



**Pearson Road, Cromwell  
Preliminary Site  
Investigation**

**River Terrace  
Developments Ltd**

*September 2017*



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Preliminary Site Investigation**

**Document Status**

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## Executive Summary

River Terrace Developments Ltd is seeking a private plan change to the Operative Central Otago District Plan to rezone land on Pearson Road, Cromwell to support residential development. In order to assess the suitability of the site for residential activity, River Terrace Developments Ltd commissioned e3Scientific Limited (e3s) to undertake a Preliminary Site Investigation (PSI) to review the landuse history of the site, identify any potential contaminant risks and determine the need for any further investigation.

The PSI has identified that the majority of the site has only been used for extensive pastoral activity and it is highly unlikely this activity has impacted the soil quality to a level that would present a risk to residential activity.

The PSI has identified some isolated areas of heavy metal contamination associated with the miners residence and 'concrete feature' that will require further investigation and management. Furthermore, some additional investigation of the firewood processing yards will be required to confirm these areas are fit for residential activity. Based on the findings of the PSI, further targeted investigation will be required to confirm the activity status of residential development under the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulation 2011.



# 1 Introduction

## 1.1 Purpose

River Terrace Developments Ltd is seeking a private plan change to the Operative Central Otago District Plan to rezone land on Pearson Road, Cromwell from Rural Resource Area and Rural Residential zoning to Residential. Approval of the plan change would allow a change of landuse to residential activity. In order to assess the suitability of the sites soils for residential activity, River Terrace Developments Ltd commissioned e3Scientific Limited (e3s) to undertake a Preliminary Site Investigation (PSI) to review the landuse history of the site, identify any potential contaminant risks and determine the need for any further investigation.

e3Scientific's experience in the provision of contaminated land services is provided in Appendix A.

## 1.2 Scope of Work

The scope of work completed during the PSI included the following:

- Review of land use history including a review of historic certificate of titles, aerial photographs and interviews with the current owner of the property.
- Review of the existing physical environment.
- Completion of a visual site inspection to examine the condition of the site.
- Analysis of soils with an X-Ray Fluorescence (XRF) instrument to provide an indication of trace metal concentrations in soils adjacent to historic structures on the site including the miners residence and small milking shed. The XRF was also employed to review background trace metal concentrations near the miners residence and milking shed.
- Development of a conceptual site model for the site based on research into the activities undertaken on the site and the proposed landuse.
- Based on conceptual site model, consideration of risks to human health and the activity status of residential activity under the National Environmental Standard for contaminated soil (NESCS).
- Preparation of a Preliminary Site Investigation report in accordance with the requirements of the Contaminated Land Management Guidelines (CLMG) No. 1 (Ministry for the Environment, 2003a).



### 1.3 Limitations

The findings of this report are based on the Scope of Work outlined above. e3 Scientific Limited (e3s) performed the services in a manner consistent with the normal level of care and expertise exercised by members of the environmental science profession. No warranties, express or implied, are made. Subject to the Scope of Work, e3s's assessment is limited strictly to identifying the risk to human health based on the historical activities on the site. The confidence in the findings is limited by the Scope of Work.

The results of this assessment are based upon site inspections conducted by e3s personnel, information from interviews with people who have knowledge of site conditions and information provided in previous reports. All conclusions and recommendations regarding the properties are the professional opinions of e3s personnel involved with the project, subject to the qualifications made above. While normal assessments of data reliability have been made, e3s assumes no responsibility or liability for errors in any data obtained from regulatory agencies, statements from sources outside e3s, or developments resulting from situations outside the scope of this project.



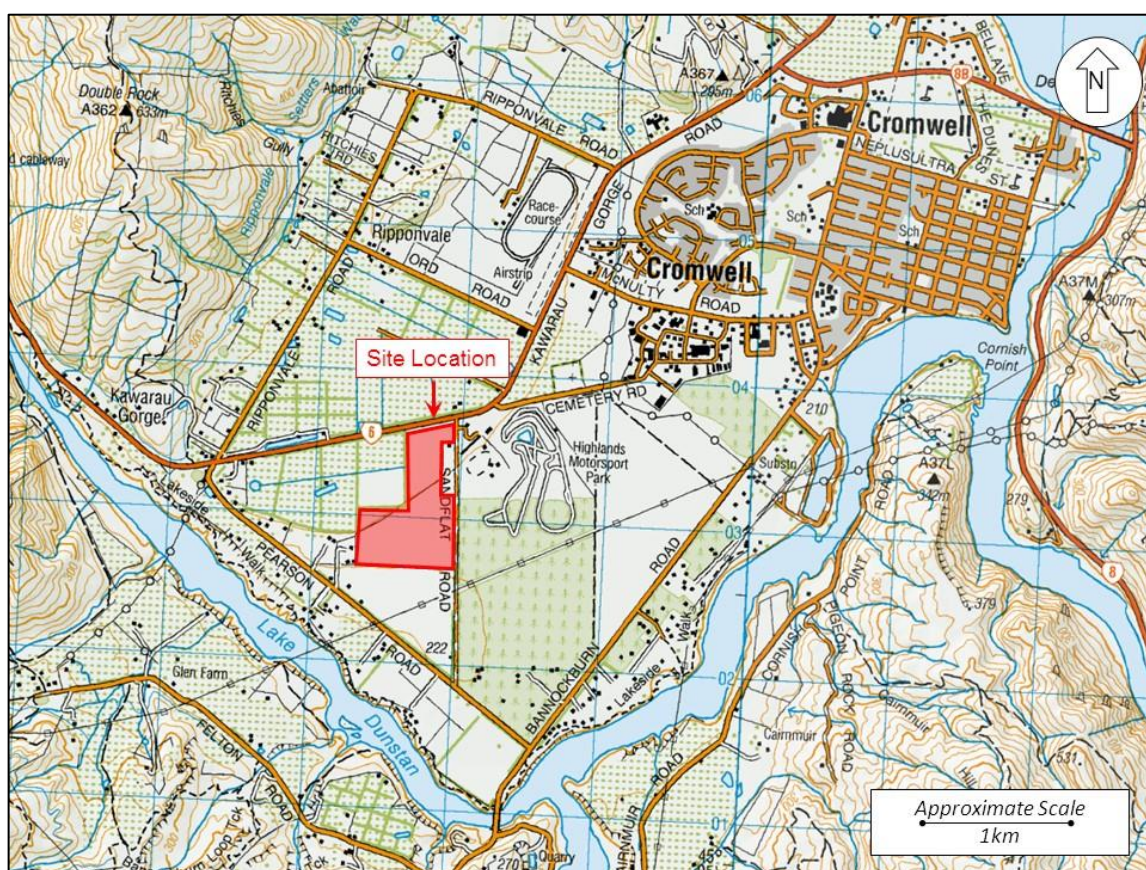
## 2 Site Location and Description

### 2.1 Site Location

The site is located at Pearson Road, Cromwell (see Figure 1).

The site under investigation is approximately 49 hectares and is legally described as PT Sec 24 Blk I Cromwell SD and Sec 28 Blk I Cromwell SD. Under the Operative Central Otago District Planning maps, the site is zoned Rural Resource Area. Sec 28 Blk I Cromwell SD and the southern section of PT Sec 24 Blk I Cromwell SD is included as being part of Rural Residential zoning under rule 4.7.2 (ii).

Central coordinates for the site are: N 5003069 E 1297732 (NZMT).



**Figure 1: Site location**





## 2.2 Site History

The history of the site has been determined from:

- a review of historical certificate of titles (provided in Appendix B);
- interview with current land owner;
- historical aerial photography;
- property files at the Central Otago District Council (CODC); and,
- information provided by Otago Regional Council.

A review of historic titles for each section was completed and summarised below.

### *History for Pt Sec 24*

The earliest documented record is from an 1880 survey map (3821) which shows William Bennett's name on the subject land. There is a water race cutting through the centre of the block in this map. Another larger survey map (SO369) shows both sections being held by James Horn. The date of this map is uncertain, but likely annotated in the early 20th century. Two water races are shown in pencil crossing the lower block. The earliest CT (OT125/196) available for the northern block is 1897, under James Horn's name. He is listed on the title as a Bannockburn Storekeeper, but was probably running stock on the land. The land appears to have stayed in the Horn family until the title is cancelled in 1963. The new title (OTB2/230) is issued to Otto Muller. He is listed as a Christchurch Sale Representative. The water race is also mentioned on the title. A prospecting licence for mining was granted to Graham John Grant in 1982 for three years, and subsequently renewed. The land stayed in the Muller family when a new CT was issued in 1994 (OT16A/611) where  $\frac{1}{4}$  shares are given to Peter, Marc, Kathrina Muller and Susanna Hanson.

### *History for Sec 28, Block 1*

The southern block is shown on the larger survey map (SO369), as well as a survey map drawn in 1882 (SO3828). Two water races are marked on this survey plan. The earliest CT found (OT160/271) is dated 1907, and shows James Horn owned the block. The land has the same history as above, with the prospecting license also noted on the title. A new title was issued in 1982 to Muller (OT7D/1155) listed as a Cromwell Farmer. A transfer was completed in 1991 where  $\frac{1}{4}$  shares are given to Peter, Marc, Kathrina Muller and Susanna Hanson.



e3Scientific (e3s) completed interviews with current owner Susanna Hanson and previous owner, her father Otto Muller. The following details were confirmed:

Since 1963, the family have leased the site for light grazing of sheep and cattle, leased to Alpine Resources (water bottling plant) and currently lease to fire wood companies. Other than the storage of orchard nets, no orchard activities have occurred on the site with Otto Muller focusing his orchard activity on the property south of Pearson Rd. The Muller family completed rabbit control on the site however conversations with Mrs Hanson revealed that poison is not used and instead a contractor is engaged to shoot rabbits. The Otago Regional Council Rabbit Board is thought to have also completed rabbit control and may have used the poison Pindone. Mrs Hanson informed us that to her knowledge, the site has not been intensively used for agricultural purposes and the site has not contained stock yards, a sheep dip, fuel storage or received regular applications of superphosphate during her family ownership.

Cromwell has a long history of gold mining with some historic mining focused along the Kawarau River south of the site prior to the Clyde dam development. Mr Muller recalls the site containing a miners residence and the foundation of this hut is still present today. To Mr Muller's knowledge, no mining of minerals has occurred on the site. This may have been due to the area having trouble with groundwater flooding mine shafts.

Mr Muller confirmed that pesticide DDT has not been applied to the site and considers the land to have strong potential for organic certification with the only known risk being contamination from nonorganic herbicides used by the neighbouring orchard. We consider spray drift from the neighbouring orchard is unlikely to have impacted soils given the mature pine tree shelter belt present on the property boundary.

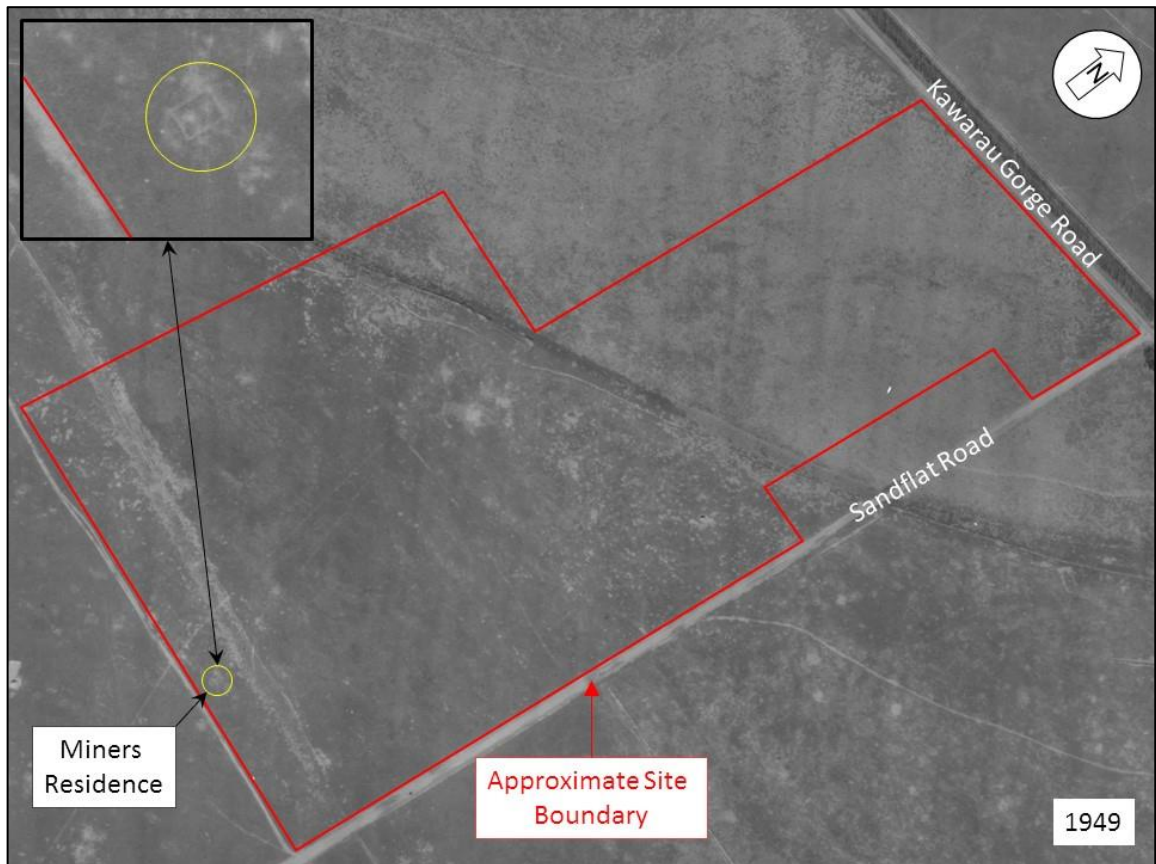
Mr Muller mentioned that Highlands Motorsport Park use the site for customer parking during event days which range between 15-20 days per annum for the last three years.

Two historic aerial photographs from 1949 and 1968 were obtained to support the review of the landuse history of the site. The aerial photographs are provided in Plates 1 and 2 and our interpretation of the photographs is set out below.



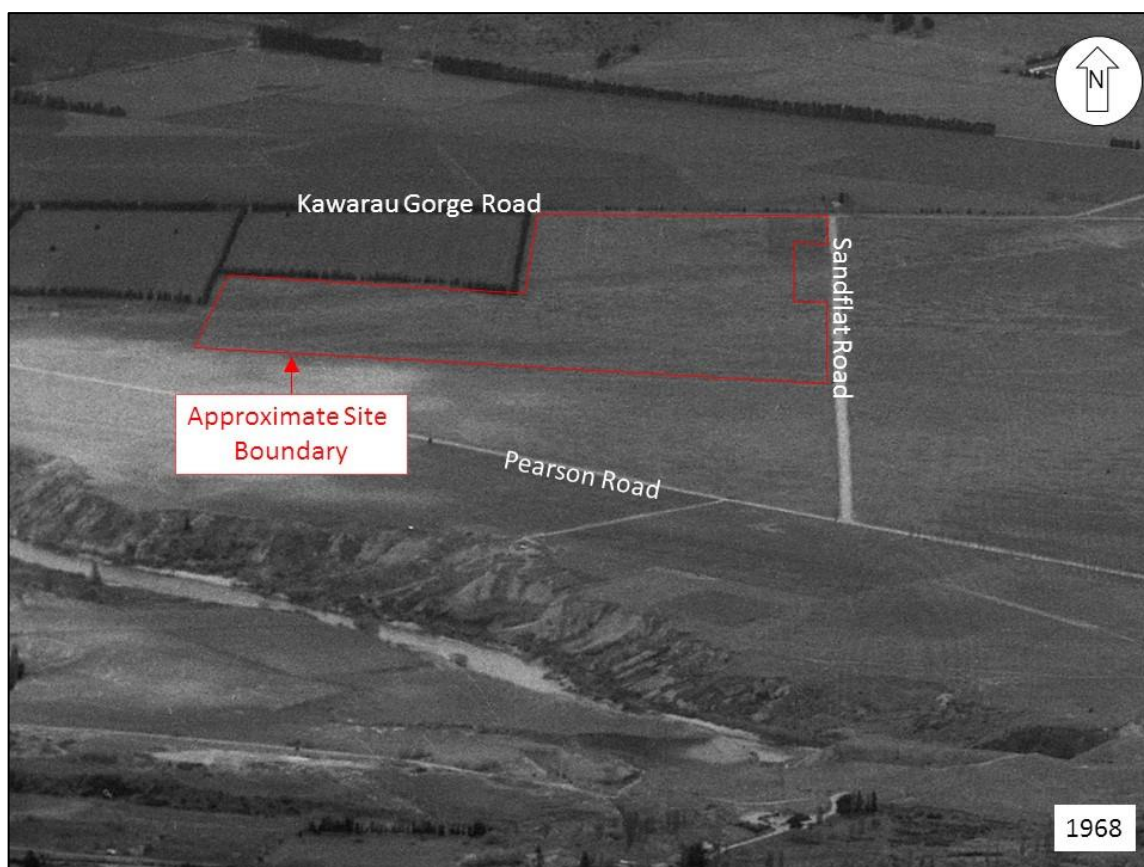
1949- The site appears to be covered in pasture and the only visible feature is the miners residence foundation. The neighbouring orchard was not established at this time.

1968- The site appears to be vacant or in an extensive pastoral farming landuse. The neighbouring orchard to the west has been established and shelter belt trees have been planted.



**Plate 1: 1949 Historic Aerial**





**Plate 2: 1968 Historic Aerial**

A Land Information Memorandum (LIM) was obtained for both parcels of land. A copy of the LIMs can be found in Appendix C. No resource of building consents, permits or compliance schedules are recorded on the LIMs. e3Scientific requested a list of resource consents held for the site from the CODC. The only resource consent provided was RC940315 dated 1994. The consent is situated on land parcel Pt Sec 24 Blk I Cromwell SD and is for the 'creation of an allotment for extraction of water from a bore and bottling water'.

## 2.3 Additional Site Information

The CLMG No 1 requires information associated with fuel storage facilities, spill loss history, recorded discharges and onsite and offsite disposal locations. e3s requested a search of the Otago Regional Council (ORC) records for Landuse and Site Contamination Status, Resource Consents, and Resource Management Act (RMA) incidents for the site. The ORC stated that:

'The above land does not currently appear on the database'



The following list provides a summary of additional information that the CLMG No. 1 (Ministry for the Environment, 2003a) indicates should be included in a site investigation report:

- Presence of drums – Empty drums were found on firewood lease holder sites with some containers containing hypochlorite solution (disinfectant) found on firewood yard 1. The containers were in good condition and there were no visible signs of staining.
- Wastes – Some organic waste was observed next to the firewood operation and was being burnt. Household rubbish items were also stockpiled on one of the firewood sites and some rubbish mixed amongst burning material. One of the firewood yards included old paint tins.
- Fill materials – No fill materials were encountered on the site.
- Odours – The only odour on the site was associated with the burning waste piles on the firewood sites.
- Flood risk – The site is not located in a flood hazard area.
- Surface water quality – No surface water was observed on site.
- Site boundary condition – The entire property is stock fenced with wire and post.
- Visible signs of contamination – No visible signs of contamination.
- Local sensitive environments – The nearest sensitive environment is Lake Dunstan located approximately 450 m southwest of the southern boundary.

## 2.4 Site Condition and Surrounding Land Uses

The following is a description of current activities on and surrounding the site and a description of historic features found during the site inspection.

Activities surrounding the site include the following:

- Highlands Motorsport Park situated on the east side of sandflat road.
- A residential house and Alpine water complex is situated between the east boundary of the site and Sandflat road.
- Neighbouring to the north and south is pasture.
- Lifestyle residential properties are present to the southwest of the site.
- Jones Orchard is located west of the northern half of the site and includes a large pine shelterbelt as the boundary.



Neighbouring activities which are considered HAIL activities include the Jones Orchard operation. Orchards are known to use a range of pesticides and herbicides. However, a mature pine shelter belt is present along the property boundary and will mitigate the risk of spray drift and subsequent effects to the soil quality of the site. An empty IBC container was found at the northern end of the site adjacent to Jones Orchard with a label describing the contents as 'Plus Organic spray oil' with active ingredient being mineral oil in the form of an emulsifiable concentrate.

The residential house situated between the east boundary of the site and Sandflat Road included numerous parked cars. At the time of the site walkover the cars appeared to be kept within the residential property's boundary and were not parked on the subject site. A hedge is present between the parked cars and the subject site.

e3Scientific completed a site inspection focusing on potential historic and current HAIL activities. Details of current site activities and historic features found during the site visit are summarised below.

#### *R&R Hiab*

R&R Hiab service have a yard located in the southeast corner of the site and established their yard under a year ago. The yard consists mostly of shipping containers and heavy vehicle parking. The yard also includes office portacoms, storage of construction goods and a small amount of fuel for machinery. There was no visible contamination noted during the site walkover. They do not conduct maintenance or workshop activities at their yard.

#### *Firewood Operators*

The site appeared to have four separate firewood operations located along the southern half of the eastern boundary. The location of the four firewood processing operations is shown in Figure 2 and described below.

Firewood yard 1 included the storage of hypochlorite solution (disinfectant) in 25 Litre containers, empty digester decomposer activator containers, empty 50 gallon drums, paint pots and approximately 12 1 metre length treated timber fence posts. Digester decomposer activator ingredients include fermented extracts, mineral salts and other nonhazardous ingredients. The yard also included piles of household waste consisting of bicycle wheels, an old television, number 8



wire, plastic netting, sheet plastic, cloth, electrical cord, empty aerosol cans, old furniture, stereo speakers, vehicle tyres and plastic buckets. The yard included stacks of wood awaiting processing and a burning pile which mostly contained organics however there was evidence of non-organic material being burnt and present was a slight burnt plastic odour.

A warning sign was attached to the entrance of the site stating that the poison Pindone will be present on the site from 11/06/2017. The MSDS for Pindone describes the persistence and degradability as 'the product is biologically degradable and will not accumulate in soil or water' and as being 'soluble in water'. The Pindone MSDS can be viewed in Appendix D. Photos of the yard are provided in Plate 3.

Firewood yard 2 included the storage of empty 50 gallon drums, cut firewood and wood to be processed, a tractor, an excavator, a shipping container and a chicken coop. A burning pile located 20 metres west of the yard included organic waste, wooden pellets, a wooden cable drum with plastic and tin paint cans. A site walkover of the operation was completed, and no visible contamination was found. The lease holder informed e3s staff that he tries to minimise the amount of fuel he has on site at one time and typically only has enough to keep his small digger operating. The lease holder has been operating on this site for approximately 9 years. Photos of the yard are provided in Plate 4.

Firewood yard 3 includes mostly wood awaiting processing and some scrap metal (including empty 50-gallon drums). A camper bus and two cars were also present at the time of the site inspection. The yard also includes a drum for burning material. A photo of the yard is provided in Plate 5.

Firewood yard 4 includes logs awaiting firewood processing. A photo of the yard is provided in Plate 6.

Location of burning piles present during the site inspection are marked on Figure 2 with a X.

The site inspection also noted a small motocross course present on the site (see Figure 2).



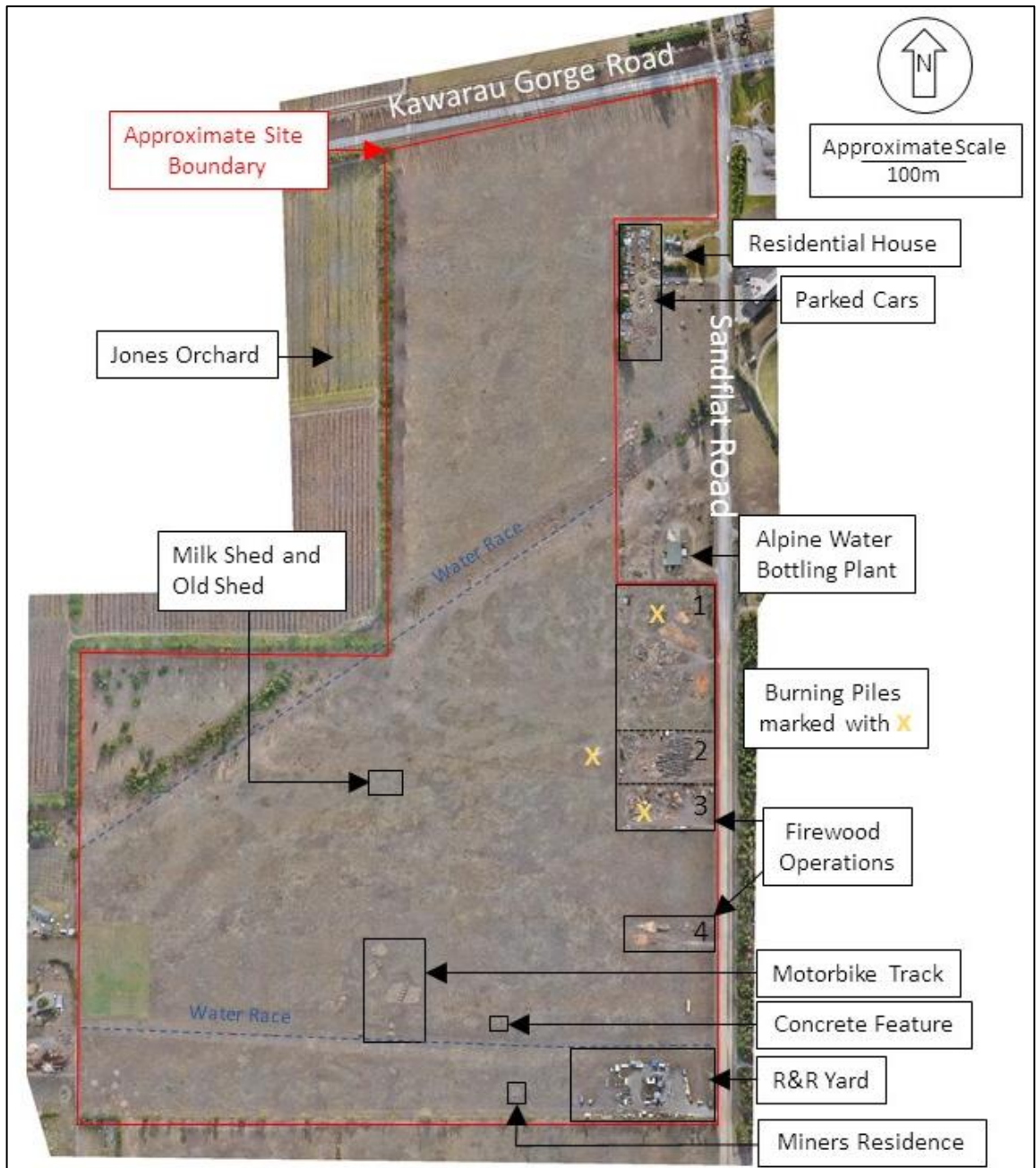


Figure 2: Site Location Plan







**Plate 3: Contents found on firewood yard 1 and burning pile**



**Plate 4: Firewood Yard 2 and burning pile**





**Plate 5: Firewood Yard 3**



**Plate 6: Firewood Yard 4**



The site also includes historic features which are summarised below.

The site includes two historic water races, one located at the southern end of the site and aligned east-west. The second race is located in the centre of the site and aligned northeast-southwest.

The foundations of a historic dairy shed and what appears to be an old storage shed, possibly an old pump shed, are found to the south of the centre of the site. The dairy shed consists of a concrete pad with a drain for effluent. The adjacent shed includes a concrete foundation and remnants of corrugated iron. In between the two features is some schist masonry. Just south of the foundations were two poles which appear to have a wire attached to them suggesting it was once a powerline (see Plate 7).

Next to the southern site boundary is the foundation of a former miner's residence which age is probably circa 1920. Houses of this time were often built using lead pipes and fittings as well as being painted with lead paint. The foundation is approximately 9 by 9 meters in size. See Plate 8 for a photo of the foundation.

North of the miner's residence is two concrete blocks which have an unknown use. This site is marked as 'concrete feature' on Figure 2. The blocks appear to have been part of a larger structure. See Plate 9 for a photo of the concrete blocks.





**Plate 7: Old shed foundation and possible Powerline**



**Plate 8: Former miner's residence**





**Plate 9: Concrete feature north of miner's residence**



## 2.5 Geology

Based on the 1:250,000 Geological Map of Wakatipu the geology of the site consists of a fill and associated outwash gravels, both slightly weathered, in main catchments; contemporaneous fan gravels and alluvium in non-glaciated catchments (Turnbull, I.M, 2000).

## 2.6 Hydrogeology and Hydrology

The site investigation did not include a groundwater assessment. The ORC holds records for 18 wells located within 1 km of the subject site. A map of these bores is provided in Appendix E. Bore uses are summarised below.

- Six bores for domestic use.
- Three bores for irrigation.
- Three bores for domestic use and irrigation.
- One bore for geological investigation.
- One bore for irrigation and stock water.
- Four bore uses are unknown.

No surface waters were noted within the subject site.



## 3 XRF Investigation

### 3.1 XRF Data

e3scientific utilised an X-ray Fluorescence instrument (XRF) during the site inspection to assess heavy metal levels in the vicinity of the historic buildings encountered on the site. Given the age of the buildings it was likely that the buildings contained materials such as lead and zinc fittings and lead paint which have the potential to impact soil quality.

The XRF was used on surface soils adjacent to the miners residence, the concrete feature to the south of the miners residence, old storage shed/pump shed, the milking shed and from two locations removed from the features to gain an understanding of heavy metal background concentrations.

For the purposes of the investigation, residential landuse guidelines were adopted as a reference for the XRF readings. We note that readings from the XRF have only been used as an indication for potential contamination and soil laboratory analysis will be required to support the XRF results.

Table 1 presents the XRF readings for zinc, arsenic and lead. All other heavy metals were detected at levels that are most likely representative of background levels and not reported further.

In summary, the results show the following:

#### *Miners Residence*

- Lead concentrations detected in the 11 sample locations exceed the NESCS soil contaminant standard of 210 mg/kg.
- Arsenic concentrations detected in 5 of the 11 sample locations exceed the NESCS soil contaminant standard of 20 mg/kg.
- Zinc concentrations detected in the 11 sample locations range from 369 ppm to 3204 ppm and are all elevated above background levels but are below the adopted soil guideline value.



### *Concrete Feature*

- Lead concentrations were detected above background levels in two of the six sample locations and exceed the NESCS soil contaminant standard in one sample location.
- Arsenic concentrations detected in all six sample locations were slightly elevated above background levels but below the NESCS soil contaminant standard.
- Zinc concentrations detected at all sample locations were elevated above background levels but below the adopted soil guideline value.

### *Old Storage Shed and Dairy Shed*

- Lead and zinc concentrations detected at the four sample locations were elevated above background levels but below adopted soil guideline values.





**Table 1: XRF results for zinc arsenic and lead (ppm)**

Location ID	Reading ID	Zn Concentration	As Concentration	Pb Concentration
Miners Residence	1	952	0	636
	1	826	17	550
	2	1036	20	353
	2	920	18	358
	3	1615	69	621
	3	2703	67	2101
	4	590	15	1111
	4	369	53	572
	5	408	43	709
	6	3204	0	4958
	7	594	36	688
Concrete Feature	1	133	11	31
	1	156	12	35
	2	79	11	37
	3	291	15	151
	3	309	15	274
	4	110	8	46
Old Storage Shed	1	513	11	171
	2	668	12	118
Dairy Shed	1	280	12	62
	2	105	8	47
Background	1	45	7	18
	2	55	8	13
Guideline		7400 <sup>1</sup>	20 <sup>2</sup>	210 <sup>2</sup>
<sup>1</sup> National Environment Protection Council 2013 (1999) Vol #2 Schedule B(i)Guideline on the Investigation Levels for Soil and Groundwater. <sup>2</sup> Ministry for the Environment Users Guide 2012 National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health Appendix B: Soil contaminant standards. <b>Shading</b> denotes guideline exceedance.				



## 4 Conceptual Site model

### 4.1 Risk to Human Health

The risk to human health from exposure to contaminants depends on the contaminant toxicity, concentration and the length of exposure time, and type of the exposure pathway. To account for the range of exposure scenarios, the NESCS risk based soil contaminant standards have been derived for five standard landuse scenarios (NESCS, 2012). These landuse scenarios are presented in Table 2. For the purpose of the PSI the standard 'Residential' landuse scenario has been adopted to characterise the proposed landuse activity associated with the proposed plan change.

**Table 2: NESCS Landuse Scenarios**

Scenario	Description
Rural / lifestyle block	Rural residential land use, including home-grown produce consumption (25 per cent). Applicable to the residential vicinity of farm houses for protection of farming families, but not the productive parts of agricultural land.  Note: Consumption of eggs, milk and meat from animals raised on site is excluded. Produce consumption is limited to home-grown vegetables. Sites for which consumption of home-grown eggs, milk or meat is important will need to be evaluated on a site-specific basis.
Residential	Standard residential lot, for single dwelling sites with gardens, including home- grown produce consumption (10 per cent).
High-density residential	Urban residential with limited soil contact, including small ornamental gardens but no vegetable garden (no home-grown produce consumption); applicable to urban townhouses, flats and ground-floor apartments with small ornamental gardens, but not high-rise apartments.
Parks / recreational	Public and private green areas and reserves used for active sports and recreation. This scenario is intended to cover playing fields and suburban reserves where children play frequently. It can also reasonably cover secondary school playing fields but not primary school playing fields.
Commercial / industrial outdoor worker (unpaved)	Commercial / industrial site with varying degrees of exposed soil. Exposure of outdoor workers to near-surface soil during routine maintenance and gardening activities with occasional excavation as part of maintaining subsurface utilities (i.e., a caretaker or site maintenance personnel). Also conservatively applicable to outdoor workers on a largely unpaved site.



#### 4.1.1 Potential contaminant sources

Table 3 presents a list of potential and known contaminants (based on XRF analysis) associated with the landuse activities that have occurred on the site and adjacent properties.

**Table 3: List of activities and associated contaminants**

Activity/Property Feature	Associated Contaminants
Jones Orchard	Arsenic, lead, copper, mercury, wide range of organic compounds including acidic herbicides and organophosphates
Broad acre application of agrichemicals	Cadmium and persistent organic pesticides such as DDT
Firewood Yards (storage of waste and the burning of wood and wastes)	Range of heavy metals, petroleum hydrocarbons and Semi Volatile Organic Compounds (SVOCs) such as polycyclic aromatic hydrocarbons associated with the burning of tyres and other waste
Miners Residence, Storage Shed/ Pump Shed, Concrete Feature	Arsenic, lead and zinc from the use of lead paint and building materials

##### *Jones Orchard*

Jones Orchard is separated from the site by a large pine shelterbelt which is likely to be very effective at preventing any spray drift entering the site. Therefore, e3scientific considers it is unlikely herbicides sprayed onto the orchard would have impacted the soil quality of the site.

##### *Pastoral Farming*

Pastoral farming that has occurred on the site may have included the application of persistent pesticides and superphosphate. Mr Muller confirmed the site has a light history of superphosphate use and applications of DDT did not occur. Prior to Mr Mullers ownership applications of superphosphate at that time were uncommon. Further, e3scientific has completed a number of investigations on Otago and Southland pastoral land that have shown heavy metal and persistent pesticide accumulation in surface soils is limited. The only areas on farms where these contaminants have been found to be problematic are near sheep dips, sheep yards and in and around farm storage sheds. Based on the above e3scientific concludes the application of agrichemicals onto the site (if this did occur) would not result in contaminant levels that would present a risk to residential activity.



### *Firewood Yards*

The firewood yards have potential to impact the sites soils through the storage of waste (namely areas of burning waste material and the storage of paint tins and household waste). Contaminants associated with this activity include a range of heavy metals and organic contaminants such as petroleum hydrocarbons and are likely to be detected as hotspots across the yards.

### *Historical Buildings*

The XRF analysis shows the materials utilised in the construction of the miners residence have impacted the soils within and surrounding the miners residence. The heavy metals lead and arsenic are at levels that exceed the NESCS risk based soil contaminant standards.

Soils adjacent to other historical buildings on the site were also found to contain elevated heavy metal levels but at much lower concentrations.

### *Contaminant Source Summary*

In summary, the PSI as found that contaminants present or possibly are present are confined to the firewood yards and near the historic buildings.

## 4.1.2 Potential Pathways and Receptors

The proposed residential landuse of the site would result in people being exposed to soils through the following pathways:

- Dermal exposure by inhabitants playing outside and gardening.
- Inhalation of dust.
- Soil ingestion through children playing in gardens, and people eating without washing hands.
- Consumption of produce grown in the soil.

The PSI has identified some isolated, relatively small areas of impacted soil in the vicinity of the miners residence and 'concrete feature'. Residential development on this land could present a risk to inhabitants and this soil will require management to mitigate the risk to human health. The soil on the firewood yards may also have been impacted and will require some additional detailed investigation to confirm the soils are fit for residential activity.



Notwithstanding the above, e3scientific considers that it is highly unlikely there is a risk to human health from the residential development of most of the land.



## 5 Areas Requiring Further Investigation

The PSI has identified areas which may have impacted soil quality due to historic and recent activity. To ensure the suitability of the proposed residential landuse, a Detailed Site Investigation (DSI) should be focused on the following areas:

- Firewood yards including burning piles for heavy metal and hydrocarbon concentrations; and,
- Historic Building sites for heavy metal concentrations, namely lead and zinc.

Figure 3 presents the above locations on the site.



**Figure 3: Areas Requiring a Detailed Site Investigation**



## 6 Summary and Conclusions

Based on the findings of this investigation, the following conclusions are made:

- River Terrace Developments Ltd is seeking a private plan change to the Central Otago District Plan to rezone land on Pearson Road, Cromwell to support residential development.
- The PSI has identified that the landuse history of the site has been predominantly pastoral in nature. There is a former miners residence on the site however there is no evidence of mining activity on the property.
- Activities that have occurred on and adjacent to the site that could impact soil quality include Jones Orchard, firewood yards and historic buildings.
- Jones Orchard has been ruled out as a potential activity that could impact soil quality due to the presence of the established pine tree hedgerow.
- The XRF analysis in vicinity of the miners residence and 'concrete feature' shows materials utilised in the construction of these buildings have impacted soils with lead and arsenic within and adjacent to these features.
- The firewood processing yards have used petroleum hydrocarbons for the maintenance and operations of machines on the site. Furthermore, stockpiles of burnt rubbish were present on these sites that may have burnt a wide range of waste with the potential to contaminate soils.

The PSI has identified some isolated areas of heavy metal contamination associated with the miners residence and 'concrete feature' that will require further investigation and management. Furthermore, some additional investigation of the firewood processing yards will be required to confirm these areas are fit for residential activity. Based on the findings of the PSI, further targeted investigation will be required to confirm the activity status of residential development under the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulation 2011.



## 7 References

- Ministry for the Environment. (2003a). *Contaminated Land Management Guidelines No. 1: Reporting on Contaminated Sites in New Zealand (revised 2011)*. Wellington: Ministry for the Environment.
- Ministry for the Environment. (2004). *Contaminated Land Management Guidelines Schedule B: Hazardous Activities and Industries List (HAIL) with Hazardous Substances*. Wellington.
- NESCS. (2012). *Users' Guide: National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health*. Wellington: Ministry for the Environment.
- Turnbull, I.M. (2000). *Geology of the Wakatipu area*. Lower Hutt, New Zealand. Institute of Geological & Nuclear Sciences Limited: Institute of Geological & Nuclear Sciences 1:250 000 geological map 18. 1 sheet + 72 p.





## **Appendices**

**Appendix A:**

**e3Scientific Limited Contaminated Land Experience**



## ***Contaminated Land Services***

e3Scientific is a New Zealand owned and operated environmental science consultancy. Our team deliver technical, innovative science; practical solutions; and expert advice to assist our clients in the smart management of the environment.

e3Scientific provides a range contaminated land services, including:

- Due Diligence Investigations.
- Preliminary Site Investigations.
- Detailed Site Investigations.
- Soil and groundwater remedial advice and management.

Our Contaminated Land Team has a sound understanding of New Zealand's regulatory environment with respect to the assessment and management of contaminated land and has been a major supplier of contaminated land services in Otago and Southland since the contaminated land National Environmental Standard (NES) took effect in January 2012.

Glenn Davis is the Technical Director of the e3Scientific Contaminated Land team and has over 20 years post graduate experience working as an Environmental Scientist. Glenn has completed preliminary site investigations, soil and groundwater investigations, detailed site investigations, and remediation projects for the oil and gas industry, transport, agricultural and land development industries and local and national governments in New Zealand, Australia, Asia, the United Kingdom and Ireland. Glenn is responsible for technical oversight of projects and sign off of contaminated land investigations and is supported by Fiona Rowley and Carrie Pritchard (Senior Environmental Scientists, specialising in Contaminated Land Investigation and Remedial Work), Alexandra Badenhop (Principal Hydrogeologist) and Project Environmental Scientists, Duncan Keenan and Dr Tapuwa Marapara.

e3scientific has completed multiple PSIs, DSIs and remedial projects across New Zealand and regularly provides peer review of site investigations for district and regional councils. Projects have involved investigations into the impact on soil quality associated with operational and historic timber treatment plants, fuel storage and distribution facilities, substations, sheep dips and yards, orchards, vineyards, agricultural activities, gasworks, service stations and operational and closed landfills.





The following provides a summary of key contaminated land work e3scientific is involved in or has completed:

- Hundreds of Preliminary Site Investigations and Detailed Site Investigations to support subdivision, landuse change and earthworks consent applications.
- Support Environment Southland's Selected Landuse Register including the identification of Hazardous Activities on properties across Southland and the registration of HAIL sites.
- Review of groundwater contamination associated with the former Invercargill gasworks site including the completion of a groundwater investigations and an environmental risk assessment to support a discharge consent application.
- Large scale remedial works of former timber treatment plants and sheep dips including the completion of detailed investigations to delineate the extent of contaminated soils, design of remedial action plans, project management of remedial works and completion of site validation and council close out reports.
- Investigations into an area of arsenic impacted soils in Frankton including the completion of detailed investigations to delineate the horizontal extent, consideration of the source of the arsenic, liaison with property owners and council.
- Project management of a bioavailability study of arsenic impacted soils in Gibbston Valley to support a Tier 2 risk assessment associated with a residential development.
- Oversight of the removal of multiple underground fuel storage systems for private residences, schools and oil and gas clients.

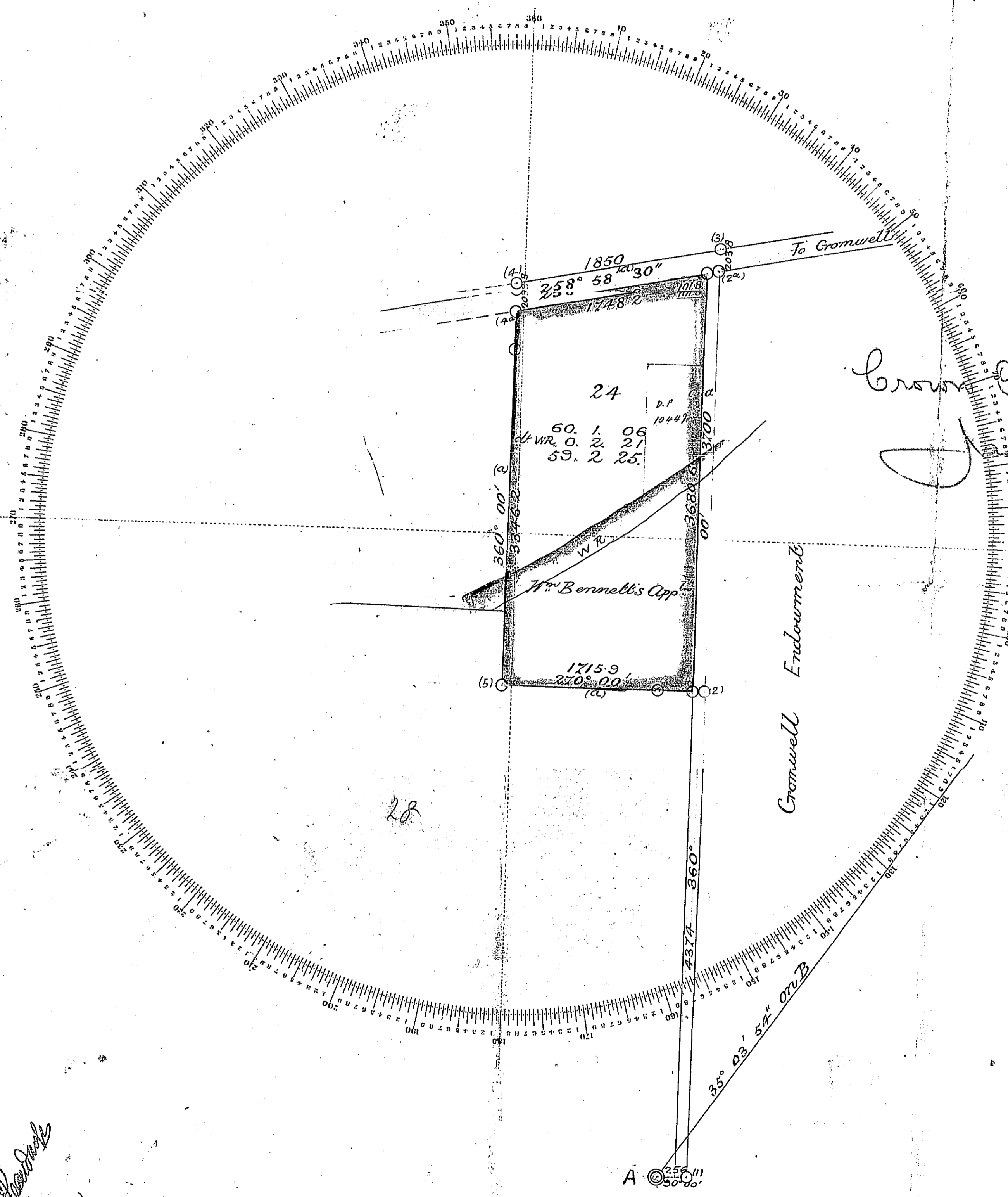
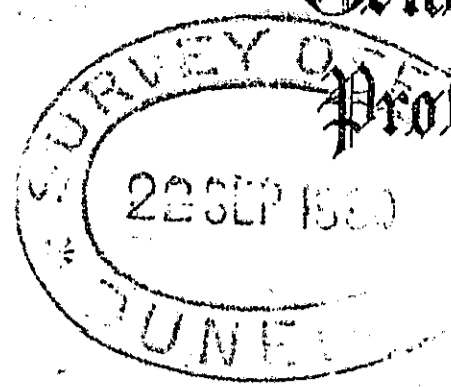
The e3Scientific team is committed to professional development, and employing new technologies in the prevention, assessment and remediation of contaminated land. e3Scientific is an active member of the Australasian Land & Groundwater Association and WasteMINZ.



**Appendix B:**  
**Historical Certificates of Title**

General Survey Department of New Zealand

Provincial District of *Otago*



24	D.P.	1044
60.	1.	06
WR.	0.	21
53.	2.	25

*Crown Granted to James How*

*Plotted by J. Campbell  
W. B. 1/10/80  
An Island Survey  
1880*

Sketch of Section 24

Block I Cromwell District,

Surveyed by *John Campbell* Asst. Surveyor

Date *August 1880*

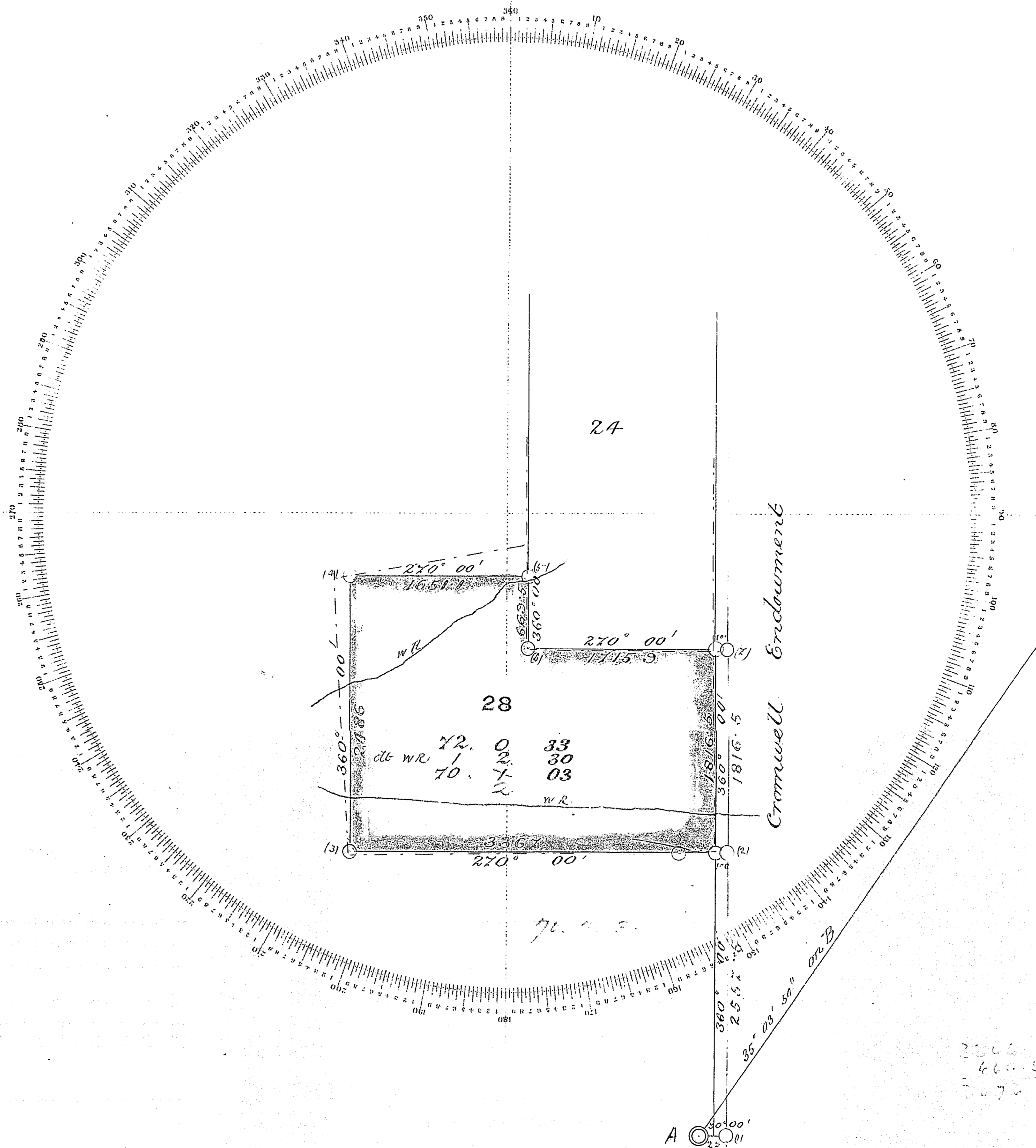


Scale 10 Chains to an Inch

**3821**

*5.11.80  
J. R. B. P.*

General Survey Department of New Zealand  
 Provincial District of Otago



Field Sketch of Section 28

Block I Cromwell District.

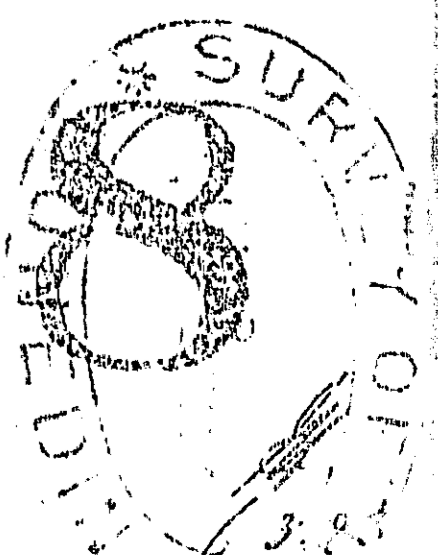
Surveyed by John Campbell Authorized Surveyor

Date December 1882

Scale 10 Chains to an Inch

NOTE Measured lines to be drawn in red, bearings or scaled lines in black, observed bearings in blue the figures also being in red black and blue. Draw a red circle round each peg, a double red circle round each trig station. Remarks or surveyor to be noted on back hereof.

3828



*Handwritten notes:*  
 27/12/82  
 27/12/82  
 On Survey Office Maps  
 10/12/82

*Handwritten signature:* J. Campbell

IV

B L O C K III

TOWN OF CROMWELL

B L O C K I

Run 245f

Area of Crown Land 35 0 12

The point marked X

Crown Land between roads  
New Road

1	35	0	12
2	7	0	31
3	0	0	00
4	0	0	00
5	0	0	00
6	3	2	00
7	15	0	00
8	1	0	00
9	1	0	00
10	1	0	00
11	1	0	00
<b>Total</b>	<b>71</b>	<b>3</b>	<b>03</b>

Run 339a

Provisional Area

A	265 0 00
B	476 2 12
C	245 0 00
D	1200 0 00
<b>Total</b>	<b>2186 2 12</b>
<b>Less</b>	<b>71 3 03</b>
<b>Provisional Area</b>	<b>2114 8 09</b>

File 4551  
369

This is the Plan referred to in Provisional Certificate No. B Provisional Certificate No. B of the 25th June 1915

... seed made ... between the ... Cromwell ... price of ...

APPROVED  
Boothsack  
Chief Surveyor

Approved in Council  
Liverpool (sgd)  
Governor  
21.6.15  
J.F. Andrews (sgd)  
Clerk of the Executive Council  
21st June 1915

Plan of  
part of  
CROMWELL SURVEY DISTRICT

Scale - 20 Chains to an Inch.



No. 70/1155

References  
Prior C/T 160/271  
Abstract 575569  
Transfer No.  
N/C. Order No.



# REGISTER

## CERTIFICATE OF TITLE UNDER LAND TRANSFER ACT

This Certificate dated the 14th day of May one thousand nine hundred and eightytwo under the seal of the District Land Registrar of the Land Registration District of O T A G O

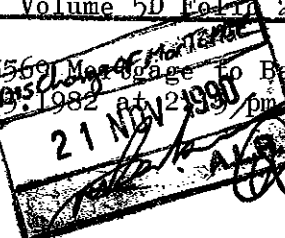
WITNESSETH that OTTO MULLER of Cromwell Farmer

is seised of an estate in fee-simple (subject to such reservations, restrictions, encumbrances, liens, and interests as are notified by memorial underwritten or endorsed hereon) in the land hereinafter described, delineated with bold black lines on the plan hereon, be the several admeasurements a little more or less, that is to say: All that parcel of land containing 28.5379 hectares more or less being Section 28 Block I CROMWELL DISTRICT

Interests at date of issue:

570855 Prospecting Licence under the Mining Act 1971 affecting the within land in favour of Graham John Grant for a term of 3 years commencing on 12.2.1982 entered 18.2.1982 at 9.56 am  
See Volume 5D Folio 213

575569 Mortgage to Bank of New Zealand - 14.9.1982 at 2.1990 pm



*[Signature]*  
A.L.R.

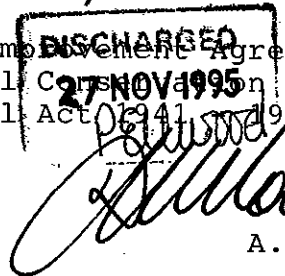


ASSISTANT LAND REGISTRAR

626491 Renewal of Prospecting Licence 5D/213 held by Graham John Grant for a further term of 3 years to 12.2.1988 - 29.11.1984 at 10.47 am.

*[Signature]*  
A.L.R.

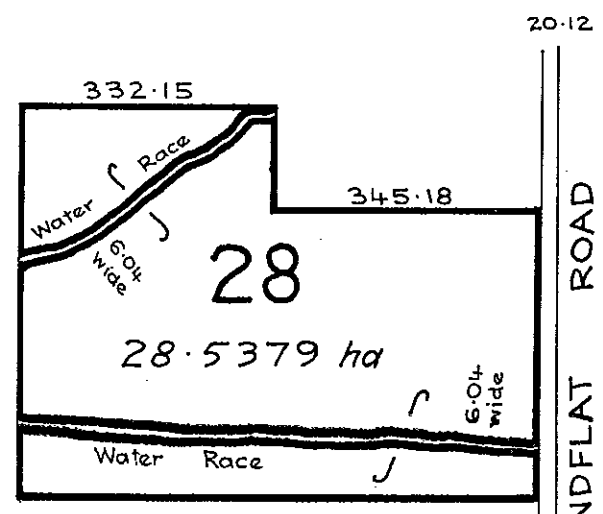
658008 Land Improvement Agreement under the Soil Conservation and Rivers Control Act 1941 entered 9.6.1986 at 9.18 am



*[Signature]*  
A.L.R.

779532 Transfer to Peter Paul Muller of Wellington Project Manager (as to a 1/4 share); Susanna Therese Hanson of Dunedin Accountant (as to a 1/4 share); Marc David Muller of Christchurch Orchard Manager (as to a 1/4 share); Kathrina Marianne Muller of Auckland Horticultural Worker (as to a 1/4 share) as tenants in common in the said shares - 20.5.1991 at 10.02am

*[Signature]*  
A.L.R.



Measurements are Metric  
Scale 1:10000

No. 70/1155

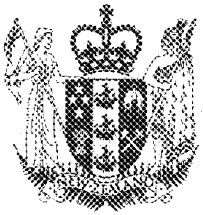
CT 7D/1155

941995.1 Exploration Permit under the  
Crown Minerals Act 1991 for a term of 5  
years commencing on the 17.9.1997 -  
12.1.1998 at 1.15

CT 9D/601 issued

*R. Hughes*  
for DLR





# COMPUTER FREEHOLD REGISTER UNDER LAND TRANSFER ACT 1952



## Historical Search Copy

  
R. W. Muir  
Registrar-General  
of Land

**Identifier** OT7D/1155  
**Land Registration District** Otago  
**Date Issued** 14 May 1982

### Prior References

OT160/271

---

**Estate** Fee Simple  
**Area** 28.5379 hectares more or less  
**Legal Description** Section 28 Block I Cromwell Survey  
District

### Original Proprietors

Peter Paul Muller as to a 1/4 share  
Susanna Therese Hanson as to a 1/4 share  
Marc David Muller as to a 1/4 share  
Kathrina Marianne Muller as to a 1/4 share

### Interests

Prospecting Licence embodied in Register 5D/213 - 18.2.1982 at 9:56 am  
Exploration Permit embodied in the Register 9D/601 - 12.1.1998 at 1:15 pm  
5524614.1 Expiry of Exploration Permit 941995.1 - 19.3.2003 at 9:00 am

No. 7D/1155

References  
Prior C/T 160/271  
Abstract 575569  
Transfer No.  
N/C. Order No.

Land and Deeds 69



REGISTER

CERTIFICATE OF TITLE UNDER LAND TRANSFER ACT

This Certificate dated the 14th day of May one thousand nine hundred and eightytwo under the seal of the District Land Registrar of the Land Registration District of O T A G O

WITNESSETH that OTTO MULLEN of Cromwell Farmer

is seised of an estate in fee-simple (subject to such reservations, restrictions, encumbrances, liens, and interests as are notified by memorial underwritten or endorsed hereon) in the land hereinafter described, delineated with bold black lines on the plan hereon, be the several admeasurements a little more or less, that is to say: All that parcel of land containing 28.5379 hectares more or less being Section 28 Block I CROMWELL DISTRICT

Interests at date of issue:

570855 Prospecting Licence under the Mining Act 1971 affecting the within land in favour of Graham John Grant for a term of 3 years commencing on 12.2.1982 entered 18.2.1982 at 9.56 am  
See Volume 5D Folio 213

575569 Mortgage of Bank of New Zealand - 14.05.1982

21 Nov 1990  
A.L.R.

*[Signature]*  
ASSISTANT LAND REGISTRAR

626491 Renewal of Prospecting Licence 5D/213 held by Graham John Grant for a further term of 3 years to 12.2.1988 - 29.11.1984 at 10.47 am.

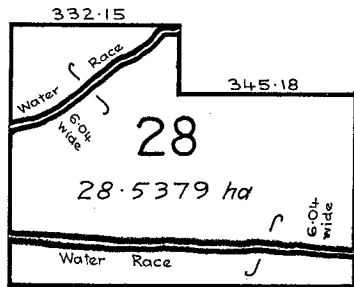
*[Signature]*  
A.L.R.

658008 Land Improvement Agreement under the Soil Conservation and Rivers Control Act 1941 entered 6.1986 at 9.18 am

DISCHARGED  
27 NOV 1995  
*[Signature]*  
A.L.R.

779532 Transfer to Peter Paul Muller of Wellington Project Manager (as to a 1/4 share); Susanna Therese Hanson of Dunedin Accountant (as to a 1/4 share); Marc David Muller of Christchurch Orchard Manager (as to a 1/4 share); Kathrina Marianne Muller of Auckland Horticultural Worker (as to a 1/4 share) as tenants in common in the said shares - 20.5.1991 at 10.02am

*[Signature]*  
A.L.R.



Measurements are Metric  
Scale 1:10000

No. 7D/1155

CT 7D/1155

941995.1 Exploration Permit under the  
Crown Minerals Act 1991 for a term of 5  
years commencing on the 17.9.1997 -  
12.1.1998 at 1.15  
CT 9D/601 issued

*R. Hughes*  
for DLR



References

Prior C/T B2/320

Transfer No.

N/C. Order No. 871505/2



REGISTER

No. 16A/611

CERTIFICATE OF TITLE UNDER LAND TRANSFER ACT

This Certificate dated the 7th day of December one thousand nine hundred and Ninety Four under the seal of the District Land Registrar of the Land Registration District of O T A G O

WITNESSETH that PETER PAUL MULLER of Wellington, Project Manager (as to a 1/4 share), SUSANNA THERESE HANSON of Dunedin, Accountant (as to a 1/4 share) MARC DAVID MULLER of Christchurch, Orchard Manager (as to a 1/4 share) and KATHRINA MARIANNE MULLER of Auckland Horticultural Worker (as to a 1/4 share) as tenants in common in the said shares are

seised of an estate in fee-simple (subject to such reservations, restrictions, encumbrances, liens, and interests as are notified by memorial underwritten or endorsed hereon) in the land hereinafter described, delineated with bold black lines on the plan hereon. be the several admeasurements a little more or less, that is to say: All that parcel of land containing 20.4563 hectares more or less being part Section 24 Block I CROMWELL SURVEY DISTRICT

658008 Land Improvement Agreement under the Soil Conservation and Rivers Control Act 1947 - 19.6.1986 at 9.18am

27 NOV 1993 Pellwood L.R.



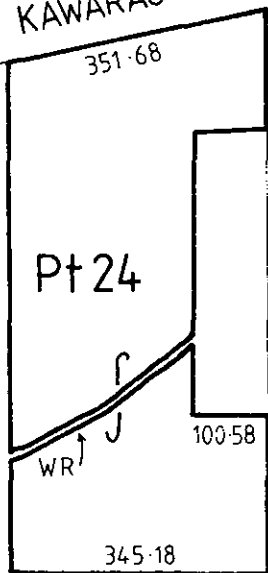
A.L.R.

941995.1 Exploration Permit under the Crown Minerals Act 1991 for a term of 5 years commencing on the 17.9.1997 - 12.1.1998 at 1.15

CT 9D/601 issued

K. Hughes for DLR

KAWARAU GORGE RD



SANDFLAT RD

Area: 20.4563 ha.

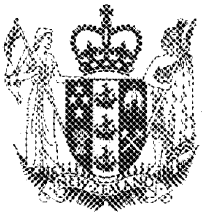
Measurements are Metric

SO 3821

No. 16A/611

**CERTIFICATE OF TITLE** No.           /          





**COMPUTER FREEHOLD REGISTER  
UNDER LAND TRANSFER ACT 1952**



  
R. W. Muir  
Registrar-General  
of Land

**Historical Search Copy**

**Identifier** OT16A/611  
**Land Registration District** Otago  
**Date Issued** 07 December 1994

**Prior References**

OTB2/320

---

**Estate** Fee Simple  
**Area** 20.4563 hectares more or less  
**Legal Description** Part Section 24 Block I Cromwell Survey  
District

**Original Proprietors**

Peter Paul Muller as to a 1/4 share  
Susanna Therese Hanson as to a 1/4 share  
Marc David Muller as to a 1/4 share  
Kathrina Marianne Muller as to a 1/4 share

---

**Interests**

Exploration Permit embodied in Register OT9D/601 - 12.1.1998 at 1.15 pm  
5041502.1 Gazette Notice (2001/1044) declaring adjoining road (S.H. No 6) to be limited access road - 11.5.2001 at 9:31 am  
5524614.1 Expiry of Exploration Permit 941995.1 - 19.3.2003 at 9:00 am



References

Prior C/T B2/320

Transfer No.

N/C. Order No. 871505/2



REGISTER

CERTIFICATE OF TITLE UNDER LAND TRANSFER ACT

This Certificate dated the 7th day of December one thousand nine hundred and Ninety Four under the seal of the District Land Registrar of the Land Registration District of O T A G O

WITNESSETH that PETER PAUL MULLER of Wellington, Project Manager (as to a 1/4 share), SUSANNA THERESE HANSON of Dunedin, Accountant (as to a 1/4 share) MARC DAVID MULLER of Christchurch, Orchard Manager (as to a 1/4 share) and KATHRINA MARIANNE MULLER of Auckland Horticultural Worker (as to a 1/4 share) as tenants in common in the said shares are

in seised of an estate in fee-simple (subject to such reservations, restrictions, encumbrances, liens, and interests as are notified by memorial underwritten or endorsed hereon) in the land hereinafter described, delineated with bold black lines on the plan hereon. be the several admeasurements a little more or less, that is to say: All that parcel of land containing 20.4563 hectares more or less being part Section 24 Block I CROMWELL SURVEY DISTRICT

658008 Land Improvement Agreement under the Soil Conservation and Rivers Control Act 1947, 19.6.1986 at 9.18am

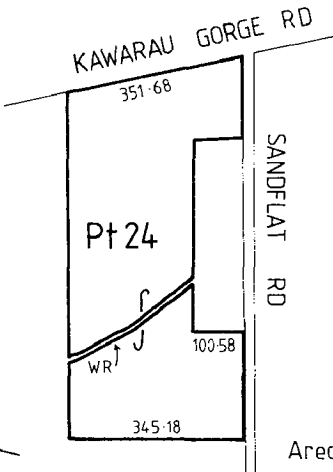
*Pellus*  
A.L.R.



941995.1 Exploration Permit under the Crown Minerals Act 1991 for a term of 5 years commencing on the 17.9.1997 - 12.1.1998 at 1.15

CT 9D/601 issued

*K. Hynes*  
for DLR



Area: 20.4563 ha.

Measurements are Metric

S0 3821

Register copy for L. & D. 69.71.72

**CERTIFICATE OF TITLE** No.           /          



93560H-50.000/2/89MK

NEW ZEALAND.

[SCHEDULE L



Register-book,  
Vol. 125 folio 196

Reference: Vol 3  
Warrant No. 67  
P.R. folio

125/196

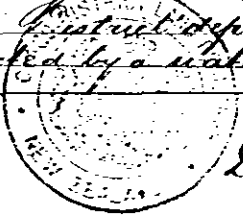
CERTIFICATE OF TITLE UNDER LAND TRANSFER ACT.

This Certificate, dated the twenty eighth day of August, one thousand eight hundred and ninety six, under the hand and seal of the District Land Registrar of the Land Registration District of Clage being a Certificate in lieu of Grant, under Warrant of His Excellency the Governor, in exercise of the powers enabling him in that behalf, witnesses that

James Horn of Bannockburn Shearer

is seized of an estate in fee-simple (subject to such reservations, restrictions, encumbrances, liens, and interests as are notified by memorial under-written or indorsed hereon; subject also to any existing right of the Crown to take and lay off roads under any Act of the General Assembly of New Zealand) in the land hereinafter described, as the same is delineated by the plan drawn hereon, bordered red, be the several admeasurements a little more or less, which said land is in the said Warrant expressed to have been originally acquired by the said James Horn as from the twenty seventh day of September, one thousand eight hundred and ninety seven, under the Land Act 1855, that is to say: All that

parcel of land containing fifty nine (59) acres two (2) rods and twenty five (25) poles more or less situated in the Cromwell District being section twenty four (24) Block One (1) shown on the Tithe Map of the said District deposited in the office of the Chief Surveyor at Dunedin and intersected by a water race colored blue on said plan hereon

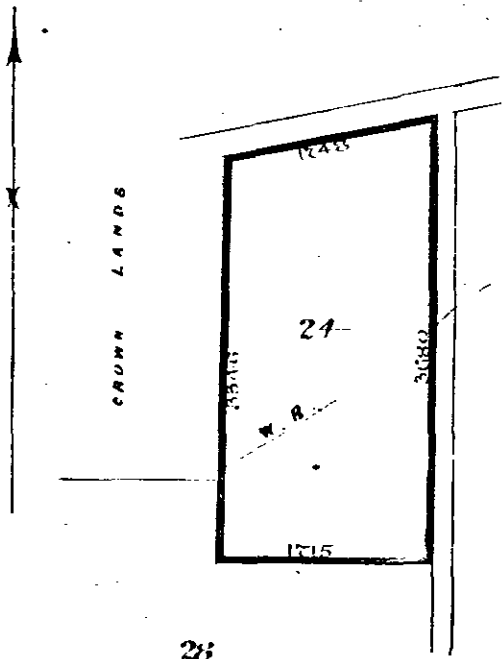


H Linton  
District Land Registrar

Block 1 Cromwell District

NEW PLAN No. 10449

59. 2. 25



28

EQUIVALENT METRIC  
AREA IS 24.1420 ha

Scale 10 chains to an inch  
Surveyed by J. Campbell Aug. 1880  
Chief Surveyor J. Hay  
Draughtsman H. Skye

Transmission R: 17833 to Maude Horn of Roper Road. Entered 13<sup>th</sup> October 1912 at 3/2  
Stewartson Mts  
Transmission 26988 to James Kararua Horn of Auckland Member R. N. J. N. as Executor. Entered 20<sup>th</sup> July 1945 at 2.250i  
254438 Canceled as to Lot 1 D.P. 10449 24.1.1963 and new C.T. 81/1431 issued  
257029 Transfer of balance to Otto Puffer - 10.4.1963 at 2.6 pm 82/320

— Canceled —  
DUPLICATE DESTROYED  
23/5/1963



CANCELLED

SCHEDULE 1.

NEW ZEALAND.



Register-book,

Vol. 160, folio 271

Reference: Warrant No. 34268  
P.R. folio 1701815

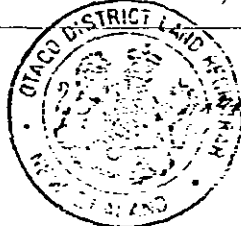
160/271

CERTIFICATE OF TITLE UNDER LAND TRANSFER ACT.

This Certificate, dated the twentieth day of March, one thousand nine hundred and seven, under the hand and seal of the District Land Registrar of the Land Registration District of Otago, being a Certificate in lieu of Grant, under Warrant of His Excellency the Governor, in exercise of the powers enabling him in that behalf, certifies that

James Horne, Businessman and Receiver

is seized of an estate in fee-simple (subject to such reservations, restrictions, encumbrances, liens, and interests as are notified by memorial underwritten or indorsed hereon; subject also to any existing right of the Crown to take and lay off roads under any Act of the General Assembly of New Zealand) in the land hereinafter described, as the same is delineated by the plan hereon, bordered red, be the several admeasurements a little more or less, which said land is in the said Warrant expressed to have been originally acquired by the said James Horne as from the fourteenth day of October, one thousand nine hundred and one, under The Land Act 1908, that is to say: All those parcels of land containing together seventy seven acres two (2) roods three (3) poles more or less situated in the Cromwell District being section twenty eight (28) Block One (1) on the Public Map of the said District deposited in the Office of the Chief Surveyor at Dunedin

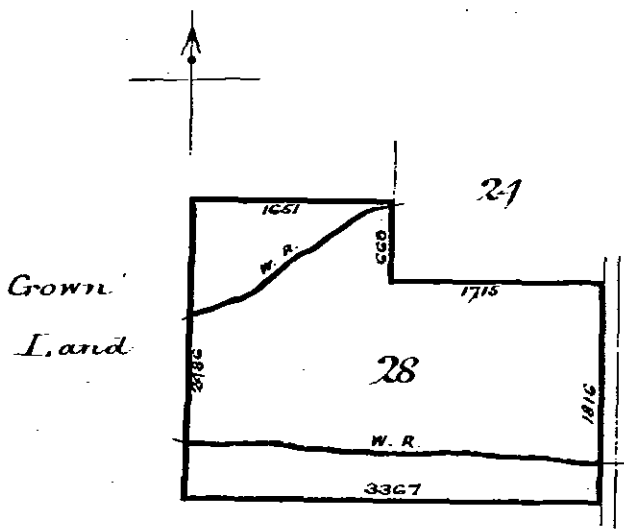


Cos. Macdonald  
District Land Registrar

Block I Cromwell District

70 a. 2 r. 03 p.

EQUIVALENT METRIC AREA IS 28.5379 ha



Crown Land

All dispositions of the above described land are subject to the restrictions imposed by Part XIII of the Land Act 1908.

Cos. Macdonald D.L.R.

Transmission N° 17833 to Maude Horn of Keshu Wairarapa dated 12th October 1933 at 1.50  
Transmission 26988 to James Kawarau Horn of Auckland Member R. N. Z. N. as Executor, dated 20th July 1945 at 2.45

257029 Transfer to Otto Muller of Christchurch Sales Representative - 10.4.1903 at 2.6 am

262522 mortgage Bank of New Zealand  
DISCHARGED 3 at 2.30.1971

THIS REPRODUCTION (ON A REDUCED SCALE) CERTIFIED TO BE A TRUE COPY OF THE ORIGINAL REGISTER FOR THE PURPOSES OF SECTION 215A LAND TRANSFER ACT 1952.  
J. H. Macdonald A.L.R.

Scale 70 Chains to an Inch  
Surveyed by J. Campbell 1882  
Chief Surveyor, E. H. Wilmet  
Draughtsman J. H. Macdonald

570855 Prospecting Licence under the Mining Act 1971 affecting the within land in favour of Graham John Grant for a term of 3 years commencing on 12.2.1982 entered 18.2.1982 at 9.56 am  
See Volume 5D/ Folio 213

OVER.....


A.L.R.

James Grant

C.T. 160/271

575569 Mortgage to Bank of New Zealand -  
14.5.1982 at 2.15 pm

  
A.L.R.

CANCELLED: SEE NOW  
C.T. 77/1155  
  
A.L.R. 14/5/1982

DUPLICATE DESTROYED  
14 / 7 / 82



Reference:  
Prior C/T. 125/196

Transfer No. 257029  
N/C. Order No.

**CANCELLED**

Land and Deeds 69  
**REGISTER**

No. B2/320

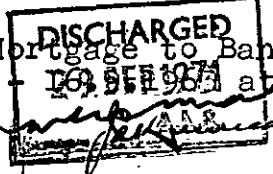
**CERTIFICATE OF TITLE UNDER LAND TRANSFER ACT**

This Certificate dated the 10th day of April one thousand nine hundred and sixtythree under the seal of the District Land Registrar of the Land Registration District of O T A G O

WITNESSETH that OTTO MULLER of Christchurch Sales Representative

is seised of an estate in fee-simple (subject to such reservations, restrictions, encumbrances, liens, and interests as are notified by memorial underwritten or endorsed hereon) in the land hereinafter described, delineated with bold black lines on the plan hereon, be the several admeasurements a little more or less, that is to say: All that parcel of land containing 54 acres 2 roods 25 perches more or less being part Section 24 Block I CROMWELL DISTRICT Intersected by a water race shown on the plan hereon.

262822 Mortgage to Bank of New Zealand - 10 SEP 1983 at 2.51 p.m.  
*[Signature]*  
A.L.R.

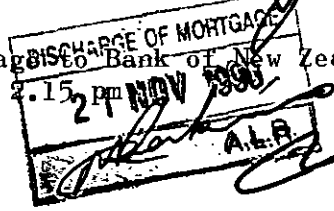


*[Signature]*  
DISTRICT LAND REGISTRAR

570855 Prospecting Licence under the Mining Act 1971 affecting the within land in favour of Graham John Grant for a term of 3 years commencing on 12.2.1982 entered 18.2.1982 at 9.56 am  
See Volume 5D Folio 213

658008 Land Improvement Agreement under the Soil Conservation and Rivers Control Act 1941 - 19.6.1986 at 9.18 am

575569 Mortgage to Bank of New Zealand - 14.5.1982 at 2.15 pm  
*[Signature]*  
A.L.R.

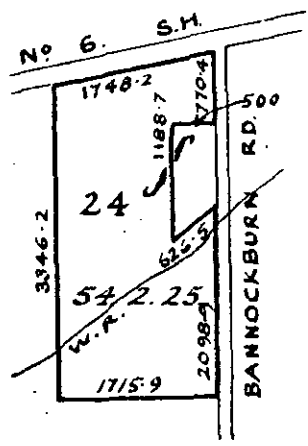


779532 Transfer to Peter Paul Muller of Wellington Project Manager (as to a 1/4 share); Susanna Therese Hanson of Dunedin Accountant (as to a 1/4 share); Marc David Muller of Christchurch Orchard Manager (as to a 1/4 share) and Kathrina Marianne Muller of Auckland Horticultural Worker (as to a 1/4 share) as tenants in common in the said shares - 20.5.1991 at 10.02am

626491 Renewal of Prospecting Licence 5D/213 held by Graham John Grant for a further term of 3 years to 12.2.1988 - 29.11.1984 at 10.47 am.

*[Signature]*  
A.L.R.

*[Signature]*  
A.L.R.



871505/1 ) New CT 16A/610 issued  
7.12.1994 ) for Lot 1 DP 23996

*[Signature]*  
A.L.R.

EQUIVALENT METRIC  
AREA IS 22.1186 ha

871505/2 ) Cancelled and new CT  
7.12.1994 ) 16A/611 issued for  
the balance

*[Signature]*  
A.L.R.

No. B2/320

Scale: 1 inch = 20 chains 50 3821

DISTRICT LAND  
REGISTRAR  
**Cancelled**  
OTAGO  
NEW ZEALAND

**DUPLICATE DESTROYED**  
13 / 12 / 1994



**Appendix C:**

**Land Information Memorandum**



1 Dunorling Street  
PO Box 122, Alexandra 9340  
New Zealand

+64 3 440 0056  
info@codc.govt.nz  
www.codc.govt.nz

Winton Partners Investments Limited  
PO Box 105526  
Auckland City  
Auckland 1143

**GST Number:** 51-442-970  
**Invoice Date:** 6/04/17  
**Customer No:** 3442129

## Tax Invoice 84473

Quantity	Description	Rate	Amount
	L170250 : Deanna Clark : Winton Partners Investments Limited 2842129103 : Pearson Road, Cromwell		
	Land Information Memorandum Commercial		225.00 *
	(* Incl GST \$29.35)		

Payment Due on or Before the 20th of the Month Following.  
Internet Bank A/C 02-0916-0081744-00. Reference=Customer No.

**Total incl. GST** \$225.00

(Please detach and return this portion with your payment)

### REMITTANCE ADVICE

Winton Partners Investments Limited  
PO Box 105526  
Auckland City  
Auckland 1143

**Customer No.:** 3442129  
**Invoice No.:** 84473  
**Total Due:** \$225.00

**Amount Enclosed:**

Central Otago District Council, PO Box 122, 1 Dunorling Street, Alexandra  
Tel 64-3-440 0056, Fax 64-3-4489196, email codcalex@codc.govt.nz



# Land Information Memorandum

## Application

Winton Partners Investments Limited	Number	L170250
PO Box 105526	Application date	6/04/17
Auckland City		09 377 7003
Auckland 1143		021 497 609
Deanna Clark	Email	deanna.clark@wintonpartners.co.nz

## Property

Valuation No.	2842129103
Location	Pearson Road, Cromwell
Legal Description	PT SEC 24 BLK I CROMWELL
Owner	Hanson Susanna Therese : Muller Kathrina M & Ors
Area (hectares)	20.4563

## Rates

<b>Government Valuation</b>		
Land	\$	840,000
Capital Value	\$	850,000
Improvements	\$	10,000
Current Rates Year 2016 to 2017		
<b>Rating Amounts</b>		
Annual Rates	\$	2,252.83
Current Instalment	\$	563.21
Next Instalment Due		22/05/17
Current Balance	\$	0.00
Water Balance (if any)	\$	
Note:		
1. Rates are charged in four equal instalments for the period commencing 1 July and ending 30 June each year.		
2. If you require further financial information regarding this property for settlement purposes, then the owner or their agent will need to contact the Council separately for this information.		

## Planning/Resource Management

<b>Resource Area:</b>	PART RURAL RESOURCE AREA & PART RURAL RESIDENTIAL RESOURCE AREA
Full details relating to use to which the land may be put and conditions attached to that use found in the Central Otago District Plan. Refer to copy of map from the District Plan for other information in the immediate vicinity.	
<b>Consents:</b>	No information located.
<b>Designation:</b>	No information located.
<b>Outstanding Requisitions:</b>	No outstanding requisitions located.
A Land Use Consent will be required to establish any residential activity on this property.	

**Building****Consents/Permits/Compliance Schedules:**

No information located.

**Outstanding Requisitions:** No outstanding requisitions located.

**Licences/Environmental Health**

No information located.

**Outstanding Requisitions:** No outstanding requisitions located.

**Sewer and Water**

**Sewer:** Not available – a private effluent disposal system will be required.

**Water:** Not available – a private potable water supply will be required.

**Storm water:** Storm water is to be discharged to soak pits on site within the property.

**Public sewerage water or stormwater drains on property:** No information found.

**Special Land Features**

*Any special feature or characteristic of the land concerned including potential erosion, avulsion, falling debris, subsidence, slippage, alluvium, or inundation, or likely presence of hazardous contaminants: The Natural Hazard database and a report on Seismic Risk in the Otago Region, (by Opus International Consultants Limited 2004), can be located on the Otago Regional Council website [www.orc.govt.nz](http://www.orc.govt.nz)*

No information located.

**Network Utility Operators**

Information relating to the availability of supply, authorisations etc (e.g. electricity or gas) can be obtained from the relevant Network Utility Operator.

**Notes**

1. No title search has been done on this property.
2. Any future development on this property may be liable for a development contribution under the Local Government Act 2002.
3. Every care has been taken to ensure that the information supplied by the Council on this form is accurate. The Council relies on information available to it, and will not be held responsible for incomplete or inaccurate information provided, or for any errors or omissions made in good faith.

**KAREN FREWEN (DDI 03 440 0613)  
ACTING LIM OFFICER**



Date: 11/04/17

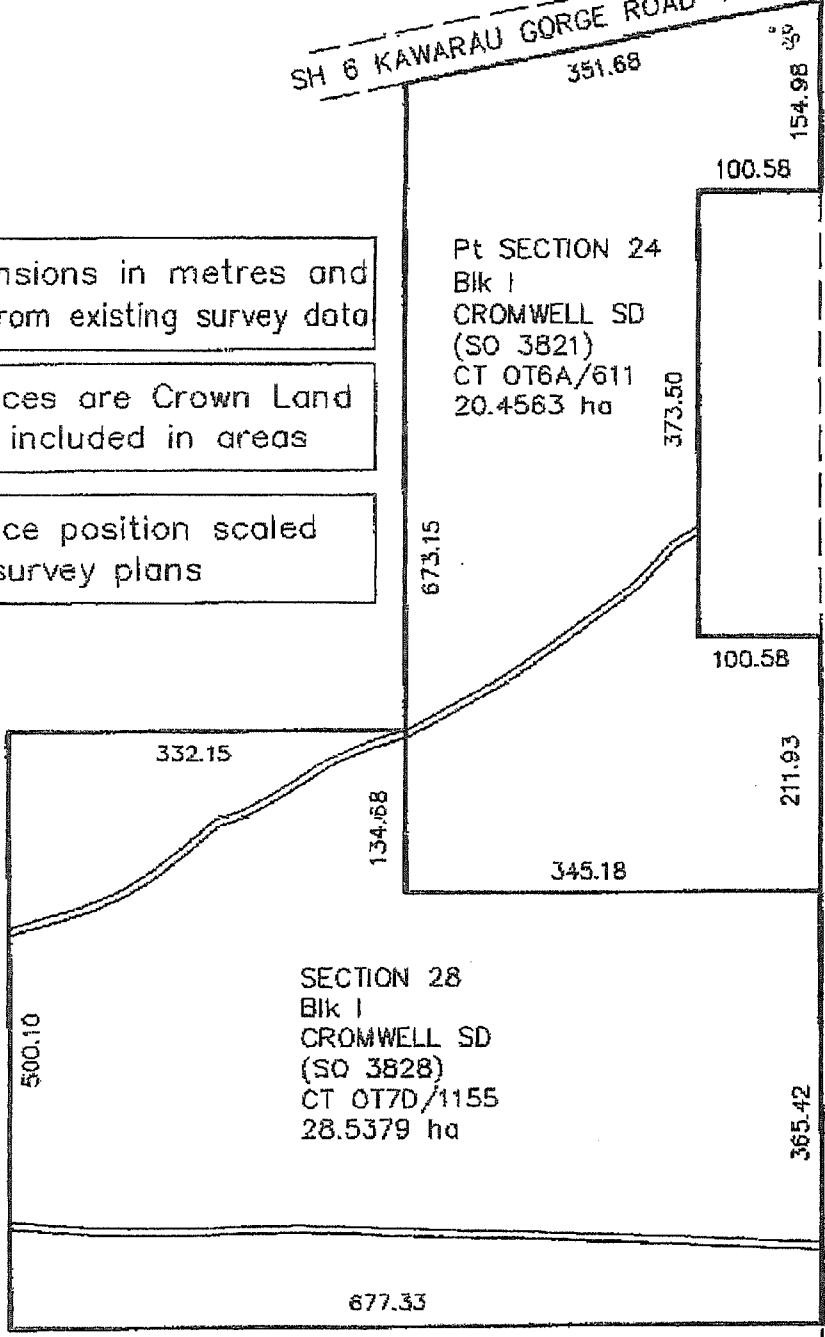
SH 6 KAWARAU GORGE ROAD 40.23 wide



All dimensions in metres and adopted from existing survey data

Water races are Crown Land and not included in areas

Water race position scaled off old survey plans



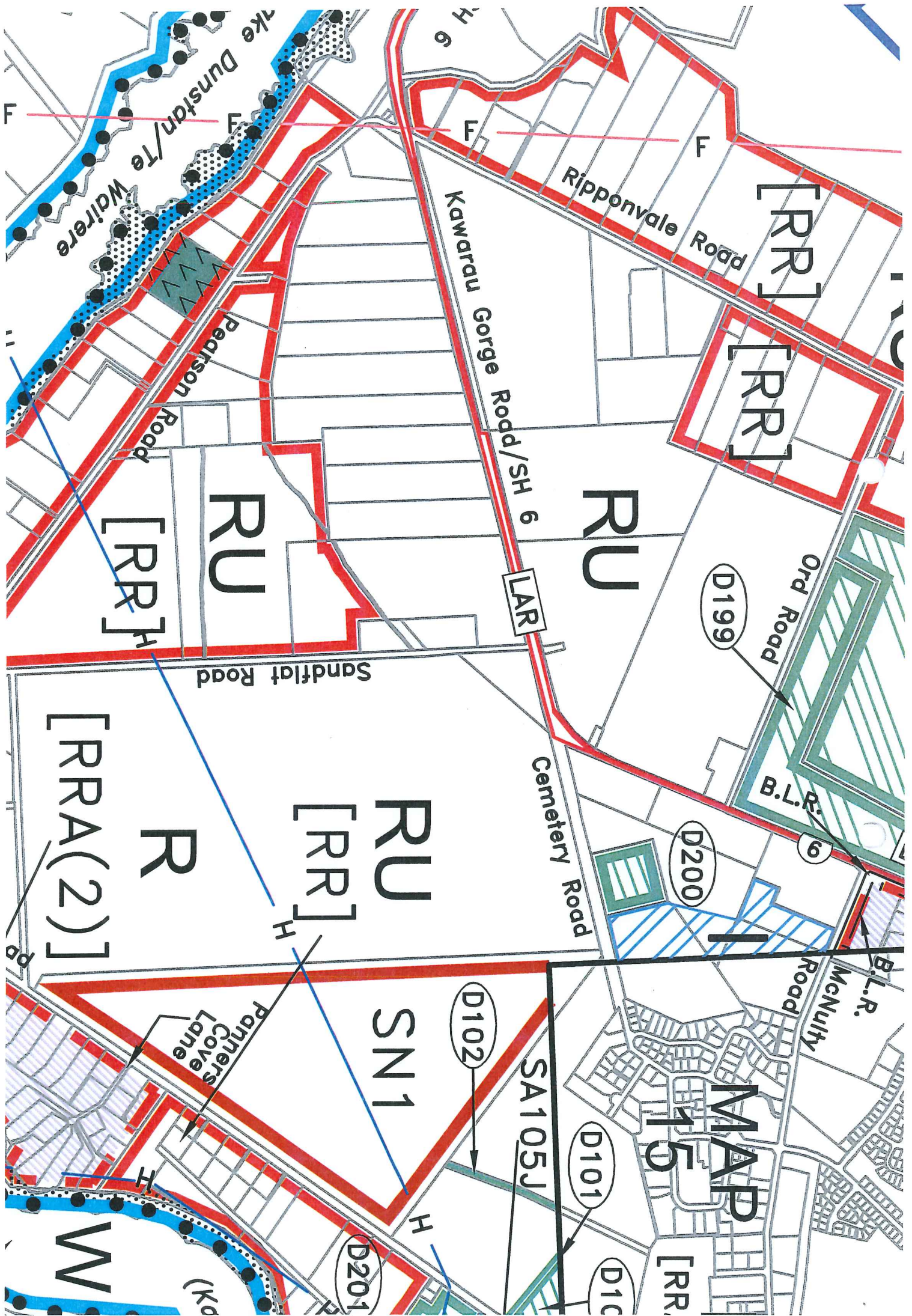
TITLE DIMENSIONS FOR CT OT6A/611 & CT OT7D/1155

**SIMON JENKIN**  
 Licensed Cadastral Surveyor  
 P.O. Box 5195    ph (03) 477 4940  
 DUNEDIN        fax (03) 477 4994

SANDFLAT ROAD, CROMWELL

SCALE 1:5000  
 SEPT 2006

06D39T



# Central Otago District Planning Maps

## LEGEND

### RESOURCE AREAS

- RU** Rural Resource Area
- R** Residential Resource Area
- B** Business Resource Area
- I** Industrial Resource Area
- RS** Rural Settlements Resource Area
- W** Water Surface and Margin Resource Area
- MRRA** McArthur Ridge Resource Area

### DESIGNATIONS

- Designation ( Schedule 19.2 )
- Limited Access Road (Urban Map)
- Limited Access Road (Rural Map)
- State Highway ( Urban Map )
- State Highway ( Rural Map )

### SCHEDULED ACTIVITIES

- SA123** Scheduled Activities ( Schedule 19.3 )

NOTES

1. All legal roads are deemed to be designated.
2. All designated land subject to underlying Resource Area provisions that apply where such land is to be used for a purpose other than the designated purpose.
3. Surface of any waterbody deemed to be in Water Surface and Margin Resource Area.
4. Other Rural Landscapes (ORL) are landscapes in the Rural Resource Area not identified as ONL, SAL or LMA.
5. Cadastral information correct as at 1 December 2007
6. Size of symbols as shown in Legend may vary when shown on Planning Maps.
7. Cadastral information from Land Information New Zealand [LINZ]

CROWN COPYRIGHT RESERVED with regard to Cadastral Information.

### HERITAGE VALUES

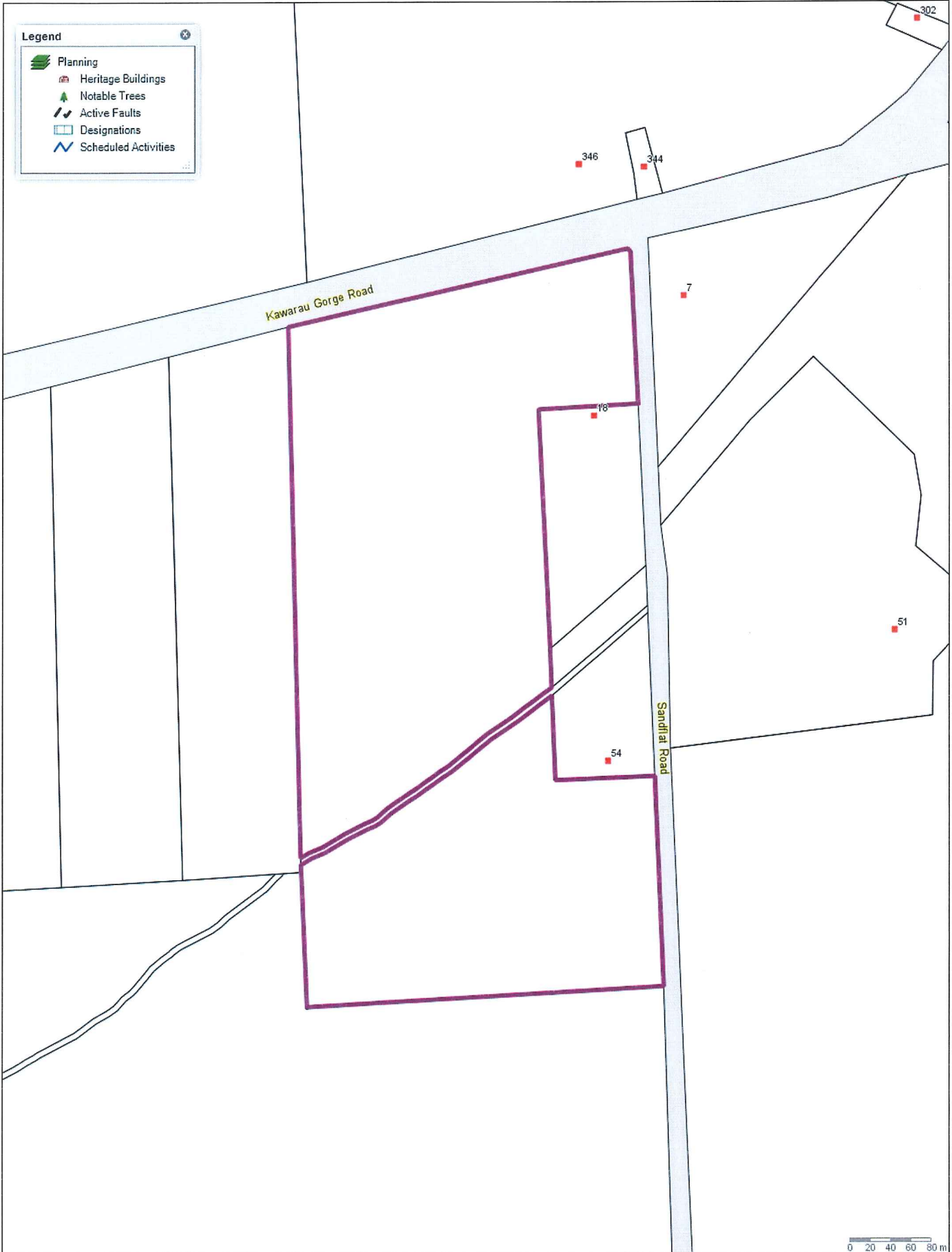
- Heritage Precinct
- Heritage Building, Place, Site or Object ( Schedule 19.4 )
- Notable Tree ( Schedule 19.4 )
- Historic Reserve ( Schedule 19.10 )
- Area of Significant Natural Value ( Schedule 19.6.1 )
- Additional Wetlands ( Schedule 19.6.A )
- Outstanding Natural Feature
- Outstanding Natural Landscape ( Schedule 19.6.2 )
- Significant Amenity Landscape
- Upper Manorburn / Lake Onslow Landscape Management Area
- Explanade Provision ( Schedule 19.9 )
- Nohoanga ( Traditional Camping )

### HAZARDS

- Flood prone land ( Schedule 19.11 )
- Mined Area (Urban Maps)
- Mined Area (Rural Maps)
- Active Geological Fault
- Filled Area (Including closed Landfills)
- Area of Subsidence or Slippage
- High Voltage Lines ( See Rule 4.7.6 A (g) )

### OTHER NOTATIONS

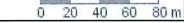
- District Boundary
- Resource Area Boundary ( Where distinction required )
- Resource Area Boundary underlying a Designation
- Area subject to enlarged Planning Map
- Rural Residential ( See Rule 4.7.2 (ii) )
- Rural Resource Area (1)-(3) ( See Rule 4.7.2 (ii) & (a) )
- Residential Resource Area (1)-(12) ( See Rule 7.3.3 (i)(c) )
- Business Resource Area (1) ( See Rule 8.3.6 (i) )
- Residential Resource Area ( See Rule 7.3.6(iii)(f)(2) – Sloping Sites )
- Airport Protection Zone ( See Rule 4.7.6 A (i) )
- Proposed Road Alignment
- Actual position of formed road ( For information purposes only )
- Road to be Stopped
- Building Line Restriction
- Verandah Required ( See Rule 8.3.6(iii) )
- Building Facades ( See Rule 8.3.2 (i) )
- Bridge



**Planning Map**

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Scale 1:5000  
 Tuesday, 11 April 2017  
 Original Sheet Size 210x297mm



### Planning Data

The information displayed is schematic only and serves as a guide. It has been compiled from Central Otago District Council's records and is made available in good faith but its accuracy or completeness is not guaranteed. Cadastral Information has been derived from Land Information New Zealand's (LINZ) Core Record System Database (CRS).

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Tuesday, 11 April 2017

### Designations within 200m

None found.

### Scheduled Activities within 200m

None found.

### Heritage Buildings within 200m

None found.

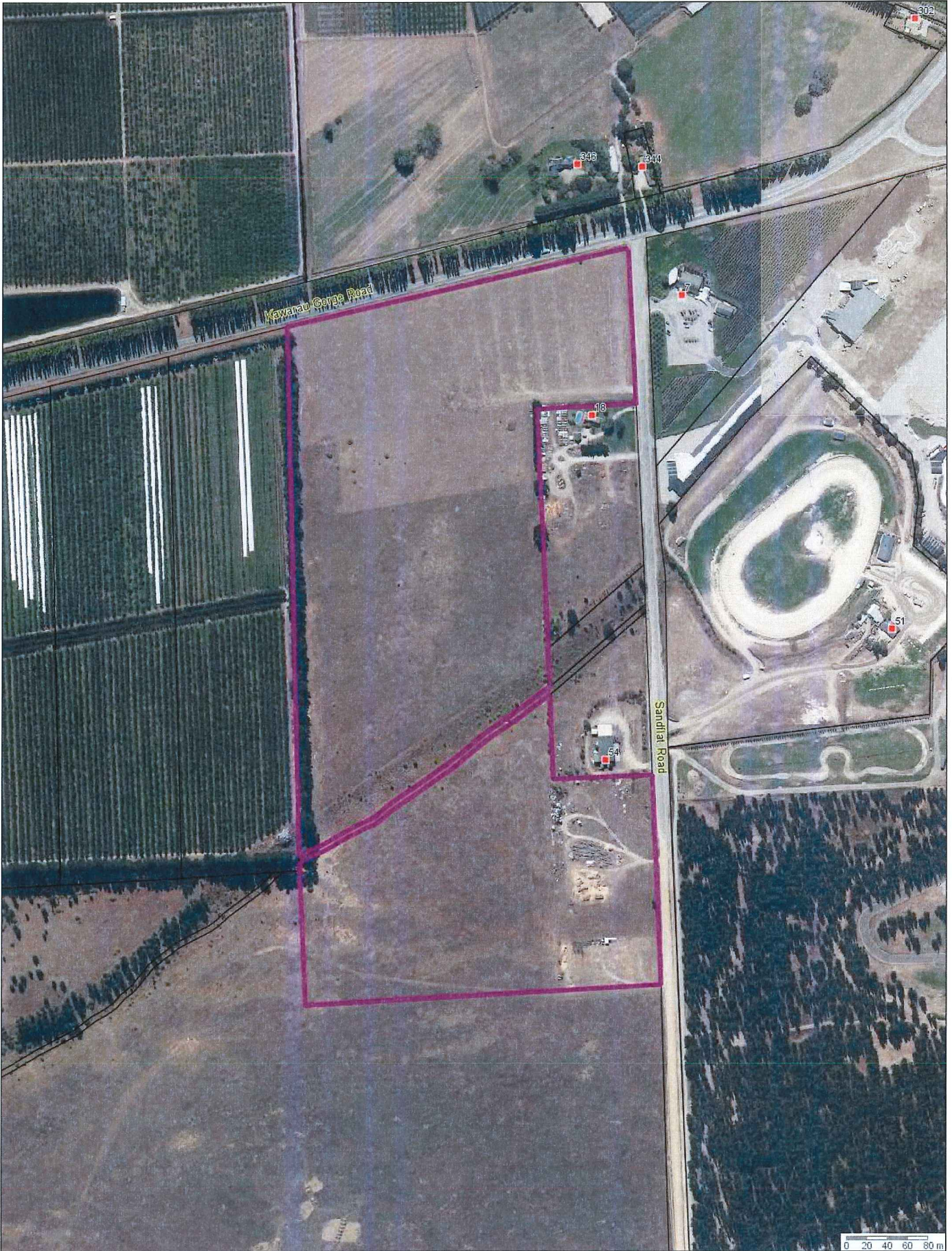
### Notable Trees within 200m

None found.

### Active Faults within 200m

None found.





0 20 40 60 80 m



### Aerial Photography Map

The information displayed is schematic only and serves as a guide. It has been compiled from Central Otago District Council's records and is made available in good faith but its accuracy or completeness is not guaranteed. Cadastral Information has been derived from Land Information New Zealand's (LINZ) Core Record System Database (CRS).

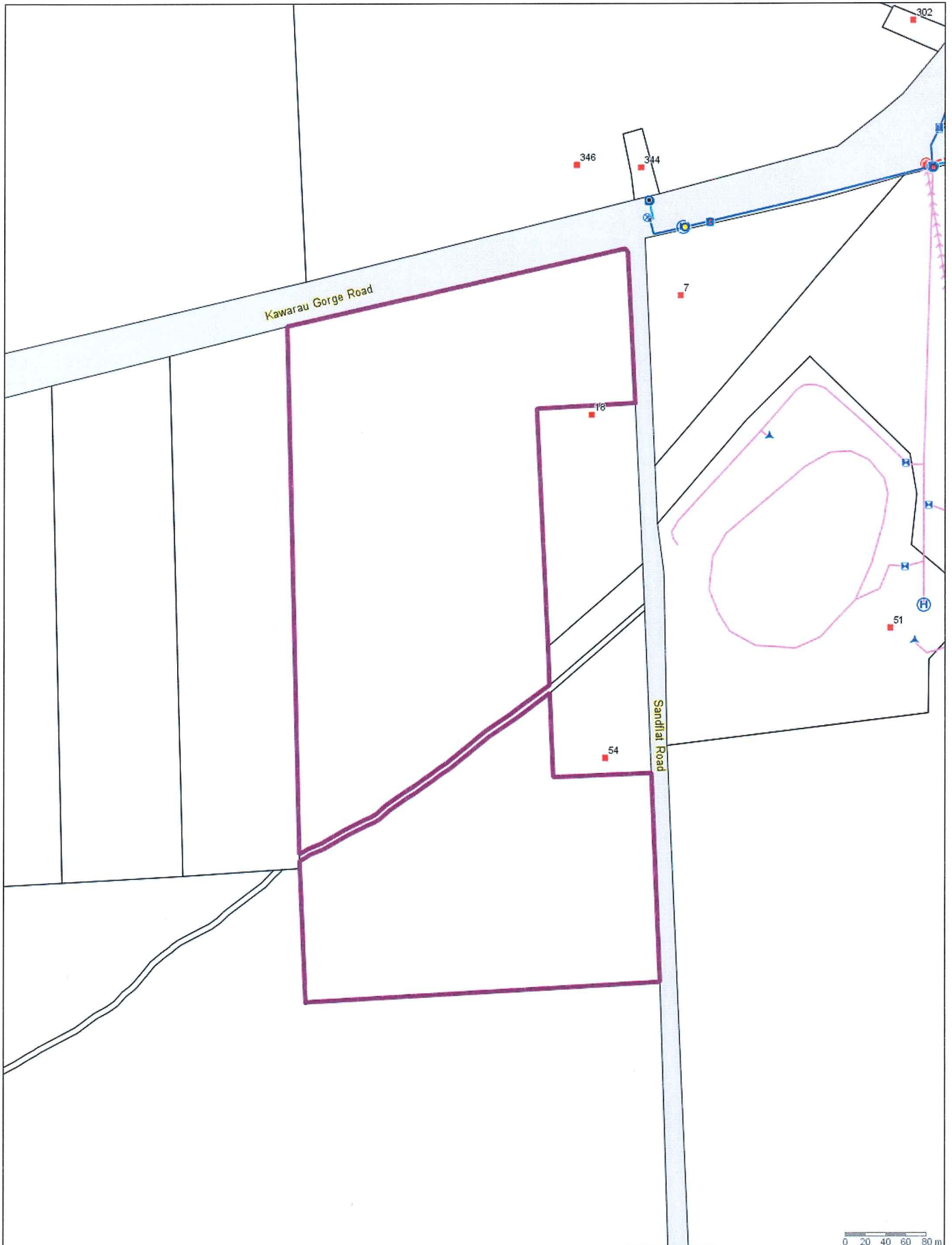
CROWN COPYRIGHT RESERVED. © Copyright Central Otago District Council.



Scale 1:5000

Tuesday, 11 April 2017

Original Sheet Size 210x297mm



### Utilities Map

The information displayed is schematic only and serves as a guide. It has been compiled from Central Otago District Council's records and is made available in good faith but its accuracy or completeness is not guaranteed. Cadastral Information has been derived from Land Information New Zealand's (LINZ) Core Record System Database (CRS).

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Scale 1:5000

Tuesday, 11 April 2017

















Original Sheet Size 210x297mm

## Water Services Legend













### Water point

-  Air Valve
-  Back Flow Preventer
-  Blank Cap
-  Bore
-  Control Box
-  Dall Tube
-  Dummy Node
-  Fire Hydrant
-  Fountain
-  Inline Meter
-  Intake Chamber
-  Manifold
-  Meter
-  Pressure Reducing Valve
-  Pump Station
-  Reservoir
-  Restrictor
-  Sprinkler
-  Tank
-  Tap
-  Treatment Plant
-  Valve

### Sewer point

-  Air Valve
-  Blank Cap
-  Boundary Isolation
-  Cleaning Eye
-  Dummy Node
-  Flow Meter
-  Grease Trap
-  Inspection Chamber
-  Manhole
-  Outlet
-  Pond
-  Pump Station
-  Septic Tank
-  Tank
-  Treatment Station
-  Valve

### Stormwater point

-  Blank Cap
-  Cleaning Eye
-  Double Mud Tank
-  Dummy Node
-  Headwall
-  Inlet
-  Manhole
-  Mud Tank
-  Outlet
-  Pump Station
-  Soakpit
-  Tank









### Water pipe

-  Irrigation
-  Principle Main
-  Private Irrigation
-  Private Water
-  Pump Rising Main
-  Raw Water Main
-  Rider Main
-  Scour Drain / Overflow
-  Service Connection
-  Trunk Main

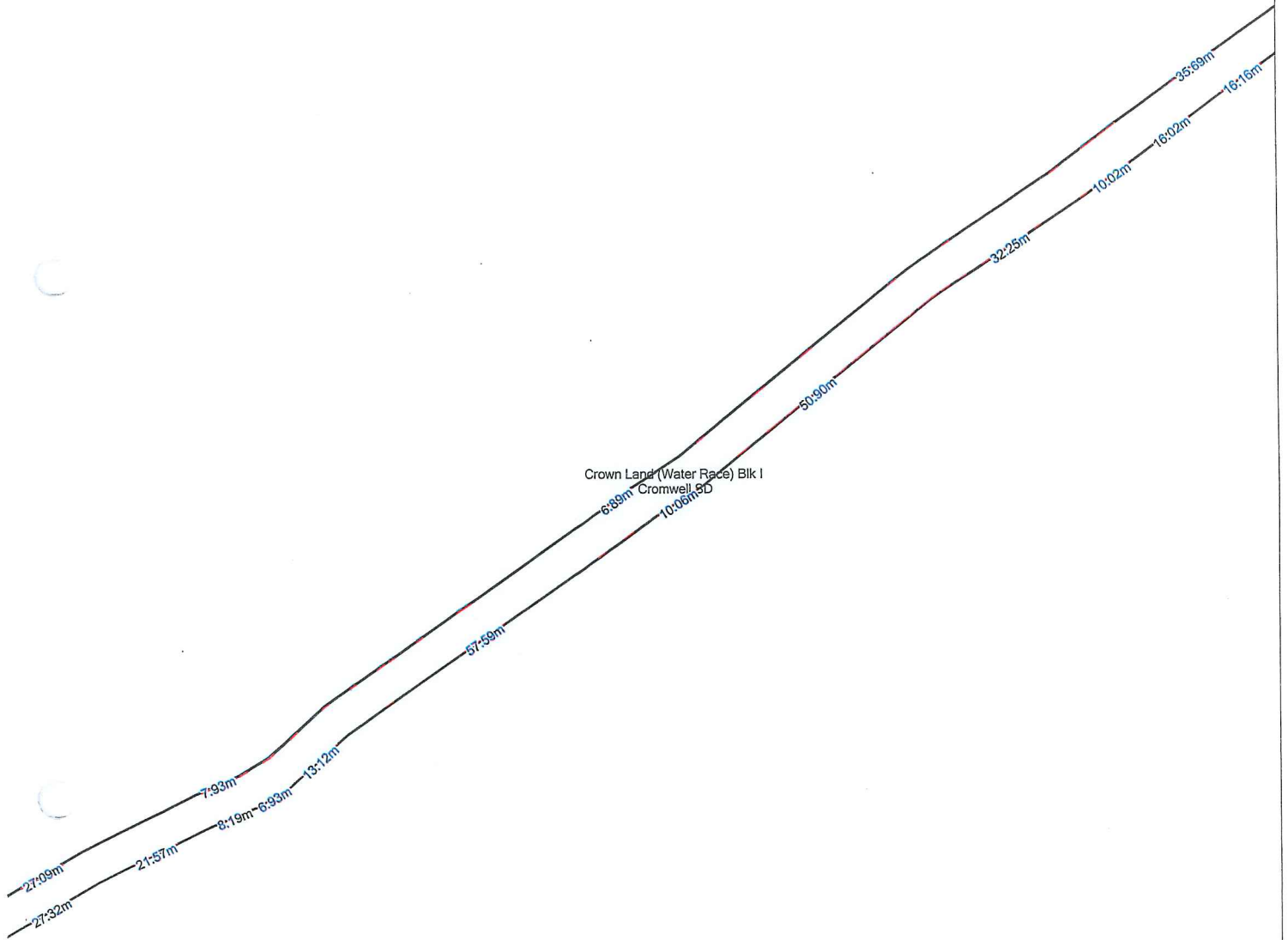
### Sewer pipe

-  Emergency Overflow
-  Gravity Main
-  Pressurised Main
-  Private Sewer
-  Pump Rising Main
-  Service Connection
-  Trunk Sewer Main

### Stormwater pipe

-  Catchpit Lead
-  Culvert
-  Gravity Main
-  Open Channel
-  Private Stormwater
-  Service Connection
-  Soakage
-  Swale

Crown land water race



Pt Sec 24  
Blk I Cromwell Survey District  
(SO 3821)  
(20.4563)  
28421/29103

Scale: 1:790  
100 metres



1 Dunorling Street  
PO Box 122, Alexandra 9340  
New Zealand

+64 3 440 0056  
info@codc.govt.nz  
www.codc.govt.nz

**GST Number:** 51-442-970  
**Invoice Date:** 6/04/17  
**Customer No:** 3442129

Winton Partners Investments Limited  
PO Box 105526  
Auckland City  
Auckland 1143

## Tax Invoice 84472

Quantity	Description	Rate	Amount
	L170249 : Deanna Clark : Winton Partners Investments Limited 2842129102 : Pearson Road, Cromwell		
	Land Information Memorandum Commercial		225.00 *
	(* Incl GST \$29.35)		

Payment Due on or Before the 20th of the Month Following.  
Internet Bank A/C 02-0916-0081744-00. Reference=Customer No.

**Total incl. GST**      \$225.00

(Please detach and return this portion with your payment)

### REMITTANCE ADVICE

Winton Partners Investments Limited  
PO Box 105526  
Auckland City  
Auckland 1143

**Customer No.:** 3442129  
**Invoice No.:** 84472  
**Total Due:** \$225.00

**Amount Enclosed:**

**Central Otago District Council, PO Box 122, 1 Dunorling Street, Alexandra**  
Tel 64-3-440 0056, Fax 64-3-4489196, email codcalex@codc.govt.nz



# Land Information Memorandum

## Application

Winton Partners Investments Limited	Number	L170249
PO Box 105526	Application date	6/04/17
Auckland City		09 377 7003
Auckland 1143		021 497 609
Deanna Clark	Email	deanna.clark@wintonpartners.co.nz

## Property

Valuation No.	2842129102
Location	Pearson Road, Cromwell
Legal Description	SEC 28 BLK I CROMWELL
Owner	Hanson Susanna Therese : Muller Kathrina M & Ors
Area (hectares)	28.5379

## Rates

### Government Valuation

Land	\$	860,000
Capital Value	\$	880,000
Improvements	\$	20,000
Current Rates Year 2016 to 2017		

### Rating Amounts

Annual Rates	\$	2,279.89
Current Instalment	\$	569.98
Next Instalment Due		22/05/17
Current Balance	\$	0.00
Water Balance (if any)	\$	

### Note:

1. Rates are charged in four equal instalments for the period commencing 1 July and ending 30 June each year.
2. If you require further financial information regarding this property for settlement purposes, then the owner or their agent will need to contact the Council separately for this information.

## Planning/Resource Management

**Resource Area:** RURAL RESOURCE AREA

Full details relating to use to which the land may be put and conditions attached to that use found in the Central Otago District Plan (rule 4.7.2(i)). Refer to copy of map from the District Plan for other information in the immediate vicinity.

### Consents:

No other planning information located.

**Designation:** No information located.

**Outstanding Requisitions:** No outstanding requisitions located.

A Land Use Consent will be required to establish any residential activity on this property.

**Building****Consents/Permits/Compliance Schedules:**

No information located.

**Outstanding Requisitions:** No outstanding requisitions located.

**Licences/Environmental Health**

No information located.

**Outstanding Requisitions:** No outstanding requisitions located.

**Sewer and Water**

**Sewer:** Not available – a private effluent disposal system will be required.

**Water:** Not available – a private potable water supply will be required.

**Storm water:** Storm water is to be discharged to soak pits on site within the property.

**Public sewerage water or stormwater drains on property:** No information found.

**Special Land Features**

*Any special feature or characteristic of the land concerned including potential erosion, avulsion, falling debris, subsidence, slippage, alluvium, or inundation, or likely presence of hazardous contaminants: The Natural Hazard database and a report on Seismic Risk in the Otago Region, (by Opus International Consultants Limited 2004), can be located on the Otago Regional Council website [www.orc.govt.nz](http://www.orc.govt.nz)*

No information located.

**Network Utility Operators**

Information relating to the availability of supply, authorisations etc (e.g. electricity or gas) can be obtained from the relevant Network Utility Operator.

**Notes**

1. No title search has been done on this property.
2. Any future development on this property may be liable for a development contribution under the Local Government Act 2002.
3. Every care has been taken to ensure that the information supplied by the Council on this form is accurate. The Council relies on information available to it, and will not be held responsible for incomplete or inaccurate information provided, or for any errors or omissions made in good faith.

**KAREN FREWEN (DDI 03-440 0613)  
ACTING LIM OFFICER**

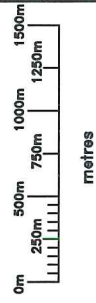


Date: 11/04/17



LOCATION  CENTRAL OTAGO DISTRICT	ADJOINING MAPS	
	51	52
	44	56
	68	56

Scale 1:30,000  
( at A3 )



See LEGEND for key  
to map notations

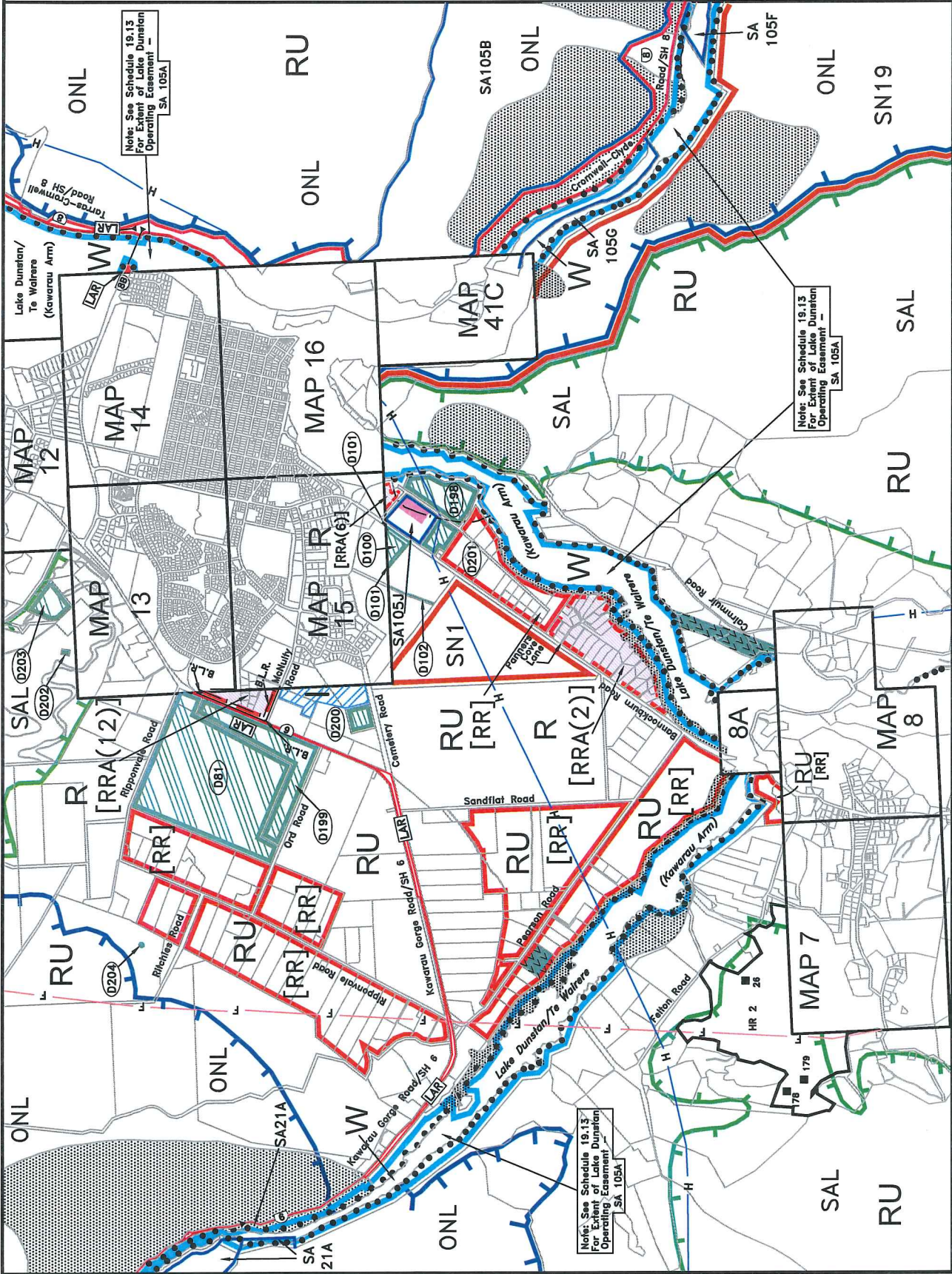
Amended: 10 July 2009,  
20 November 2009  
15 July 2013

Publicly Notified : 18 July 1998  
Amended by Decisions : 1 July 2000  
Operative Date : 1 April 2008

CENTRAL OTAGO DISTRICT PLAN

# MAP 44

## CROMWELL ENVIRONS





# Central Otago District Planning Maps

## LEGEND

### RESOURCE AREAS

<b>RU</b>	Rural Resource Area
<b>R</b>	Residential Resource Area
	Business Resource Area
	Industrial Resource Area
<b>RS</b>	Rural Settlements Resource Area
<b>W</b>	Water Surface and Margin Resource Area
<b>MRRA</b>	McArthur Ridge Resource Area

### DESIGNATIONS

	Designation ( Schedule 19.2 )
	Limited Access Road (Urban Map)
	Limited Access Road (Rural Map)
	State Highway ( Urban Map )
	State Highway ( Rural Map )

### SCHEDULED ACTIVITIES

<b>SA123</b>	Scheduled Activities ( Schedule 19.3 )
--------------	--

NOTES

- All legal roads are deemed to be designated.
- All designated land subject to underlying Resource Area provisions that apply where such land is to be used for a purpose other than the designated purpose.
- Surface of any waterbody deemed to be in Water Surface and Margin Resource Area.
- Other Rural Landscapes (ORL) are landscapes in the Rural Resource Area not identified as ONL, SAL or LMA.
- Cadastral information correct as at 1 December 2007
- Size of symbols as shown in Legend may vary when shown on Planning Maps.
- Cadastral information from Land Information New Zealand [LINZ] CROWN COPYRIGHT RESERVED with regard to Cadastral information.

### HERITAGE VALUES

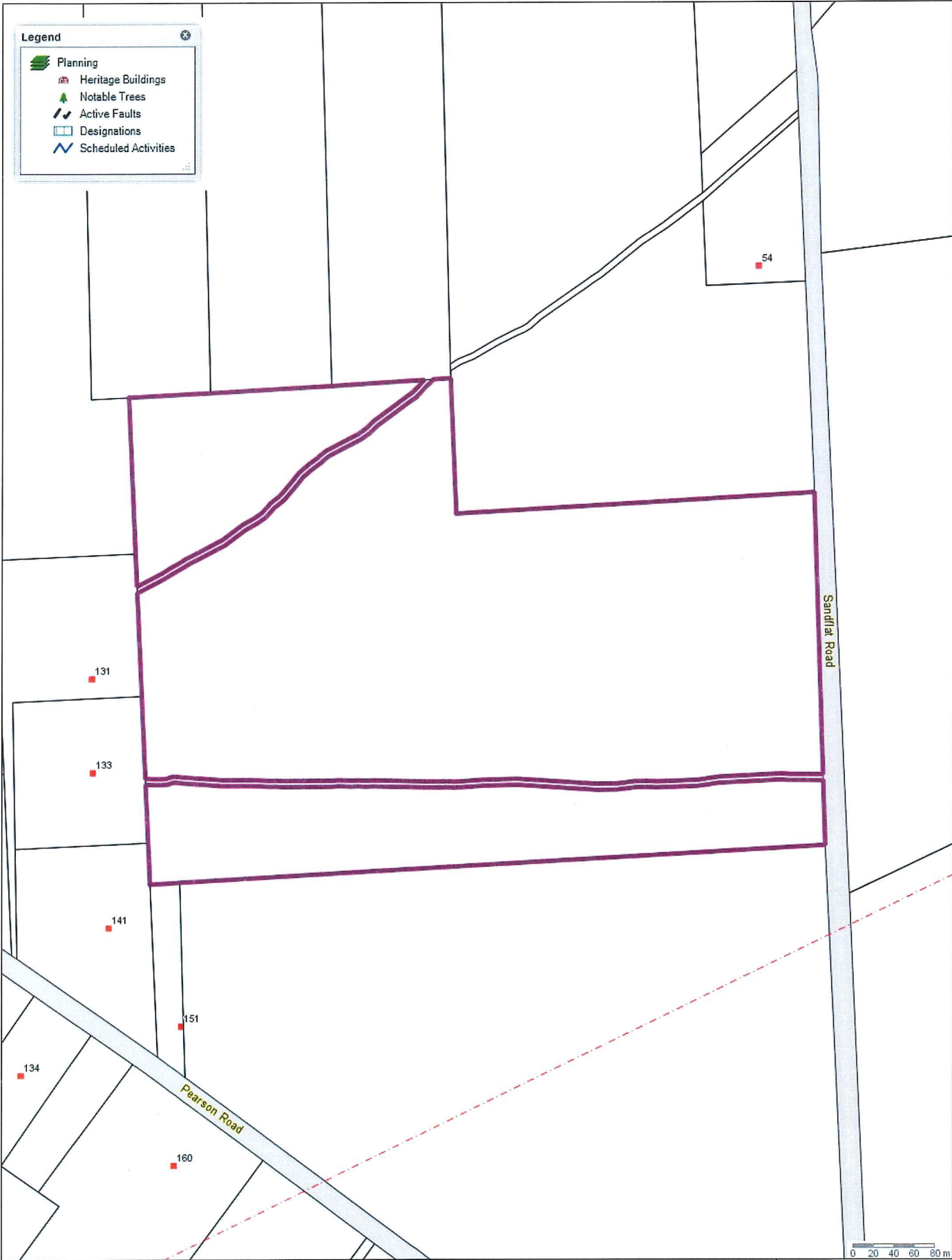
	Heritage Precinct
■ 123	Heritage Building, Place, Site or Object ( Schedule 19.4 )
↑ 12	Notable Tree ( Schedule 19.4 )
	Historic Reserve ( Schedule 19.10 )
	Area of Significant Natural Value ( Schedule 19.6.1 )
▲ W12	Additional Wetlands ( Schedule 19.6A )
	Outstanding Natural Feature
	Outstanding Natural Landscape ( Schedule 19.6.2 )
	Significant Amenity Landscape
	Upper Manorburn / Lake Onslow Landscape Management Area
	Esplanade Provision ( Schedule 19.9 )
	Nohoanga ( Traditional Camping )

### HAZARDS

	Flood prone land ( Schedule 19.11 )
	Mined Area (Urban Maps)
	Mined Area (Rural Maps)
	Active Geological Fault
	Filled Area (including closed Landfills)
	Area of Subsidence or Slippage
	High Voltage Lines ( See Rule 4.7.6 A (g) )

### OTHER NOTATIONS

	District Boundary
	Resource Area Boundary ( Where distinction required )
	Resource Area Boundary underlying a Designation
	Area subject to enlarged Planning Map
	Rural Residential ( See Rule 4.7.2 (II) )
	Rural Resource Area (1)-(5) ( See Rule 4.7.2 (II) & (Ia) )
	Residential Resource Area (1)-(12) ( See Rule 7.3.3 (I)(c) )
	Business Resource Area (1) ( See Rule 8.3.6 (I) )
	Residential Resource Area ( See Rule 7.3.6(III)(f)(2) – Sloping Sites )
	Airport Protection Zone ( See Rule 4.7.6 A (I) )
	Proposed Road Alignment
	Actual position of formed road ( For information purposes only )
	Road to be Stopped
	Building Line Restriction
	Verandah Required ( See Rule 8.3.6(III) )
	Building Facades ( See Rule 8.3.2 (I) )
	Bridge



**Planning Map**

The information displayed is schematic only and serves as a guide. It has been compiled from Central Otago District Council's records and is made available in good faith but its accuracy or completeness is not guaranteed. Cadastral Information has been derived from Land Information New Zealand's (LINZ) Core Record System Database (CRS).

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**NORTH**  
Scale 1:5000  
Tuesday, 11 April 2017  
Original Sheet Size 210x297mm



### Planning Data

The information displayed is schematic only and serves as a guide. It has been compiled from Central Otago District Council's records and is made available in good faith but its accuracy or completeness is not guaranteed. Cadastral Information has been derived from Land Information New Zealand's (LINZ) Core Record System Database (CRS).

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Tuesday, 11 April 2017

### Designations within 200m

None found.

### Scheduled Activities within 200m

None found.

### Heritage Buildings within 200m

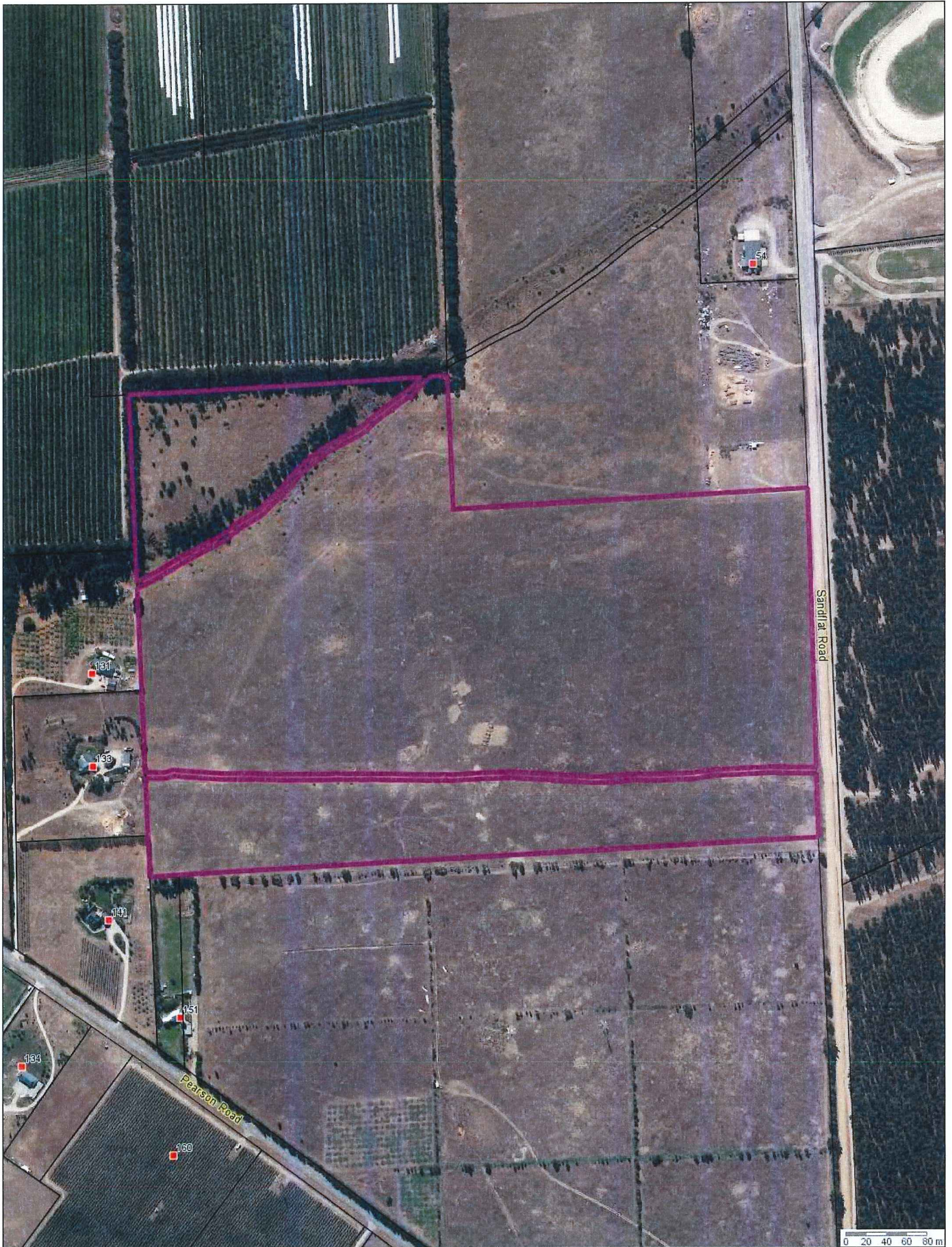
None found.

### Notable Trees within 200m

None found.

### Active Faults within 200m

None found.



### Aerial Photography Map

The information displayed is schematic only and serves as a guide. It has been compiled from Central Otago District Council's records and is made available in good faith but its accuracy or completeness is not guaranteed. Cadastral Information has been derived from Land Information New Zealand's (LINZ) Core Record System Database (CRS).

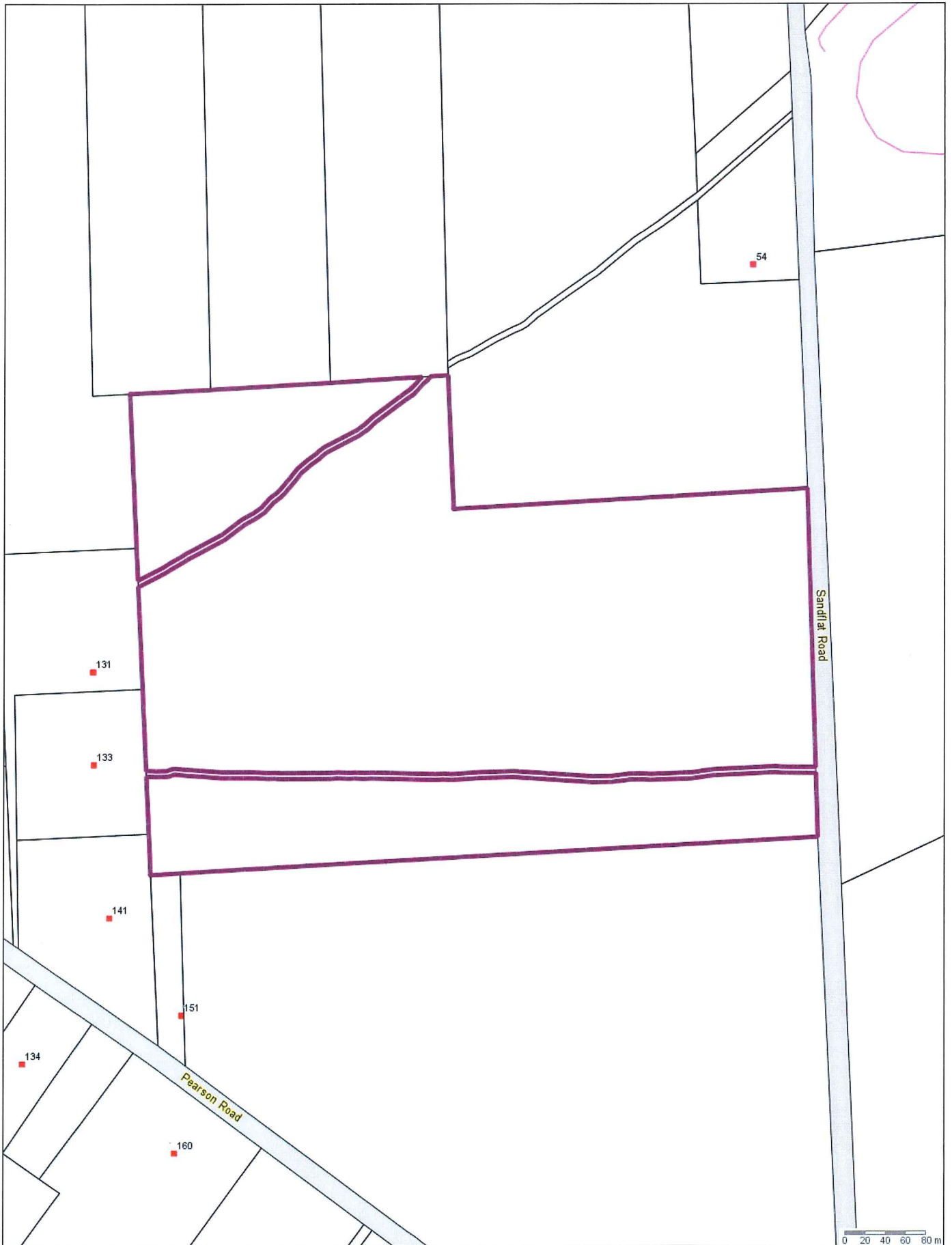
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Scale 1:5000

Tuesday, 11 April 2017

Original Sheet Size 210x297mm



### Utilities Map

The information displayed is schematic only and serves as a guide. It has been compiled from Central Otago District Council's records and is made available in good faith but its accuracy or completeness is not guaranteed. Cadastral Information has been derived from Land Information New Zealand's (LINZ) Core Record System Database (CRS).

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Scale 1:5000

Tuesday, 11 April 2017

















Original Sheet Size 210x297mm

## Water Services Legend













### Water point

-  Air Valve
-  Back Flow Preventer
-  Blank Cap
-  Bore
-  Control Box
-  Dall Tube
-  Dummy Node
-  Fire Hydrant
-  Fountain
-  Inline Meter
-  Intake Chamber
-  Manifold
-  Meter
-  Pressure Reducing Valve
-  Pump Station
-  Reservoir
-  Restrictor
-  Sprinkler
-  Tank
-  Tap
-  Treatment Plant
-  Valve

### Sewer point

-  Air Valve
-  Blank Cap
-  Boundary Isolation
-  Cleaning Eye
-  Dummy Node
-  Flow Meter
-  Grease Trap
-  Inspection Chamber
-  Manhole
-  Outlet
-  Pond
-  Pump Station
-  Septic Tank
-  Tank
-  Treatment Station
-  Valve

### Stormwater point

-  Blank Cap
-  Cleaning Eye
-  Double Mud Tank
-  Dummy Node
-  Headwall
-  Inlet
-  Manhole
-  Mud Tank
-  Outlet
-  Pump Station
-  Soakpit
-  Tank









### Water pipe

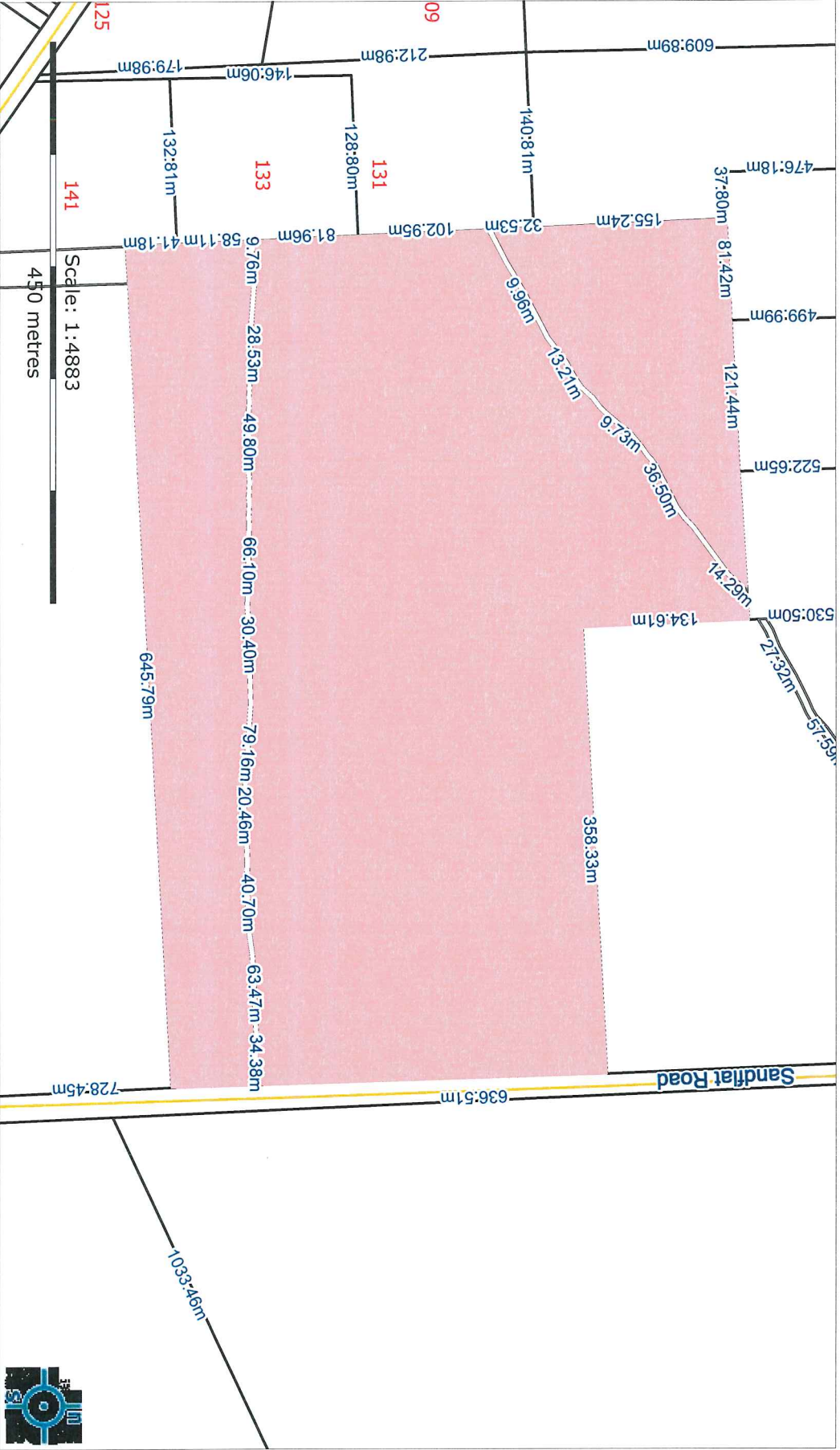
-  Irrigation
-  Principle Main
-  Private Irrigation
-  Private Water
-  Pump Rising Main
-  Raw Water Main
-  Rider Main
-  Scour Drain / Overflow
-  Service Connection
-  Trunk Main

### Sewer pipe

-  Emergency Overflow
-  Gravity Main
-  Pressurised Main
-  Private Sewer
-  Pump Rising Main
-  Service Connection
-  Trunk Sewer Main

### Stormwater pipe

-  Catchpit Lead
-  Culvert
-  Gravity Main
-  Open Channel
-  Private Stormwater
-  Service Connection
-  Soakage
-  Swale



**Appendix D:**  
**Pindone MSDS**



## SAFETY DATA SHEET

# PINDONE RABBIT PELLETS

Updated: October 2009

## 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY

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**PRODUCT NAME:** *PINDONE RABBIT PELLETS*  
**USE:** For the Control of Rabbits  
**OTHER NAMES:** Pindone Agtech Rabbit Pellets, Pindone Rabbit Pellets  
**FORM:** Anticoagulant Cereal Based Pellet Bait  
**MANUFACTURER:** **Pest Management Services Ltd**  
P O Box 11-097, Christchurch  
Ph: 0800 111 466 Fax: 03 348 9291  
Email: [sheryle@nopests.co.nz](mailto:sheryle@nopests.co.nz)  
Web: [www.nopests.co.nz](http://www.nopests.co.nz)

**EMERGENCY PHONE NO.:** National Poisons Centre: 0800 POISON -NZ 0800 764 766

## 2. HAZARD IDENTIFICATION

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6.9B Danger of serious damage to health by prolonged exposure  
9.1D Toxic to aquatic organisms

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

<i>Active Ingredients:</i>	<i>CAS No.:</i>	<i>Proportion:</i>	<i>Molecular Weight:</i>	<i>UN No.:</i>
Pivalyn, Potassium	83-26-1	0.25g/kg	0.75g	
Sorbate, green dye				

## 4. FIRST AID MEASURES

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**EYE CONTACT:** Flush with cool water for at least 15 minutes. If irritation develops, obtain medical assistance.

**SKIN CONTACT:** Wash with soap and water. If irritation develops, obtain medical assistance.

**INHALATION:** Remove patient to fresh air.

**INGESTION:** Do not induce vomiting. Call physician or emergency number immediately.

Administer vitamin K<sub>1</sub> intramuscularly or orally as indicated in bishydroxycoumarin overdoses. Repeat as necessary based on monitoring of prothrombin times.

**SYMPTOMS:** May reduce clotting ability of the blood.

**ADVICE TO PHYSICIAN:** If ingested, administer Vitamin K<sub>1</sub> intramuscularly or orally as indicated by bishydroxycoumarin overdoses. Repeat as necessary as based upon monitoring of prothrombin times.

## 5. FIRE-FIGHTING MEASURES

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**EXTINGUISHING MEDIA:** Extinguish with water, foam or inert gas.

**MEASURES UNSUITABLE FOR SAFETY REASONS:** None

**SPECIAL FIRE FIGHTING PROCEDURES:** As with all fires, evacuate personnel to safe areas.

**PROTECTIVE EQUIPMENT:** Firefighters should be equipped with protective clothing and self-contained breathing apparatus.

**UNUSUAL FIRE OR EXPLOSION HAZARDS:** This material is assumed to be combustible. When heated to decomposition, material emits toxic fumes.

## 6. ACCIDENTAL RELEASE MEASURES

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**PERSONAL PROTECTION:** Gloves should be worn during clean up.

**ENVIRONMENTAL PROTECTION:** Avoid entry to watercourses. In the event of a spill, isolate area and take all practicable steps to manage any harmful effects from entering streams and waterways. Scoop into secure containers and recover any undamaged bait for later use by placing in appropriately labelled containers and dispose of spoiled bait as detailed

below. Use a broom to collect any fine debris and wash down the spill area with copious amounts of water only after spill has been removed. Advise local emergency services of any such occurrence.

## 7. HANDLING AND STORAGE

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**HANDLING:** Keep product in the original container. Do not handle the product near food, animal foodstuffs or drinking water. Keep out of reach of children. Do not use near heat sources, open flame, or hot surfaces. Wash thoroughly with soap and water after handling.

**STORAGE:** Store in a cool, dry place inaccessible to children, pets and wildlife. Keep container tightly closed when not in use. Avoid contamination of lakes, streams and ponds by use, storage and disposal.

**APPROVED SHELF LIFE:** 12 months.

## 8. EXPOSURE CONTROL/PERSONAL PROTECTION

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<b>SPECIAL PROTECTIVE EQUIPMENT:</b>	Not Required
<b>VENTILATION:</b>	Not required
<b>RESPIRATOR TYPE:</b>	Not required
<b>SKIN PROTECTION:</b>	Rubber gloves (recommended)
<b>EYE PROTECTION:</b>	Not required
<b>HYGIENE RECOMMENDATIONS:</b>	Wash thoroughly with soap and water after handling.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

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<b>APPEARANCE:</b>	Green cereal pellet, 11mm diameter & 18mm long, grain odour.
<b>BOILING POINT:</b>	N/A
<b>MELTING POINT:</b>	N/A
<b>FREEZING POINT:</b>	N/A
<b>FLASH POINT:</b>	N/A
<b>DENSITY:</b>	N/A
<b>VAPOUR PRESSURE:</b>	N/A
<b>SOLUBILITY:</b>	Soluble in water.

## 10. STABILITY AND REACTIVITY

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<b>STABILITY:</b>	Stable if stored in original container in a cool, dry location.
<b>POLYMERIZATION:</b>	Will not occur.
<b>INCOMPATIBILITY/CONDITIONS TO AVOID:</b>	None known
<b>HAZARDOUS DECOMPOSITION PRODUCTS:</b>	None known

## 11. TOXICOLOGICAL INFORMATION

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<b>LD50, ORAL (INGESTION):</b>	In excess of 200g/kg
<b>LD50, DERMAL (SKIN CONTACT):</b>	N/A
<b>LD50, ORAL (INHALATION):</b>	Be careful of dust from pellets.
<b>LC50, LETHAL CONCENTRATION:</b>	021ppm (fish) – rainbow trout 1.6ppm (fish) – blue gill sunfish
<b>LC50 AVIAN: 8DAY DIETRY:</b>	2250ppm (bird) – mallard duck 1560ppm (bird) – bobwhite quail

## 12. ECOLOGICAL INFORMATION

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**ECOTOXICITY:** Do not contaminate streams, rivers or waterways with the chemical or used containers.

**PERSISTANCE & DEGRADABILITY:** The product is biologically degradable and will not accumulate in soil or water.

### 13. DISPOSAL

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**WASTE DISPOSAL METHOD:** Waste resulting from use may be disposed of on-site or at an approved waste disposal facility. Dispose of all waste by burning or burying; bury any unwanted or spoiled bait on the active face of a landfill and cover immediately if there is any danger of non-target exposure (e.g. seagulls). The application of composting material under and over the bait will accelerate degradation and detoxification. Dispose in accordance with all local, state and national regulations.

### 14. TRANSPORT INFORMATION

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**DANGEROUS GOODS CLASS:** Not classified Dangerous Goods as toxicity falls below PACKING GROUP III threshold.

### 15. REGULATORY INFORMATION

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**CLASSIFICATION:** ACVM No.4110  
HSNO Approval No. HSR001604

### 16. OTHER INFORMATION

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The information provided in this Safety Data Sheet has been obtained from sources believed to be reliable. Pest Management Services Ltd provides no warranties; either expressed or implied, and assumes no responsibility for the accuracy or completeness of the data contained herein. This information is offered for your consideration and investigation. The user is responsible to ensure that they have all current data relevant to their particular use.

**Appendix E:**

**Otago Regional Council Bore Map**

Cromwell - 1 km Well Search

