park Limited	Discharge of Stormwater-Residential
CRC103619	De Minimis	Current	Mr C G Shaw	Discharge of Stormwater-Residential
CRC103714	Consent	Consent Transferred (replaced by new record)	Ascot Park Limited	Discharge of Stormwater-Residential
CRC103717	Consent	Consent Transferred (replaced by new record)	Ascot Park Limited	Discharge of Stormwater-Residential
CRC103719	Consent	Current	Ascot Park Limited	Discharge of Stormwater-Residential
CRC103726	Consent	Consent Transferred (replaced by new record)	Ascot Park Limited	Discharge of Stormwater-Residential
CRC103727	Consent	Consent Transferred (replaced by new record)	Ascot Park Limited	Discharge of Stormwater-Residential
CRC103728	Consent	Consent Transferred (replaced by new record)	Ascot Park Limited	Discharge of Stormwater-Residential
CRC103729	Consent	Current	Ascot Park Limited	Discharge of Stormwater-Residential
CRC103393	Consent	Consent Changed (replaced by new record)	Twyn Vision Limited	Discharge of Stormwater-Residential
CRC103751	Consent	Consent Surrendered	Twyn Vision Limited	Discharge of Stormwater-Residential
CRC103898	Consent	Consent Surrendered	Twyn Vision Limited	Discharge of Stormwater-Residential
CRC103899	Consent	Consent Surrendered	Twyn Vision Limited	Discharge of Stormwater-Residential
CRC103900	Consent	Consent Surrendered	Twyn Vision Limited	Discharge of Stormwater-Residential
CRC103901	Consent	Consent Surrendered	Twyn Vision Limited	Discharge of Stormwater-Residential
CRC103902	Consent	Consent Surrendered	Twyn Vision Limited	Discharge of Stormwater-Residential
CRC103903	Consent	Consent Surrendered	Twyn Vision Limited	Discharge of Stormwater-Residential
CRC103904	Consent	Consent Surrendered	Twyn Vision Limited	Discharge of Stormwater-Residential
CRC103905	Consent	Consent Surrendered	Twyn Vision Limited	Discharge of Stormwater-Residential
CRC110088	De Minimis	Current	Mr S McLaren	Discharge of Stormwater-Residential
CRC110335	Consent	Current	Mr S A Baxter	Discharge of Human Effluent
CRC052948.2	Consent	Consent Transferred (replaced by new record)	K R & K M Brough	Discharge of Human Effluent
CRC110733	Consent	Current	Mr S A & Mrs M Baxter	Install a Bore/Gallery
CRC103726.1	Consent	Current	Mr G J & Mrs M J Stenhouse	Discharge of Stormwater-Residential
CRC111294	Consent	Consent Surrendered	Twyn Vision Limited	Discharge of Stormwater-Residential
CRC103393.1	Consent	Consent Surrendered	Twyn Vision Limited	Discharge of Stormwater-Residential

CRC111685	Consent	Current	Mr G M & Mrs N S Sole	Discharge of Human Effluent
CRC111997	De Minimis	Current	Department Of Building and Housing, Christchurch	Discharge of Stormwater-Residential
CRC120159	Consent	Current	Selwyn District Council	Install a Bore/Gallery
CRC103727.1	Consent	Current	Andrew Woods Properties Limited	Discharge of Stormwater-Residential
CRC103717.1	Consent	Current	Mr C B Goh & Ms S C Wong	Discharge of Stormwater-Residential
CRC103728.1	Consent	Current	C R Newman & M A Woods	Discharge of Stormwater-Residential
CRC120643	Consent	Current	Mr G M Sole	Install a Bore/Gallery
CRC052948.3	Consent	Current	Mr A J MacDonald & Ms M S Rosewarne	Discharge of Human Effluent
CRC082915.1	Consent	Current	Mr V J Lavery & Miss D M Walsh	Discharge of Human Effluent
CRC121322	Consent	Audit (Sec 42a Report), On hold awaiting affected party approval	Mr D L Geddes	Discharge of Dairy Effluent
CRC122143	Consent	Current	Selwyn District Council	Install a Bore/Gallery
CRC103582.1	Consent	Current	Mr W J & Mrs M N Brown	Discharge of Stormwater-Residential
CRC122254	Cert Comply	Current	Mr R & Mrs J Williams	Discharge of Stormwater-Residential
CRC122479	Permitted	Current	Foster Holdings Limited	Discharge of Human Effluent
CRC103714.1	Consent	Current	Mr D R Goss & Ms E A Weedon	Discharge of Stormwater-Residential
CRC122870	Permitted	Current	Mr R B Greig	Discharge of Human Effluent
CRC130004	Cert Comply	Current	Hughes Developments	Discharge of Stormwater-Residential
CRC122140	Consent	Current	Selwyn District Council	Excavate Material
CRC130003	Consent	Application Recommendation, On hold awaiting confirmation of draft conditions	Hughes Developments	Discharge of Stormwater-Industrial

Compliance and Monitoring

Compliance and Monitoring Information Related to Resource Consents on the Property

Consented Bores

Compliant, no site visit
CRC020564 - expired

Bore M36/1849 was installed at this property under resource consent CRC020564. The Bore Compliance Report and Bore Log have been received for this bore

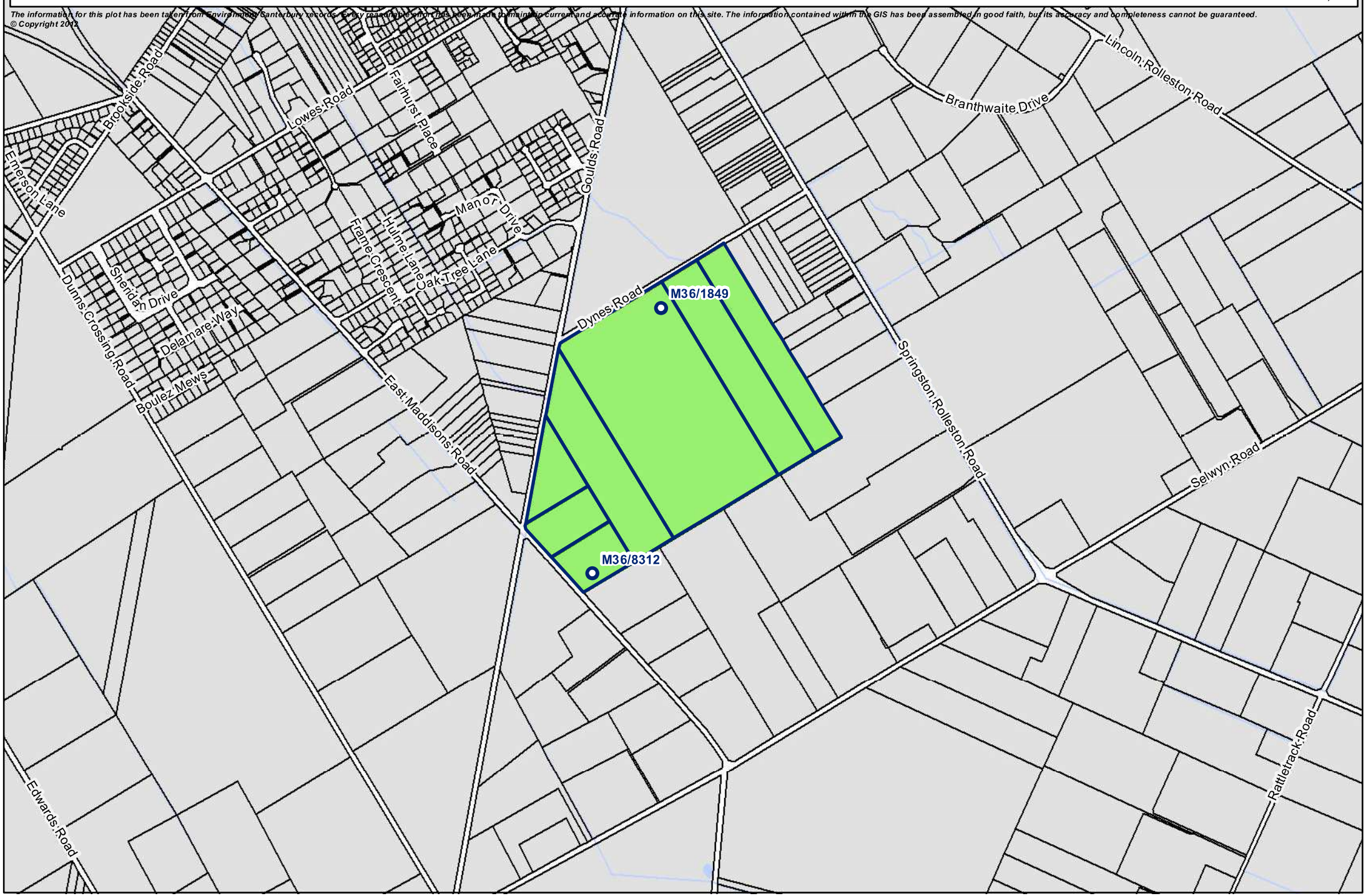
Not installed
CRC071349 - expired

Bore M36/8312 was proposed to be installed at this property under resource consent CRC071349. Bores are only authorised to be installed until the relevant resource consent expires and this consent expired on th 23rd November 2009.

Dynes Road Rolleston. Wells on Property

Environment Canterbury Regional Council
Kaunihera Taiao ki Waitaha

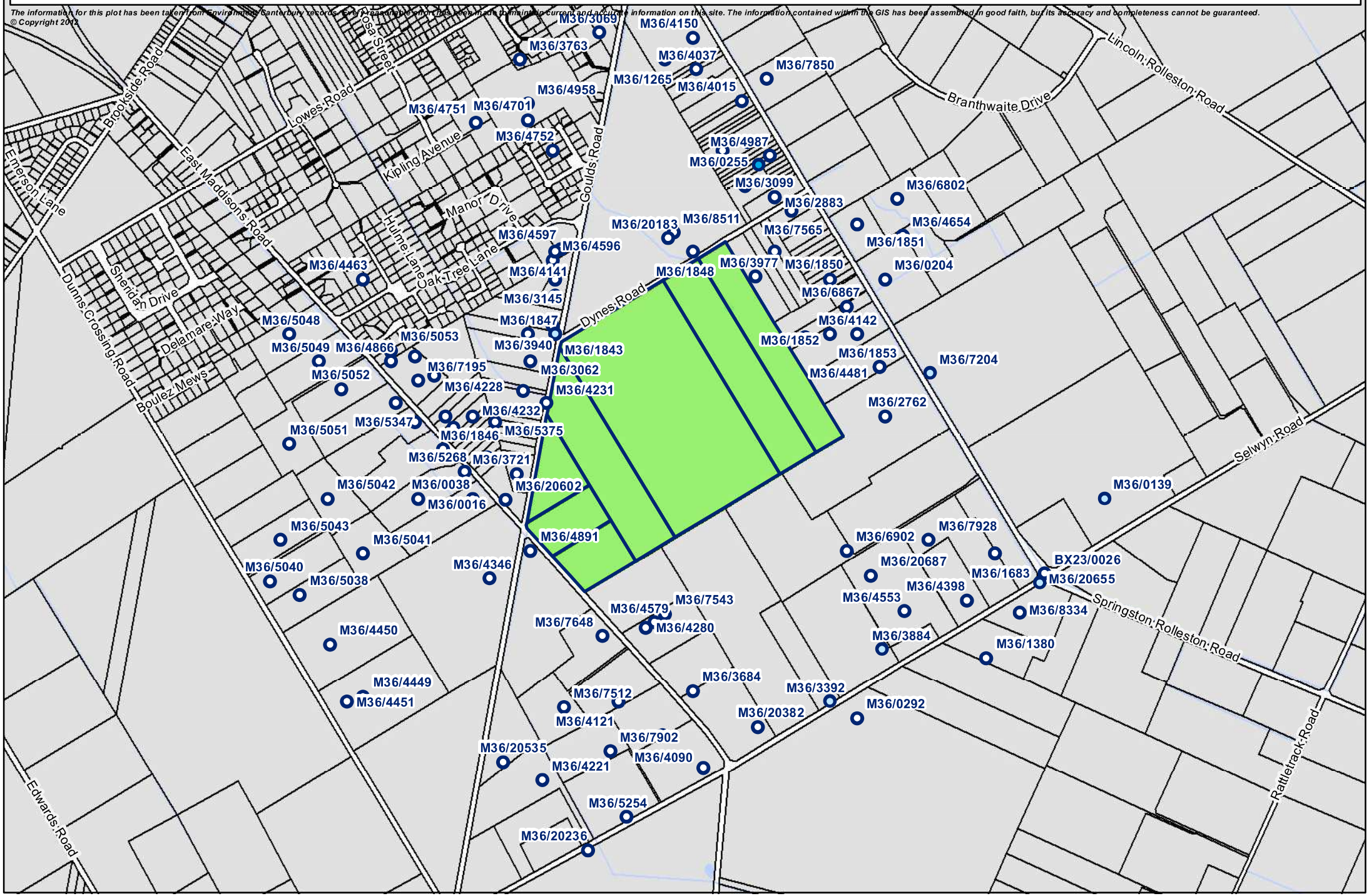
Scale 1:17,218



Dynes Road Rolleston. Wells within 1km radius

Environment Canterbury Regional Council
Kaunihera Taiao ki Waitaha

Scale 1:17,218



Fact Sheet

August 2005

Wells plot

The following information is designed to accompany a "wells plot". This plot consists of a map showing well locations and a report providing information regarding these wells.

The following information can currently be included in a wells report. As all of this information is seldom necessary, staff will often select the information they think is relevant to your enquiry. If you require a more comprehensive report Customer Services are happy to provide this service for you. Please note that a figure of 0.00 indicates there is no data for that particular category.

AQUIFER TESTS: number of aquifer tests that have been recorded in the database.

BOTTOM SCREEN 1/2/3: measurement from the top of the well casing to the bottom of the screen[1]. Up to three screens can be shown. Measured in metres (m).

CALC MIN WL: calculated minimum water level, available in some areas. Calculated from surrounding wells when the well has no water level measurements available. Measured in metres (m) from measuring point[2].

CONSENT NO: resource consent number of a groundwater take associated with well. Only shows one consent number (even if more than one consent is associated with the well).

CONSENT STATE: stage the consent specified in the 'consent no' column is at within the consent process. For an explanation of these codes, contact Customer Services.

DATE DRILLED: date that the well was drilled.

DATE EXPIRES: expiry date of the consent specified in the 'consent no' column.

DEPTH: of well, measured in metres (m) below ground level.

DIAMETER: of well, measured in millimetres (mm).

END READINGS: date of the last water level observation.

GRID EAST: full easting grid reference from New Zealand map grid.

GRID NORTH: full northing grid reference from New Zealand map grid.

GRID REFERENCE: co-ordinates to locate the well on a map, obtained using the NZMS 260 1:50 000 map series.

GROUND RL: ground reference level measures the height in metres (m) of the measuring point with respect to ground level. A negative value indicates that the ground level is below measuring point. A positive value indicates that the ground level is above measuring point

[1] A screen permits the entry of water and prevents the entry of sediment into the well. A well can have more than one screen.

[2] The measuring point is usually the top of the well casing.

Customer Services
0800 EC INFO
(0800 32 4636)

P O Box 345, Christchurch
www.ecan.govt.nz

Environment Canterbury
Your regional council

Wells plot

GW MONITORING TYPE: groundwater monitoring type code show wells currently monitored for water l evels.

C = CCC observation well
D, L, R = recorder network
M = monthly manual readings

HIGHEST/LOWEST WATER LEVEL: on record. A negative number indicates the water level is below the measuring point. A positive number indicates the water level is above the measuring point. Measured in metres (m) from measuring point. -1000.00 (-999.9) indicates no water recorded in well (i.e. well has run dry at some stage). 1000.00 (-999.999) indicates water flowing above ground (from an artesian well). Note in GIS output appears as –1000 but in fact is stored as –999.99

INITIAL SWL: initial water level, as measured by driller when well was drilled. Measured in metres (m) from measuring point. Not a very reliable level, indicative only.

ISOTOPE: A number that indicates the number of measurements that have been taken; zero indicates no data. Isotope and tracer data are measurements relating to the age of the water using natural isotopes like carbon 14 or tracer gases as CFC's.

MAXDRAWDOWN: amount that the water level droped when pumping from the well at the specified maximum yield (see 'maxyield' column). Measured in metres (m).

MAX RATE: that can be abstracted for the consent specified in the 'consent no' column. Measured in litres per second (l/s).

MAXYIELD: the maximum recorded tested volume discharged from a well, either by pumping or free flow. Measured in litres per second (l/s).

MSD: Mean Sea Level Datum (Lyttelton 1937)

OWNER: last known owner of the well.

QAR: see Quality Assurance Rating for grid reference accuracy (next page).

QAR RL: see Quality Assurance Rating for measuring point height in MSD* (next page).

QUALARC SITE NO: site identification number for water quality data.

READING COUNT: number of water level readings on record.

REFERENCE RL: reference level is the height of the water level measuring point, in relation to mean sea level datum. Measured/estimated in MSD.

SPECIFIC CAPACITY: discharge per unit drawdown of a well during pumping (yield ÷ drawdown). A high specific capacity usually indicates high yielding aquifers. A low specific capacity (especially values less than one) is associated with large drawdowns and low yielding areas or poorly constructed wells. Measured in litres per second per metre (l/s/m).

START READINGS: date of the first water level observation.

Customer Services
0800 EC INFO
(0800 32 4636)

P O Box 345, Christchurch
www.ecan.govt.nz

Environment Canterbury
Your regional council

Wells plot

STRATA: shows whether the geological log has been entered into the database. A number indicates the number of lines in the geological log; zero indicates no log available.

TOP SCREEN 1/2/3: measurement from the top of the well casing to the top of the screen. Up to three screens can be shown. Measured in metres (m).

USE CODE 1/2/3: use of well based on information provided when the well was drilled. May not be current if use has changed and no field visit has taken place. Up to three use codes can be shown. See well use codes (next page).

WELL NO: each well is given a number based on NZMS 260 1:50 000 map series.

WELL STATUS: code to show current status of the well. See well status codes (next page).

WELL TYPE: code to show type of well. See well type codes (next page).

WQ MONITORING TYPE: water quality monitoring type code show wells currently monitored for water quality.

A = annual
M = monthly
Q = quarterly
S = saltwater intrusion network

Accuracy: This information has been taken from Environment Canterbury records. It is supplied in good faith but its accuracy or completeness is not guaranteed. If the information is relied on in support of a resource consent application it should be verified independently (i.e. checking if the wells are located correctly, if wells exist and whether they are used). For information on accuracy of well locations, see below.

Quality Assurance Rating (QAR): Information in the Wells Database has been collected over a number of years to varying standards of measurement or observation. To address this, quality assurance rating (QAR) codes have been developed for well location.

The table below shows the accuracy of the different ratings for well locations and measuring point heights.

QAR Code	QAR Well location accurate to:	QAR Measuring Point Height
1	< 2 m (surveyed)	<0.1 Surveyed
2	Between 2-15 m GPS	<0.5m (GPS-d) or LIDAR
3	Between 10 and 50 meters	<2.5m LIDAR
4	Up to 300 m or with a grid refernce know to 100m accuracy only	<5meters estimated of topo map or DTM
5	Proposed	No height assigned

Customer Services
0800 EC INFO
(0800 32 4636)

P O Box 345, Christchurch
www.ecan.govt.nz

Environment Canterbury
Your regional council

Wells plot

Well Type Codes:

BO	Bore or well
CL	Well cluster
GA	Infiltration gallery
BG	Bore with attached gallery
RI	River Benchmark
TH	Thermal bore
PI	Excavated pit
WA	Water hole
UN	Unknown

Well Use Codes:

AC	Air conditioning
AT	Aquifer testing
CO	Commercial
DA	Dairy use
DE	Desalting
DO	Domestic supply
DS	Domestic and Stock
DW	Dewatering
ED	Effluent disposal
FI	Fire
FR	Frost protection
GA	Garden
GE	Geological research
GR	Groundwater remediation
IN	Industrial
IR	Irrigation
LQ	Liquifaction prevention
OB	Water level observation
PU	Public supply
RE	Recharge
SC	Small community public supply
SF	Sewage flushing
ST	Stock supply
SW	Swimming pool
TE	Foundation/investigation bore
WQ	Groundwater quality

Well Status Codes:

2A	Bore propsed to be altered
AL	Altered bore (new Number)
BU	Buried/unlikely well still exists
AE	Active-exists
CA	Capped (semi-permanent)
EX	Casing retrieved
FD	Filled in (plugged)
ND	Not drilled
NO	Not used
PR	Proposed
PL	Proposed Land Parcel Area
PW	Proposed grid reference for water permit
SE	Sealed/ grouted up

Resource Consents:

Before a new well is installed (e.g. drilled) or an existing well altered (e.g. deepened or filled in) you will need a resource consent (well permit) from Environment Canterbury. Permits to abstract water may also be required depending on the location of the well and quantity of water to be abstracted. This information can be found in Environment Canterbury's Resource Consent Information Series Booklet 10 - Bores and Groundwater.

Other Information:

Other useful Environment Canterbury resources include:

Your Well Water Might Be Making You Sick

What's in my well water?

These, and other resources, are available from Customer Services.

Customer Services
0800 EC INFO
(0800 32 4636)

P O Box 345, Christchurch
www.ecan.govt.nz

Environment Canterbury
Your regional council

Bore or Well No: M36/1849
Well Name:
Owner: FOSTER,D.M.

Environment Canterbury
Your regional council

Street of Well: DYNES ROAD
Locality: ROLLESTON
NZGM Grid Reference: M36:6059-3250 QAR 4
NZGM X-Y: 2460590 - 5732500
Location Description: SEE M36/1848
ECan Monitoring:
Well Status: Not Used

File No: CO6C/00652
Allocation Zone: Selwyn-Waimakariri
Uses: Irrigation

Drill Date: 01 Jan 2004
Well Depth: 48.00m -GL
Initial Water Depth: -11.50m -MP
Diameter: 200mm

Water Level Count: 0
Strata Layers: 8
Aquifer Tests: 0
Isotope Data: 0
Yield/Drawdown Tests: 1

Measuring Point Ait: 41.91m MSD QAR 3
GL Around Well: 0.00m -MP
MP Description:

Highest GW Level:
Lowest GW Level:
First Reading:
Last Reading:

Driller: Dynes Road Drilling
Drilling Method: Cable Tool
Casing Material: STEEL
Pump Type: Unknown
Yield: 16 l/s
Drawdown: 5 m
Specific Capacity: 3.04 l/s/m

Calc. Min. GWL: -13.30m -MP
Last Updated: 12 Nov 2007
Last Field Check:

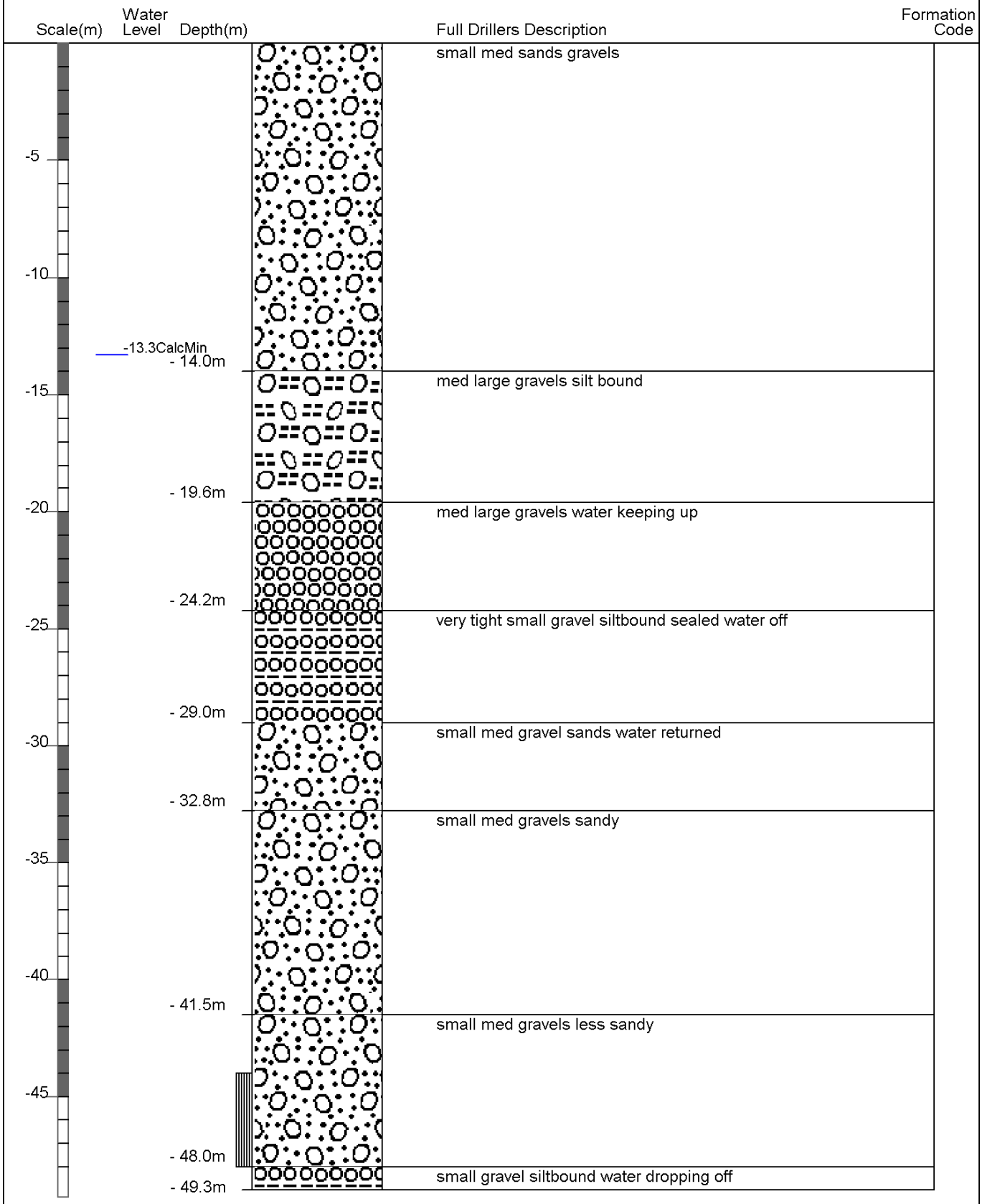
Screens:
Screen Type: Stainless steel
Top GL: 44.00m
Bottom GL: 48.00m

Aquifer Type: Unknown
Aquifer Name: Riccarton Gravel

Date	Comments
26 Sep 2001	ALSO M36/1848 Changed from 14m to 90m Application 26/09/01

Borelog for well M36/1849

Gridref: M36:6059-3250 Accuracy : 4 (1=high, 5=low)
Ground Level Altitude : 41.91 +MSD
Driller : Dynes Road Drilling
Drill Method : Cable Tool
Drill Depth : -49m Drill Date : 1/01/2004



Bore or Well No: M36/8312
Well Name:
Owner: MR K D FINDLATER

Environment Canterbury
Your regional council

Street of Well: EAST MADDISON ROAD
Locality: ROLLESTON
NZGM Grid Reference: M36:6034-3153 QAR 5
NZGM X-Y: 2460340 - 5731530
Location Description:
ECan Monitoring:
Well Status: Landparcel Proposed

File No: CO6C/26007
Allocation Zone: Selwyn-Waimakariri
Uses: Domestic and Stockwater

Drill Date:
Well Depth: 38.00m -GL
Initial Water Depth:
Diameter: 150mm

Measuring Point Ait: 36.70m MSD QAR 4
GL Around Well: 0.00m -MP
MP Description:

Driller: Dynes Road Drilling
Drilling Method: Rotary/Percussion
Casing Material:
Pump Type:
Yield:
Drawdown:
Specific Capacity:

Aquifer Type:
Aquifer Name:

Water Level Count: 0
Strata Layers: 0
Aquifer Tests: 0
Isotope Data: 0
Yield/Drawdown Tests: 0

Highest GW Level:
Lowest GW Level:
First Reading:
Last Reading:
Calc. Min. GWL:
Last Updated: 15 Nov 2006
Last Field Check:

Screens:
Screen Type:
Top GL:
Bottom GL:

WELL_NO	WELL_STATUS_DESC	WELL_OWNER	DEPTH	DIAMETER	USE_CODE_1_DESC
M36/0139	Active (exist, present)	GREENSLADE J.C.	65.80000305	203	Domestic and Stockwater
M36/4383	Active (exist, present)	WARMAN D.G.	24	150	Domestic Supply
M36/3392	Active (exist, present)	STERNE SJ & VL	34	150	Domestic Supply
M36/1852	Active (exist, present)	MAWHINNEY, D.	24.29999924	150	Domestic and Stockwater
M36/1468	Active (exist, present)	GILES B.J.	30	150	Stock Supply
M36/0292	Active (exist, present)		12.80000019	100	Domestic Supply
M36/4142	Active (exist, present)	DONALDSON J.D.	27.39999962	100	Domestic Supply
M36/1851	Not Used	DUNCAN	16	76	
M36/4481	Active (exist, present)	THOM C.N & S.M	30	150	Domestic and Stockwater
M36/1853	Active (exist, present)	KIDD P.R.	14	150	Domestic and Stockwater
M36/3884	Active (exist, present)	PALMER AG & ER	24	127	Domestic Supply
M36/2762	Not Used	THOM, C.N. & S.M.	24.29999924	200	Irrigation
M36/0204	Not Used	MOW	27.39999962	102	Domestic Supply
M36/6802	Active (exist, present)	Mr & Mrs J R & A J Forrest	36.40000153	150	Irrigation
M36/4654	Active (exist, present)	Mr G C Main & Mrs V L Eilken-Main	45.84999847	200	Small Community Supply
M36/4553	Not Used	MILLS .J	33	150	Irrigation
M36/4398	Active (exist, present)	YATES RP & EM	24.39999962	150	Domestic and Stockwater
M36/1380	Active (exist, present)	P J & H M Rains Family Trust	56.09999847	200	Irrigation
M36/1683	Active (exist, present)	YATES R.P.	13.10000038	150	Domestic and Stockwater
M36/4597	Not Used	NORTON L.J. & J.A.	18	76	
M36/3069	Active (exist, present)	BEHRNS T.C.	36	150	Domestic and Stockwater
M36/4121	Active (exist, present)	WARREN RJ & CL	21.5	152	Domestic and Stockwater
M36/5254	Active (exist, present)	Mr D B Irvine	36	150	Irrigation
M36/4280	Active (exist, present)	MEADOWS, G.L & J.M	25	150	Domestic and Stockwater
M36/4579	Not Used	MEADOWS, G.L.	23.5	150	
M36/1849	Not Used	FOSTER,D.M.	48	200	Irrigation
M36/1265	Active (exist, present)	A.B.ROBSON	24.39999962	76	Domestic Supply
M36/3684	Active (exist, present)	MEADOWS G.L.	19	150	Domestic and Stockwater
M36/1848	Not Used	FOSTER D.M.	24	200	Domestic Supply
M36/4150	Active (exist, present)	WILLETTS JR & RP	33	125	Domestic Supply
M36/4037	Active (exist, present)	Mr W L & Mrs A M Hunter	34.79999924	125	Domestic Supply
M36/4090	Active (exist, present)	DUTHIE D.J.M.	18.29999924	150	Domestic Supply
M36/5641	Active (exist, present)	BUNKER, RJA	36	125	Domestic Supply
M36/4015	Active (exist, present)	HURRELL G.A.	28	150	Domestic Supply
M36/3761	Active (exist, present)	BARNES M.R.	33.25	125	Domestic Supply
M36/3997	Active (exist, present)	COMMON A.D. H	42	125	Domestic Supply
M36/3977	Active (exist, present)	HOWDEN K.D.	34	150	Domestic Supply
M36/0255	Active (exist, present)	PETER VAN DER BERG	24.39999962	100	Water Level Observation
M36/4987	Active (exist, present)	MITCHELL, A.J. & L.A.	28	150	Domestic Supply
M36/1850	Active (exist, present)	WHITTINGTON, B.R.	18	150	Domestic and Stockwater
M36/2883	Active (exist, present)	SHEARER	21	150	Domestic Supply
M36/3099	Active (exist, present)	DEPT.LANDS & SURVEY	36	150	Domestic Supply
M36/5267	Active (exist, present)	GRAHAM, K.	38.5	150	Domestic Supply
M36/4707	Not Used	CHERRY, J.N.	24	83	

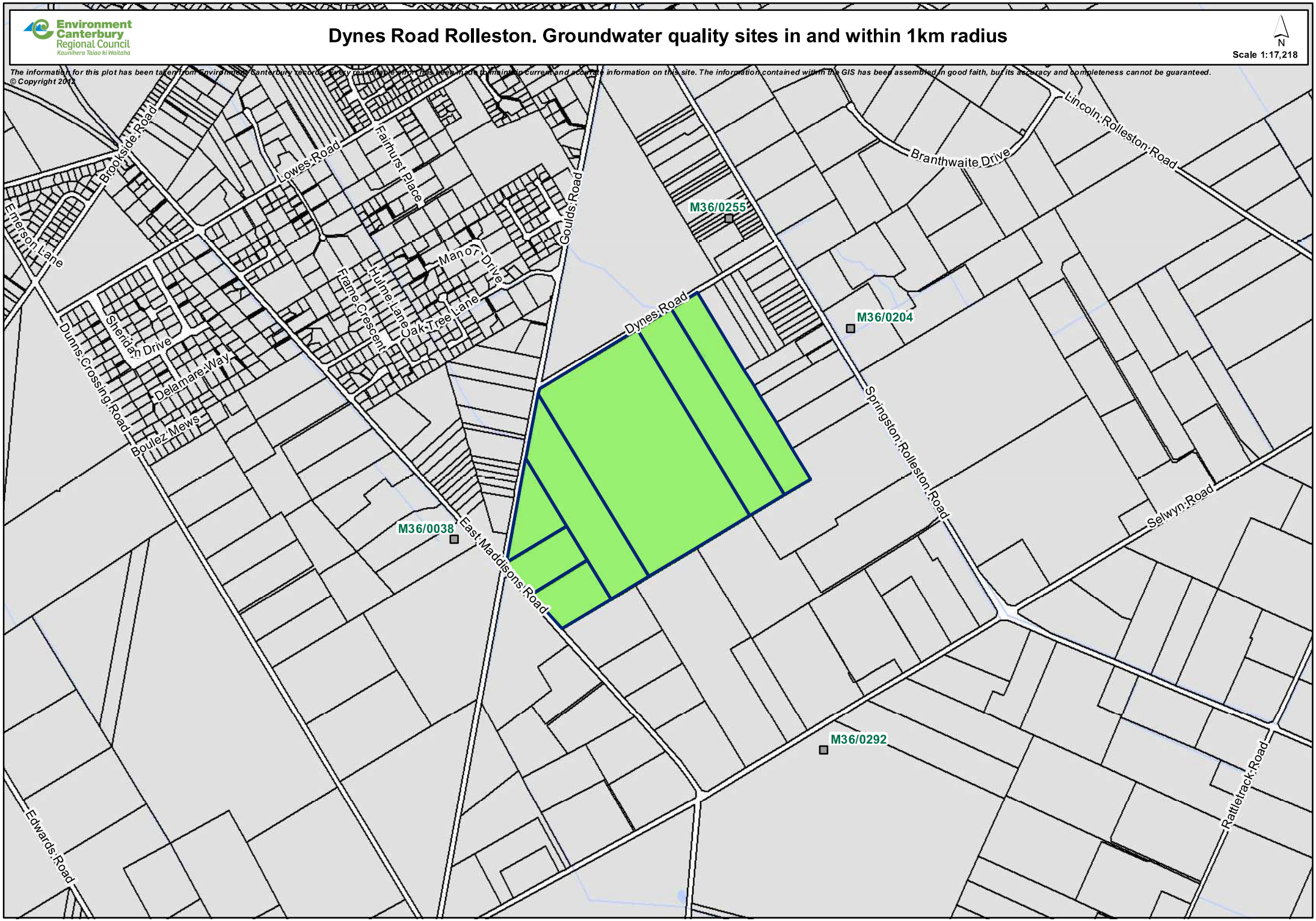
M36/0016	Not Used	WADE.A.	14	51	
M36/4228	Active (exist, present)	ANDREW J.J.	39.5	150	Domestic and Stockwater
M36/4291	Active (exist, present)	THOMAS, A.D.	36.59999847	150	Domestic Supply
M36/4140	Active (exist, present)	MACKENNA F & L	16.79999924	100	Domestic Supply
M36/4253	Active (exist, present)	BUNN DD & R	30	125	Domestic and Stockwater
M36/5268	Active (exist, present)	MACDONALD, K.	37	150	Domestic Supply
M36/0038	Active (exist, present)	M.W.D.	27.10000038	102	Domestic Supply
M36/1846	Active (exist, present)	BOS, G.	12	76	Domestic Supply
M36/4751	Active (exist, present)	BRITNELL, E.C.	33	125	Domestic Supply
M36/3041	Active (exist, present)	QUINTON, K.R.	24	150	Domestic Supply
M36/4346	Active (exist, present)	MAIN M.R.	26.79999924	150	Domestic Supply
M36/5375	Active (exist, present)	HAYWOOD, DH	21.45000076	76	Domestic Supply
M36/3721	Active (exist, present)	WILSON N.L.	19	150	Domestic Supply
M36/4231	Active (exist, present)	WHITE C.E.	35	150	Domestic Supply
M36/4232	Not Used	WHITE C.E.	None	51	
M36/3763	Active (exist, present)	FRASER .B.	31.70000076	150	Domestic and Stockwater
M36/0121	Not Used	WIDDERSON .J.	20.10000038	127	
M36/4701	Not Used	FRASER, B.E.	30	125	
M36/4958	Active (exist, present)	WILLIAMS, M.J. & N.J.	29	150	Domestic and Stockwater
M36/4891	Active (exist, present)	Mr & Ms B N & J A Stevens & Gray	25.25	150	Domestic and Stockwater
M36/3062	Active (exist, present)	MOSLEY NR & AL	36.5	150	Domestic and Stockwater
M36/4221	Active (exist, present)	Mr & Ms R J & S E Silcock & Russell	21.44000053	150	Irrigation
M36/3940	Active (exist, present)	WATSON .G.	32.40000153	150	Stock Supply
M36/4596	Active (exist, present)	NORTON L.J. & J.A.	39.79999924	150	Domestic and Stockwater
M36/4752	Active (exist, present)	FRASER, B.E.& J.F.	30	125	Domestic Supply
M36/1843	Active (exist, present)	STEEL M & SE	19	150	Domestic Supply
M36/1847	Active (exist, present)	MAYER IF & JK	19	150	Domestic Supply
M36/5063	Active (exist, present)	PAYNE, G.R.& K.	40	150	Domestic Supply
M36/3145	Active (exist, present)	GIRVAN RG & SC	35.40000153	125	Domestic and Stockwater
M36/4141	Active (exist, present)	NORTON L.J.	17.70000076	51	Domestic Supply
M36/5040	Active (exist, present)	KAJENS TRADING DEVELOPMENT LTD	34.5	150	Domestic Supply
M36/5043	Active (exist, present)	KAJENS TRADING DEVELOPMENT LTD	35.29999924	150	Domestic Supply
M36/5051	Active (exist, present)	KAJENS TRADING DEVELOPMENT LTD	33.59999847	150	Domestic Supply
M36/5048	Active (exist, present)	KAJENS TRADING DEVELOPMENT LTD	36	150	Domestic Supply
M36/5038	Active (exist, present)	KAJENS TRADING DEVELOPMENT LTD	32.09999847	150	Domestic Supply
M36/5049	Active (exist, present)	KAJENS TRADING DEVELOPMENTS LTD	36	150	Domestic Supply
M36/5042	Active (exist, present)	KAJENS TRADING DEVELOPMENT LTD	32.09999847	150	Domestic Supply
M36/4450	Active (exist, present)	Mr & Mrs L K & J C Blackmore	25.20000076	150	Irrigation
M36/5052	Active (exist, present)	KAJENS TRADING DEVELOPMENT LTD	34.20000076	150	Domestic Supply
M36/4451	Active (exist, present)	TYACK GJ & FR	None	None	Domestic Supply
M36/4449	Not Used	TYACK GJ & FR	24.20000076	150	Irrigation
M36/5041	Active (exist, present)	KAJENS TRADING DEVELOPMENT LTD	32	150	Domestic Supply
M36/4463	Active (exist, present)	BURNELL PF & LM	36	150	Domestic Supply
M36/4866	Active (exist, present)	HICKMAN, C.J.& P.E.	36	150	Domestic and Stockwater
M36/5053	Active (exist, present)	KAJENS TRADING DEVELOPMENT LTD	35.5	150	Domestic Supply

M36/5347	Not Used	KAJENS TRADING AND DEVELOPMENT	None	None		
M36/6867	Active (exist, present)	BN McIntyre		30	150	Domestic Supply
M36/6902	Active (exist, present)	Mr A J Cartwright		42	150	Domestic Supply
M36/7195	Active (exist, present)	MS J N CHERRY		42	150	Domestic and Stockwater
M36/7204	Active (exist, present)	Mr & Mrs R Geddes & Davis		114	200	Irrigation
M36/7512	Active (exist, present)	Mr & Mrs A S & M M Baxter		29	150	Domestic and Stockwater
M36/7543	Active (exist, present)	Mr & Ms G K & P R Poole & Eastmond		26	150	Domestic and Stockwater
M36/7565	Active (exist, present)	Mr & Mrs T & N Buhrs		35	150	Domestic Supply
M36/7639	Active (exist, present)	Mr & Mrs DA & MG Miller		32	150	Domestic and Stockwater
M36/7648	Active (exist, present)	Mr & Ms PM & KI Tilling & Thompson		26	150	Domestic and Stockwater
M36/7850	Active (exist, present)	Mr A J Easton		42	150	Domestic and Stockwater
M36/7902	Active (exist, present)	RB & BM CHAPMAN & HAMILTON		36	150	Domestic and Stockwater
M36/7928	Active (exist, present)	RP & EM YATES		37	150	Domestic and Stockwater
M36/8312	Landparcel Proposed	MR K D FINDLATER		38	150	Domestic and Stockwater
M36/8334	Active (exist, present)	MR & MRS VAN DER ZWET		48	150	Domestic and Stockwater
M36/8511	Landparcel Proposed	MR D J FOSTER		43	150	Domestic and Stockwater
M36/20183	Landparcel Proposed	MR & MRS D J & A P FOSTER		50	200	Domestic Supply
M36/20236	No Info Expired Boreconsent	Messers M G Stephens A L Billborough & J R Scott		80	300	Irrigation
M36/20382	Active (exist, present)	I J & B A BURRELL		36	150	Domestic and Stockwater
M36/20535	Active (exist, present)	Mr S & Mrs M Baxter		30	150	Domestic and Stockwater
M36/20602	Active (exist, present)	MR DAVID FOSKETT		36	150	Domestic Supply
M36/20655	Active (exist, present)	SELWYN DISTRICT COUNCIL		14.5	150	Water Level Observation
M36/20687	Active (exist, present)	MR G M SOLE		36	150	Domestic Supply
BX23/0026	Landparcel Proposed	SELWYN DISTRICT COUNCIL		20	110	Other - see comments

Dynes Road Rolleston. Groundwater quality sites in and within 1km radius

Environment Canterbury Regional Council
Kaunihera Taiao ki Waitaha

Scale 1:17,218



GROUND WATER QUALITY

Only dated ground water quality data is available (up to 10/8/1982) for wells within a 1km radius of this site. If you would like to see this historical data please contact Customer Services. The results relate to ground water quality in the well at the time that the sample was collected. However, it is important to note that ground water quality can change over time. The information is limited to the determinants that were analysed.

The locations of wells in Environment Canterbury's Wells database are generally accurate to within a few hundred metres. Therefore, it is possible that any details of wells included in this response may not actually be on the property in question. Likewise, there may be other wells on the property that Environment Canterbury does not have on record, or for which Environment Canterbury has inaccurate location details. If you have more detailed information on wells on the property, contact Environment Canterbury staff.

Each year, Environment Canterbury collects ground water samples from approximately 250 wells throughout Canterbury to assess the general quality of ground water by monitoring microbiological and chemical water indicators such as coliform bacteria and nitrate-nitrogen. Environment Canterbury also monitors pesticides and hydrocarbon contaminants in some parts of the region, and it conducts more detailed investigations in specific areas where contamination has been reported. A number of reports on ground water quality in Canterbury are held by Environment Canterbury, some of which may be relevant to your area.

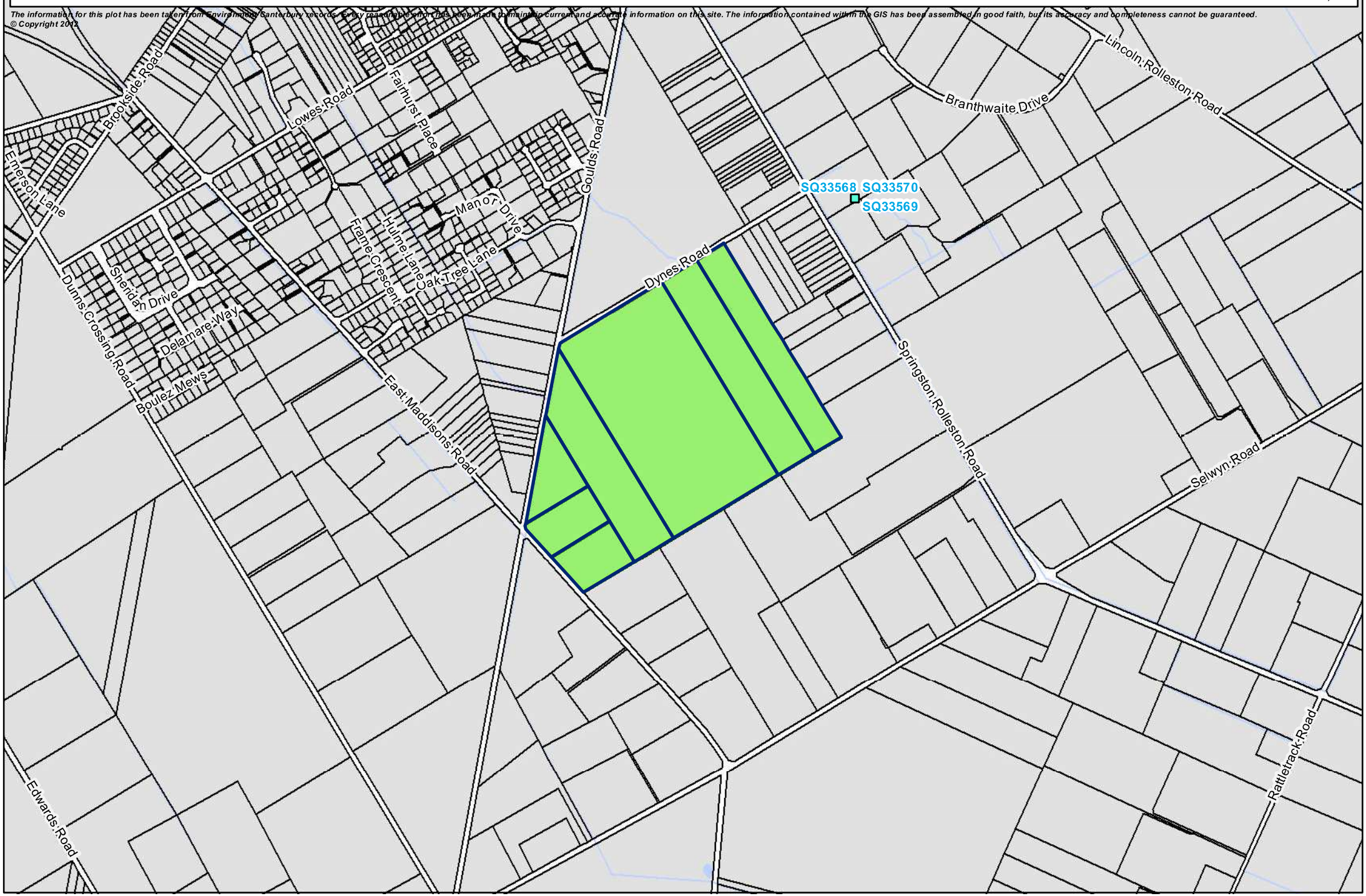
If ground water quality is an important consideration in the purchase of this property then you are advised to contact Environment Canterbury to see if any of this information is available, either in the form of reports or ground water quality data. Furthermore, Environment Canterbury recommends that you have your well water tested when you purchase a new property if the water is to be used for drinking purposes or where the quality of the water may affect the use of the water for other purposes.

Information is supplied on the basis that it is accurate to the best of the Environment Canterbury's knowledge and belief and is based on the information currently held by the Environment Canterbury. While Environment Canterbury has exercised all reasonable skill and care in controlling this information, Environment Canterbury accepts no liability in contract, tort or otherwise howsoever, for any loss, damage, injury or expense (whether direct, indirect or consequential) arising out of the provision of this information or its use by you.

Dynes Road Rolleston. Surface Water quality sites in and within 1km radius

Environment Canterbury Regional Council
Kaunihera Taiao ki Waitaha

Scale 1:17,218



SURFACE WATER QUALITY

Only dated surface water quality data is available (up to 7/11/1996) within a 1km radius of this site. If you would like to see this historical data please contact Customer Services. The results relate to water quality at the time that the sample was collected. However, it is important to note that water quality can change over time. The information is limited to the determinands that were analysed.

Environment Canterbury collects water quality samples from a number of sites throughout the region, which can change from year-to-year, and it conducts more detailed investigations in specific areas where contamination has been identified. A number of reports on surface water quality in Canterbury are held by Environment Canterbury, some of which may be relevant to water bodies in the greater area near your property.

Information is supplied on the basis that it is accurate to the best of the Environment Canterbury's knowledge and belief and is based on the information currently held by the Environment Canterbury. While Environment Canterbury has exercised all reasonable skill and care in controlling this information, Environment Canterbury accepts no liability in contract, tort or otherwise howsoever, for any loss, damage, injury or expense (whether direct, indirect or consequential) arising out of the provision of this information or its use by you.

Terms and conditions for the supply and use of Environment Canterbury information.

(Environment Canterbury is the promotional name for Canterbury Regional Council)

DESCRIPTION OF INFORMATION

Information supplied to: Tom Davies

Description of information to which these terms and conditions apply:

Daily Mean flows on the following site:

> 68002: Selwyn River at Coes Ford (Grid Reference: M36:632-228) from the 1st of January 2005 to the 16th of September 2012.

Data supplied as: Excel Spreadsheet

GENERAL TERMS AND CONDITIONS

1. Environment Canterbury owns the copyright on the information.
2. Environment Canterbury shall be acknowledged as the source of the information used in any reports, publications, media statements or other documents, or oral statements which include the information and are made available to third parties or the general public.
3. A copy of these terms and conditions shall accompany any of the attached information which is made available to third parties.
4. The user of the attached information agrees to indemnify Environment Canterbury for any losses sustained as a consequence of breach of any of these conditions.

DISCLAIMER

The attached information is supplied on the basis that it is accurate to the best of Environment Canterbury knowledge and belief and is based on the information currently held by Environment Canterbury. While Environment Canterbury has exercised all reasonable skill and care in controlling this information, Environment Canterbury accepts no liability in contract, tort or otherwise howsoever, for any loss, damage, injury or expense (whether direct, indirect or consequential) arising out of the provision of this information or its use by you.

NOTE ON PROVISIONAL INFORMATION

The attached information is *provisional/~~audited~~* **(see below)** information. Provisional information has not yet been checked using the Council's Quality Assurance audit procedures. Provisional information may be subject to significant changes and are not citeable until reviewed and approved by Environment Canterbury.

Information users are cautioned to consider carefully the nature of provisional information before using it for decisions that concern personal or public safety or the conduct of business that involves monetary or operational consequences.

Prepared by: Kerrie Osten	Date: 20th September 2012

~~~ NIWA Tideda ~~~ Environme Canterbury 20-Sep-12 9:40
~~~ PDAY ~~~ VER 1.9
Source is Y:\68002.mtd
24 hour periods beginning at midnight each day.
Daily means Year 2005 site 68002 Selwyn at Coes Ford
Flow l/s

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
1	1033	635	326	345	528	641	588	589	544	542	428	208	
2	1028	617	326	345	542	643	589	587	539	533	399	200	
3	1013	608	302	336	663	622	596	577	559	532	402	192	
4	1018	605	301	326	620	619	589	572	566	525	402	199	
5	991	596	288	319	597	638	589	569	564	554	372	240	
6	992	575	266	327	587	630	589	571	557	535	375	241	
7	995	545	298	334	578	616	589	577	540	536	356	273	
8	1057	542	295	333	654	621	593	661	537	587	335	253	
9	1376	498	290	367	684	616	593	634	537	570	329	244	
10	1182	458	297	372	645	616	589	625	530	616	300	238	
11	1112	468	323	364	624	616	589	614	529	680	287	242	
12	1080	504	306	362	603	616	589	605	524	615	300	231	
13	1058	508	301	353	595	609	584	590	523	578	334	291	
14	1028	508	304	355	587	611	584	586	518	557	408	297	
15	990	529	298	359	582	617	591	581	518	547	348	293	
16	967	482	306	368	602	616	589	576	515	533	332	238	
17	943	431	311	372	597	616	588	578	503	517	335	196	
18	930	403	305	369	602	614	594	582	499	513	310	187	
19	909	385	302	371	639	608	602	582	782	509	307	180	
20	888	379	294	368	643	608	613	580	920	507	277	164	
21	860	368	311	371	746	624	640	571	734	504	286	125	
22	833	361	324	376	766	619	625	569	665	501	311	126	
23	826	352	322	384	716	606	617	565	626	494	279	280	
24	804	362	317	491	684	602	608	564	602	481	270	229	
25	771	349	332	652	664	601	602	558	594	470	289	179	
26	749	347	348	594	649	638	601	559	592	464	286	251	
27	723	350	372	573	642	618	595	553	582	460	267	313	
28	713	340	351	565	631	609	589	552	581	435	251	215	
29	726	347	564	629	603	591	549	567	430	230	167		
30	691	356	540	616	597	590	548	555	446	208	138		
31	674	347	604	589	543	445	135						
Min	674	340	266	319	528	597	584	543	499	430	208	125	125
Mean	934	468	315	405	630	617	596	580	580	523	320	218	516
Max	1376	635	372	652	766	643	640	661	920	680	428	313	1376

Daily means Year 2006 site 68002 Selwyn at Coes Ford
Flow l/s

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	122	32	32	92	142	455	4780	2374	2475	1525	1239	1143
2	125	29	72	91	144	423	4366	2048	2413	1503	1223	1108
3	115	27	111	91	151	404	3809	1912	2241	1715	1208	1113
4	124	29	129	92	154	424	4311	1684	2191	4221	1171	1123
5	141	68	67	99	151	561	20293	1506	2148	2252	1160	1095
6	128	78	26	103	145	507	16629	1434	2087	1990	1158	1069
7	110	63	21	119	143	455	12075	2444	2024	1922	1384	1063
8	96	62	30	118	144	425	9315	5324	2009	1797	1446	1091
9	92	80	64	91	148	410	7453	8058	1986	1829	1357	1132
10	191	93	55	87	159	395	7142	8378	1946	1722	1257	1101
11	246	88	48	90	164	384	7557	7191	1913	1621	1215	1067
12	284	75	54	83	572	2704	7562	6346	1896	1582	1200	1059
13	285	59	56	86	508	2147	6582	5732	1883	1557	1189	1094
14	229	66	60	85	443	1397	5306	6537	1842	1511	1211	1059
15	174	64	62	82	924	2616	4010	9309	1839	1514	1157	1034
16	142	54	67	83	594	35024	3500	10687	1850	1462	1124	1027
17	124	50	77	74	417	66212	3015	8557	1820	1412	1138	1024
18	106	38	82	68	342	36483	2652	7139	1780	1405	1310	999
19	125	34	77	74	298	28408	2857	6119	1789	1422	1284	988
20	111	32	79	85	269	25200	25258	5329	1766	1358	1225	1100
21	95	34	90	71	254	17512	44525	4925	1747	1343	1188	1427
22	73	30	95	64	274	25589	26919	7099	1711	1315	1182	4825
23	67	29	95	61	453	25180	18818	5177	1672	1316	1171	6606
24	61	26	97	52	453	28781	13337	4497	1668	1351	1126	6976
25	60	26	94	148	560	21861	9218	4092	1657	1354	1103	5232
26	57	28	88	204	481	15844	6722	3688	1630	1317	1133	3827
27	53	34	94	154	553	11720	5448	3338	1571	1302	1156	2955
28	46	48	97	138	508	8812	4465	3098	1581	1293	1094	2160

29	41	93	134	507	6753	3751	2927	1587	1286	1057	1684			
30	28	92	147	580	5355	3330	2735	1562	1358	1115	2045			
31	28	92	507	2887	2613	1264	8451							
Min	28	26	21	52	142	384	2652	1434	1562	1264	1057	988	21	
Mean	119	49	74	99	359	12415	9609	4913	1876	1607	1199	2183	2887	
Max	285	93	129	204	924	66212	44525	10687	2475	4221	1446	8451	66212	

Daily means Year 2007 site 68002 Selwyn at Coes Ford
Flow l/s

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	10248	870	716	671	718	699	832	1007	870	758	689	414
2	7309	866	712	665	767	700	809	965	862	761	676	440
3	6360	884	702	656	829	697	1267	941	863	820	673	431
4	6140	861	698	655	763	699	1001	942	888	798	677	415
5	4995	848	699	653	743	704	957	1315	980	773	683	396
6	3794	866	680	652	727	705	1077	1145	948	744	671	383
7	2769	899	676	676	720	703	1040	1069	920	730	658	373
8	2139	879	680	679	716	702	974	1009	912	765	627	353
9	1722	872	668	674	715	701	936	986	894	760	604	347
10	1531	872	665	677	716	699	919	965	885	795	595	341
11	1413	864	663	680	717	700	918	954	875	1392	589	315
12	1338	853	660	712	714	701	965	945	855	1080	579	314
13	1279	851	693	706	713	699	945	978	847	960	579	346
14	1264	840	753	692	720	697	920	959	847	904	655	428
15	1216	832	755	685	722	695	912	942	836	856	614	393
16	1151	822	720	683	722	718	902	937	813	822	648	346
17	1128	787	702	680	719	726	897	945	799	795	783	308
18	1111	773	706	677	713	714	895	959	787	806	672	336
19	1076	778	709	670	710	710	881	942	785	781	565	351
20	1078	767	698	669	713	710	882	935	782	772	547	371
21	1084	760	694	672	714	720	895	930	779	759	548	369
22	1029	762	687	674	708	755	894	921	785	748	526	384
23	977	778	681	674	712	727	890	903	784	743	487	338
24	949	775	687	674	711	711	881	896	806	731	444	293
25	948	761	687	676	707	700	877	893	802	719	437	275
26	948	730	682	680	705	689	869	892	783	708	417	293
27	949	725	678	687	704	685	867	886	774	703	415	295
28	932	725	683	694	700	685	864	898	767	708	436	287
29	914	690	695	698	762	863	890	760	726	417	269	
30	897	691	704	699	1006	1162	886	758	711	408	272	
31	882	683	700	1076	877	700	262					
Min	882	725	660	652	698	685	809	877	758	700	408	262	262	
Mean	2244	818	693	678	721	717	938	958	835	801	577	346	863	
Max	10248	899	755	712	829	1006	1267	1315	980	1392	783	440	10248	

Daily means Year 2008 site 68002 Selwyn at Coes Ford
Flow l/s

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	259	84	143	101	198	289	763	203336	17310	3949	1529	842
2	243	70	170	122	210	292	659	53268	13355	3620	1442	849
3	228	65	172	126	523	300	594	39941	11570	3457	1421	786
4	218	77	161	113	721	298	813	36463	12254	3388	1444	743
5	205	82	158	104	478	293	1733	41229	37528	3147	1468	733
6	208	79	150	104	387	293	3610	34953	55887	2995	1399	728
7	228	81	148	107	350	340	1354	25436	33016	3107	1370	718
8	214	95	138	113	331	503	1071	19557	24089	3023	1333	732
9	205	81	134	119	307	417	866	21498	19076	2678	1346	776
10	191	64	136	120	299	372	771	17074	16578	2421	1330	784
11	181	64	140	119	292	353	730	13604	14684	2283	1286	746
12	162	68	140	123	285	345	717	12247	12786	2151	1245	769
13	137	81	142	125	287	331	649	13906	10967	2114	1231	731
14	117	84	145	124	278	326	623	12195	9678	2076	1194	688
15	112	302	144	129	270	319	599	10691	8638	1985	1171	707
16	111	754	139	132	280	312	586	9056	7857	1954	1123	713
17	104	612	145	146	269	313	574	7573	7324	1896	1126	700
18	91	316	133	156	272	310	571	7051	6776	1850	1101	672
19	94	244	128	226	291	306	595	7151	6226	1797	1070	651
20	85	209	111	219	283	311	620	6269	6124	1801	1048	1061
21	86	188	112	197	276	317	596	5480	5981	1743	1033	1404
22	102	178	115	184	282	328	589	4922	5332	1723	1039	1011
23	123	175	118	178	314	422	581	4380	4922	1682	1000	900

24	106	160	113	172	304	416	3993	4285	4501	1660	973	858	
25	100	137	109	170	314	385	35776	26186	4257	1692	955	849	
26	108	126	106	177	324	376	23702	153363	4353	1782	909	826	
27	103	120	105	184	313	368	12907	130780	4401	1696	905	786	
28	92	118	101	188	303	509	7138	67518	4228	1644	878	762	
29	88	119	99	180	296	2406	4907	41893	4177	1608	853	735	
30	89	94	180	296	1039	4938	30937	4183	1566	826	697		
31	93	94	289	77939	23889	1541	652						
Min	85	64	94	101	198	289	571	4285	4177	1541	826	651	64
Mean	145	167	130	148	320	440	6179	35037	12602	2259	1168	794	4990
Max	259	754	172	226	721	2406	77939	203336	55887	3949	1529	1404	203336

Daily means Year 2009 site 68002 Selwyn at Coes Ford
Flow l/s

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	609	231	348	344	535	6099	1631	2744	2512	1359	3968	956
2	564	233	308	325	494	4907	1639	2411	2953	1316	3273	1101
3	564	242	301	316	474	3782	2112	2149	2607	1308	2646	1110
4	568	245	303	305	465	3026	1997	2002	2306	1260	2211	1035
5	546	234	312	285	462	2660	1920	1877	2123	1228	1849	998
6	525	206	314	276	913	2351	2496	1766	1970	1237	1631	983
7	494	179	284	273	847	2044	10118	1733	1861	1241	1470	983
8	458	212	264	423	783	1875	11640	1712	1770	1261	1381	982
9	436	201	288	431	894	1801	8756	1688	1688	1503	1358	945
10	447	217	291	331	1262	1770	6223	1669	1646	1574	1343	909
11	437	260	350	308	2055	1728	4675	1656	1642	1443	1310	916
12	421	329	351	304	1184	1686	3820	1631	1598	1379	1248	913
13	435	337	337	308	964	2193	3865	1740	1543	1340	1210	852
14	423	293	318	310	848	2456	4476	1862	1517	1316	1191	862
15	406	265	314	310	795	2324	3592	1825	1492	1285	1162	941
16	386	267	312	310	739	2113	2967	1811	1462	1282	1138	910
17	371	275	312	310	701	1866	2736	1855	1456	1323	1101	881
18	397	271	318	318	678	1753	2574	1881	1448	1308	1072	874
19	467	288	306	327	674	1698	2289	2012	1416	1291	1062	862
20	425	333	303	355	1502	1688	1905	1888	1395	1315	1025	872
21	385	366	311	359	3074	1701	1710	1824	1395	1282	1025	905
22	362	326	318	359	1884	1701	1605	1827	1395	1249	1030	876
23	349	304	320	359	1997	1701	1487	1955	1395	1224	1016	846
24	334	333	327	359	4016	1701	4299	1924	1371	1212	975	797
25	312	330	322	362	80976	1680	12989	1884	1399	1200	912	708
26	305	319	319	363	54836	1687	8911	1924	1417	1228	866	684
27	328	321	339	355	29915	1687	6534	2341	1403	1505	848	719
28	344	333	329	361	17828	1658	5138	2868	1395	1968	876	743
29	335	318	485	10765	1634	4294	2565	1395	5463	915	732	
30	329	309	656	7592	1632	3670	2259	1386	7396	920	704	
31	276	315	6065	3155	2401	5197	686					
Min	276	179	264	273	462	1632	1487	1631	1371	1200	848	684	179
Mean	420	277	315	349	7620	2220	4362	1990	1679	1790	1401	880	1961
Max	609	366	351	656	80976	6099	12989	2868	2953	7396	3968	1110	80976

Daily means Year 2010 site 68002 Selwyn at Coes Ford
Flow l/s

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	614	477	269	180	245	15238	7614	4774	43326	3721	1582	1192
2	568	461	276	198	245	10710	6443	4295	26309	3481	1560	1205
3	561	456	285	201	249	8058	5614	3767	18154	3296	1536	1204
4	543	434	274	183	254	6153	4936	3712	19198	3063	1509	1166
5	514	417	274	207	268	4883	4364	3596	18931	2948	1752	1130
6	503	411	289	217	279	4281	3925	3328	15182	2888	1973	1097
7	506	411	273	231	279	5052	3664	3224	12417	2779	1773	1093
8	503	411	250	231	280	16666	3491	6872	11229	2749	1677	1088
9	482	406	236	226	285	16258	3455	99511	12811	2724	1622	1076
10	496	399	242	222	291	12397	3457	45652	12727	2660	1590	1078
11	585	403	260	214	297	9567	3209	23591	12199	2686	1551	1071
12	587	397	301	159	301	7598	3061	12846	10238	2566	1512	1024
13	570	380	320	127	308	6283	2993	9825	15822	2510	1455	1019
14	564	366	295	139	304	5467	2848	16122	19258	2444	1440	988
15	564	353	285	134	307	5278	2787	15652	16446	2376	1400	992
16	564	340	284	257	333	4641	2731	11450	13330	2348	1412	987
17	571	347	298	279	487	4075	2698	9381	11004	2283	1378	1043
18	574	397	294	252	560	3810	2625	10406	13439	2170	1370	1024

19	574	410	295	251	476	3604	2553	20841	11031	2085	1332	983
20	574	384	289	245	434	3402	2520	28557	9136	2088	1353	954
21	574	380	286	236	421	3592	2460	21915	8329	2063	1394	887
22	597	378	255	225	411	3523	2777	15857	7765	1925	1404	813
23	722	347	243	214	402	4843	3989	11848	7018	1891	1346	785
24	704	310	244	236	411	11270	37092	9417	6460	1897	1332	782
25	628	293	271	285	809	26736	27428	7801	5761	1837	1328	768
26	587	307	250	275	2641	29663	17108	6865	5137	1804	1296	755
27	580	288	230	273	56823	23351	12331	5752	4623	1807	1259	740
28	571	273	240	268	48115	16286	9349	4961	4515	1797	1238	908
29	558	240	256	34125	11768	7208	4464	4262	1731	1208	942	
30	528	238	253	31697	9267	5942	5915	3988	1681	1180	849	
31	499	199	25351	5267	35511	1591	842					
Min	482	273	199	127	245	3402	2460	3224	3988	1591	1180	740	127
Mean	567	380	267	222	6700	9791	6643	15087	12668	2384	1459	983	4785
Max	722	477	320	285	56823	29663	37092	99511	43326	3721	1973	1205	99511

Daily means Year 2011 site 68002 Selwyn at Coes Ford
Flow l/s

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	841	605	517	508	667	996	1134	1114	2269	1704	2326	1344
2	807	588	482	508	682	977	1103	1094	2097	1696	2292	1288
3	793	595	459	507	728	964	1093	1089	1984	1699	2137	1242
4	787	602	452	549	746	978	1083	1089	1904	2122	1979	1199
5	810	594	465	907	746	982	1092	1089	1857	2028	1892	1157
6	826	565	548	753	720	964	1102	1106	1846	1911	1840	1259
7	792	636	523	667	881	964	1060	1101	1828	1857	1806	2180
8	760	665	514	634	1393	962	1100	1067	1854	1851	1786	1775
9	732	643	502	619	1170	954	1088	1048	1844	1809	1812	1611
10	727	610	495	614	1097	1052	1054	1047	1830	1779	1875	1550
11	733	589	498	611	1071	1123	1063	1047	1837	1818	1802	1526
12	745	598	505	602	1050	1061	1043	1085	1857	1754	1845	1503
13	751	603	507	597	1025	1029	1014	1109	1836	1722	1798	1465
14	722	627	490	601	1020	1005	1010	1122	1858	1701	1738	1464
15	695	592	474	612	1005	994	1002	1220	1851	1692	1706	1462
16	666	564	476	638	1005	964	995	1976	1846	1667	1749	1727
17	679	539	496	694	988	958	979	6094	1829	1665	1687	1660
18	751	537	495	788	941	993	974	6975	1813	1677	1624	1538
19	793	541	477	729	934	1012	974	4633	1848	6144	1564	1482
20	704	538	491	702	934	1078	979	3097	1861	63779	1552	1439
21	695	496	513	686	934	1083	984	2514	1836	26812	1758	1399
22	709	534	521	685	934	1048	992	2198	1835	16089	1743	1363
23	720	589	519	678	940	1047	1003	2029	1803	11645	1645	1347
24	725	566	509	652	950	1027	1036	1943	1807	8341	1631	1322
25	704	571	502	638	954	1013	1125	1858	1829	6308	1568	1289
26	688	578	496	667	1135	1002	1220	1826	1796	4970	1503	1266
27	663	556	519	667	1282	1005	1250	3337	1767	3866	1486	1239
28	657	548	588	667	1137	1046	1268	3549	1745	3431	1485	1220
29	668	528	667	1059	1277	1221	3324	1715	3159	1423	1212	
30	637	509	667	1029	1189	1171	2966	1706	2777	1380	1222	
31	629	510	1015	1132	2546	2518	1238					
Min	629	496	452	507	667	954	974	1047	1706	1665	1380	1157	452
Mean	729	581	503	651	973	1025	1076	2171	1853	6193	1748	1419	1588
Max	841	665	588	907	1393	1277	1268	6975	2269	63779	2326	2180	63779

Daily means Year 2012 site 68002 Selwyn at Coes Ford
Flow l/s

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	1201	762	1201	809	812	908	978	1668	3652	?	?	?
2	1158	748	960	814	794	908	999	17602	3246	?	?	?
3	1143	729	1007	817	809	913	1036	39714	2980	?	?	?
4	1122	719	1029	829	820	904	1119	36735	2722	?	?	?
5	1077	725	913	816	828	944	1165	24329	2395	?	?	?
6	1057	726	855	791	850	1612	1174	14322	2105	?	?	?
7	1074	709	823	796	860	1283	1144	9396	1945	?	?	?
8	1039	689	818	791	869	1146	1108	8288	1821	?	?	?
9	1025	672	816	780	873	1090	1099	27509	1714	?	?	?
10	1020	669	830	761	891	1021	1108	25914	2486	?	?	?
11	996	677	844	944	899	993	1102	16443	2321	?	?	?
12	963	670	845	986	899	961	1102	12386	1955	?	?	?
13	983	682	809	913	904	942	1102	60482	1681	?	?	?

14	887	718	786	859	905	956	1106	143808	1515	?	?	?	
15	819	749	798	838	914	1017	1138	63914	1362	?	?	?	
16	798	721	788	832	911	1565	1135	43482	1265	?	?	?	
17	783	685	781	825	891	1327	1110	28249	?	?	?	?	
18	786	677	746	828	890	1268	1091	21350	?	?	?	?	
19	794	702	809	820	878	1215	1091	16825	?	?	?	?	
20	767	688	814	825	883	1150	1091	14780	?	?	?	?	
21	765	660	808	834	891	1092	1091	14166	?	?	?	?	
22	805	671	875	834	891	1060	1101	14967	?	?	?	?	
23	885	822	869	841	891	1051	1127	14841	?	?	?	?	
24	825	935	842	835	896	1123	1181	11814	?	?	?	?	
25	838	982	833	826	898	1130	1233	10054	?	?	?	?	
26	817	858	784	825	894	1093	1238	8505	?	?	?	?	
27	927	813	762	848	917	1044	1240	7471	?	?	?	?	
28	825	797	765	841	912	1025	1230	6389	?	?	?	?	
29	787	810	781	823	954	985	1237	5506	?	?	?	?	
30	781	791	829	927	971	1294	4687	?	?	?	?		
31	769	802	920	1695	4147	?	?						
Min	765	660	746	761	794	904	978	1668	1265	?	?	?	660
Mean	920	740	845	834	883	1090	1150	23540	2198	?	?	?	3699
Max	1201	982	1201	986	954	1612	1695	143808	3652	?	?	?	143808

End of process

20 September 2012

Memo to: Customer Services
Attention: Jason McDonald

Re: LIR#3449 – Flood Risk
For: Golder Associates (Tom Davies)

LOTS 1, 2, 3 & 4 DP 372247, LOT 1 DP 8833, RS 12514 & RS 15710 – DYNES ROAD, ROLLESTON

Flood Risk

The property is outside the recorded floodplains of the major rivers and areas recorded by Environment Canterbury as flood ponding areas. This assessment is based on historical flood records and floodplain studies held by Environment Canterbury.

Environment Canterbury and previously the North Canterbury Catchment Board have not monitored the locality to determine any extent of flooding resulting from localised rainfall events.

Environment Canterbury does not have sufficient information to comment on whether or not there is any risk of localised flooding by runoff from adjoining land or water-races or drains. Environment Canterbury staff have not inspected the property in order to ascertain any such risk.

Other possible sources of information would be local knowledge or the Selwyn District Council.

Nick Griffiths

HAZARD ANALYST

Our Ref: HAZA/FLD/ASS/CHC/12554
Your Ref:
Contact: Nick Griffiths

Environment Canterbury
Regional Council
Kaunihera Taiao ki Waitaha

28 September 2012

Memo to: Customer Services

Re: LIR 3449
For: Golder Associates attn: Mr Tom Davies
Property address: Dynes Road, Rolleston
Legal description: Lots 1,2,3 & 4 DP 372247, RS 12514 and RS 15710

EARTHQUAKE HAZARD

No specific earthquake hazard information or specific soils/foundation condition information is held by Environment Canterbury for this property.

Surface fault rupture hazard

There are no known earthquake faults at the ground surface on the property.

Ground shaking hazard

There are a number of known earthquake faults in the mid Canterbury area, mostly in the Southern Alps and foothills, that are capable of generating damaging earthquakes.

Regional-scale studies indicate that Modified Mercalli (MM) intensity 6-7 ground shaking is almost certain to occur in the Rolleston area within the next 50 years and there is a 10% chance of MM intensity 7-8 ground shaking within the next 50 years[1]. The MM intensity scale is a descriptive scale from 1-12 used to describe the "strength" of earthquake shaking at a particular location (in contrast, the magnitude of an earthquake measures the "size", or amount of energy released in an earthquake – intensity generally decreases with distance from the earthquake source). At MM intensity 6 ground shaking is felt by everyone, furniture moves and plaster cracks. At MM intensity 7 there is general alarm, it is difficult to stand, weak masonry buildings are damaged, windows crack and there are small landslides and rockfalls. At MM intensity 8 driving is difficult, ordinary masonry is damaged, chimneys fall, significant landsliding occurs in susceptible slopes and liquefaction occurs in susceptible sediments. At MM intensity 9 there is general panic, masonry and foundations are damaged or destroyed, some houses shift off foundations and landsliding is widespread.

Local ground conditions (soil type and depth) may influence ground shaking intensity by up to +/- 1.5 MM units.

Liquefaction hazard

The property is in a general area of very low liquefaction potential, determined primarily from geological information. However, because soil conditions can vary over short distances, actual liquefaction potential at a particular site can only be determined through a site specific investigation. Available mapping after the September 2010 Darfield (Canterbury) Earthquake

[1] Figures produced pre-September 2010. Revised ground shaking hazard is likely to be slightly higher over the next decade because of the Canterbury earthquakes.

shows there was evidence of liquefaction on the property, but there was no similar evidence mapped after the February 2011 Christchurch Earthquake.

Further information

Further information on earthquake hazards, the earthquake magnitude scale and the Modified Mercalli intensity scale can be found in the booklet *The Q Files: Earthquakes* which can be requested at no charge from Environment Canterbury Customer Services. General information on liquefaction can be found in the booklet *The Q Files: Liquefaction*, which is also available at no charge from Environment Canterbury Customer Services. These booklets can also be downloaded at www.ecan.govt.nz/qfiles.

Further regional-scale information on probabilistic ground shaking hazard (including peak ground acceleration and spectral acceleration data) is available in the report *Updated Probabilistic Seismic Hazard Assessment for the Canterbury Region* available from Environment Canterbury. Further district-scale information on ground shaking and liquefaction can be found in *Selwyn District Engineering Lifelines Project - Earthquake Hazard Assessment* available from Environment Canterbury or Selwyn District Council, and in *2010 Canterbury Earthquake Liquefaction Report – Selwyn District Council* available from Selwyn District Council or www.selwyn.govt.nz. Information on these reports can be found at www.ecan.govt.nz/hazards. District-scale liquefaction maps can be downloaded from the Environment Cantebury website at www.ecan.govt.nz/liq.

Information on Technical Categories for liquefaction can be found on the Canterbury Earthquake Recovery Authority website at cera.govt.nz/residential-green-zone-technical-categories.

Important notes

The earthquake hazard assessment methodologies, information compilation and presentation techniques used for this assessment include certain qualifications and limitations on the use of the earthquake hazard information.

1. Ground shaking is one effect of earthquakes and is generally greatest near the fault (earthquake source) that has generated the earthquake. Earthquakes can also cause ground damage through:

    - permanent displacement (rupture) of the ground surface along the fault
    - general deformation of the ground surface near the fault
    - local and regional scale uplift, subsidence and tilting
    - settlement of the ground surface through densification of dry sand
    - liquefaction (where saturated soil behaves like a liquid during very intense ground shaking), which can cause ground settlement, ejection of sand and water, lateral spreading (sideways movement of soil) near rivers and other water bodies, and flow failures (similar to a landslide but can occur on slopes with angles as low as 2 degrees).

2. The earthquake hazard information provided is regional in scope and cannot be substituted for a site-specific investigation. A suitably qualified and experienced practitioner should assess the site-specific potential for earthquake damage if necessary.

3. The hazard information provided is based on the best information available at the time of the studies and was supplied to Environment Canterbury under specific contract arrangements including financial and time constraints.

4. Environment Canterbury and other organisations may hold more detailed earthquake information than provided here. Any additional information held by Environment Canterbury may be provided on request.

5. The earthquake hazard information may be liable to change or review if new information is made available.

6. Selwyn District Council may hold site-specific soils/foundation condition information for this site or nearby sites.

7. The earthquake hazard information provided does not imply any actual level of damage to any particular structure, utility service or other infrastructure.

Marion Irwin
Hazard Analyst (Geological)

PLANT PEST REPORT

ASSESSMENT NUMBER(S): 2405526000 and 2405526004

The following information has been extracted from Environment Canterbury's plant pest database. The database matches inspections with valuation assessments therefore ALL assessment numbers for a 'property' must be searched.

A lack of data does not mean that a particular pest is not present; the assessment may not have been inspected.

A "yes" for compliance means that at the date of the inspection the property complied with the rules for the Regional Pest Management Strategy for that particular pest. That may be because no plant pests were found or it may be because the rules were being complied with. (Note: Rules do not require large areas of gorse, broom & Old Man's Beard to be removed). The property may not necessarily comply now.

A Notice of Direction is a legal notice requiring a land occupier to take specific action within a specific time. If not complied with Environment Canterbury may engage a contractor to undertake the work at the occupier's expense. Obligations may transfer to subsequent occupiers.

Pest	Compliance	Notice of Direction Issued	Additional Comments
Broom and gorse	Unknown	NO	Last inspected in 2003 when a request was made to clear the roadside by the water race (pests on roadsides are the responsibility of the adjoining land owner in this area. We recommend that a purchaser ensures that the roadside is clear before settlement.

If Plant Pests are present an annual control programme is required.

Please contact us for a copy of the rules of the Regional Pest Management Strategy if you are unfamiliar with them.

Plant Pests –
Broom
Gorse

Extracts from Regional Pest Management Strategy (2011)

7.5 Broom

7.5.1 Description

Common broom, *Cytisus scoparius,* is a branched perennial shrub up to 2.5 metres tall with bright yellow flowers. Montpellier broom, *Teline monspessulana*, and white broom, *Cytisus multiflorus*, while somewhat smaller in stature are, except for slightly smaller yellow flowers or red flecked white flowers respectively, very difficult to distinguish from common broom. They are therefore treated as one in association with common broom.

Broom is a widespread plant scattered across land throughout the region. Density varies from light to heavy depending upon the intensity of grazing management. It is most prevalent on lightly grazed and ungrazed areas.

7.5.2 Adverse effects

Broom seedlings are unable to compete with productive pasture. Where insufficient grazing pressure is exerted, the plants can establish dense stands that can shade out most other species and destroy pasture. The plants will spread from infested land onto clear land. Seed dispersal is mostly within ten metres of the parent plant unless assisted by other agents such as stock or water. Seed may survive in the soil for more than 50 years.

7.5.3 Objective

Over the duration of the Strategy, prevent broom from infesting land presently free from broom.

7.5.4 Principal measures to achieve the objective

The following principal measures will be undertaken.

(a) Land occupiers are responsible for controlling broom on the land they occupy.

(b) Environment Canterbury will regularly inspect land at risk to broom infestation to determine the presence and density of broom. The frequency of inspection will depend on the population dynamics of the plants and the proneness of the land to infestations. The activity may also include the removal of isolated plants where it is cost-effective to do so during inspection.

(c) Environment Canterbury will provide advice and education to the community to increase the awareness of broom, its infestation pathways and its control measures. Methods may include:

- (i) responding to public enquiries;
- (ii) discussions with runanga, participating in discussion groups, field days, Agricultural and Pastoral Association shows and other appropriate public events;
- (iii) providing information on control measures and alternatives to herbicides;
- (iv) producing and distributing pamphlets and using media opportunities to convey relevant information;
- (v) advising landowners on technical matters in association with inspections;
- (vi) mechanisms to formalise staged management programmes and development of stage controlled programmes in association with inspections; and
- (vii) encouraging group activities that will be of assistance in meeting the desired outcomes of this Strategy.

(d) Environment Canterbury will facilitate Community Initiative Programmes.

(e) Environment Canterbury will obtain and distribute biological control agents and will take action to ensure the effective and co-ordinated use of new control tools including new biological control agents.

(f) Environment Canterbury will facilitate the use of Government-funded employment initiatives where this could be an effective means for implementing the Strategy.

(g) Environment Canterbury will support continuing research into the development and application of new control tools including biological control.

(h) Environment Canterbury will monitor land with broom to determine whether the objective is being met.

(i) Environment Canterbury will administer rules where it is necessary to achieve the objective.

7.5.5 Strategy Rules for broom

(a) Land occupiers shall eliminate broom infestations that cover up to 50 square metres in area and are greater than five metres from other broom infestations exceeding 50 square metres in area on the land that they occupy.

For the purpose of this rule, eliminate means the permanent preclusion of the broom plant's ability to set viable seed.

(b) Land occupiers shall eliminate broom infestations on the land that they occupy within 10 metres of any adjoining property occupied by another land occupier where that adjoining property is clear of, or being cleared of, broom infestations within 10 metres of the boundary between the properties.

For the purpose of this rule eliminate means the permanent preclusion of the broom plant's ability to set viable seed.

(c) Land occupiers and other persons shall not sell, propagate or distribute any broom plant or part thereof.

A breach of any of these rules creates an offence under Section 154(r) of the Biosecurity Act 1993 and may initiate the regulatory procedures set out in Chapter 12.

Land occupiers are exempted from the provisions of these rules for the following:
(i) the requirement to eliminate broom when present as a hedge within a property; and
(ii) the requirement to eliminate broom when present as a hedge on a boundary provided that the top and sides of the hedge are trimmed each year after flowering but before seed set to minimise seeding.

Land occupiers may apply for an exemption from any of the above rules in accordance with the procedures set out in Chapter 12.

Explanation

The purpose of these rules is to provide a defined level at which landowners must carry out control of broom infestations and to prevent land becoming infested by broom through human-assisted activities. Examples of human assistance include selling plants commercially or at fairs, the multiplication of plants for personal or commercial use or any distribution through recreational uses or other uses of land.

Exemptions from the rules may be obtained where the landowner can agree with Environment Canterbury on a binding programme of broom control for a property that is consistent with the objective, and is carried out within a fixed time frame. Such a programme could include initially dealing with larger broom infestations ahead of smaller non-complying broom infestations.

7.6 Gorse

7.6.1 Description

This plant is a sharply spinous, woody, deeply rooted, leguminous perennial shrub able to grow almost anywhere. Gorse grows up to four metres tall with thick stems. It is a widespread plant scattered across land throughout the region. Density varies from light to heavy depending upon the intensity of grazing management. It is most prevalent on lightly grazed and ungrazed areas.

7.6.2 Adverse effects

Gorse forms dense thickets that prevent stock from grazing infested areas. Seeds can be ejected up to 5 metres from pods. Seed may be spread by water, birds, road-making, gravel extractions, animals and machinery. The plant may seed twice a year. Seed may survive in the soil for more than 50 years.

7.6.3 Objective

Over the duration of the Strategy, prevent gorse from infesting land presently free from gorse.

7.6.4 Principal measures to achieve the objective

The following principal measures will be undertaken.

(a) Land occupiers are responsible for controlling gorse on the land they occupy.

(b) Environment Canterbury will regularly inspect land at risk to gorse infestation to determine the presence and density of gorse. The frequency of inspection will depend on the population dynamics of the plants and the proneness of the land to infestations. The activity may also include the removal of isolated plants where it is cost-effective to do so during inspection.

(c) Environment Canterbury will provide advice and education to the community to increase the awareness of gorse, its infestation pathways and its control measures. Methods may include:

  (i) responding to public enquiries;

  (ii) discussions with runanga, participating in discussion groups, field days, Agricultural and Pastoral Association shows and other appropriate public events;

  (iii) providing information on control measures and alternatives to herbicides;

  (iv) producing and distributing pamphlets and using media opportunities to convey relevant information;

  (v) advising landowners on technical matters in association with inspections;

  (vi) mechanisms to formalise staged management programmes and development of stage controlled programmes in association with inspections;

  (vii) encouraging group activities that will be of assistance in meeting the desired outcomes of this Strategy.

(d) Environment Canterbury will facilitate Community Initiative Programmes.

(e) Environment Canterbury will obtain and distribute biological control agents and will take action to ensure the effective and co-ordinated use of new control tools including new biological control agents.

(f) Environment Canterbury will facilitate the use of Government-funded employment initiatives where this could be an effective means for implementing the Strategy.

(g) Environment Canterbury will support continuing research into the development and application of new control tools including biological control.

(h) Environment Canterbury will monitor land with gorse to determine whether the objective is being met.

(i) Environment Canterbury will administer rules where it is necessary to achieve the objective.

7.6.5 Strategy Rules for gorse

(a) Land occupiers shall eliminate gorse infestations that cover up to 50 square metres in area and are greater than five metres from other gorse infestations exceeding 50 square metres in area on the land that they occupy.

For the purpose of this rule eliminate means the permanent preclusion of the gorse plant's ability to set viable seed.

(b) Land occupiers shall eliminate gorse infestations on the land that they occupy within 10 metres of any adjoining property occupied by another land occupier where that adjoining property is clear of, or being cleared of, gorse infestations within 10 metres of the boundary between the properties.

For the purpose of this rule eliminate means the permanent preclusion of the gorse plant's ability to set viable seed.

(c) Land occupiers and other persons shall not sell, propagate or distribute any gorse plant or part thereof.

A breach of any of these rules creates an offence under Section 154(r) of the Biosecurity Act 1993 and may initiate the regulatory procedures set out in Chapter 12.

Land occupiers are exempted from the provisions of this rule for the following:

(i) the requirement to eliminate gorse when present as a hedge within a property; and

(ii) the requirement to eliminate gorse when present as a hedge on a boundary provided that the top and sides of the hedge are trimmed each year after flowering but before seed set to minimise seeding.

Land occupiers may apply for an exemption from any of the above rules in accordance with the procedures set out in Chapter 12.

Explanation

The purpose of these rules is to provide a defined level at which landowners must carry out control of gorse infestations and to prevent land becoming infested by gorse through human-assisted activities. Examples of human assistance include selling plants commercially or at fairs, the multiplication of plants for personal or commercial use or any distribution through recreational uses or other uses of land.

Exemptions from the rules may be obtained where the landowner can agree with Environment Canterbury on a binding programme of gorse control for a property that is consistent with the objective, and is carried out within a fixed time frame. Such a programme could include initially dealing with larger gorse infestations ahead of smaller non-complying gorse infestations.

ANIMAL PEST REPORT

ASSESSMENT NUMBER(S): 2405526000 and 2405526004

The following information has been extracted from Environment Canterbury's animal pest database. The database matches inspections with valuation assessments therefore ALL assessment numbers for a 'property' must be searched.

A lack of data does not mean that a particular animal is not present; the assessment may not have been inspected.

A "yes" for compliance means that at the date of the inspection the property complied with the rules for the Regional Pest Management Strategy for that particular pest. That may be because no animal pests were found or it may be because the rules were being complied with. The property may not necessarily comply now.

A Notice of Direction is a legal notice requiring a land occupier to take specific action within a specific time. If not complied with Environment Canterbury may engage a contractor to undertake the work at the occupier's expense. Obligations may transfer to subsequent occupiers.

Pest	Compliance	Notice of Direction Issued	Additional Comments
No inspection records	Unknown	NO	

If Animal Pests are present an annual control programme is required.

Please contact us for a copy of the rules of the Regional Pest Management Strategy if you are unfamiliar with them.

Environment Canterbury
Regional Council
Kaunihera Taiao ki Waitaha

PO Box 345
Christchurch 8140

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

Customer Services
P. 03 353 9007 or 0800 324 636

www.ecan.govt.nz

19 September 2012

Attn: Tom Davies
Golders Associates (NZ) Limited
PO Box 2281
Christchurch 8140

Dear Tom

Thank you for submitting your property enquiry. I have searched 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.

There are currently no LLUR sites located on the land parcel(s) you enquired about; however I have included information regarding a site (or sites) located nearby which may be of interest to you. The enclosed LLUR statement indicates the location of the site(s) relative to the land you enquired about, and details the information we currently hold for the site(s) on the register.

There are a number of hazardous activities (as defined by The Ministry for the Environment) associated with the land parcel covered by this enquiry:

1. Above ground storage tank (AST) located next to dwelling on south-western edge.
2. AST located on northern edge in the vicinity of sheep yards and implement sheds.
3. AST located on northern edge in the vicinity of sheep yards and implement sheds.

If the land is to be subdivided or undergo a change of land use a more detailed site investigation is recommended.

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 additional information and conduct our own investigations into current and historic land uses.

The LLUR does not contain all the information held by Environment Canterbury about a property, and 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 be aware that many current and past activities undertaken on farms (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 and these may not be listed on the LLUR.

Please note: Due to the Christchurch earthquake, Environment Canterbury has limited access to files. Even though we endeavour to keep our electronic files up to date, there may be more information on record that we are unable to provide at this time.

Yours sincerely

Jason McDonald
Advisory Officer

Davina McNickel
Team Leader Contaminated Sites

Encl:
Statement from Environment Canterbury's Listed Land Use Register
Listed Land Use Register Information Pamphlet

Our Ref: IN7C/4-1
Your Ref: 12849
Dynes Road, Rolleston

Statement from the Listed Land Use Register

Environment Canterbury Regional Council
Kaunihera Taiao ki Waitaha

58 Kilmore Street, PO Box 345, Christchurch
General enquiries: 03 365 3828 Customer services: 03 353 9007
Fax: 03 365 3194 or: 0800 EC INFO (0800 324 636)
Email: ecinfo@ecan.govt.nz Website: www.ecan.govt.nz

Date:	18 September 2012	
Land Parcels:	• RS 15710	Valuation No(s): 2405526000,2405526000A,2405526000B, 2405526000C
	• RS 12514	Valuation No(s): 2405526000,2405526000A,2405526000B, 2405526000C
	• Lot 1 DP 8833	Valuation No(s): 2405526000,2405526000A,2405526000B, 2405526000C
	• Lot 1 DP 372247	Valuation No(s): 2405526001
	• Lot 2 DP 372247	Valuation No(s): 2405526002
	• Lot 3 DP 372247	Valuation No(s): 2405526003
	• Lot 4 DP 372247	Valuation No(s): 2405526004

Summary of sites:

Site ID	Site Name	Location	HAIL Activity(s)	Category
5516	54 Dynes Road, Rolleston	54 Dynes Road, Rolleston	A17 - Storage tanks or drums for fuel, chemicals or liquid waste	Partially Investigated

Information held about the sites on the Listed Land Use Register

Site 5516: 54 Dynes Road, Rolleston (Within 100m of enquiry area.)

Site Address:	54 Dynes Road, Rolleston
Legal Description:	RS 9522

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

Land uses (from HAIL):

Period From	Period To	HAIL land use
?	2005	Storage tanks or drums for fuel, chemicals or liquid waste

Notes

18 Oct 2010

An underground fuel storage tank. Removed from the site in circa 2005, the tank continued to be used as an above ground storage tank at a neighbouring property. A soil sample collected from the fill point of the former underground storage tank location by Tonkin & Taylor in 2010 yielded acceptable concentrations of total petroleum hydrocarbons and BTEX compounds.

Investigations

1 Apr 2010 **INV 5125: 54 Dynes Road, Rolleston - Desk-based Ground Contamination Investigation with Limited Confirmatory Sampling**
Tonkin and Taylor Ltd

Summary of investigation(s)

Tonkin & Taylor were engaged by Selwyn District Council to undertake a preliminary site investigation and a limited intrusive soil sampling investigation at a 33.3 ha block of land at 54 Dynes Road, Rolleston, presently described as RS 23251, RS 9522 and RS 19792. According to the report, Selwyn District Council was considering purchase of the properties comprising the study area for the purpose of constructing a recreational facility (including sporting fields).

The study area was in use for rural residential and general agricultural purposes at the time of the investigation. Research undertaken as part of the preliminary site investigation included a review of historical certificates of title (1883-2007), historical aerial photographs (1942-2010) and regional and district council files, an interview with the property's owner for the last 35 years, and a site inspection.

The desktop review reported that the study area was historically used for sheep farming and cropping purposes. There were no sheep dips within the study area. The potential for significant residual contamination associated with the past agricultural use was therefore assessed as low. However, the historical use of persistent pesticides may have resulted in surface soil impact, particularly within plots previously used for vegetable gardening. A gravel extraction pit (600 square metres, 4 m deep) was observed on the eastern corner of the study area. A 100 cubic metre soil stockpile – reportedly sourced from a residential subdivision in Rolleston – was observed adjacent to the gravel pit. Two residential dwellings were identified at the site.

An underground fuel storage tank formerly existed within the study area. The tank was removed roughly 5 years prior to the investigation (i.e. 2005) and was still in use as an above ground storage tank at the neighbouring property. A Tonkin & Taylor report identifies the tank location, but the tank's capacity is unknown. Validation samples had not been collected at the time of the removal. Because storage of hazardous chemicals in tanks is a HAIL activity, the former tank location has been entered on the Listed Land Use Register (LLUR) as **Site 5516**.

In April 2010 a limited intrusive soil investigation was conducted to confirm that the historical use of the site for agricultural purposes has not resulted in significant soil contamination. The sampling pattern was designed to assess the presence of residual soil contamination from the general agricultural use, historical gardening, and the imported soil stockpile. While a single surface sample was collected at the fill point of the former underground storage tank, samples were not collected to characterise sub-surface soil at the former underground petroleum storage tank location. Furthermore, sampling was not undertaken in the vicinity of dwellings to determine presence, or otherwise, of lead impact.

Surficial (0.0-0.1 m) and deeper (0.2-0.5 m) soil were collected from 16 locations. A single discrete sample was collected from the imported soil stockpile, located adjacent to the gravel extraction pit. Only the surface samples were submitted for analysis. Based on the sampling location, the analysis was scheduled for heavy metals (arsenic, cadmium, chromium, copper, lead, nickel, and zinc), organochlorine pesticide, total petroleum hydrocarbons, BTEX compounds, and polycyclic aromatic hydrocarbons.

All sample results were compliant with the guideline criteria protective of residential, recreational and industrial/commercial land use. Soil cadmium, lead and zinc concentrations at a number of sampling locations were above the likely background levels (ECan, 2006). Petroleum hydrocarbons in the C15-C36 carbon band were detected marginally above the laboratory limits in the sample collected near the old underground storage tank location, recording a concentration of 32 mg/kg. Polycyclic aromatic hydrocarbon compounds were not recorded above the laboratory limits of detection in the sample collected from stockpiled soils.

Based on the information provided in the report, it is proposed to register LLUR **Site 5516** as 'Partially Investigated'. Based on the observations (i.e. continuing use of the former underground storage tank as an above ground storage tank at an adjacent property), and the analytical results of a single sample collected at the former tank fill point, the likelihood of significant soil contamination at the former tank location is low. However, further sampling at the former tank area should be carried out in support of this contention.

No analytical analysis was undertaken to confirm the presence, or otherwise, of lead-based paint on the old dwelling located within the study area.

1 Jan 2011 **INV 12787: Desk-Based Ground Contamination Assessment Plan Change 7 Area**
Tonkin and Taylor Ltd

Summary of investigation(s)

Report(s) have not yet been audited.

For further information from Environment Canterbury, contact the Contaminated Sites Officer and refer to enquiry number 12849.

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.

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

Statement from the Listed Land Use Register

Environment Canterbury Regional Council
Kaunihera Taiao ki Waitaha

58 Kilmore Street, PO Box 345, Christchurch
General enquiries: 03 365 3828 Customer services: 03 353 9007
Fax: 03 365 3194 or: 0800 EC INFO (0800 324 636)
Email: ecinfo@ecan.govt.nz Website: www.ecan.govt.nz

Date: 18 September 2012

Land Parcels:

• RS 15710	Valuation No(s): 2405526000,2405526000A,2405526000B, 2405526000C
• RS 12514	Valuation No(s): 2405526000,2405526000A,2405526000B, 2405526000C
• Lot 1 DP 8833	Valuation No(s): 2405526000,2405526000A,2405526000B, 2405526000C
• Lot 1 DP 372247	Valuation No(s): 2405526001
• Lot 2 DP 372247	Valuation No(s): 2405526002
• Lot 3 DP 372247	Valuation No(s): 2405526003
• Lot 4 DP 372247	Valuation No(s): 2405526004

Summary of sites:

Site ID	Site Name	Location	HAIL Activity(s)	Category
5516	54 Dynes Road, Rolleston	54 Dynes Road, Rolleston	A17 - Storage tanks or drums for fuel, chemicals or liquid waste	Partially Investigated

Information held about the sites on the Listed Land Use Register

Site 5516: 54 Dynes Road, Rolleston (Within 100m of enquiry area.)

Site Address:	54 Dynes Road, Rolleston
Legal Description:	RS 9522

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

Land uses (from HAIL):

Period From	Period To	HAIL land use
?	2005	Storage tanks or drums for fuel, chemicals or liquid waste

Notes

18 Oct 2010

An underground fuel storage tank. Removed from the site in circa 2005, the tank continued to be used as an above ground storage tank at a neighbouring property. A soil sample collected from the fill point of the former underground storage tank location by Tonkin & Taylor in 2010 yielded acceptable concentrations of total petroleum hydrocarbons and BTEX compounds.

Investigations

1 Apr 2010 **INV 5125: 54 Dynes Road, Rolleston - Desk-based Ground Contamination Investigation with Limited Confirmatory Sampling**
Tonkin and Taylor Ltd

Summary of investigation(s)

Tonkin & Taylor were engaged by Selwyn District Council to undertake a preliminary site investigation and a limited intrusive soil sampling investigation at a 33.3 ha block of land at 54 Dynes Road, Rolleston, presently described as RS 23251, RS 9522 and RS 19792. According to the report, Selwyn District Council was considering purchase of the properties comprising the study area for the purpose of constructing a recreational facility (including sporting fields).

The study area was in use for rural residential and general agricultural purposes at the time of the investigation. Research undertaken as part of the preliminary site investigation included a review of historical certificates of title (1883-2007), historical aerial photographs (1942-2010) and regional and district council files, an interview with the property's owner for the last 35 years, and a site inspection.

The desktop review reported that the study area was historically used for sheep farming and cropping purposes. There were no sheep dips within the study area. The potential for significant residual contamination associated with the past agricultural use was therefore assessed as low. However, the historical use of persistent pesticides may have resulted in surface soil impact, particularly within plots previously used for vegetable gardening. A gravel extraction pit (600 square metres, 4 m deep) was observed on the eastern corner of the study area. A 100 cubic metre soil stockpile – reportedly sourced from a residential subdivision in Rolleston – was observed adjacent to the gravel pit. Two residential dwellings were identified at the site.

An underground fuel storage tank formerly existed within the study area. The tank was removed roughly 5 years prior to the investigation (i.e. 2005) and was still in use as an above ground storage tank at the neighbouring property. A Tonkin & Taylor report identifies the tank location, but the tank's capacity is unknown. Validation samples had not been collected at the time of the removal. Because storage of hazardous chemicals in tanks is a HAIL activity, the former tank location has been entered on the Listed Land Use Register (LLUR) as **Site 5516**.

In April 2010 a limited intrusive soil investigation was conducted to confirm that the historical use of the site for agricultural purposes has not resulted in significant soil contamination. The sampling pattern was designed to assess the presence of residual soil contamination from the general agricultural use, historical gardening, and the imported soil stockpile. While a single surface sample was collected at the fill point of the former underground storage tank, samples were not collected to characterise sub-surface soil at the former underground petroleum storage tank location. Furthermore, sampling was not undertaken in the vicinity of dwellings to determine presence, or otherwise, of lead impact.

Surficial (0.0-0.1 m) and deeper (0.2-0.5 m) soil were collected from 16 locations. A single discrete sample was collected from the imported soil stockpile, located adjacent to the gravel extraction pit. Only the surface samples were submitted for analysis. Based on the sampling location, the analysis was scheduled for heavy metals (arsenic, cadmium, chromium, copper, lead, nickel, and zinc), organochlorine pesticide, total petroleum hydrocarbons, BTEX compounds, and polycyclic aromatic hydrocarbons.

All sample results were compliant with the guideline criteria protective of residential, recreational and industrial/commercial land use. Soil cadmium, lead and zinc concentrations at a number of sampling locations were above the likely background levels (ECan, 2006). Petroleum hydrocarbons in the C15-C36 carbon band were detected marginally above the laboratory limits in the sample collected near the old underground storage tank location, recording a concentration of 32 mg/kg. Polycyclic aromatic hydrocarbon compounds were not recorded above the laboratory limits of detection in the sample collected from stockpiled soils.

Based on the information provided in the report, it is proposed to register LLUR **Site 5516** as 'Partially Investigated'. Based on the observations (i.e. continuing use of the former underground storage tank as an above ground storage tank at an adjacent property), and the analytical results of a single sample collected at the former tank fill point, the likelihood of significant soil contamination at the former tank location is low. However, further sampling at the former tank area should be carried out in support of this contention.

No analytical analysis was undertaken to confirm the presence, or otherwise, of lead-based paint on the old dwelling located within the study area.

1 Jan 2011 **INV 12787: Desk-Based Ground Contamination Assessment Plan Change 7 Area**
Tonkin and Taylor Ltd

Summary of investigation(s)

Report(s) have not yet been audited.

For further information from Environment Canterbury, contact the Contaminated Sites Officer and refer to enquiry number 12849.

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.

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

At Golder Associates we strive to be the most respected global company providing consulting, design, and construction services in earth, environment, and related areas of energy. Employee owned since our formation in 1960, our focus, unique culture and operating environment offer opportunities and the freedom to excel, which attracts the leading specialists in our fields. Golder professionals take the time to build an understanding of client needs and of the specific environments in which they operate. We continue to expand our technical capabilities and have experienced steady growth with employees who operate from offices located throughout Africa, Asia, Australasia, Europe, North America, and South America.

Africa	+ 27 11 254 4800
Asia	+ 852 2562 3658
Australia & New Zealand	+ 61 7 3721 5400
Europe	+ 44 356 21 42 30 20
North America	+ 1 800 275 3281
South America	+ 55 21 3095 9500

solutions@golder.com
www.golder.com

AUCKLAND

Tel +64 9 486 8068
Fax +64 9 486 8072

Level 2
Nielsen Centre
129 Hurstmere Road
Takapuna
Auckland 0622

PO Box 33-849
Takapuna 0740

TAURANGA

Tel +64 7 928 5335
Fax +64 7 928 5336

78 Maunganui Road
Tauranga 3116

PO Box 13611
Tauranga Central
Tauranga 3141

HAMILTON

Tel +64 7 928 5335
Fax +64 7 928 5336

Ruakura AgResearch Centre
Room 31 in the Homestead
East Street
Hamilton 3214

PO Box 19-479
Hamilton 3244

NELSON

Tel +64 3 548 1707
Fax +64 3 548 1727

Level 3
295 Trafalgar Street
Nelson 7010

PO Box 1724
Nelson 7040

CHRISTCHURCH

Tel +64 3 377 5696
Fax +64 3 377 9944

Level 1
132 Tuam Street
Christchurch 8011

PO Box 2281
Christchurch 8140

DUNEDIN

Tel +64 3 479 0390
Fax +64 3 474 9642

Level 9A
John Wickliffe House
265 Princes Street
Dunedin 9016

PO Box 1087
Dunedin 9054

Golder Associates

APPENDIX C

Resource Care Guide

Info Sheet 14
Resource care guide - June 2009

Dead Stock and Offal Disposal

Disposal of carcasses and offal is often the last thing you want to think about, but safe and effective management of offal disposal can test even the most capable farmer.

Fresh offal contains a number of harmful organisms, chemicals and bacteria which can have a serious impact on human and stock health as well as the environment. Stock and offal disposal require good management in order to reduce its impacts.

The principles of dead stock management are:

- Dispose of the animal as soon as possible to reduce the risk of disease spreading.
- Do not leave animal carcasses in the open where dogs or other animals can get to them or where they are visible from the road.
- Never dispose of carcasses in farm dairy effluent ponds.
- Keep dead stock well away from waterways, wetlands, and bores.

What are the legal requirements?

Carcass disposal may have adverse environmental impacts, particularly on the quality of water and air.

Environment Canterbury's Proposed Natural Resources Regional Plan includes the following permitted activity rules, WQL23, AQL32, AQL67 and AQL63 which apply to the disposal of dead animals and offal. Provided that you can comply with all the conditions of these rules then disposal of carcasses and offal, from animals that die or are killed on your farm, to offal pits, by composting or burial is permitted. If for any reason you cannot comply with all the conditions, you will require a resource consent.

Depending on your location there may also be other plans or rules you need to consider. Call Environment Canterbury for full details to check which rules apply to you.

All that was left of a cow after 6 months composting in saw dust

Comparing stock disposal options

Disposal Options	Advantages	Disadvantages
Off-farm rendering	• Unlikely to have adverse effects on the environment • No risk of on-farm contamination from carcasses	• Only available in some areas • Requires an area for secure storing of carcasses before pick-up • May be costly
Composting	• Useful product generated • Reuses other farm resources such as calf-shed sawdust • High composting temperature destroys pathogens and prevents fly incubation	• A reliable supply of carbon source (e.g. sawdust) is required • Requires understanding of composting • Predator and vermin control can be challenging. • Finished compost must not be spread on pasture grazed by stock.
Offal Pits	• Simple • Cost effect • Easy to manage	• Seepage can contaminate groundwater • Predator and vermin control is required • Increasing restrictions on use
Burial	• Simple • Cost-effective	• Requires vermin control • Labour intensive • Can contaminate groundwater
Incineration	• Carcasses are destroyed quickly • Any pathogens present are destroyed	• May cause odour and smoke nuisance • Transport and cremation costs are incurred for off-farm incineration

This publication has been produced by Environment Canterbury to promote sustainable land management practices.

Environment Canterbury
Your regional council

Composting

Composting of dead stock offers an alternative to traditional disposal methods and decreases the risk of groundwater contamination. A well-managed composting system can be low cost, environmentally sound, and virtually odour-free. Composting involves layering dead animals within a bulking agent such as sawdust or straw.

Once complete, compost can be spread over non-productive areas (domestic gardens, shelter belts, woodlots) or can be used for part of the bulking agent in a new composting pile. Compost should not be spread on ground where animals will graze as there is a risk of pathogens being present in the compost.

Site selection

a. Choose a high, level site away from wells, watercourses, tile drains and well above groundwater.

b. Choose a site where soils will limit any leeching reaching groundwater.

c. You will need enough space for 3 piles or bins and space for handling carcasses and bulking agent into and out of piles or bins.

d. Ensure easy access to manage and monitor the compost.

e. Ensure convenient access to a water supply so that you can add water to compost as needed.

Bulking agent

The carbon to nitrogen (C:N) ratio of composting material should be at least 5:1. Since animal carcasses are high in nitrogen, the bulking agent needs to be high in carbon. The process must be aerobic if odour is to be minimised, so air penetration through the compost heap is essential. A bulking agent with material size 12-44mm in diameter will allow better airflow through the pile. Materials must be able to settle around and be in contact with the carcass.

Untreated sawdust is recommended because of its small particle size and high absorbency that minimises leachate. Straw can be used but there are problems in using it such as longer breakdown times, and leachate production. Generally a straw stack will need to be roofed and built on a concrete surface so that leachate can be collected. You can also use finished compost as part of the bulking agent in a new pile - a rule of thumb is 50 percent old-to-new, but you may want to use more or less depending on how degraded the bulking agent is in the finished compost.

Composting type

Composting can be undertaken in bins or open windrows.

Windrows

a. Windrows are generally built up to be 1.5m high and 3m wide.

b. Windrows need to be fenced to keep stock and scavengers out.

Sheep composting windrow

Bins

a. The composting bin needs to be at least 60cm wider and longer then the largest animal you will be expecting to compost.

b. Usually you will need three bins – two for composting and one being filled.

c. Large bales of low quality hay can be used to form the bins. Place bales end to end to create walls for a three sided enclosure. More permanent systems build concrete bins in a covered shed or purpose built wooden crates for smaller animals.

d. A lid or cover will allow you to control moisture and also keep scavengers out.

A sheep composting bin made of 50x150mm treated timber

How to compost step by step

1. Building the Pile

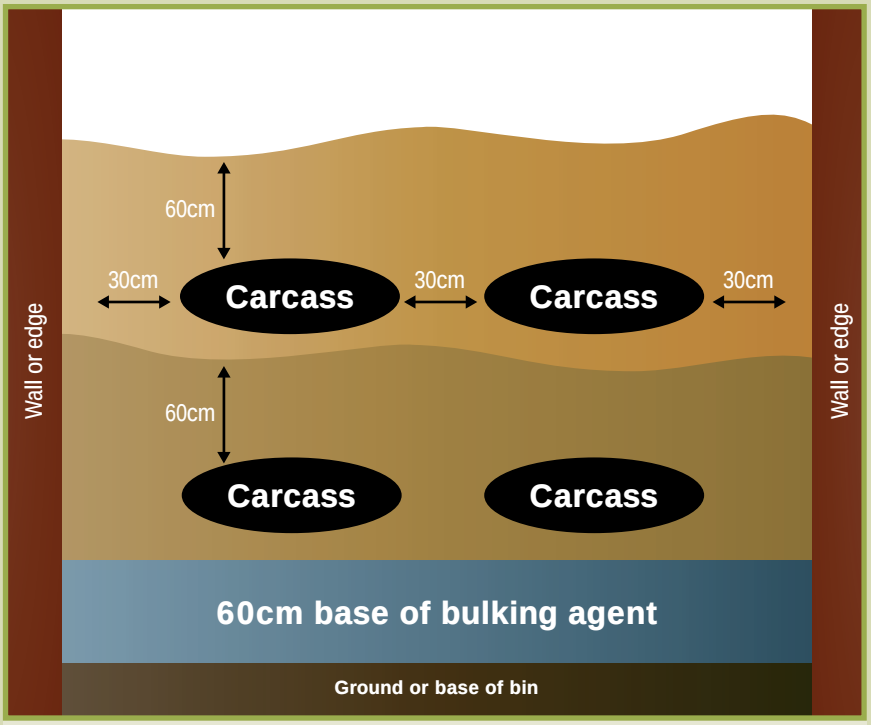
a. Place at least 60cm of bulking agent on the ground or floor of the composting bin.

b. Place the carcasses in a single layer on top of the bulking agent at least 30cm from the edge of the pile and at least 30cm apart. Split the stomach of each carcass as it is added.

c. Cover the carcasses with 60cm of bulking agent.

d. Add water if needed – the pile should leave your hand feeling moist, but you should not be able to squeeze any water out of it.

e. Once the pile is full, start a second pile following these same steps.



Example of spacing when filling composting bin

2. Composting

a. Monitor the pile regularly to make sure that all carcass parts stay completely covered by bulking agent.

b. As the micro-organisms begin to compost the carcasses, the internal temperature of the pile will rise to between 60-70°C. Once oxygen is depleted this temperature will drop.

c. Turning the pile – when the temperature has dropped (approx 3 months for large animals, or 45 days for small), the pile should be moved to a new bin or windrow with 60cm of fresh bulking agent on it base. This turning aerates the pile.

d. Check moisture content of the pile and add water as necessary.

e. Cover the turned pile with another 30cm of bulking agent.

f. Leave the pile to compost through another cycle (45 days or 3 months based on animal size).

3. Finishing the compost

a. Inspect the pile. If you can no longer see any flesh, the compost can be termed ‘finished’. It should be dark, humus-like material with very little odour. At this stage, any bones should be so brittle that they can be easily crushed. If there is still some flesh visible, you need to turn the pile again and let it go through another heat cycle.

b. Sometimes more time is needed to completely compost the larger and denser bones. If the compost is finished other than the bones, remove them and place in a new pile for further decomposition.

Dead stock collection service

Where possible, arrange for carcasses to be picked up by a licensed dead stock collection service. Operators skin the dead animals and render the carcass to produce protein meals, tallow and fertiliser.

Dead animals should be carefully handled to avoid damaging their skins as their value is greatly diminished if they are dragged or ripped. The collection point should not be visible from the road.

Offal pits

While offal pits are considered a simple and cheap method of disposing of small quantities of dead stock, they require good management in order to reduce their impact on the environment.

Location of offal pits

- Offal pits must be at least 50m from waterways, wetlands, bores and property boundaries.
- Avoid areas where the watertable is high or poorly draining soils. The bottom of the pit should be at least 3m above the top of the maximum expected groundwater level. There must be no groundwater entering the bottom of your pit.
- Surface runoff must be directed away from the pit.
- Animals and rodents must be prevented from accessing the pit.
- Offal pits can only be used for waste that originate from the property they are on.
- Pits should not be located in areas prone to flooding or ponding due to heavy rainfall (1 in 5 year event).

Construction

- Offal pits may be narrow trenches dug by an excavator, or vertical shafts usually about 1m in diameter and a few meters deep constructed by a large diameter auger.
- The volume of the pit should be no more than 30 cubic metres.
- The top of the pit should be covered with a heavy-duty concrete slab at least 125mm thick with access from at least one airtight cover-plate.

Example of a well constructed offal pit

Some guidelines for managing offal pits

Do's	Don'ts
• Dispose of stock as quickly as possible • Slit the stomach of each carcass to allow the intestines out for faster decomposition • Puncture the left side of the rumen to prevent build up of toxic gases • Keep the pit moist by adding several litres of water weekly (but not so much that water collects at the bottom) • Cover the offal pit securely to prevent animals gaining access • Once the pit is full to within 1 metre of the surface, fill it with soil, compact and re-grass • Keep pits free of vermin such as rats	• Do not site offal pits near property boundaries, waterways or in areas with a high watertable • Do not use disinfectant to reduce odour as this will inhibit the decomposition process • Do not add lime as this will slow down decomposition • Do not use an offal pit as a landfill • Do not dispose of chemicals in offal pits • Do not light fires anywhere near an offal pit – gases produced by decomposition can be flammable

Burial

Shallow burial may be a convenient method of disposal where water tables are low enough to avoid groundwater contamination. Controlling vermin and scavengers can be difficult. Make sure that the hole is backfilled immediately and that the buried carcass is well covered, so that dogs or other scavengers cannot dig it up. Select an area with clay or impervious soil below to contain any leachate and site the hole at least 100m from domestic bores or surface waterways to avoid contamination. Do not bury animals in the floodplain of a waterway.

For more information contact ECan Customer Services in Christchurch or Timaru:

Christchurch Phone: (03) 353 9007
Christchurch Fax: (03) 365 3194

Timaru Phone: (03) 687 7800
Timaru Fax: (03) 687 7808

Freephone: 0800 EC INFO (0800 324 636)
Email: ecinfo@ecan.govt.nz or Visit: www.ecan.govt.nz

At Golder Associates we strive to be the most respected global company providing consulting, design, and construction services in earth, environment, and related areas of energy. Employee owned since our formation in 1960, our focus, unique culture and operating environment offer opportunities and the freedom to excel, which attracts the leading specialists in our fields. Golder professionals take the time to build an understanding of client needs and of the specific environments in which they operate. We continue to expand our technical capabilities and have experienced steady growth with employees who operate from offices located throughout Africa, Asia, Australasia, Europe, North America, and South America.

Africa	+ 27 11 254 4800
Asia	+ 86 21 6258 5522
Australia & NZ	+ 61 3 8862 3500
Europe	+ 356 21 42 30 20
North America	+ 1 800 275 3281
South America	+ 55 21 3095 9500

solutions@golder.com
www.golder.com

AUCKLAND

Tel +64 9 486 8068
Fax +64 9 486 8072

Level 2
Nielsen Centre
129 Hurstmere Road
Takapuna
Auckland 0622

PO Box 33-849
Takapuna 0740

TAURANGA

Tel +64 7 928 5335
Fax +64 7 928 5336

78 Maunganui Road
Tauranga 3116

PO Box 13611
Tauranga Central
Tauranga 3141

HAMILTON

Tel +64 7 859 2356
Fax +64 9 486 8072

Ruakura AgResearch Centre
Room 31 in the Homestead
East Street
Hamilton 3214

PO Box 19-479
Hamilton 3244

NELSON

Tel +64 3 548 1707
Fax +64 3 548 1727

Level 3
295 Trafalgar Street
Nelson 7010

PO Box 1724
Nelson 7040

CHRISTCHURCH

Tel +64 3 377 5696
Fax +64 3 377 9944

Level 1
214 Durham Street
Christchurch 8011

PO Box 2281
Christchurch 8140

DUNEDIN

Tel +64 3 479 0390
Fax +64 3 474 9642

Level 9A
John Wickliffe House
265 Princes Street
Dunedin 9016

PO Box 1087
Dunedin 9054

Golder Associates

APPENDIX D

Laboratory Analysis Certificates

Hill Laboratories
BETTER TESTING BETTER RESULTS

R J Hill Laboratories Limited
1 Clyde Street
Private Bag 3205
Hamilton 3240, New Zealand

Tel +64 7 858 2000
Fax +64 7 858 2001
Email mail@hill-labs.co.nz
Web www.hill-labs.co.nz

ANALYSIS REPORT

Client:	Golder Associates (NZ) Limited	**Lab No:**	1157919	SPv1
Contact:	T Davies	**Date Registered:**	19-Jul-2013	
	C/- Golder Associates (NZ) Limited	**Date Reported:**	26-Jul-2013	
	PO Box 2281	**Quote No:**		
	Christchurch Mail Centre	**Order No:**		
	CHRISTCHURCH 8140	**Client Reference:**	Faringdon	
		Submitted By:	T Davies	

Sample Type: Soil

Sample Name:		Faringdon 1 - 0.1m 18-Jul-2013	Faringdon 2 - 0.1m 18-Jul-2013	Faringdon 3 - 0.1m 18-Jul-2013	Faringdon 4 - 0.1m 18-Jul-2013	Faringdon 5 - 0.1m 18-Jul-2013
Lab Number:		1157919.1	1157919.3	1157919.5	1157919.7	1157919.9
Individual Tests						
Dry Matter	g/100g as rcvd	78	79	79	81	81
Total Recoverable Arsenic	mg/kg dry wt	3	3	3	3	3
Total Recoverable Copper	mg/kg dry wt	4	3	4	3	4
Total Recoverable Lead	mg/kg dry wt	16.1	14.9	14.9	13.4	15.3
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
alpha-BHC	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
beta-BHC	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
delta-BHC	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
gamma-BHC (Lindane)	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
cis-Chlordane	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
trans-Chlordane	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Total Chlordane [(cis+trans)* 100/42]	mg/kg dry wt	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04
2,4'-DDD	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
4,4'-DDD	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
2,4'-DDE	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
4,4'-DDE	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
2,4'-DDT	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
4,4'-DDT	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Dieldrin	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Endosulfan I	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Endosulfan II	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Endosulfan sulphate	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Endrin	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Endrin Aldehyde	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Endrin ketone	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Heptachlor	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Heptachlor epoxide	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Hexachlorobenzene	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Methoxychlor	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Organonitro&phosphorus Pesticides Screen in Soil by GCMS						
Acetochlor	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Alachlor	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Atrazine	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Atrazine-desethyl	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Atrazine-desisopropyl	mg/kg	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12
Azaconazole	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03

Sample Type: Soil						
Sample Name:		Faringdon 1 - 0.1m 18-Jul-2013	Faringdon 2 - 0.1m 18-Jul-2013	Faringdon 3 - 0.1m 18-Jul-2013	Faringdon 4 - 0.1m 18-Jul-2013	Faringdon 5 - 0.1m 18-Jul-2013
Lab Number:		1157919.1	1157919.3	1157919.5	1157919.7	1157919.9
Organonitro&phosphorus Pesticides Screen in Soil by GCMS						
Azinphos-methyl	mg/kg	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12
Benalaxyl	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Bitertanol	mg/kg	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12
Bromacil	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Bromopropylate	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Butachlor	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Captan	mg/kg	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12
Carbaryl	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Carbofuran	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Chlorfluazuron	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Chlorothalonil	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Chlorpyrifos	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Chlorpyrifos-methyl	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Chlortoluron	mg/kg	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12
Cyanazine	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Cyfluthrin	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Cyhalothrin	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Cypermethrin	mg/kg	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12
Deltamethrin (Tralomethrin)	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Diazinon	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Dichlofluanid	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Dichloran	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Dichlorvos	mg/kg	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09
Difenoconazole	mg/kg	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09
Dimethoate	mg/kg	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12
Diphenylamine	mg/kg	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12
Diuron	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Fenpropimorph	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Fluazifop-butyl	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Fluometuron	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Flusilazole	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Fluvalinate	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Furalaxyl	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Haloxyfop-methyl	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Hexaconazole	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Hexazinone	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
IPBC (3-Iodo-2-propynyl-n-butylcarbamate)	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Iprodione	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Kresoxim-methyl	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Linuron	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Malathion	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Metalaxyl (Mefenoxam)	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Methamidophos	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Metolachlor	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Metribuzin	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Molinate	mg/kg	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12
Myclobutanil	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Naled	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Norflurazon	mg/kg	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12
Oxadiazon	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Oxyfluorfen	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Paclobutrazol	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Parathion-ethyl	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Parathion-methyl	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06

Sample Type: Soil						
Sample Name:		Faringdon 1 - 0.1m 18-Jul-2013	Faringdon 2 - 0.1m 18-Jul-2013	Faringdon 3 - 0.1m 18-Jul-2013	Faringdon 4 - 0.1m 18-Jul-2013	Faringdon 5 - 0.1m 18-Jul-2013
Lab Number:		1157919.1	1157919.3	1157919.5	1157919.7	1157919.9
Organonitro&phosphorus Pesticides Screen in Soil by GCMS						
Pendimethalin	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Permethrin	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Pirimicarb	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Pirimiphos-methyl	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Prochloraz	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Procymidone	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Prometryn	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Propachlor	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Propanil	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Propazine	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Propiconazole	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Pyriproxyfen	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Quizalofop-ethyl	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Simazine	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Simetryn	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Sulfentrazone	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
TCMTB [2-(thiocyanomethylthio) benzothiazole,Busan]	mg/kg dry wt	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12
Tebuconazole	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Terbacil	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Terbufos	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Terbumeton	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Terbuthylazine	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Terbuthylazine-desethyl	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Terbutryn	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Thiabendazole	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Thiobencarb	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Tolylfluanid	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Triazophos	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Trifluralin	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Vinclozolin	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06

Sample Name:		Faringdon 6 - 0.1m 18-Jul-2013	Observatory 1 - 0.1m 18-Jul-2013	Observatory 2 - 0.1m 18-Jul-2013	Observatory 3 - 0.1m 18-Jul-2013	Dup 1m 18-Jul-2013
Lab Number:		1157919.11	1157919.13	1157919.15	1157919.17	1157919.19
Individual Tests						
Dry Matter	g/100g as rcvd	81	-	-	-	81
Total Recoverable Arsenic	mg/kg dry wt	3	-	-	-	3
Total Recoverable Copper	mg/kg dry wt	3	-	-	-	4
Total Recoverable Lead	mg/kg dry wt	14.2	36	25	51	15.0
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.010	-	-	-	< 0.010
alpha-BHC	mg/kg dry wt	< 0.010	-	-	-	< 0.010
beta-BHC	mg/kg dry wt	< 0.010	-	-	-	< 0.010
delta-BHC	mg/kg dry wt	< 0.010	-	-	-	< 0.010
gamma-BHC (Lindane)	mg/kg dry wt	< 0.010	-	-	-	< 0.010
cis-Chlordane	mg/kg dry wt	< 0.010	-	-	-	< 0.010
trans-Chlordane	mg/kg dry wt	< 0.010	-	-	-	< 0.010
Total Chlordane [(cis+trans)* 100/42]	mg/kg dry wt	< 0.04	-	-	-	< 0.04
2,4'-DDD	mg/kg dry wt	< 0.010	-	-	-	< 0.010
4,4'-DDD	mg/kg dry wt	< 0.010	-	-	-	< 0.010
2,4'-DDE	mg/kg dry wt	< 0.010	-	-	-	< 0.010
4,4'-DDE	mg/kg dry wt	< 0.010	-	-	-	< 0.010
2,4'-DDT	mg/kg dry wt	< 0.010	-	-	-	< 0.010
4,4'-DDT	mg/kg dry wt	< 0.010	-	-	-	< 0.010

Sample Type: Soil						
Sample Name:		Faringdon 6 - 0.1m 18-Jul-2013	Observatory 1 - 0.1m 18-Jul-2013	Observatory 2 - 0.1m 18-Jul-2013	Observatory 3 - 0.1m 18-Jul-2013	Dup 1m 18-Jul-2013
Lab Number:		1157919.11	1157919.13	1157919.15	1157919.17	1157919.19
Organochlorine Pesticides Screening in Soil						
Dieldrin	mg/kg dry wt	< 0.010	-	-	-	< 0.010
Endosulfan I	mg/kg dry wt	< 0.010	-	-	-	< 0.010
Endosulfan II	mg/kg dry wt	< 0.010	-	-	-	< 0.010
Endosulfan sulphate	mg/kg dry wt	< 0.010	-	-	-	< 0.010
Endrin	mg/kg dry wt	< 0.010	-	-	-	< 0.010
Endrin Aldehyde	mg/kg dry wt	< 0.010	-	-	-	< 0.010
Endrin ketone	mg/kg dry wt	< 0.010	-	-	-	< 0.010
Heptachlor	mg/kg dry wt	< 0.010	-	-	-	< 0.010
Heptachlor epoxide	mg/kg dry wt	< 0.010	-	-	-	< 0.010
Hexachlorobenzene	mg/kg dry wt	< 0.010	-	-	-	< 0.010
Methoxychlor	mg/kg dry wt	< 0.010	-	-	-	< 0.010
Organonitro&phosphorus Pesticides Screen in Soil by GCMS						
Acetochlor	mg/kg	< 0.06	-	-	-	< 0.06
Alachlor	mg/kg	< 0.05	-	-	-	< 0.05
Atrazine	mg/kg	< 0.06	-	-	-	< 0.06
Atrazine-desethyl	mg/kg	< 0.06	-	-	-	< 0.06
Atrazine-desisopropyl	mg/kg	< 0.12	-	-	-	< 0.12
Azaconazole	mg/kg	< 0.03	-	-	-	< 0.03
Azinphos-methyl	mg/kg	< 0.12	-	-	-	< 0.12
Benalaxyl	mg/kg	< 0.03	-	-	-	< 0.03
Bitertanol	mg/kg	< 0.12	-	-	-	< 0.12
Bromacil	mg/kg	< 0.06	-	-	-	< 0.06
Bromopropylate	mg/kg	< 0.06	-	-	-	< 0.06
Butachlor	mg/kg	< 0.06	-	-	-	< 0.06
Captan	mg/kg	< 0.12	-	-	-	< 0.12
Carbaryl	mg/kg	< 0.06	-	-	-	< 0.06
Carbofuran	mg/kg	< 0.06	-	-	-	< 0.06
Chlorfluazuron	mg/kg	< 0.06	-	-	-	< 0.06
Chlorothalonil	mg/kg	< 0.06	-	-	-	< 0.06
Chlorpyrifos	mg/kg	< 0.06	-	-	-	< 0.06
Chlorpyrifos-methyl	mg/kg	< 0.06	-	-	-	< 0.06
Chlortoluron	mg/kg	< 0.12	-	-	-	< 0.12
Cyanazine	mg/kg	< 0.06	-	-	-	< 0.06
Cyfluthrin	mg/kg	< 0.06	-	-	-	< 0.06
Cyhalothrin	mg/kg	< 0.06	-	-	-	< 0.06
Cypermethrin	mg/kg	< 0.12	-	-	-	< 0.12
Deltamethrin (Tralomethrin)	mg/kg	< 0.06	-	-	-	< 0.06
Diazinon	mg/kg	< 0.03	-	-	-	< 0.03
Dichlofluanid	mg/kg	< 0.06	-	-	-	< 0.06
Dichloran	mg/kg	< 0.2	-	-	-	< 0.2
Dichlorvos	mg/kg	< 0.09	-	-	-	< 0.09
Difenoconazole	mg/kg	< 0.09	-	-	-	< 0.09
Dimethoate	mg/kg	< 0.12	-	-	-	< 0.12
Diphenylamine	mg/kg	< 0.12	-	-	-	< 0.12
Diuron	mg/kg	< 0.06	-	-	-	< 0.06
Fenpropimorph	mg/kg	< 0.06	-	-	-	< 0.06
Fluazifop-butyl	mg/kg	< 0.06	-	-	-	< 0.06
Fluometuron	mg/kg	< 0.06	-	-	-	< 0.06
Flusilazole	mg/kg	< 0.06	-	-	-	< 0.06
Fluvalinate	mg/kg	< 0.05	-	-	-	< 0.05
Furalaxyl	mg/kg	< 0.03	-	-	-	< 0.03
Haloxyfop-methyl	mg/kg	< 0.06	-	-	-	< 0.06
Hexaconazole	mg/kg	< 0.06	-	-	-	< 0.06
Hexazinone	mg/kg	< 0.03	-	-	-	< 0.03

Sample Type: Soil						
Sample Name:		Faringdon 6 - 0.1m 18-Jul-2013	Observatory 1 - 0.1m 18-Jul-2013	Observatory 2 - 0.1m 18-Jul-2013	Observatory 3 - 0.1m 18-Jul-2013	Dup 1m 18-Jul-2013
Lab Number:		1157919.11	1157919.13	1157919.15	1157919.17	1157919.19
Organonitro&phosphorus Pesticides Screen in Soil by GCMS						
IPBC (3-Iodo-2-propynyl-n-butylcarbamate)	mg/kg dry wt	< 0.3	-	-	-	< 0.3
Iprodione	mg/kg	< 0.3	-	-	-	< 0.3
Kresoxim-methyl	mg/kg	< 0.03	-	-	-	< 0.03
Linuron	mg/kg	< 0.06	-	-	-	< 0.06
Malathion	mg/kg	< 0.06	-	-	-	< 0.06
Metalaxyl (Mefenoxam)	mg/kg	< 0.06	-	-	-	< 0.06
Methamidophos	mg/kg	< 0.3	-	-	-	< 0.3
Metolachlor	mg/kg	< 0.05	-	-	-	< 0.05
Metribuzin	mg/kg	< 0.06	-	-	-	< 0.06
Molinate	mg/kg	< 0.12	-	-	-	< 0.12
Myclobutanil	mg/kg	< 0.06	-	-	-	< 0.06
Naled	mg/kg	< 0.3	-	-	-	< 0.3
Norflurazon	mg/kg	< 0.12	-	-	-	< 0.12
Oxadiazon	mg/kg	< 0.06	-	-	-	< 0.06
Oxyfluorfen	mg/kg	< 0.03	-	-	-	< 0.03
Paclobutrazol	mg/kg	< 0.06	-	-	-	< 0.06
Parathion-ethyl	mg/kg	< 0.06	-	-	-	< 0.06
Parathion-methyl	mg/kg	< 0.06	-	-	-	< 0.06
Pendimethalin	mg/kg	< 0.06	-	-	-	< 0.06
Permethrin	mg/kg	< 0.03	-	-	-	< 0.03
Pirimicarb	mg/kg	< 0.06	-	-	-	< 0.06
Pirimiphos-methyl	mg/kg	< 0.06	-	-	-	< 0.06
Prochloraz	mg/kg	< 0.3	-	-	-	< 0.3
Procymidone	mg/kg	< 0.06	-	-	-	< 0.06
Prometryn	mg/kg	< 0.03	-	-	-	< 0.03
Propachlor	mg/kg	< 0.06	-	-	-	< 0.06
Propanil	mg/kg	< 0.2	-	-	-	< 0.2
Propazine	mg/kg	< 0.03	-	-	-	< 0.03
Propiconazole	mg/kg	< 0.05	-	-	-	< 0.05
Pyriproxyfen	mg/kg	< 0.06	-	-	-	< 0.06
Quizalofop-ethyl	mg/kg	< 0.06	-	-	-	< 0.06
Simazine	mg/kg	< 0.06	-	-	-	< 0.06
Simetryn	mg/kg	< 0.06	-	-	-	< 0.06
Sulfentrazone	mg/kg	< 0.3	-	-	-	< 0.3
TCMTB [2-(thiocyanomethylthio) benzothiazole,Busan]	mg/kg dry wt	< 0.12	-	-	-	< 0.12
Tebuconazole	mg/kg	< 0.06	-	-	-	< 0.06
Terbacil	mg/kg	< 0.06	-	-	-	< 0.06
Terbufos	mg/kg	< 0.06	-	-	-	< 0.06
Terbumeton	mg/kg	< 0.06	-	-	-	< 0.06
Terbuthylazine	mg/kg	< 0.03	-	-	-	< 0.03
Terbuthylazine-desethyl	mg/kg	< 0.06	-	-	-	< 0.06
Terbutryn	mg/kg	< 0.06	-	-	-	< 0.06
Thiabendazole	mg/kg	< 0.3	-	-	-	< 0.3
Thiobencarb	mg/kg	< 0.06	-	-	-	< 0.06
Tolylfluanid	mg/kg	< 0.03	-	-	-	< 0.03
Triazophos	mg/kg	< 0.06	-	-	-	< 0.06
Trifluralin	mg/kg	< 0.06	-	-	-	< 0.06
Vinclozolin	mg/kg	< 0.06	-	-	-	< 0.06

Sample Name:		Dup 2m 18-Jul-2013				
Lab Number:		1157919.20				
Individual Tests						
Total Recoverable Lead	mg/kg dry wt	34	-	-	-	-

SUMMARY OF METHODS

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively clean matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Samples
Environmental Solids Sample Preparation	Air dried at 35°C and sieved, <2mm fraction. Used for sample preparation. May contain a residual moisture content of 2-5%.	-	1, 3, 5, 7, 9, 11, 13, 15, 17, 19-20
Organochlorine/nitro&phosphorus Pest.s Screen in Soils, GCMS	Sonication extraction, Dilution cleanup, GC-MS analysis. Tested on as received sample	-	1, 3, 5, 7, 9, 11, 19
Dry Matter (Env)	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. US EPA 3550. (Free water removed before analysis).	0.10 g/100g as rcvd	1, 3, 5, 7, 9, 11, 19
Total Recoverable digestion	Nitric / hydrochloric acid digestion. US EPA 200.2.	-	1, 3, 5, 7, 9, 11, 13, 15, 17, 19-20
Total Recoverable Arsenic	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	2 mg/kg dry wt	1, 3, 5, 7, 9, 11, 19
Total Recoverable Copper	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	2 mg/kg dry wt	1, 3, 5, 7, 9, 11, 19
Total Recoverable Lead	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	0.4 mg/kg dry wt	1, 3, 5, 7, 9, 11, 13, 15, 17, 19-20

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Samples are held at the laboratory after reporting for a length of time depending on the preservation used and the stability of the analytes being tested. Once the storage period is completed the samples are discarded unless otherwise advised by the client.

Graham Corban MSc Tech (Hons)
Client Services Manager - Environmental Division

At Golder Associates we strive to be the most respected global company providing consulting, design, and construction services in earth, environment, and related areas of energy. Employee owned since our formation in 1960, our focus, unique culture and operating environment offer opportunities and the freedom to excel, which attracts the leading specialists in our fields. Golder professionals take the time to build an understanding of client needs and of the specific environments in which they operate. We continue to expand our technical capabilities and have experienced steady growth with employees who operate from offices located throughout Africa, Asia, Australasia, Europe, North America, and South America.

Africa	+ 27 11 254 4800
Asia	+ 86 21 6258 5522
Australia & NZ	+ 61 3 8862 3500
Europe	+ 356 21 42 30 20
North America	+ 1 800 275 3281
South America	+ 55 21 3095 9500

solutions@golder.com
www.golder.com

AUCKLAND

Tel +64 9 486 8068
Fax +64 9 486 8072

Level 2
Nielsen Centre
129 Hurstmere Road
Takapuna
Auckland 0622

PO Box 33-849
Takapuna 0740

TAURANGA

Tel +64 7 928 5335
Fax +64 7 928 5336

78 Maunganui Road
Tauranga 3116

PO Box 13611
Tauranga Central
Tauranga 3141

HAMILTON

Tel +64 7 859 2356
Fax +64 9 486 8072

Room 31 in the Homestead
Ruakura Research Centre
10 Bisley Road
Hamilton 3214

PO Box 19-479
Hamilton 3244

NELSON

Tel +64 3 548 1707
Fax +64 3 548 1727

Level 3
295 Trafalgar Street
Nelson 7010

PO Box 1724
Nelson 7040

CHRISTCHURCH

Tel +64 3 377 5696
Fax +64 3 377 9944

Level 1
214 Durham Street
Christchurch 8011

PO Box 2281
Christchurch 8140

DUNEDIN

Tel +64 3 479 0390
Fax +64 3 474 9642

Level 9A
John Wickliffe House
265 Princes Street
Dunedin 9016

PO Box 1087
Dunedin 9054

Golder Associates