



Document Set ID: 6467039
Version: 1, Version 2012
Commonwealth Drip Field: Location of CR9, looking towards Lot 1





Ribbon Test for CR9

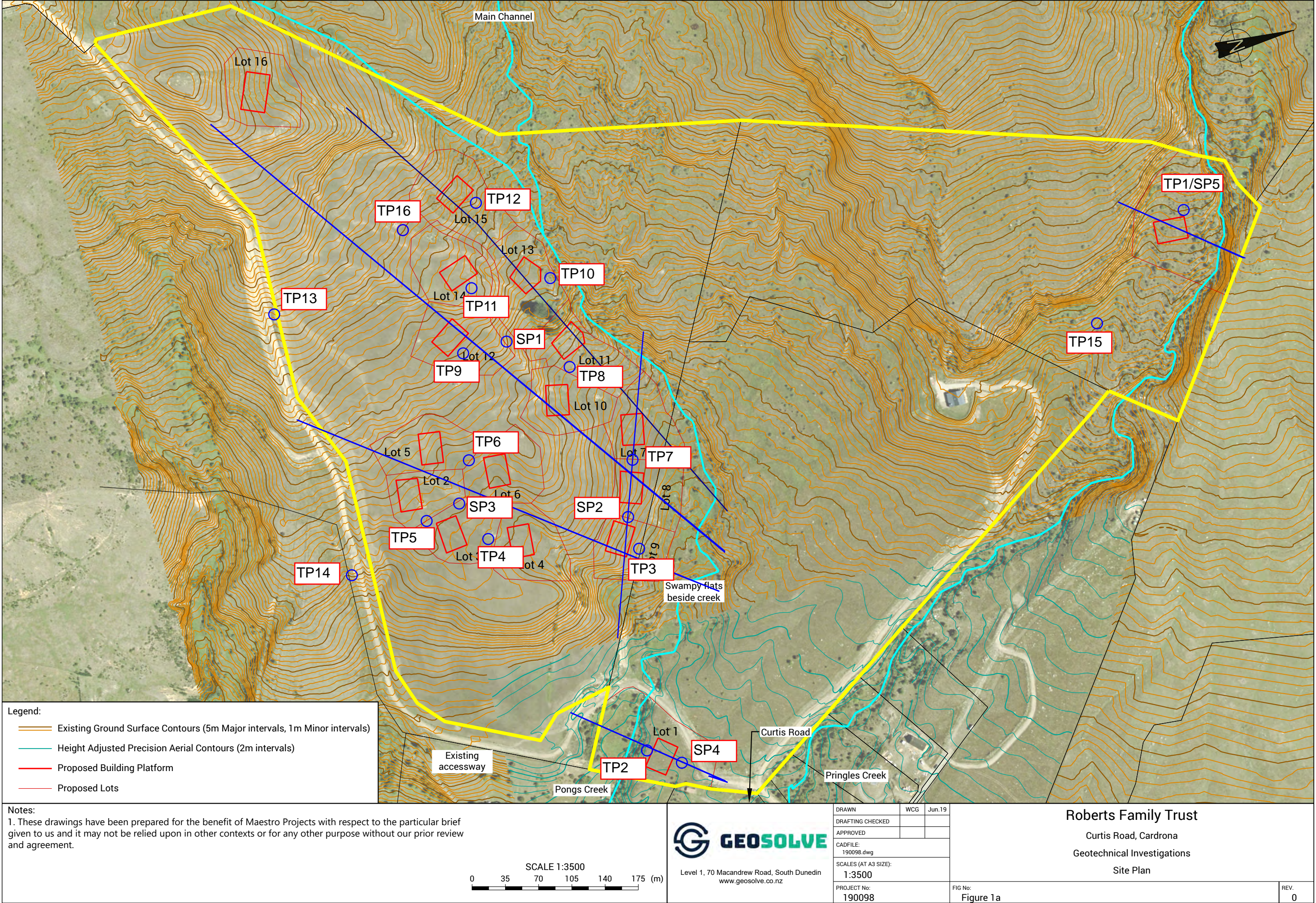


Ribbon Test for CR13



Ribbon Test for CR14
 Document Set 640136
 Version: 1, Version Date: 20/03/2020

Appendix B GeoSolve Test Pits


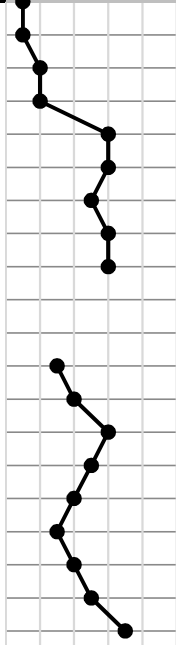
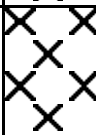
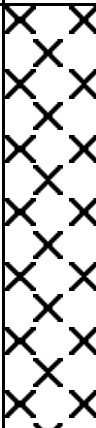
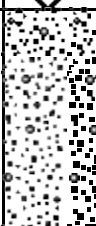



EXCAVATION LOG

EXCAVATION NUMBER:

TP 2

| | | | | | | |
|-----------------------|---------------|----|---------------|-----------------|----------------|---------------|
| PROJECT: | Curtis Rd | | | | JOB NUMBER: | 190098 |
| LOCATION: | See Site Plan | | | | | |
| INCLINATION: Vertical | | | | | | |
| EASTING: | | mE | EQUIPMENT: | 5.5 T Excavator | OPERATOR: | Mat |
| NORTHING: | | mN | INFOMAP NO. | | COMPANY: | Diverse Works |
| ELEVATION: | | m | DIMENSIONS: | | HOLE STARTED: | 7-Jun-19 |
| METHOD: | | | EXCAV. DATUM: | | HOLE FINISHED: | 7-Jun-19 |

| DEPTH (m) | SOIL / ROCK TYPE | GRAPHIC LOG | DESCRIPTION | USCS GROUP | GROUNDWATER / SEEPAGE | SCALA PENETROMETER Blows per 100mm 0 2 4 6 8 10 |
|-----------|----------------------|---|---|------------|-----------------------|--|
| 0.2 | TOPSOIL |  | Dark brown, organic SILT with rootlets. Sluffed. Moist. | | NO SEEPAGE |  |
| 0.6 | SLUFFED FAN ALLUVIUM |  | Grey, SILT with trace rootlets. Sluffed. Silt is non-plastic. Soft. Moist. | | | |
| 1.9 | FAN ALLUVIUM |  | Grey, SILT with minor sand. Silt is non-plastic. Firm. Dry to moist. | | | |
| 2.6 | FAN ALLUVIUM |  | Grey, silty gravelly SAND with some cobbles and minor boulders. Sand is fine to coarse. Gravel is fine to coarse and sub-angular. Silt is non-plastic. Medium dense. Loose bedding. Dry to moist. | | | |
| 3.5 | FAN ALLUVIUM |  | Orange/light brown, SILT. Silt is non-plastic. Stiff. Chaotic structure. Dry to moist. | | | |

Total Depth = 3.5 m


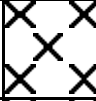
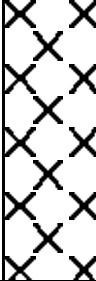

| | |
|----------|----------------|
| COMMENT: | Logged By: MDP |
| | Checked Date: |
| | Sheet: 1 of 1 |

EXCAVATION LOG

EXCAVATION NUMBER:

SP 4

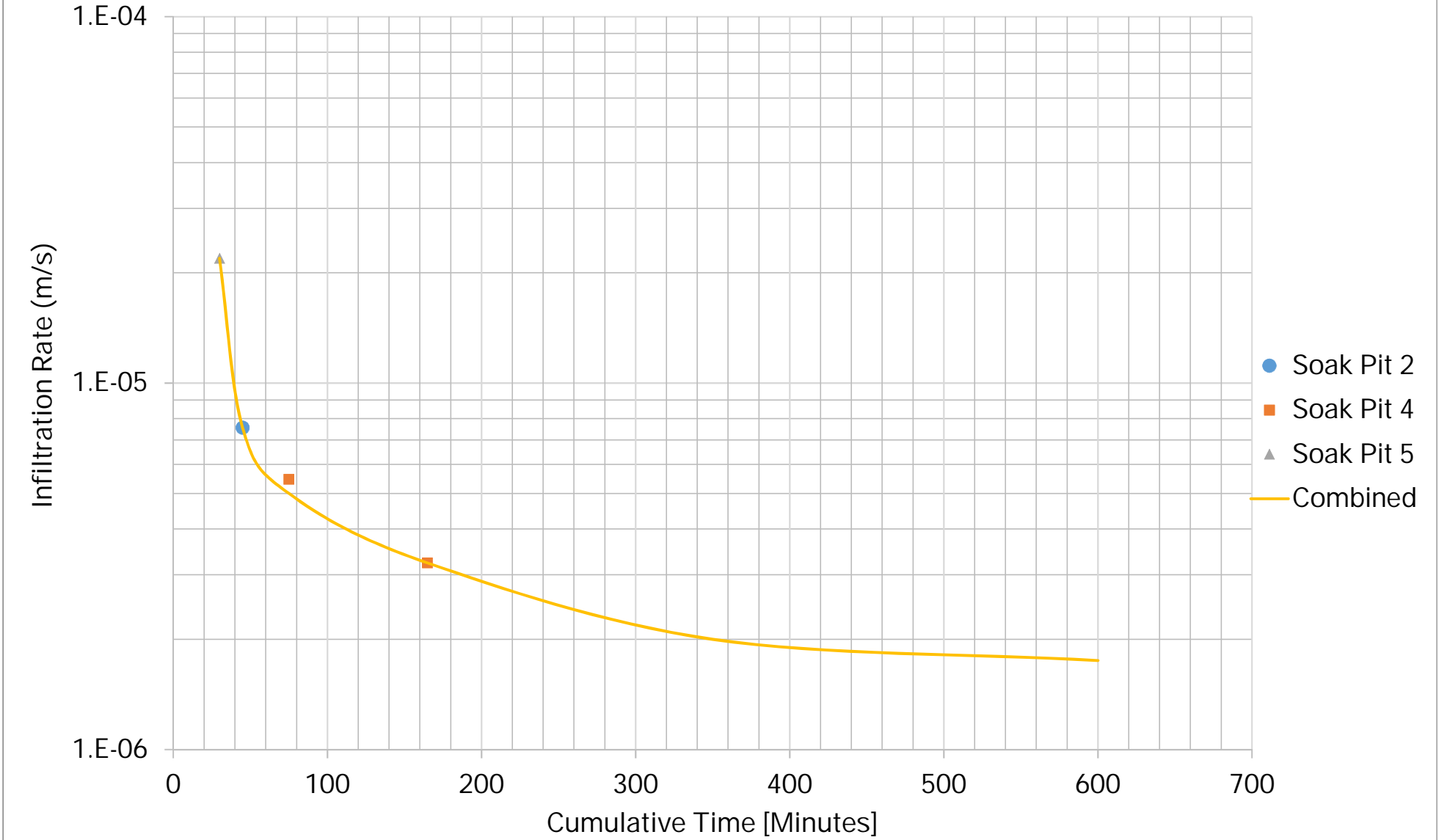
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|-----------------------|---------------|----|---------------|-----------------|----------------|---------------|
| PROJECT: | Curtis Rd | | | | JOB NUMBER: | 190098 |
| LOCATION: | See Site Plan | | | | | |
| INCLINATION: Vertical | | | | | | |
| EASTING: | | mE | EQUIPMENT: | 5.5 T Excavator | OPERATOR: | Mat |
| NORTHING: | | mN | INFOMAP NO. | | COMPANY: | Diverse Works |
| ELEVATION: | | m | DIMENSIONS: | | HOLE STARTED: | 5-Jun-19 |
| METHOD: | | | EXCAV. DATUM: | | HOLE FINISHED: | 5-Jun-19 |

| DEPTH (m) | SOIL / ROCK TYPE | GRAPHIC LOG | DESCRIPTION | USCS GROUP | GROUNDWATER / SEEPAGE | SCALA PENETROMETER |
|-----------|----------------------|---|---|------------|-----------------------|--------------------|
| 0.2 | TOPSOIL |  | Dark brown, organic SILT with rootlets. Sluffed. Moist. | | NO SEEPAGE | |
| 0.5 | SLUFFED FAN ALLUVIUM |  | Brownish grey, SILT with trace rootlets. Sluffed. Soft. Dry to moist. | | | |
| 1.35 | FAN ALLUVIUM |  | Brownish grey, SILT with minor sand. Silt is non-plastic. Stiff. Dry to moist. | | | |
| 1.4 | FAN ALLUVIUM |  | Brownish grey, silty GRAVEL with minor sand, cobbles & boulders. Gravel is fine to coarse. Gravel is sub-angular. Silt is non-plastic. Medium dense. Loose bedding. Dry to moist. | | | |

Total Depth = m

| | |
|----------|----------------|
| COMMENT: | Logged By: MDP |
| | Checked Date: |
| | Sheet: 1 of 1 |

Soak Test Results - Curtis Road Cardrona



Appendix C OSET test certificates for two OSW treatment systems

On-site Effluent Treatment National Testing Programme (OSET NTP)

PERFORMANCE CERTIFICATE EXTENSION 2016 AdvanTex® AX-20 Mode 3 and Mode 3B On-site Domestic Wastewater Treatment System, OSET NTP Trial 5, 2009/2010

System Tested

AdvanTex® AX-20 Mode 3 recirculating textile packed bed reactor treatment unit. Rated design capacity 2,000 litres/day. Total liquid volume 7,200 litres (primary treatment 4,000 litres; aeration treatment textile surface area 5,019 m²; recirculation 2,000 litres; pump chamber 1,200 litres). Emergency storage 2,000 litres. No tertiary treatment (such as UV disinfection) is incorporated. Testing was undertaken November 2009 to August 2010

Test Flow Rate

The **AdvanTex® AX-20 Mode 3** was tested at a flow rate of 1,000 litres/day (equivalent to servicing a 3-bedroom 5 to 6 person household) over an 8 month (35 week) period followed by a 5 week high load effects period involving 5 days at 2,000 litres per day then 1,000 litres/day over the following 4 weeks.

Testing and Evaluation Procedures

A total of 16 treated effluent samples of organic matter (BOD₅), suspended solids (TSS), total nitrogen (TN) and ammonia nitrogen (NH₄-N) at generally six day intervals during weeks 23 through 40 were benchmarked and rated on their median values. In addition, the energy used by the treatment and effluent pumping system was assessed on the mean of consumption levels over the 16 sample days, weeks 23 to 35.

Meeting AS/NZS 1547:2000 Secondary Effluent Quality Requirements

These requirements are that 90% of all test samples must achieve a BOD₅ of ≤ 20 g/m³ and TSS of ≤ 30 g/m³ with no one result for BOD₅ being >30 g/m³ nor no one result for TSS being >45 g/m³. The **AdvanTex® AX-20 Mode 3** already holds a performance certificate issued on 9 April 2010 under Trial 3 (2007/2008) which states that the system **achieved** a performance level of **100%** for both BOD₅ and TSS.

Benchmark Ratings

The **AdvanTex® AX-20 Mode 3** system **achieved** the following effluent quality ratings:

| Indicator Parameters | Median | Std Dev. | Rating | Rating System | | | | |
|---|--------|----------|--------|---------------|-----|-----|-----|-----|
| | | | | A+ | A | B | C | D |
| BOD ₅ (g/m ³) | 2.0 | 0.7 | A+ | <5 | <10 | <20 | <30 | ≥30 |
| TSS (g/m ³) | 2.5 | 4.1 | A+ | <5 | <10 | <20 | <30 | ≥30 |
| Total nitrogen (g/m ³) | 12.3 | 1.3 | A | <5 | <15 | <25 | <30 | ≥30 |
| NH ₄ -Nitrogen (g/m ³) | 0.6 | 0.21 | A+ | <1 | <5 | <10 | <20 | ≥20 |
| Energy (kWh/d) (mean) | 0.92 | -- | A | 0 | <1 | <2 | <5 | ≥5 |

Performance Certificate Extension

In August 2016 Innoflow Technologies Ltd applied for an Extension of Time related to the Performance Certificate issued in 2011 for their **AX-20 Mode 3** plant and requested that it be applied to their **AX-20 Mode 3B** plant. They provided a signed and legally witnessed statement that there have been two changes to the mode 3 plant tested in 2011 comprising:

- Change from a concrete tank (Mode 3) to a fibreglass tank (Mode 3B), and provided full technical drawings for review.
- Change from a locally sourced AXPTRO V5 control system to an Orenco MVP-AX20 B2/DM(NZ) control panel, with no change in control logic or control timer settings.

AND that these changes are not considered to have resulted in reduced performance in terms of all effluent quality parameters listed in the original OSET-NTP certification.

On-site Effluent Treatment National Testing Programme,
c/- Technical Manager, 2/12 Mt Blanc Pl, Northpark, Howick, AUCKLAND 2013
Mob: 021 626 772 E-mail: ray@hedgland.co.nz



On-site Effluent Treatment National Testing Programme (OSET NTP)

SWANS-MAG reviewed the changes and concurs with the Innoflow Technologies Ltd statement that no reduction in performance is expected. Hence the plants performance results and Benchmark Ratings above, as tested in 2009, can be expected to remain unchanged in 2016 for either the Mode 3 or Mode 3B plant and the previous Performance Certificate can be extended for a period of 3 years from its previous expiry date.

This Performance Certificate is specific to the **AdvanTex® AX-20 Mode 3 and Mode 3B plants** as specified above when operated at a flow rate of 1,000 litres/day, **and is valid to 22 March 2019**. The Trial 3 Performance Certificate of 9 April 2010 includes effluent quality ratings for TP (total phosphorus) and FC (faecal coliforms).

For the full OSET NTP Trial 5 report on the performance of the **AdvanTex® AX-20 Mode 3** system contact Innoflow Technologies Ltd at Dairy Flat, Auckland, on *0800innoflow*.

Authorised By:

Ray Hedgland,
Technical Manager, OSET NTP

13 October 2016

**On-site Effluent Treatment National Testing Programme,
c/- Technical Manager, 2/12 Mt Blanc Pl, Northpark, Howick, AUCKLAND 2013
Mob: 021 626 772 E-mail: ray@hedgland.co.nz**



On-site Effluent Treatment National Testing Programme (OSET NTP)

PERFORMANCE CERTIFICATE Environment Technology AES-38 R & AES-38 R/UV OSET NTP Trial 13, 2017/2018

System Tested

The Environment Technology AES-38 R & R/UV treatment plant comprising a passive aerobic proprietary bed treatment system with treated effluent recirculation through the septic tank, plus a phosphorus reduction filter and UV disinfection (turned on from Week 20 of the testing program) participated in Trial 13 of the On-site Effluent Treatment National Testing Programme (OSET NTP). This commenced on 23 October 2017 and ran over ten months (44 weeks) during which the treated effluent discharge was monitored generally every six days. The Environment Technology AES-38 R & R/UV treatment system tested had a rated capacity of 1,026L/day (38L/m/day of AES pipe) and a maximum capacity of 2,025/day (75L/m/day of AES pipe). The plant comprised a 5,000L septic tank, a 2.25m wide x 8m long x 0.9m deep AES bed configured as a Combination System comprising two lines supplied via a distribution box, with each line comprising a Basic Serial Pipeline in accordance with ET's installation manual, followed by a 630L recirculation tank with a Waste-180VA 2,000L/h recirculation pump (operated 144 min/day discharging to the septic tank), plus a 200L phosphorous reduction chamber, a Salcor UV-3G unit and a 45L effluent pump station. The emergency storage below the bed and in the pump station is 1,307L.

The service requirement is annual for the R/UV plant and 4 yearly for the R plant for septic tank cleaning.

Test Flow Rate

The Environment Technology AES-38 R & R/UV treatment system was tested at 1,000L/day (equivalent to servicing a 3-bedroom 5 to 6 person household) over an 10 month (40 week) period November 2017 to August 2018 including a 1 month (4 week) high load effects test involving 5 days at 2,000L/day then 1,000L/day over the following 3 weeks. Note that the manufacturer's advised design capacity for this plant is 1,400L/day.

Testing and Evaluation Procedures

A two-month (8 week) media development and settling-in period was initially proposed, but this was extended to 12 weeks due to an unscheduled geothermal waste influent flow on 23 November, followed by extreme weather events in Rotorua, resulting in widespread flooding and high infiltration into the sewerage system, along with an electrical storm impacting on the testing facility control system in early December. Ten samples were taken during this period (Weeks 4 to 12). The Environment Technology AES-38 R & R/UV treatment system did not appear to be affected by either the geothermal influent or weather events.

The performance evaluation testing programme followed involving a three-month pre-benchmarking period (20 samples over Weeks 13 to 28), and a three-month benchmarking period (19 samples over Weeks 29 to 40). Within each block, a five-day consecutive sample period occurred (Weeks 25 and 34). A one-month high load assessment period followed in Weeks 42 to 44 (three samples).

The 39 samples taken through the pre-benchmarking and benchmarking periods were used to assess treatment performance against the **Secondary Effluent Quality** requirements for biochemical oxygen demand (BOD₅) and total suspended solids (TSS) defined by AS/NZS 1547:2012 as set out in AS/NZS 1546.3:2008

A total of 19 treated effluent samples of organic matter (BOD₅), total suspended solids (TSS), total nitrogen (TN), ammonia nitrogen (NH₄-N), total phosphorus (TP) and faecal coliforms (FC) at generally six day intervals during weeks 28 through 40 were tested and the results benchmarked and rated on their median values.



On-site Effluent Treatment National Testing Programme (OSET NTP)

General Performance

There were no equipment failures (apart from a discharge pump replacement prior to commencement of testing) or attendance other than an inspection in Week 20 to turn the UV system on and clean the UV Teflon tube, during which neither plant nor control settings were modified.

In terms of effluent quality, the Environment Technology AES-38 plant performed consistently well overall, with low and stable BOD, TSS, and TN results throughout, including through the geothermal influent event. There was no impact upon performance due to varying influent concentrations, cold winter temperatures, or the high flow test, apart from a minor increase in TN for the first week after high flows, which immediately returned to normal. Overall, the plant achieved total nitrification with no $\text{NH}_4\text{-N}$ throughout, and low levels of TOXN, resulting in low Total Nitrogen of $<12\text{mg/L}$, and a mean of only 7.8mg/L .

Bacteria reduction was also good, with the AES-38 R plant effluent containing 1,900-18,000cfu/100mL faecal coliforms. After the UV unit was switched on in Week 20, low *E.coli* results were achieved with a median of 2cfu/100mL and 80% $<3\text{cfu/100mL}$.

The plant's power usage was around 0.9kWh/day in the AES-38 R mode, and 2.1kWh/day in the AES-38 R/UV mode.

AS/NZS 1547:2012 Secondary Effluent Quality Requirements

These requirements are that 90% of all test samples must achieve a BOD_5 of $\leq 20\text{ g/m}^3$ and TSS of $\leq 30\text{ g/m}^3$ with no one result for BOD_5 being $>30\text{ g/m}^3$ and no one result for TSS being $>45\text{ g/m}^3$.

The Environment Technology AES-38 R & R/UV treatment plant had **100% of BOD_5 results and 100% of TSS results** within the **Secondary Effluent Quality** requirements for both the 90 percentile and maximum limits above. **The AES-38 R & R/UV plants therefore achieved AS/NZS 1547 secondary effluent quality performance requirements** when operated at 1,000 L/day, which is the manufacturer's advised operational flow design capacity.

AS/NZS 1547:2012 Secondary Effluent Quality with disinfection Requirements

These requirements are additional to the secondary effluent quality requirements and require the plant to achieve *E.coli* levels comprising a median $\leq 10\text{cfu/100mL}$, with 80% of samples $\leq 20\text{cfu/100mL}$, and no sample to exceed 100cfu/100mL

The UV unit was turned on in Week 20 from when the plant performed as an AES-38 R/UV system. Transmissivity, and Turbidity were tested from Week 25 and *E.coli* from Week 28. The results showed that the effluent had high Transmissivity with a median of 72%, and low Turbidity with a median of 2NTU. *E.coli* results varied from 1 to 34cfu/100mL, with 80% of samples $\leq 5\text{cfu/100mL}$, and a mean of 1cfu/100mL. **The Environment Technology AES-38 R/UV plant therefore had 100% compliance with the requirements of this standard for secondary treatment plants with disinfection.**



On-site Effluent Treatment National Testing Programme (OSET NTP)

Benchmark Ratings

The Environment Technology AES-38 R & R/UV treatment plant achieved the following effluent quality ratings:

| Indicator Parameters | Median | Std Dev | Rating | Rating System | | | | |
|-----------------------------------|-------------------|---------|--------|---------------|------|---------|----------|----------|
| | | | | A+ | A | B | C | D |
| BOD (mg/L) | 2 | 0 | A+ | <5 | <10 | <20 | <30 | ≥30 |
| TSS (mg/L) | 1 | 1.1 | A+ | <5 | <10 | <20 | <30 | ≥30 |
| Total Nitrogen (mg/L) | 7.7 | 1.6 | A | <5 | <15 | <25 | <30 | ≥30 |
| NH ₄ - Nitrogen (mg/L) | 0 | 0 | A+ | <1 | <5 | <10 | <20 | ≥20 |
| Total phosphorus (mg/L) | 3.5 | 0.4 | B | <1 | <2 | <5 | <7 | ≥7 |
| E.coli (cfu/100mL) ¹ | 2 ¹ | 16 | A+ | <10 | <200 | <10,000 | <100,000 | ≥100,000 |
| Energy (kWh/d) (mean) | 1.98 ¹ | 0.14 | B | 0 | <1 | <2 | <5 | ≥5 |

¹The E.coli and Power results are whilst UV disinfection was operating.

This Certificate of Performance only applies to the Environment Technology AES-38 R & R/UV treatment plants as described in the 'System Tested' above when operated at 1,000 L/day, which the manufacturers advise is normal flow design capacity.

The certificate is valid for 5 years from the date below. For the full OSET NTP report on the performance of the Environment Technology AES-38 R & R/UV wastewater treatment plant contact Dick Lamb/Hazel Pearson, Phone: 03 970 7979, or Email: info@et.nz

Authorised By:

Ray Hedgland, Technical Manager, OSET NTP
27 November 2018

OTAGO REGIONAL COUNCIL

RESOURCE MANAGEMENT ACT 1991

SECTION 139 – CERTIFICATE OF COMPLIANCE

APPLICANT: Charles Layton Roberts, Christine Jennifer Roberts and Jo-anne Leslie Johns being Trustees of the Roberts Family Trust

ADDRESS: Curtis Road Cardrona

REFERENCE NUMBER: RM19.307.01

SITE: **Location:** Cardrona, approximately 702 metres north west of the intersection of Curtis Road and Pringles Creek Road.

Grid Reference/GPS location: NZTM 2000: E1284107 N5023704

Legal Description: Lot 1 DP 433836

Introduction

Roberts Family Trust (the applicant) has requested a Certificate of Compliance for taking and using surface water from Pringles Creek within the Cardrona River Catchment as a permitted activity.

The relevant plan is the Regional Plan: Water for Otago (RPW).

Relevant Rules

The applicant has sought a Certificate of Compliance under Rule 12.1.2.1, Rule 12.1.2.4 and Rule 12.1.2.5 of the RPW which state the following:

- “12.1.2.1 The taking and use of surface water for domestic needs or the needs of animals for drinking water is a **permitted** activity providing:
- (a) No take is for a volume greater than 25,000 litres per day; and
 - (b) No take is at a rate greater than 0.5 litres per second in the North Otago, Maniototo or Central Otago subregions (as identified on Maps A1-A8), or greater than 1 litre per second elsewhere in Otago; and
 - (c) The taking or use does not have an adverse effect on the environment.”
- “12.1.2.4 Except as provided for by Rules 12.1.1.1 to 12.1.2.3, the taking and use of surface water for no more than 3 days in any one month, is a **permitted** activity, providing:
- (a) The water is not used for irrigation; and

- (b) There is no change to the water level range or hydrological function of any Regionally Significant Wetland; and
- (c) There is no damage to fauna, or New Zealand native flora, in or on any Regionally Significant Wetland; and
- (d) No lawful take of water is adversely affected as a result of the taking; and
- (e) No take is for a volume greater than 100,000 litres per day; and
- (f) No take is at a rate greater than 10 litres per second; and
- (g) No back-flow of any contaminated water occurs to the water body; and
- (h) Fish are prevented from entering the intake structure; and
- (i) The taking of surface water is not suspended.

The Otago Regional Council may, by public notice, suspend the taking of water under this rule if the taking of water as primary allocation, under a resource consent has had to cease in accordance with Rule 12.1.4.9, for the catchment or river, or part of the catchment or river, at which the taking of water under this rule is occurring.”

“12.1.2.5 Except as provided for by Rules 12.1.1.1 to 12.1.2.4, the taking and use of surface water is a **permitted** activity, providing:

- (a) There is no change to the water level range or hydrological function of any Regionally Significant Wetland; and
- (b) There is no damage to fauna, or New Zealand native flora, in or on any Regionally Significant Wetland; and
- (c) No lawful take of water is adversely affected as a result of the taking; and
- (d) No take is for a volume greater than 25,000 litres per day at any landholding; and
- (e) No take is at a rate greater than 0.5 litres per second in the North Otago, Maniototo or Central Otago subregions (as identified on Maps A1-A8), or greater than 1 litre per second elsewhere in Otago; and
- (f) No back-flow of any contaminated water occurs to the water body; and
- (g) Fish are prevented from entering the intake structure; and
- (h) The taking of surface water is not suspended.

The Otago Regional Council may, by public notice, suspend the taking of water under this rule if the taking of water as primary allocation, under a resource consent has had to cease in accordance with Rule 12.1.4.9, for the catchment or river, or part of the catchment or river, at which the taking of water under this rule is occurring.”

Rule 12.1.2.1, Rule 12.1.2.4 and Rule 12.1.2.5 of the RPW are permitted activities provided the clauses under each Rule are met.

Details of the Activity for Which a Certificate of Compliance is Sought

The applicant proposes to abstract surface water from Pringles Creek located on Lot 1 DP 433836 for the following purposes:

- Domestic water supply and stock water supply under Rule 12.1.2.1 of the RPW restricted to a daily volume of 25,000 litres at a maximum rate of 0.5 Litres per second (L/s);
- A 3 day take per calendar month under Rule 12.1.2.4 where no water under Rule 12.1.2.1 and Rule 12.1.2.5 of the RPW will be taken on these three days. Water taken under this Rule will not exceed 100,000 litres per day and will not exceed a rate of 1.16 L/s.
- Irrigation water and water for other uses under Rule 12.1.2.5 of the RPW that is not provided for under Rule 12.1.2.1 and 12.1.2.4. Water taken under this Rule will not exceed the maximum take of 25,000 litres per day and will not exceed a rate of 0.5 L/s. Water taken under this Rule will be reticulated separately from the domestic water take and will have a separate dedicated water meter.

The point of abstraction from Pringles Creek will occur approximately at Map Reference NZTM 2000 1284107E and 5023704N. Pringles Creek is located within the Cardrona River Catchment.

The applicant proposes that water abstracted under Rule 12.1.2.5 will be reticulated separately to that of the domestic water supply. The applicants propose water taken under Rule's 12.1.2.1 and 12.1.2.4 will be reticulated through the same domestic water supply system, however the taking of water under Rule 12.1.2.4 will only occur for 3 days per a month and during that time no water will be taken under Rule 12.1.2.1.

The applicant's landholding also has a part share from a consented water take from Pringles Creek (RM17.212.01). Up to 3,000 litres of water is allocated to the property from the consented take on a daily basis.

Compliance With the Permitted Activity Rules

Under the RPW there are no provisions that prevent stacking of surface water under the permitted activity Rules 12.1.2.1, 12.1.2.4 and 12.1.2.5. The following provisions apply under each Rule:

Rule 12.1.2.1:

- (a) *No take is for a volume greater than 25,000 litres per day; and*

The applicant advises water will be metered to take a maximum of 25,000 litres a day and therefore this provision is complied with.

- (b) *No take is at a rate greater than 0.5 litres per second in the North Otago, Maniototo or Central Otago subregions (as identified on Maps A1-A8), or greater than 1 litre per second elsewhere in Otago; and*

The applicant advises an appropriate pump size will be installed on the domestic water take that will limit the rate of this take to a maximum of 0.5 L/s and therefore the proposed take will meet this requirement.

(c) *The taking or use does not have an adverse effect on the environment.*

The applicant has confirmed the estimated seven day mean annual low flow (MALF) of Pringles Creek is 35 L/s and has confirmed the rate of take under Rule 12.1.2.1 is equivalent to 1.4% of the MALF for Pringles Creek and is not expected to have adverse effects on the environment.

The applicant proposes to take water under three different permitted activity rules and this may result in cumulative effects. It is noted that each rule is treated separately and the stacking of permitted activity rules can occur under the RPW. The effects of each of the proposed takes therefore need to be assessed against each relevant rule. Currently the RPW does not provide for addressing the cumulative effects of stacking permitted activity rules.

Rule 12.1.2.4:

(a) *The water is not used for irrigation;*

The applicant advises the take of water under Rule 12.1.2.4 will not be used for irrigation and therefore this requirement will be met.

(b) *There is no change to the water level range or hydrological function of any Regionally Significant Wetland; and*

The proposal complies with this provision as there are no Regionally Significant Wetlands within 10 kilometres (km) of the site.

(c) *There is no damage to fauna, or New Zealand native flora, in or on any Regionally Significant Wetland; and*

The proposal complies with this provision as there are no Regionally Significant Wetlands within 10 km of the site.

(d) *No lawful take of water is adversely affected as a result of the taking; and*

The applicant has estimated the proposed take under Rule 12.1.2.4 is approximately 2.5% of the seven day MALF for Pringles Creek and is unlikely to cause adverse effects on lawful takes of water. It is acknowledged that the take for RM17.212.01 is located within 200 m of the proposed take. The proposed take under Rule 12.1.2.4 is located upstream from the consented take and is not expected to effect residual flows set in conditions of consent of RM17.212.01.

(e) *No take is for a volume greater than 100,000 litres per day; and*

The applicant has confirmed that the take under Rule 12.1.2.4 will not exceed 100,000 L/day on any three days per calendar month. The applicants advise this will be complied with by the use of a domestic water supply meter.

(f) No take is at a rate greater than 10 litres per second; and

A separate dedicated pump is proposed to be used by the applicant that will limit the rate of the take under Rule 12.1.2.4 to approximately 1 L/s. The proposal will therefore comply with this provision.

(g) No back-flow of any contaminated water occurs to the water body; and

The applicant advises no back flow of any contaminated water is able to occur to the water body and therefore the activity complies with this provision.

(h) Fish are prevented from entering the intake structure; and

The applicant advises the take of water is suitably screened to prevent fish from entering the intake and therefore this provision is complied with.

(j) The taking of surface water is not suspended.

The applicant advises the taking of water under Rule 12.1.2.4 is able to cease if the taking of surface water is suspended. Currently the taking of surface water is not suspended.

12.1.2.5

(a) There is no change to the water level range or hydrological function of any Regionally Significant Wetland; and

The proposal complies with this provision as there are no Regionally Significant Wetlands within 10 km of the site.

(b) There is no damage to fauna, or New Zealand native flora, in or on any Regionally Significant Wetland; and

The proposal complies with this provision as there are no Regionally Significant Wetlands within 10 km of the site.

(c) No lawful take of water is adversely affected as a result of the taking; and

The applicant proposes to reticulate water taken under Rule 12.1.2.5 separately from the domestic water take and therefore the take under this Rule is not expected to adversely affect the permitted activity takes under Rule 12.1.2.1 and 12.1.2.4. As previously highlighted the take for RM17.212.01 is located within 200 m of the proposed take. The proposed take under Rule 12.1.2.4 is located upstream from the consented take and is not expected to effect residual flows set in conditions of consent of RM17.212.01.

(d) No take is for a volume greater than 25,000 litres per day at any landholding; and

A separate water meter will be installed to ensure the daily volume allowance of 25,000 L/day is not exceeded.

- (e) *No take is at a rate greater than 0.5 litres per second in the North Otago, Maniototo or Central Otago subregions (as identified on Maps A1-A8), or greater than 1 litre per second elsewhere in Otago; and*

An appropriate sized pump will be installed to limit the rate of the take to a maximum of 0.5 L/s. The proposed take will therefore comply with this provision.

- (f) *No back-flow of any contaminated water occurs to the water body; and*

The applicant advises no back flow of any contaminated water is able to occur to the water body and therefore the activity complies with this provision.

- (g) *Fish are prevented from entering the intake structure; and*

The applicant advises the take of water is suitably screened to prevent fish from entering the intake and therefore this provision is complied with.

- (h) *The taking of surface water is not suspended.*

The applicant advises the taking of water under Rule 12.1.2.5 is able to cease if the taking of surface water is suspended. Currently the taking of surface water is not suspended.

Certification

It is certified that, with regard to the activities at the location specified above, as stated in the application for this certification received by the Consent Authority on 12th September 2019 and the further information received on 30th September 2019 and the further information received on the 4th October 2019 to take surface water from Pringles Creek on Lot 1 DP 433836 for the following purposes:

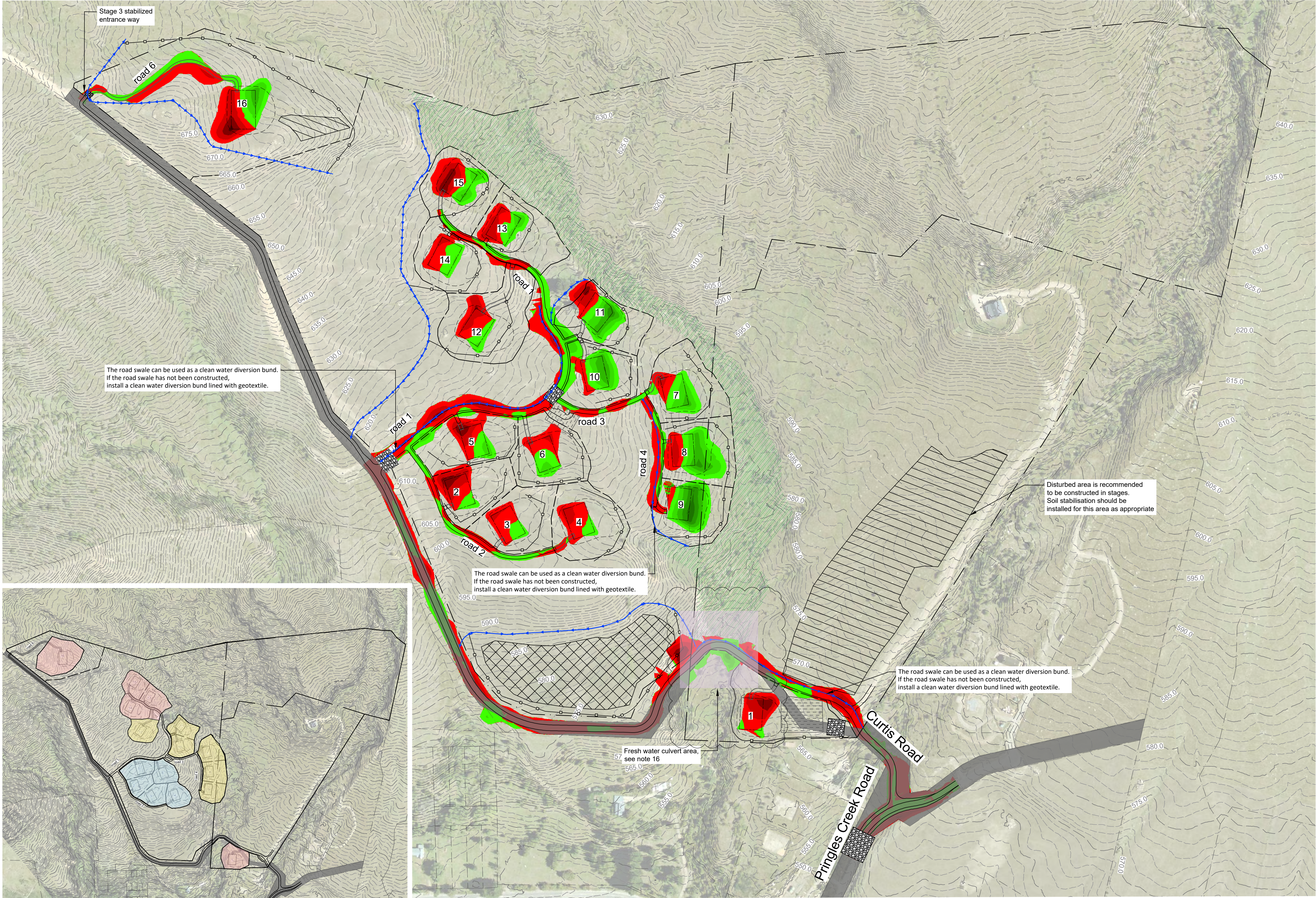
- Domestic water supply and stock water supply under Rule 12.1.2.1 of the RPW restricted to a daily volume of 25,000 L/day with a maximum rate of 0.5 L/s;
- A 3 day take per calendar month under Rule 12.1.2.4 where no water under Rule 12.1.2.1 and Rule 12.1.2.5 of the RPW will be taken on these three days; and water take under this rule will be no more than 100,000 L/day and will not exceed a rate of 10 L/s.
- Irrigation water and water for other uses under Rule 12.1.2.5 of the RPW that is not provided for under Rule 12.1.2.1 and 12.1.2.4. Water taken under this Rule will not exceed the maximum take of 25,000 L/day and will not exceed a rate of 0.5 L/s.

Can lawfully be taken under permitted activity provisions of Rule 12.1.2.1, Rule 12.1.2.4 and Rule 12.1.2.5 under the Regional Plan: Water for Otago at the date of the application for this certificate, provided it is undertaken as per the application and additional information provided.



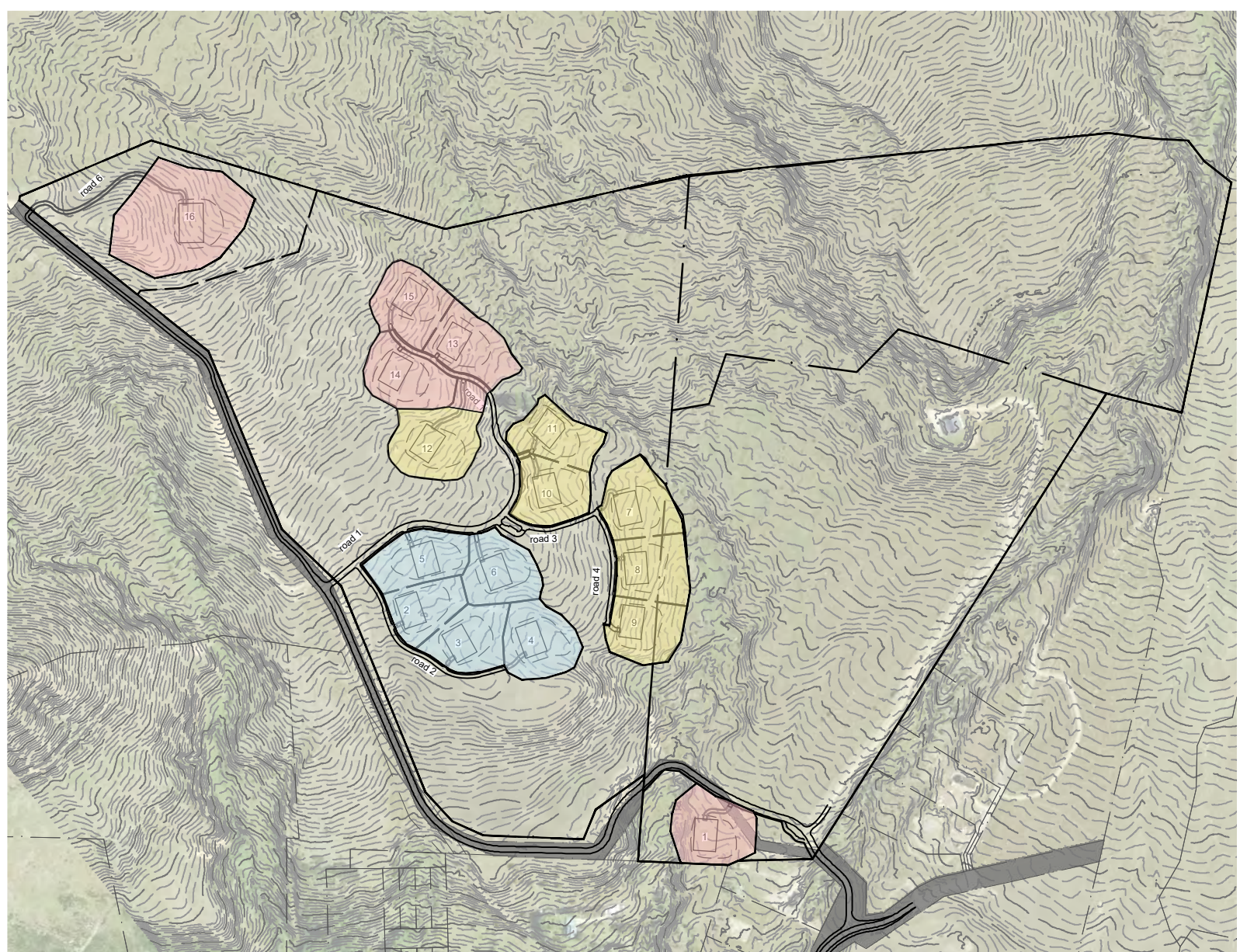
Joanna Gilroy
Manager Consents

Date: 31 October 2019



Notes:

1. This plan shall be read in conjunction with Revision 2 of the Erosion and Sediment Control Plan issued by Holmes Consulting.
2. Cut and fill batter slopes at 3H:1V.
3. No bulking factors are included in cut fill volumes.
4. Contours at 1m intervals.
5. The contractors construction methodology and Erosion and Sediment Control Plan shall consider the following notes.
6. Stabilisation shall be undertaken during construction of the road when it is not being worked on.
7. All erosion and sediment control devices should be inspected weekly and after every rainfall event. Repair or replace any damaged components immediately. Undertake additional checks before any forecast rain or strong wind events to ensure that the site is stabilised and erosion & sediment control measures are in good condition. As site works progress, adapt the erosion & sediment control measures to suit the works.
8. Minimise the area of exposed soil at all times. Consider construction phasing/staging to avoid large areas of exposed soil. Stabilise all exposed surfaces as soon as possible following earthworks (ie. mulching, geotextiles or hydroseeding as per QLDC's 'A Guide to Earthworks in the Queenstown Lakes District'.
9. Prevent clean water from entering the construction zone by adopting the appropriate upstream boundary controls (earth bunding and/or diversion channels). Use dirty water diversion bunds to prevent sediment laden runoff from leaving the construction zone.
10. Proposed cut material is to be removed from site and disposed of at nominated areas noted in the ESCP report. Some material should be stockpiled onsite for surface reinstatement.
11. Access for construction traffic as indicated. Provide a stabilised construction access as per QLDC's 'A Guide to Earthworks in the Queenstown Lakes District'. Monitor the construction access daily to ensure no sediment is tracked onto surrounding roads. Provide wheel wash facilities at the construction access, if necessary. All dirty water from wheel wash facilities to be directed to treatment facility.
12. Use watering of exposed surfaces as required to control dust in dry, windy conditions.
13. All sediment control devices to be maintained until the construction area has been stabilised with topsoil and grass cover compacted hardfill or fully sealed (asphalt/paving).
14. Geotextile lined earth bunds shall be installed to divert water from the silt fences.
15. Subsoil drainage and dewatering of perched ground may be required prior to commencement of works onsite. Alternative ground water control measures may need to be in place by the contractor for when ground water is encountered.
16. A fresh water assessment by a suitably qualified ecologist shall be undertaken prior to construction of the culvert. This shall include advice on control measures during construction of the culvert.



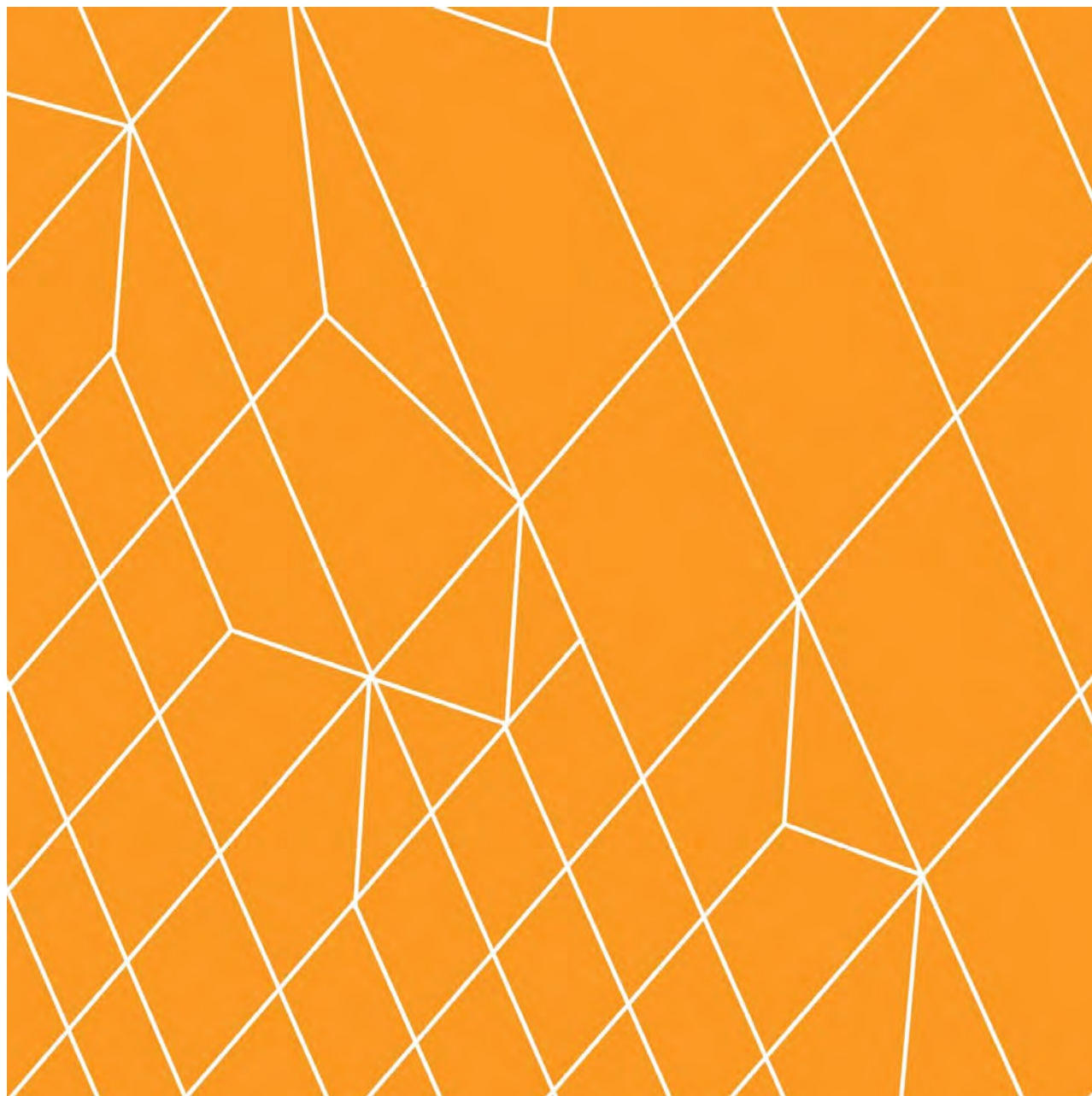
legend:

- Stage 1
Stage 2
Stage 3
- Contours major (existing)
Contours minor (existing)
Lot boundary (existing)
Adjacent lot boundary (existing)
- Proposed subdivision lot boundaries
Building platforms (proposed)
Curtilage Areas
- Disturbed areas (proposed)
Pongs Creek Clutha Flathead Preservation Corridor
Existing right of way
- Potential fill area
Potential Contractor site compound
Stabilized entrance way
- Super silt fence
Clean water diversion bund

| Surface Analysis: Elevation Ranges | | | |
|------------------------------------|-------|-----------------------|-----------------------|
| Number | Color | Minimum Elevation (m) | Maximum Elevation (m) |
| 1 | | -4.000 | -3.000 |
| 2 | | -3.000 | -2.000 |
| 3 | | -2.000 | -1.000 |
| 4 | | -1.000 | 0.000 |
| 5 | | 0.000 | 1.000 |
| 6 | | 1.000 | 2.000 |
| 7 | | 2.000 | 3.000 |
| 8 | | 3.000 | 4.000 |
| 9 | | 4.000 | 5.000 |

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| | | | | | | | | | | | | | | | |
|--|--|--|--|--|--|--|--|---|--|---|--|--|--|-------------------------------|----------------|
| Consultants Baxter Design Group Ltd Landscape Architect Geosolve Ltd Geotech Origin Consultants Ltd Archaeological | | | | Environmental Associates Ltd Water Supply Bartlett Consulting Traffic E3 Scientific Contamination and Ecology | | Maestro Project Delivery maestroprojects.co.nz | | Holmes Consulting 39 Market Place Auckland 1010 New Zealand HolmesConsulting.co.nz T: +64 9 965 4789 | | McDOUGALL'S BLOCK PROJECT ROBERTS FAMILY TRUST QUEENSTOWN | | Sheet Title proposed overall erosion and sediment control plan | Drawn JWV Filename 138332.00 P - C23 ESCP.dwg Job No 138332.00 C23-01 | Scale 1:2000 Sheet No 4 | (at A1) Rev |
|--|--|--|--|--|--|--|--|---|--|---|--|--|--|-------------------------------|----------------|



Erosion and Sediment Control Plan McDougall's Block

10 Curtis Road
Cardrona
New Zealand

Report

Holmes Consulting

Version 3
4 March 2020
138332.00

Report

McDougall's Block

Prepared For:
Roberts Family Trust

Date: 4 March 2020
Project No: 138332.00
Revision No: 3

Prepared By:



Billy Langhenry
CIVIL ENGINEER
Holmes Consulting LP

Reviewed By:



Gerhard Fourie
PROJECT ENGINEER
Holmes Consulting LP



1 INTRODUCTION

Holmes Consulting Limited Partnership has been engaged by Roberts Family Trust to prepare an infrastructure report suitable for a resource consent for the proposed 16 lot Development at 10 Curtis Road. There is potential for dust and sediment to exceed the existing conditions during the period of time that the site is under construction. Dust and sediment could be generated from the following sources:

- Cut/fill areas and disturbed ground;
- Stockpiles of excavated material; and
- Un-vegetated surfaces.

This plan is prepared for resource consent to demonstrate how erosion and sediment control could be managed. It is not suitable for construction and the appointed contractor will need to take ownership of this plan and develop for construction based on actual site construction staging and methodologies.

Dust can be generated from truck movements within the unsealed site as well as the construction of the earthworks.

The existing site is dominated by grassed surfaces and generally slopes from the west to the east at a gradient of 5°-20°, with some existing swales, hills, gullies and creeks within the site boundary. There are two races crossing through the site and overland flow routes through the property drain to either Pongs or Pringles Creek. Pongs Creek and its associated Riparian zone is classified as a protection zone and is adjacent to Lots 1, 7-11, 13, and 15.

The project manager has supplied a staging plan:

Stage 1 = lot 1, lot 16, lot 13, lot 14, lot 15.

Stage 2 = lot 7, lot 8, lot 9, lot 10, lot 11, lot 12.

Stage 3 = lot 2, lot 3, lot 4, lot 5, lot 6.

Surface water runoff from disturbed/un-vegetated surfaces has the potential to create excess sediment to leave the site and enter adjacent watercourses. Under ORC Regional Plan Clause 12.C.1, the discharge of water or any contaminant to water, or onto or into land in circumstances which may result in a contaminant entering water, is a permitted activity.

This plan focuses on minimising dust sediment, and erosion from the above sources by a combination of prevention and control measures described in the sections below. It shall be read and implemented in conjunction with Queenstown Lakes District Council's (QLDC's) 'A Guide to Earthworks in the Queenstown Lakes District' and 'QLDC Guidelines for Environmental Management Plans'.

2 DUST CONTROL

2.1 Prevention Measures

- To minimise dust formation, the extent of exposed earth at one time shall be minimised where feasible.
- All exposed ground shall be sealed/re-vegetated as soon as practical.

2.2 Control Measures

Dust control is most critical during dry conditions. The potential for dust cloud formation will be monitored visually on a daily basis by the consent holder/construction supervisor, during periods of operation.

Water will be used to suppress dust if necessary.



Construction should be completed in stages where possible, to minimise the area of exposed ground at one time.

Sowing of grass or planting to reinstate batters and fill areas will be implemented as soon as possible, which will also help to mitigate dust from affected ground.

Refer to GD01 'Stormwater Management Devices in the Auckland Region' for sizing and implementation of the control devices. Other standards may be used but should be confirmed with QLDC prior to construction.

3 SEDIMENTATION CONTROL

The existing site is dominated by grassed surfaces and generally slopes from the west to east at a gradient of 5°-20°. There are two races crossing through the site and overland flow routes through the property drain to either Pongs or Pringles Creek.

Left unchecked, stormwater runoff could erode exposed ground surfaces and deposit silt beyond the site onto private property or into the two water races. Measures to prevent this are described in the following sections.

3.1 Prevention Measures

- Existing grass/vegetation will be retained where practical until construction works are ready to commence.
- Construction should take place in stages where possible to minimise the amount of exposed (i.e. un-vegetated/unsealed) ground at a time.
- It is recommended control measures be installed specifically for each lot rather than having an overall site control system for each stage of construction.
- Designated landscaped areas shall be vegetated as soon as practical.
- Clean water diversion bunds lined with geotextiles could be constructed on site where possible to divert clean stormwater runoff and prevent eroding soil further downstream. Alternatively, sediment settlement tanks can be an additional measure to ensure only clean water is discharged back to the waterways.
- Stockpiles should be covered where possible to prevent stormwater runoff from eroding the material and creating sedimentation. They should be within a bunded (or ideally vegetated) area to act as a runoff buffer to prevent migration of sediment-laden runoff from entering the drainage system. They should also be located upstream of a sediment control device that can filter out sediment.

3.2 Control Measures

The following measures could be used to help control sediment spreading:

- Super silt fences could be installed for each lot. The fences should be installed along a contour as practically possible. The super silt fences should be maintained on a weekly basis and after each rainfall event.
- Appropriate measures should be taken for vehicle access to the construction site, so that sediment is not tracked on to Pringles Creek Road and Cardrona Valley Road. This could include a rumble strip or a wheel washing facility.
- The consent holder/construction supervisor should regularly monitor the site to assess the effectiveness and condition of any hay bales or silt fencing. These should be replaced/repared where appropriate.
- A chemical management plan could be created by the contractor to ensure sedimentation occurs.

- There have not been any springs encountered on-site. Perched ground water may need to be drained before work starts. The discharge of the perched ground water should not cause erosion or flooding to the adjacent land.
- Subsoil drains may need to be installed so that once ground water is struck, water has a place to drain to. The Contractor will need to develop their own strategy for managing ground water across this site.
- A freshwater assessment will be undertaken before the construction of the culvert by an ecologist. During their time on-site the ecologist should advise on the control measures that shall be put into place during the construction of the culvert.
- To aid the effectiveness of the sedimentation control measures, work is recommended to not be undertaken during periods of heavy rain.
- Exposed areas should be stabilised as soon as practicable on completion of works, ensuring that any materials used for ground stabilisation are fully biodegradable to avoid plastic fragments remaining in the environment.
- Waterways should be regularly monitored for drawdown effects, to avoid adverse effects on in-stream fauna.
- A schedule for monitoring of control measures should be created by the contractor and submitted with their Construction Management Plan.

Refer to GD01 'Stormwater Management Devices in the Auckland Region' for details on the sedimentation control devices. Other standards may be used but should be confirmed with QLDC prior to construction.

The Erosion and Sediment Control Plan attached is an indicative layout of the control measures. The configuration may be modified once the construction methodology is confirmed.

4 CONTRACTOR INPUT

Once a Contractor is appointed, and prior to the start of the construction works, a detailed Construction Management Plan (CMP) will be prepared which sets out the details of the proposed construction methodology and measures to be taken to minimise the potential erosion caused by construction.

These measures described above should be implemented in conjunction with the detailed construction management plan.



10 Curtis Road Cardrona Preliminary Site Investigation

Roberts Family Trust

June 2019



Arrow Lane Arrowtown 9302

www.e3scientific.co.nz

**10 Curtis Road Cardrona
Preliminary Site Investigation**

Document Status

| Version | Purpose of Document | Prepared By | Reviewer | Review Date |
|---------|---------------------------|-------------|----------|--------------|
| 0.1 | Draft for internal review | JH | GD | 26 June 2019 |
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Executive Summary

The Roberts Family Trust (RFT) is in the process of obtaining the necessary consents to subdivide and develop property located at 10 Curtis Road, Cardrona for residential use. The legal descriptions for the property are Lot 1 DP 425263, Lot 1 DP 433836 and Lot 6 DP 344432. The proposed development entails the subdivision of the site into 17 residential lots with a residual lot containing the existing dwelling and balance of the site. Disturbance of soil and earthworks will be required in the construction of building platforms and access to the created Lots.

As part of the consenting process, Maestro Projects as project manager commissioned e3Scientific Limited to carry out a Preliminary Site Investigation under the provisions of the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (the NESCS). The PSI was undertaken to review the site landuse history, identify any activities with the potential to impact soil quality and determine the implications for residential development of the site under the NESCS.

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

- Review of the landuse history including historic certificates of title, historic aerial photographs, archaeological reports relating to the site, information available from Otago Regional Council and Queenstown Lakes District Council and information provided by the site owners and their agents;
- Review of the existing physical environment;
- Completion of a visual site inspection to determine the condition of the site;
- Review of risks to human health associated with the proposed residential landuse.

In summary the Preliminary Site Investigation has found that the landuse history of the site is dominated by extensive pastoral activity with some historical mining activities.

Pastoral farming activities can impact soil quality through the use of pesticides in sheep dips, foot baths and stock yards in addition to the storage of fuels and



chemicals and storage and maintenance of farm machinery. None of this pastoral farming infrastructure was identified on the site.

The mining activity undertaken in the area utilised hydraulic sluicing, rather than quartz crushing and extraction, and would not have utilised chemical processing to remove gold from the washable soil. The mining carried out at the site is therefore highly unlikely to have impacted the soil quality of the site.

Given the PSI identified no historical contaminant sources on the site e3S concludes it is highly unlikely that there is a risk to human health associated with the proposed subdivision and residential development of the site. The proposed subdivision, landuse change and earthworks on 10 Curtis Road, Cardona is therefore considered permitted under regulation 8(3) and 8(4) of the NESCS.



1 Introduction

1.1 Purpose

The Roberts Family Trust (RFT) is in the process of obtaining the necessary consents to subdivide and develop property located at 10 Curtis Road, Cardrona for residential use. The legal descriptions for the property are Lot 1 DP 425263, Lot 1 DP 433836 and Lot 6 DP 344432. The proposed development entails the subdivision of the site into 17 residential lots with a residual lot containing the existing dwelling and balance of the site. Disturbance of soil and earthworks will be required in the construction of building platforms and access to the created Lots.

As part of the consenting process, RFT commissioned e3Scientific Limited to carry out a Preliminary Site Investigation in order to address the provisions of the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (the NESCS). The PSI was undertaken to review the site landuse history, identify any activities with the potential to impact soil quality and determine the activity status of the subdivision, landuse change and earthworks under the NESCS.

1.2 Scope of Work

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

- Review of the landuse history including historic certificates of title, historic aerial photographs, archaeological reports relating to the site, information available from Otago Regional Council and Queenstown Lakes District Council and information provided by the site owners and their agents;
- Review of the existing physical environment;
- Completion of a visual site inspection to determine the condition of the site;
- Review of risks to human health associated with the proposed residential landuse.



1.3 Limitations

The findings of this report are based on the Scope of Work outlined above. e3Scientific 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 10 Curtis Road, Cardrona and is legally described as Lot 1 DP 425263, Lot 1 DP 433836 and Lot 6 DP 344432. The land is located within the Rural General Zone in the Queenstown Lakes District Plan (Figure 1).

The site under investigation is approximately 54.34 Hectares in total area.

Coordinates for the existing dwelling located at the site are 1284081E 5203496N (NZTM 2000).

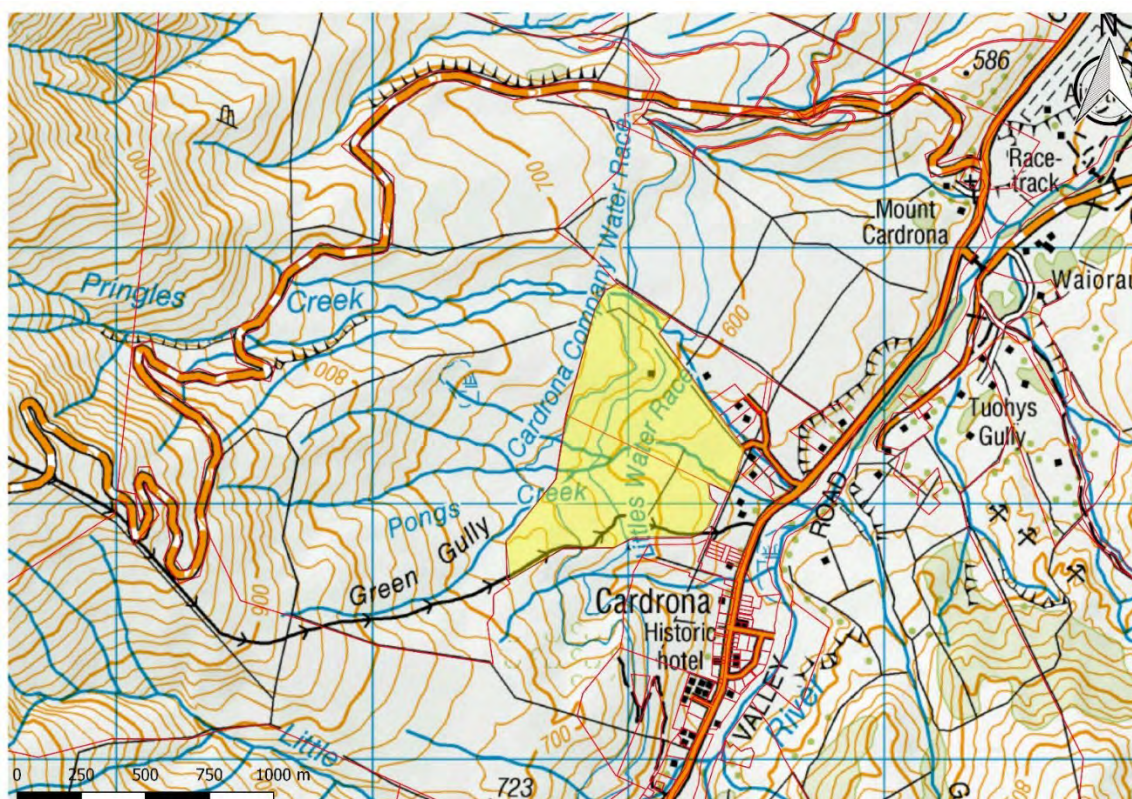


Figure 1: Site Location Plan

2.2 Site History

A detailed site history of the property has been prepared by Origin Consultants. A precis of comments provided by Origin is contained in the sections below.



2.2.1 Certificates of Title

The site was originally split into two titles, under Sections 4 and 5, Block I Cardrona Survey District. The earliest documented references to the site show it as leased to J McGrath and James Corbet in 1874, and incorporates the water race running along the western portion of the site.

By 1882, Section 5 was being leased by Wong You, with Section 4 broken up into Sections 2 and 3 of the Knuckle Peak Survey District. These boundaries were still in place in a 1921 survey. The first title for Section 5 was issued to Wong You in 1881, then transferred to Wah Young in 1887, before entering an inactive period which lasted until it was incorporated into a new title in 1996 and issued to Cardrona Holdings Limited. The remainder of the site formed a small portion of the larger Sections 2 and 3 of the Knuckle Peak Survey District, undergoing several transfers as renewable leases before being brought under a deferred payment license and issued to John Lee (a farmer) in 1972. A fee simple title was then issued to Lee in 1982. Subsequent leases and new titles were issued in 1983, 1989 and 1990.

2.2.2 Historic Aerial Photography

A review of aerial photographs of the site was undertaken to support a review of the landuse history and whether any visible HAIL activities had occurred on the site.

2.2.3 Site History Information

According to Origin Consultants (Pers. Comm. Ben Teele, 4 June 2019) "the documented history of the site was a mix of alluvial mining and early pastoral farming. Section 5 was the focus of early mining by the Chinese, and a small hamlet is recorded on the site. [The Chinese miners] worked the streambed of Pringles Creek using small scale alluvial methods. Two water races were built across the site by 1874, but were not built by the Chinese. Water from these races would have supplied workings further downstream. Outside of the streambed, the area was turned over to pastoral farming, likely by 1874. This continued through the twentieth century, as the land was leased and then purchased by the farmer...The Chinese hamlet would have been small and discrete [sic], and not likely to have used things such as lead paint. The wider site has a long history of pastoral use, but with the homestead located to the north of the current site boundaries."



2.2.4 Review of District Council Information

A review of Queenstown Lakes District Council edocs property information for the site did not reveal any HAIL activity history or any information which indicated the likely presence of contaminants at the site.

2.2.5 Review of Regional Council Information

An information request was made to Otago Regional Council to provide the HAIL status of the site from the Council's registers and any relevant information relating to the site's status.

ORC advised that it held no HAIL records relating to the site.

2.3 Contaminants Commonly Associated with the Landuse

The site has historically been used primarily for pastoral farming, with short periods in which alluvial mining using primarily low-impact methods occurred. Contaminants which may be associated with these landuses are:

- Pesticides, fertilisers and other agricultural chemicals;
- Arsenic, mercury and cyanide associated with gold extraction from ore.

Given the type of farming carried out in this area, it is considered unlikely that any agrichemicals such as persistent pesticides or heavy metals would have accumulated in soils at concentrations that would present a risk to human health under a rural residential landuse scenario. In our experience these chemicals are only likely to be found in elevated concentrations where they have been stored or used intensively such as sheep yards, footbaths and sheep dips. There is no evidence of stock yards, sheep dips or a woolshed on the site. It is therefore highly unlikely persistent pesticides associated with pastoral farming activities are present on the site at elevated concentrations.

The types of mining activity carried out in the area utilised hydraulic sluicing, rather than quartz crushing and extraction, and would not have utilised chemical processing to remove gold from the washable soil. The mining carried out at the site is therefore highly unlikely to have impacted the soil quality of the site. (Hamel, 2001).



2.4 Site Condition and Surroundings

2.4.1 Site Condition

A site visit was carried out on 31 May 2019 to visually assess the site and identify any further potential for contamination at the site. The visit occurred after a period of heavy rainfall and the site was noted to be potentially susceptible to surface runoff flooding – all house sites were noted to be saturated due to being positioned in depressions or having discharges from springs. House sites located south of Pongs Creek showed evidence of historical ploughing, with numerous rock piles / cairns noted on this portion of the site. Vegetation across the site included a mixture of browntop pasture, tussock, hawthorn, briar and matagouri consistent with its history of extensive grazing. Other than the existing dwelling and a tent structure, there were no signs of farm buildings, yards, disposal sites or chemical storage areas.

No drums, waste or fill material were observed at the site and there were no odours or other signs of contamination noted. The site is currently bounded with stock fencing.

Landuses surrounding the site are predominantly rural or rural-residential. The Cardrona township is located approximately 400 metres to the south-east of the site, with the Cardrona skifield and access road located to the west and north.





Plate 1: Site Conditions

1. Looking south-east from northern corner; 2. Looking north-west from house site 4; 3. Looking east from house site 7; 4. Looking west from house site 14.

2.4.2 Geology and Hydrology

A geotechnical assessment of the site has been carried out. The geology of the site consists of Early Quaternary outwash gravels overlain by alluvial fan deposits with surficial silty topsoil and loess (Geosolve Limited, 2016). The GNS geological map of New Zealand identifies the site geology as Early Quaternary alluvium and colluvium consisting of weathered gravel, sand, silt and mud of alluvial and colluvial origin (Edbrooke, Heron, Forsyth, & Jongens, 2014).

The nearest natural surface water body to the site is Pong's Creek, which runs from west to east through the centre of the site, towards the Cardrona River. A man-made water race (Little's Water Race) intersects Pong's Creek and runs roughly north to south through the centre of the site (Figure 1).

The site investigation did not include a groundwater assessment. The location of groundwater bores within a one kilometre radius of the site (held by Otago



Regional Council) is provided in Appendix E. A total of 5 known bores have been drilled within one kilometre of the site and are summarised below.

- One bore in private ownership with an unknown use;
- Five bores owned by Queenstown Lakes District Council to supply Cardrona with water. These are located in the Cardrona Valley floor.



Plate 2: Pong's Creek



Plate 3: Little's Water Race



3 Summary and Conclusions

In summary the PSI has found that the landuse history of the site is dominated by extensive pastoral activity with some historical mining activities.

Pastoral farming activities can impact soil quality through the use of pesticides in sheep dips, foot baths and stock yards in addition to the storage of fuels and chemicals and storage and maintenance of farm machinery. None of this pastoral farming infrastructure was identified on the site.

The mining activity undertaken in the area utilised hydraulic sluicing, rather than quartz crushing and extraction, and would not have utilised chemical processing to remove gold from the washable soil. The mining carried out at the site is therefore highly unlikely to have impacted the soil quality of the site.

Given the PSI identified no historical contaminant sources on the site e3S concludes it is highly unlikely that there is a risk to human health associated with the proposed subdivision and residential development of the site. The proposed subdivision, landuse change and earthworks on 10 Curtis Road, Cardona is therefore considered permitted under regulation 8(3) and 8(4) of the NESCS.



4 References

- Edbrooke, S. H. (2014). Geological Map of New Zealand 1:1 000 000. *GNS Science Geological Map 2*. Lower Hutt, New Zealand: GNS Science.
- Edbrooke, S., Heron, D., Forsyth, P., & Jongens, R. (. (2014). *Geological Map of New Zealand 1:1 000 000. GNS Science Geological Map 2*. Lower Hutt, New Zealand: GNS Science.
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- Hamel, J. (2001). *The Archaeology of Otago*. Wellington: Department of Conservation.
- Middleton, A. (2006). *Mt Cardrona Station Archaeological Assessment of Study Area*.
- Ministry for the Environment. (2003). *Contaminated Land Management Guidelines No. 2: Hierarchy and Application in New Zealand of Environmental Guideline Values*.
- Ministry for the Environment. (2011). *Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand Module 4- Tier 1 Soil Screening Criteria*.
- Ministry for the Environment. (2012). *Users' Guide: National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health*. Wellington: Ministry for the Environment.
- NEPC. (1999). National Environment Protection (Assessment of Site Contamination) Measure 1999, amended 2013.



Appendices

Appendix A:
e3Scientific Limited Contaminated Land Experience



Contaminated Land Services

e3Scientific Limited (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 Managing 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 Simon Bloomberg.

The e3scientific team has completed multiple Preliminary Site Investigations, Detailed Site Investigations 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.





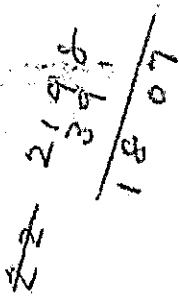
The following provides a summary of key contaminated land work e3scientific is involved in or has completed:

- 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:
Historic Certificates of Title



Rebecca on falling down 1/13/13
An-Rose 1/29/13

3588

Scale 10 Chains to an Inch

T.B. 4p 258 2/7/74

C. D. B. 1258

285

285

LEGALISATION CARD

KNUCKLE PEAK S. D.

Blk. I Cardrona

Run 629

Sections 3,5,6,12,13,17 and 34 to 51,Block I,
CARDRONA DISTRICT

Surveyed by C. Otway, District Surveyor, 28th Feby., 1921.

Scale: 5 Chains to an Inch.

Section number 15 is not used in this Survey

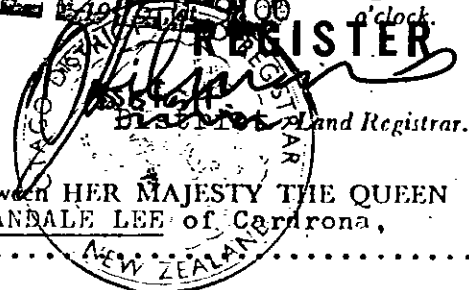
RECEIVED: 4/4/21
EXAMINED: 29/4/21 L.B. Smith
TRAV. REDT^{NO.}: 93 PAGE 131-197
FIELD BOOK: 882, 202 PAGE
REF. PLANS: 87 13, 14, 47, 8, 6, C.H.S. 56
Town of Carolina 11
File M.L. 1976 Index No. 9740
Recorded S.A.P.

F.B. 1802 p. 39-42
F.B. 1803 p. 1-37, 41-45

APPROVED 30 April 1951
Rolf Land
Chief Surveyor

C. C. C. Way
Dist. Surveyor
March 31st 1922

4 APR 1921

CANCELLEDEntered in the Register-book, the
38th day of September
1972 at 12 o'clock

50/319

Deferred Payment Licence under the Land Act 1948.

This Deed, made the 3rd day of February 1972, between HER MAJESTY THE QUEEN (hereinafter referred to as "the Licensor"), of the one part, and JOHN ALLAN DALE LEE of Cardrona, farmer

(hereinafter referred to as "the Licensee"), of the other part: WHEREAS the Licensor has agreed to sell and the Licensee has agreed to purchase the land hereinafter described, including the improvements set out in the schedule hereto for the sum of \$11122.85 ✓ pursuant to sections 122 & 65 of the Land Act 1948 by way of deferred payment licence AND whereas on the 3rd day of February 1972 the Licensee paid a deposit of \$1662.85 ✓ to the Licensor NOW THIS DEED WITNESSETH that the Licensor, in consideration of the premises and of the covenants, conditions, and agreements herein contained and implied, and on the part of the Licensee to be paid, observed and performed doth hereby grant to the Licensee an exclusive licence to occupy all that parcel of land, containing by admeasurement 3456 acres 2 roods 01 perches ✓ more or less, situated in the Land District of Otago ✓, and being Sections 40, 41, 42, 44 and 50 Block I, Cardrona Survey District and Sections 1, 2 Block ✓ as the same is more particularly delineated with bold black lines on the plan hereon: TO HOLD the same unto the Licensee for the term of 25 years from the 1st day of July 1972 together with the period between the date of this licence and the aforesaid 1st day of July 1972; or until the said land is sooner granted in fee-simple to the Licensee. AND the Licensee doth hereby covenant with the Licensor as follows:

THAT the Licensee will pay to the Department of Lands and Survey at Dunedin the said purchase price, by a deposit of \$1662.85 (which has already been paid), together with interest thereon at the rate of six ✓ per centum, and thereafter by 50 ✓ half yearly instalments of \$367.67 ✓ on the 30th day of June and the 31st day of December in each and every year subject to variation of the rate of interest and the amount of the half yearly instalments in the manner hereinafter provided.

The first such instalment shall be payable on the 31st day of December 1972 ✓ Interest on the balance of the purchase money from the 3rd day of February 1972 to the 30th day of June 1972, shall be payable on the said 30th day of June 1972. ✓

AND it is hereby declared and agreed (1) That these presents are intended to take effect as a licence to occupy Farm ✓ Land pending the completion of purchase by deferred payments under the Land Act 1948 and of any enactments passed in amendment or substitution thereof and the provisions of the said Act and of the Regulations made thereunder, applicable to such licences, shall be binding in all respects upon the parties hereto in the same manner as if such provisions had been fully set out herein. (2) That the Licensor may from time to time, but at intervals of not less than five years, upon giving to the Licensee not less than three month's notice in writing, increase or reduce the rate of interest payable on aforesaid to conform with the rate of interest as may then be current and approved by the Minister of Finance in respect of similar deferred payment licences granted under the Land Act 1948 Provided However that:

- (a) No such notice altering any rate of interest shall be given to become effective earlier than five years after the 1st day of July 1972; ✓
- (b) Any such alteration of the rate of interest shall take effect from the date nominated in the said notice being not earlier than three months from the date when the notice would in the ordinary course of post be delivered to the Licensee:
- (c) The decision of the Licensor as to any variation of interest shall be final and conclusive.
- (d) As from the effective date of any such alteration of the rate of interest, the instalments of principal and interest payable hereunder shall be adjusted to amounts computed from amortisation tables for the new rate of interest for the number of years then unexpired of the term hereof, and thenceforth the Licensee shall pay such adjusted instalments on the due dates for payment.

II, and Section 3, Block I, Knucklepeak SURVEY District ✓

50/319

The equivalent metric area
is 1398.7974 ha

CANCELLED REGISTER

2

1629-0-00

3

1283-0-00

BIK I

BIK II

KNUCKLE

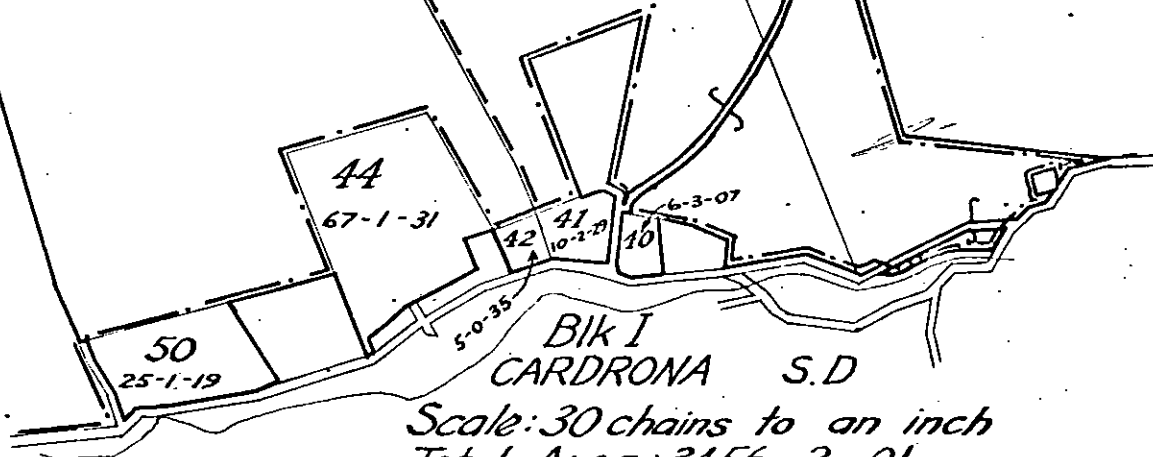
PEAK

S. D.

1

429-0-00

New Plan
17960



Assistant.

IN WITNESS whereof the Commissioner of Crown Lands for the said Land District, on behalf of the Licensor, has hereunto set his hand, and these presents have also been signed by the said Licensee.

Assistant.

Signed by the said Commissioner, on behalf of the Licensor,
in the presence of—

Witness: R.B. Moxley

Occupation: Chief Roads and Survey Dept.

Address: Dunedin

[Signature]
Assistant Commissioner of Crown Lands.

Signed by the above-named Licensee, in the presence of—

Witness: [Signature]

Occupation: Police

Address: Dunedin

John A. Lee
Licensee.

Register copy for L. & D. 69, 71, 72

C.T. 5C/319

CANCELLED

504026 Mortgage to The National
Bank of New Zealand Limited -
25.9.1978 at 9.10 am

362124 Mortgage to The Dominion
Assurance Office of New Zealand Limited
- 23.10.1973 at 10.51 am

[Signature]
A.L.R.

[Signature]
A.L.R.

362125 Mortgage to The State Advances
Corporation of New Zealand - 23.10.1973
at 10.51 am

[Signature]
A.L.R.

517091 Caveat by Cardrona Skifield Limited
entered 5.6.1979 at 1.54 pm

[Signature]
A.L.R.

557873 Amalgamation application under
Section 279 Local Government Act 1974

[Signature]
for A.L.R.

420487 Evidence of the change of name of
the Mortgagee in Mortgage 362124 to
Commercial Union Assurance Company of
New Zealand Limited entered 29.3.1974
at 2.35 pm

[Signature]
A.L.R.

582065 } Cancelled and a new C.T. 9A/778
2.9.1982 } issued for within land

[Signature]
A.L.R.

445647 Mortgage to The Rural Banking
and Finance Corporation of New Zealand -
27.8.1975 at 2.46 pm

[Signature]
for A.L.R.



451537 Mortgage to The Rural Banking
and Finance Corporation of New Zealand -
10.12.1975 at 11.50 am

[Signature]
for A.L.R.

DUPLICATE DESTROYED

13 1101 1982

454249 Agreement pursuant to Section 30
of the Soil Conservation and Rivers
Control Act 1941 entered 19.2.1976 at
9.48 am

[Signature]
for A.L.R.

457185 Variation of Mortgage 362124 -
14.4.1976 at 11.45 am

[Signature]
A.L.R.

500046 Agreement pursuant to Section
30 of the Soil Conservation and
Rivers Control Act 1941 entered
20.7.1978 at 9.35 am

[Signature]
A.L.R.

| |
|-------------------------|
| LAND & DEEDS |
| Nature: <i>A.P.L.</i> |
| Firm: <i>C.C.L.</i> |
| 28 SEP 1973 |
| Time: <i>9.09</i> |
| Fees: <i>9</i> |
| Abstract No. <i>424</i> |



Reference:
Certificate No 582065
P.R. Vol 50 Folio 319
Transfer No

Land and Decd 72

No. 9A/778

CANCELLED REGISTER
CERTIFICATE OF TITLE UNDER LAND TRANSFER ACT

This Certificate dated the 2nd day of September 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 being a Certificate in lieu of Grant, **WITNESSETH** that JOHN ALLANDALE LEE of Cardrona Farmer

is seized 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, which said land was originally acquired by the abovenamed

as from the 19th day of July one thousand nine hundred and eightytwo under Section 122 Land Act 1948 that is to say: All that parcel of land containing 1398.7984 hectares more or less being Sections 40, 41, 42, 44 and 50 Block I Cardrona District and Sections 1 and 2 Block II and Section 3 Block I KNUCKLEPEAK DISTRICT

Interests at date of Issue:

Subject to the reservations and conditions imposed by Section 59 of the Land Act 1948

ASSISTANT LAND REGISTRAR

517091 Caveat by Cardrona Skifield Limited entered 1.1.1979 at 1.54 pm A.L.R.

362124 Mortgage to (now) Commercial Union Assurance Company of New Zealand Limited - 23.10.1970 at 10.50 am (varied and subsequently) A.L.R.

362125 Mortgage to The State Advances Corporation of New Zealand - 23.10.1970 at 10.51 am A.L.R.

445647 Mortgage to The Rural Banking and Finance Corporation of New Zealand - 27.8.1975 at 2.46 pm A.L.R.

451537 Mortgage to The Rural Banking and Finance Corporation of New Zealand - 10.12.1975 at 11.50 am A.L.R.

454249 Agreement pursuant to Section 30 of the Soil Conservation and Rivers Control Act 1941 entered 19.2.1976 at 9.48 am

500046 Agreement pursuant to Section 30 of the Soil Conservation and Rivers Control Act 1941 entered 20.7.1978 at 9.35 am

504026 Mortgage to The National Bank of New Zealand Limited - 9.10 am A.L.R.

Scale 1 inch

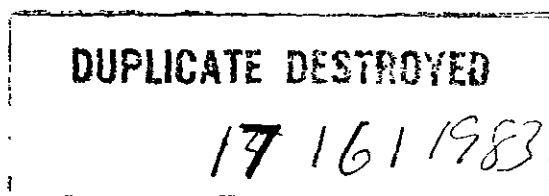
591004/7 Transfer to Waiorau Holdings Limited - 3.3.1983 at 10.50 am A.L.R.

591004/8 Mortgage to The National Bank of New Zealand Limited - 3.3.1983 at 10.50am A.L.R.

592897/1 Discharge of Mortgage 591004/8 as to Lot 1 D.P. 17960 - 12.4.1983 at 2.15 pm A.L.R.

592897/2 Transfer of Lot 1 D.P. 17960 to Martin Robert Curtis and Kay Marion Curtis - 12.4.1983 at 2.15 pm 9B/499 A.L.R.

592897/2 Cancelled as to the balance 12.4.1983 and new C.T. 9B/500 issued A.L.R.





9A1778

Transfer No 592897/2
N/C Order No.



REGISTER

CERTIFICATE OF TITLE UNDER LAND TRANSFER ACT

This Certificate dated the 12th day of April one thousand nine hundred and eightythree under the seal of the District Land Registrar of the Land Registration District of C T A G O

WITNESSETH that WAIORAU HOLDINGS LIMITED a duly incorporated company having its registered office at Ashburton

is/consented 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 1394.4979 hectares more or less being Sections 40, 41, 50 and part Section 41 Block I CARDRONA DISTRICT and part Section 3 Block I and Section 1 and part Section 2 Block II KNUCKLE PEAK DISTRICT

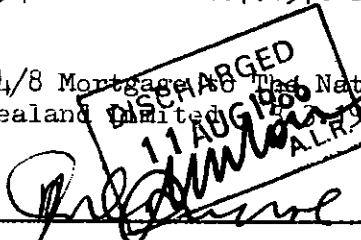
Interests at date of Issue:

Subject to the reservations and conditions imposed by Section 59 of the Land Act 1948

454249 Agreement pursuant to Section 30 of the Soil Conservation and Rivers Control Act 1941 - entered 19.2.1976 at 9.48 am

500046 Agreement pursuant to Section 30 of the Soil Conservation and Rivers Control Act 1941 entered 20.7.1978 at 9.35 am

591004/8 Mortgage to The National Bank of New Zealand Limited entered 30.5.1983 at 10.50 am

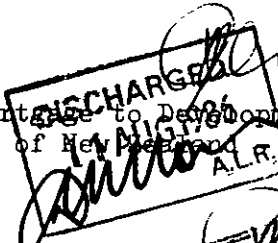


A.L.R.

595601/1 Lease to John Allandale Lee, Jim Nelson, William Eugene Ducease and Patrick Andrew Frengley for a term of two years 6 months commencing on 1.3.1982 - 30.5.1983 at 2.30 pm

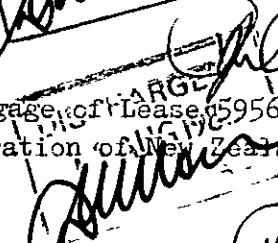
A.L.R.

595601/2 Mortgage to Development Finance Corporation of New Zealand entered 30.5.1983 at 2.30 pm



A.L.R.

595601/3 Mortgage of Lease 595601/1 to Development Finance Corporation of New Zealand - 30.5.1983 at 2.30 pm



A.L.R.

Measurements are Metric

595601/4 Memorandum of Priority ranking mortgage 595601/2 as a first mortgage and mortgage 591004/8 as a second mortgage - 30.5.1983 at 2.30 pm



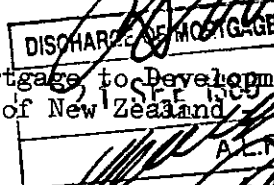
613671 Variation of Mortgage 595601/2 - 27.4.1984 at 9.48 am

A.L.R.

619374 Variation of Mortgage 595601/3 - 3.8.1984 at 10.54 am

A.L.R.

661070/4 Mortgage to Development Finance Corporation of New Zealand entered 11.8.1986 at 10.10 am.



A.L.R.

719753 Resolution pursuant to Section 321 (3)(c) Local Government Act 1974 - 20.1.1989 at 9.13am

A.L.R.

729200 Mortgage to The National Bank of New Zealand - 22.5.1989 at 10.10am.



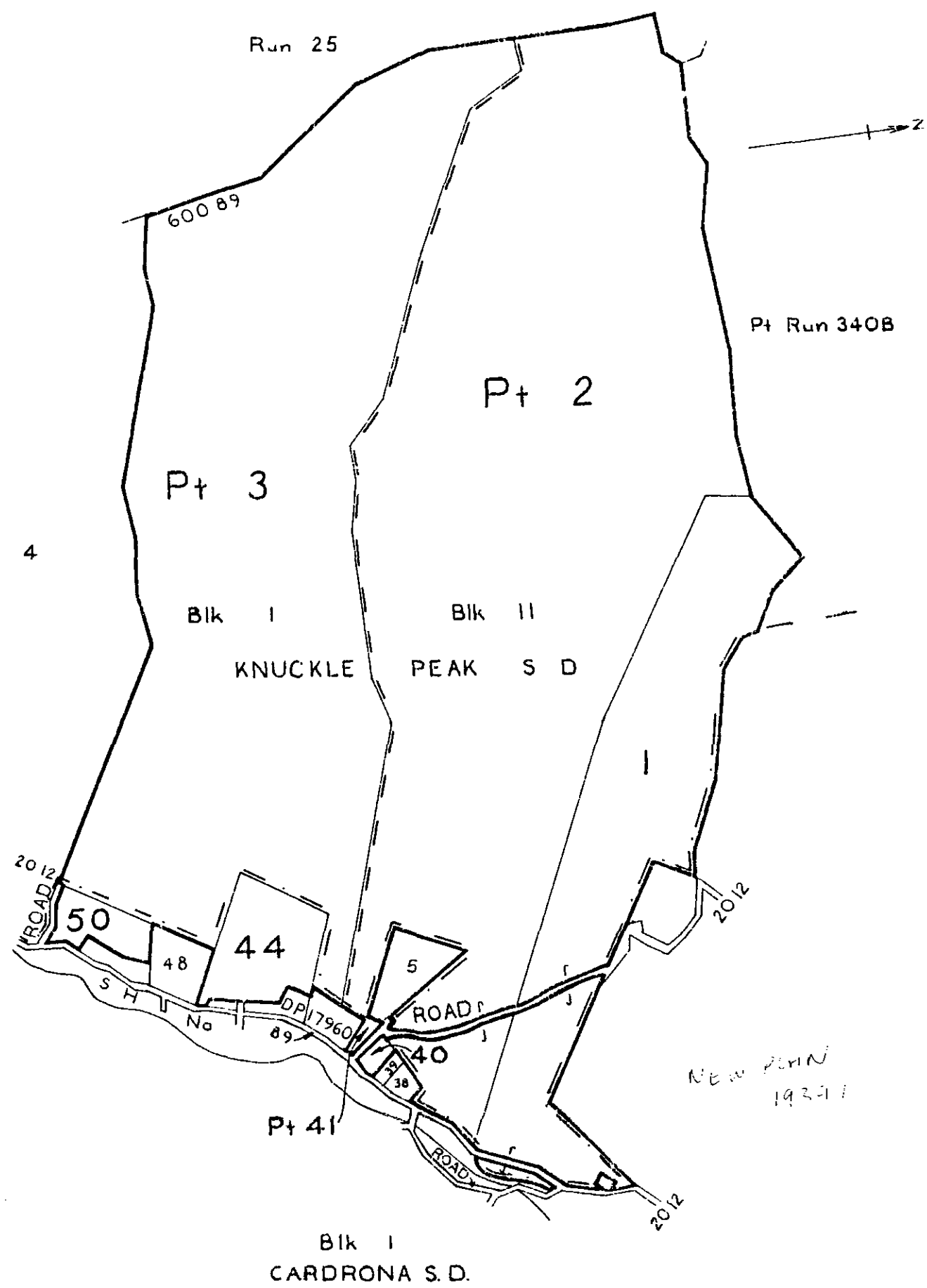
A.L.R.

733199/2 Mortgage to The National Bank of New Zealand Limited - 14.7.1989 at 9.49 am



new Plan 19397

REGISTER



Total Area : 1394.4979ha

Scale 1 25 000

Measurements are Metric

C.T: 9B/500

The easements specified in the memorandum on D.P. 19397 are required to be created pursuant to Section 309(1)(c) Local Government Act 1974


A.L.R.

740674/1) New C.T. 13A/156 issued
25.10.1989) for Lot 1 D.P. 19397
) herein


A.L.R

740674/2) Cancelled and new C.T.
25.10.1989) 13A/157 issued for the balance


A.L.R.

DUPLICATE DESTROYED
6 11/2/1987

DISTRICT LAND
REGISTRAR
Cancelled



References

Prior C/T 9B/500

Transfer No.

N/C. Order No. 740674/2

Land and Deeds 69

No. 13 A / 157

~~CANCELLED~~

~~CANCELLED~~

TO BE CONVERTED

CERTIFICATE OF TITLE UNDER LAND TRANSFER ACT

REGISTER

This Certificate dated the 25th day of October one thousand nine hundred and eighty nine under the seal of the District Land Registrar of the Land Registration District of O T A G O

WITNESSETH that WAIORAU HOLDINGS LIMITED at Ashburton

is seized 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 792.0187 hectares more or less being Sections 40, 44, 50 and part Section 41 Block I Cardrona District and part Section 3 Block I and part Sections 1 and 2 Block II KNUCKLE PEAK DISTRICT

Interests at date of issue:

The easements specified in the memorandum on DP 19397 are required to be created pursuant to Section 309(1)(c) Local Government Act 1974



Subject to the reservations and conditions imposed by Section 59 Land Act 1948

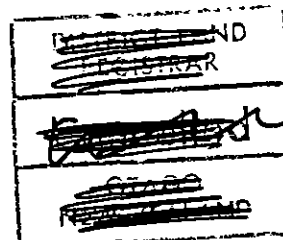
DUPLICATE DESTROYED

9/13/1990

454249 Agreement pursuant to Section 30 Soil Conservation and Rivers Control Act 1941 - 19.2.1976 at 9.48am

Part Sec 1 Block II.
Knuckle Peak SD remains herein

500046 Agreement pursuant to Section 30 Soil Conservation and Rivers Control Act 1941 - 20.7.1978 at 9.35am



DISCHARGED
733199/2 Mortgage to The National Bank of New Zealand Limited 14.7.1989 at 9.49am

[Signature]
A.L.R.

746414/2) New CT 13A/679 issued for
25.1.1990) Lots 1,2,6 and 7 DP 21223

Acct section
left remains
herein

746414/4) Cancelled and new CT 13A/681
25.1.1990) issued for lots 10 & 13 DP
21223

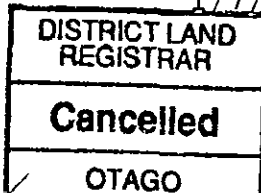
[Signature]
A.L.R.

911030A2
1/7/1996

Cancelled and new CT.
17C/906 issued for the
balance (lot 2 DP.17960)

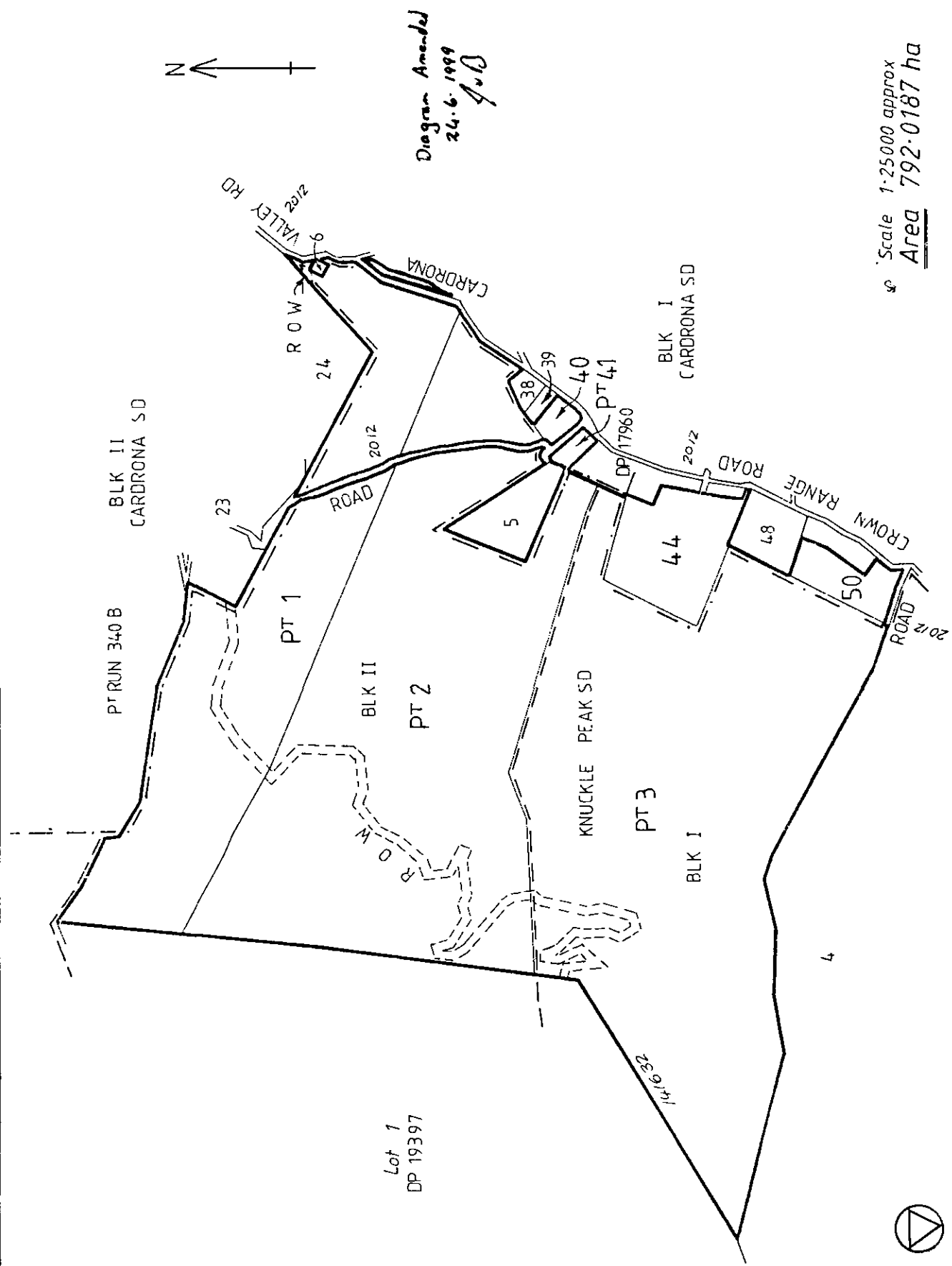
[Signature]
A.L.R.

DIAGRAM OVERLEAF
Measurements are Metric



13 A / 157

CERTIFICATE OF TITLE No 13A / 157



References

Prior C/T 13A/157

Transfer No

N/C Order No 746414/2

Land and Deeds 69

No. 13 A / 679



REGISTER

CANCELLED

CERTIFICATE OF TITLE UNDER LAND TRANSFER ACT

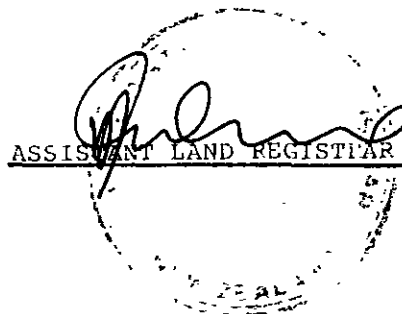
This Certificate dated the 25th day of January one thousand nine hundred and ninety under the seal of the District Land Registrar of the Land Registration District of O T A G O

WITNESSETH that WALORAU HOLDINGS LIMITED at Ashburton

is seized 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 768.1827 hectares more or less being Lots 1, 2, 6 and 7 Deposited Plan 21223 and being Section 40, 44, 50 and Part Section 41 Block I CARDRONA DISTRICT Part Section 3 Block I and Part Sections 1 and 2 Block II KNUCKLE PEAK DISTRICT

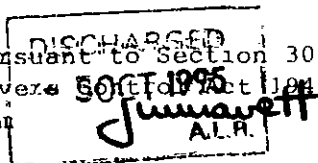
Interests at date of issue:

**
Subject to Section 308(4) Local Government
Act 1974 (see the Councils conditions on DP
21223



Subject to the reservations and conditions imposed by Section 59 Land Act 1948

454249 Agreement pursuant to Section 30 Soil Conservation and Rivers Control Act 1941 - 19.2.1976 at 9.48am



838333/2 Resolution pursuant to Section 243(e) Resource Management Act 1991 revoking the easements specified in the memorandum of easements endorsed on D.P. 19397 - 10.9.1993 at 10.33 am

[Signature]
A.L.R.

500046 Agreement pursuant to Section 30 Soil Conservation and Rivers Control Act 1941 - 20.7.1973 at 9.35am

838333/3 Transfer of the within land to Cardrona Holdings Limited together with a right of way over part Lots 10, 11, 12 and 13 D.P. 21223 (C.T. 13A/681) marked "A, B, C, D, E, F, G, H and I" on D.P. 19397 - 10.9.1993 at 10.33 am

[Signature]
A.L.R.

763410 Caveat by Cardrona Holdings Limited entered 14.9.1990 at 10.50am

[Large handwritten signature]
A.L.R.
Withdrawn
10/9/1993
SEE

838333/3 Fencing Covenant

[Signature]
A.L.R.

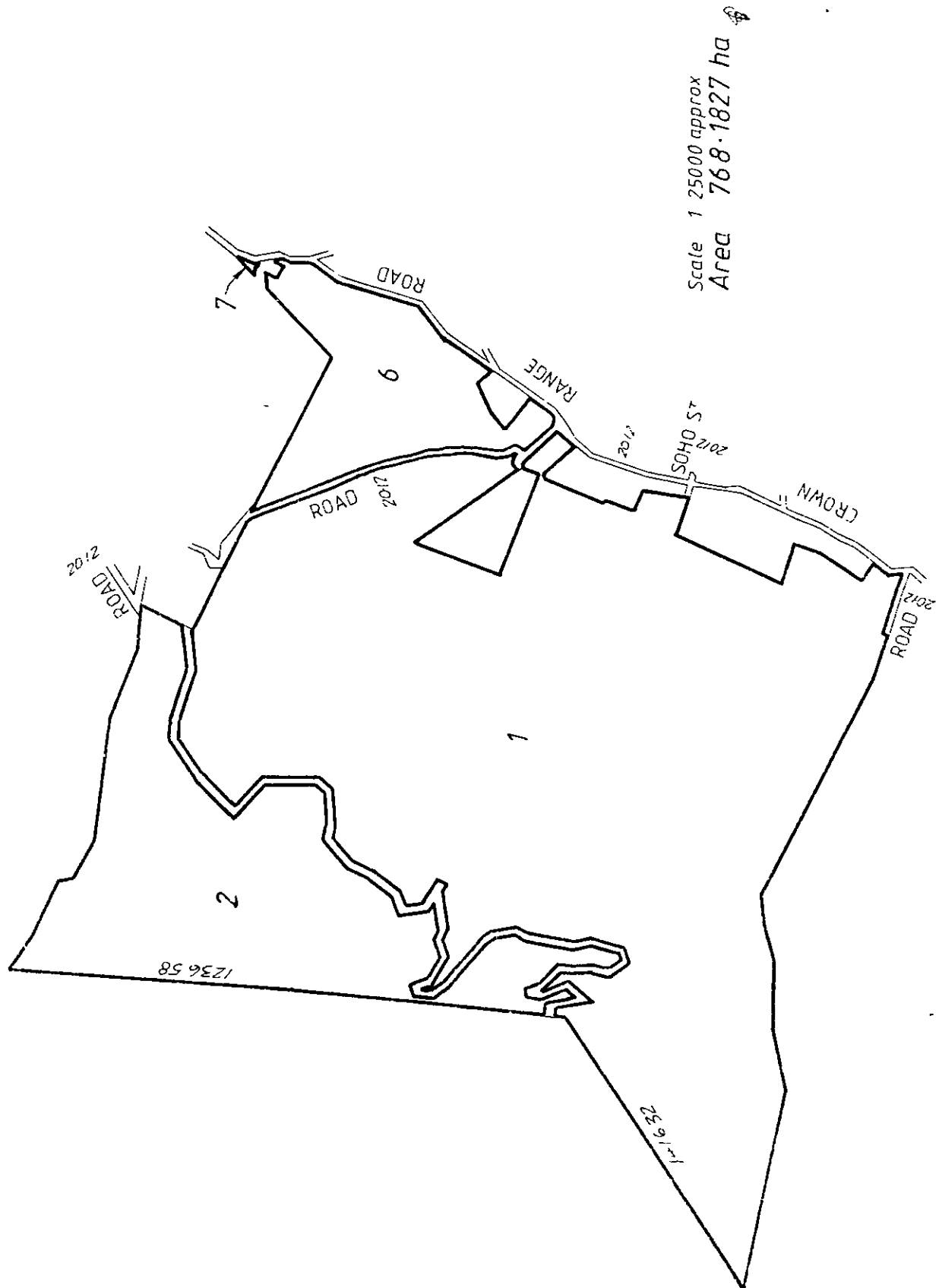
838333/3 Transfer being a grant of a right to convey electricity over part of the within land marked "A, B, C, D" on D.P. 21223 appurtenant to Lot 1 D.P. 19397 (C.T. 13A/681) - 10.9.1993 at 10.33 am

[Signature]
A.L.R.

DIAGRAM OVERLEAF
Measurements are Metric

13 A / 679

CERTIFICATE OF TITLE No. _____



Scale 1:25000 approx
Area 768.1827 ha

REGISTER

C.T. 13A/679

908435 ~~Empire~~ ^{Mining} Permit under
the Crown Minerals Act 1991
affecting part of the within land
in favour of ~~Carl Robertson Timothy Scarr~~
~~Alister Howison~~ for a term of twelve
years from 15 October 1994 -
23.5.1998 at 9.00 am
See Volume 9D Folio 546

*Amended
10.2.1997
4/10*

Jumavett
A.L.R.

946367.1 Mortgage to The National
Bank of New Zealand Limited
17.4.1998 at 9.01

McLennan
for DLR

965777.1 Resolution under
Section 241(4)(b) Resource
Management Act 1991 cancelling
the amalgamation condition
imposed on DP 26816

McLennan
for RGL

978521.1 Mining Permit under
Crown Minerals Act 1991. Term 4
years from 11 November 1999
18.11.1999 at 9.00
CT 9D/643 issued

K Patel
for RGL

Over

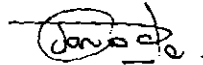
13A/679

983113 1 Resolution under Section 243(e) Resource
Management Act 1991 cancelling the easement condition
on DP 26816 marked a-b on DP 26816 as to Lot 2 DP
17960 CT 17C/906

983113 2 CsT issued
Lot 6 DP 26816
Balance
- all 11 2.2000 at 11 55

18D/533

18D/534



For RGL

CANCELLED
DUPLICATE DESTROYED



References

Prior C/T 55/65

Land and Deeds 69

Transfer No

N/C. Order No.

Application No: 6116



REGISTER

CERTIFICATE OF TITLE UNDER LAND TRANSFER ACT

This Certificate dated the 13th day of February one thousand nine hundred and ninety six under the seal of the District Land Registrar of the Land Registration District of OTAGO

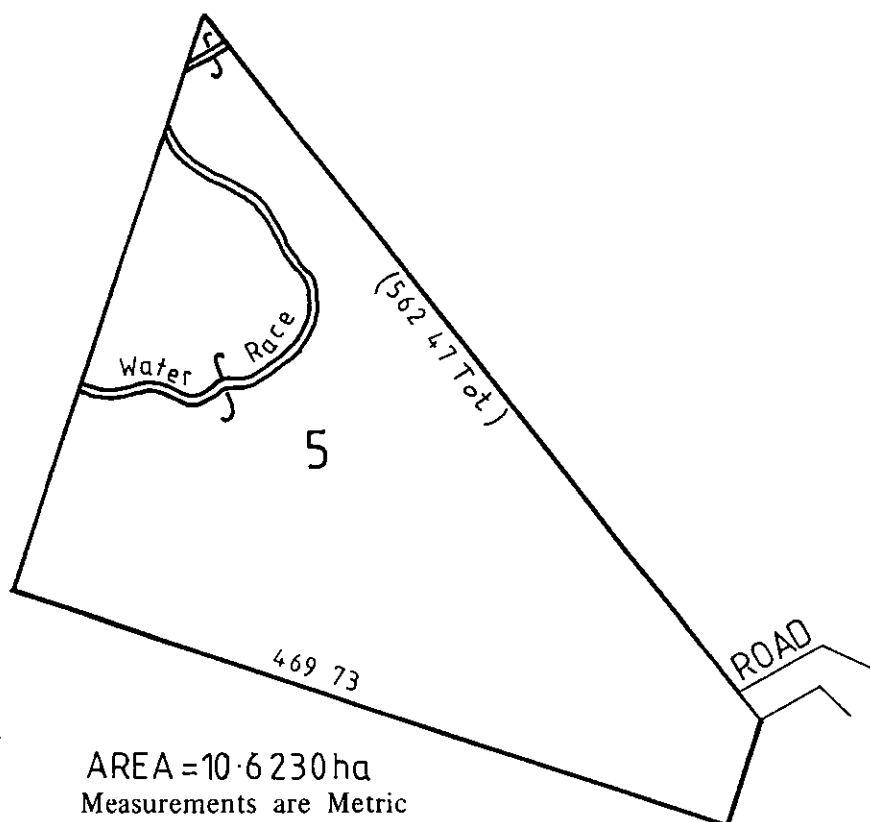
WITNESSETH that CARDRONA HOLDINGS LIMITED

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 10.6230 hectares more or less being Section 5 Block I Cardrona District



946367.1 Mortgage to The National Bank of New Zealand Limited
17.4.1998 at 9.01

M. Hanney
for DLR



AREA = 10.6230 ha
Measurements are Metric

SO 285
D00361E
5148



Register copy for L. & D 69, 71 72

No 17B / 975

17B / 975

CANCELLED

55/65

Registered Book.

Fol. 55 Folio. 65



Victoria, by the Grace of God, of the United Kingdom of Great Britain and Ireland, Queen:

Grant under
Land Act 1877

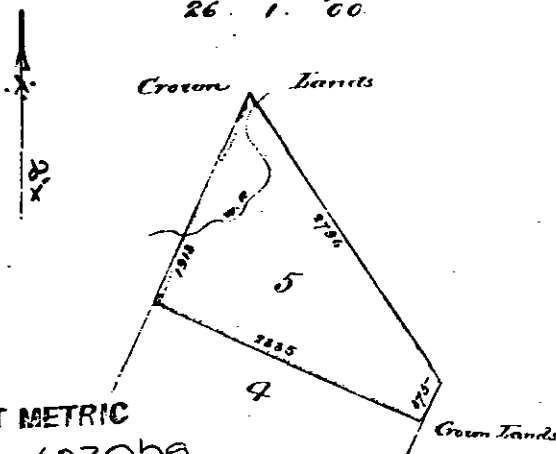
TO ALL to whom these Presents shall come, Greeting:

Know Ye that, for good considerations Us thereunto moving, WE, for Us, our Heirs and Successors, do hereby Grant unto Wong Yow of the Town of Auckland, in the Provincial District of Otago, Shirley his

Heirs and Assigns, All that Parcel of Land in our Provincial District of Otago in our Colony of NEW ZEALAND, containing by admeasurement Twenty six (26) acres and one (1) rood more or less situate in the Cardena

District being section numbered one (1) Block one (1) on the map of the said District bounded

BL: I Cardena Dist:
26. 1. 00



EQUIVALENT METRIC
AREA IS 10.6230 ha

Scale 10 chains = 1 inch

Surveyed by J. H. H. H.

Chief Surveyor W. H. H.

Draftsman

As the same is delineated on the plan drawn in the margin hereof, WITH all the Rights and Appurtenances thereto belonging: To hold unto the said Wong Yow

towards the North West by Green Lands one thousand

and thirty five (1935) links towards the

North East by Green Lands one thousand and

and ninety six (1996) links towards the South East

by Green Lands three hundred and seventy five (375)

links and towards the South West by Green Lands

two thousand three hundred and thirty five (2335)

links and the aforesaid linkages more or less and

intersected by the Water Race

As from the twenty fifth day of March one thousand eight hundred and twenty eight
In Testimony whereof WE have caused this our GRANT to be sealed with the Seal of our Colony of NEW ZEALAND.

Witness our Trusty and Well-beloved The Honourable Sir John Hamilton Gordon Knight Grand
Cross of the Most Distinguished Order of Saint Michael and Saint George our
High Commissioner for the Western Pacific

Governor and Commander-in-Chief in and over the Colony of NEW ZEALAND and its Dependencies, and Vice-Admiral of the same, at
Wellington this twentieth day of March, in the fourth
year of our Reign, and in the year of our Lord one thousand eight hundred and eighty one

No. 21733

Reg. 10. 24

Index No. 22011

Wong Yow

Transfer No. 16347 Wang You to Sek Hee: entered
22nd March 1886 at 2.35 o'clock

55/ 65

Transfer No. 17561 Sek Hee to Wah Young
Entered 8th November 1887 at 1 o'clock

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. L. R.

Application 6116 pursuant to the Land
Transfer Amendment Act 1963
C.T. 17B/975 issued for the within land

D. L. R.



ENTERED at 10— o'clock on the 29th
day of March 1881.

H. L. R.
DISTRICT LAND REGISTRAR

Registration District of Otago

DATED 7th March 1881.
26A 1R. 00 P.

Grant
TO

Wang You

ENTERED in Reg. No. 22/91 Folio 154
18th March 1881

R. S. G.
COMMISSIONER OF CROWN LANDS

ENTERED on Record this 10th
day of March 1881.

Reg. No. 684

Folio 65

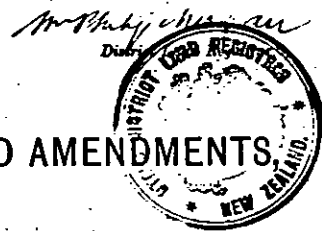
H. L. R.
UNDER SECRETARY FOR CROWN LANDS



NEW ZEALAND.

Vol 193 fol 153 (Lands—B. 24.)
Particulars entered in the Register-book, Vol.

193/153

the 5th day of May
1922, at 2 o'clock.

O T A G O LAND DISTRICT.

RENEWABLE LEASE UNDER PART III OF THE LAND ACT, 1908, AND AMENDMENTS, AND OF THE MINING ACT, 1908.

No. R.L.90.

This Deed, made the eighteenth day of November, 1922, between His Majesty the King (who, with his heirs and successors, is hereinafter termed "the Lessor") of the one part, and JOHN FINLAISON McDougall of the other part,

EQUIVALENT METRIC

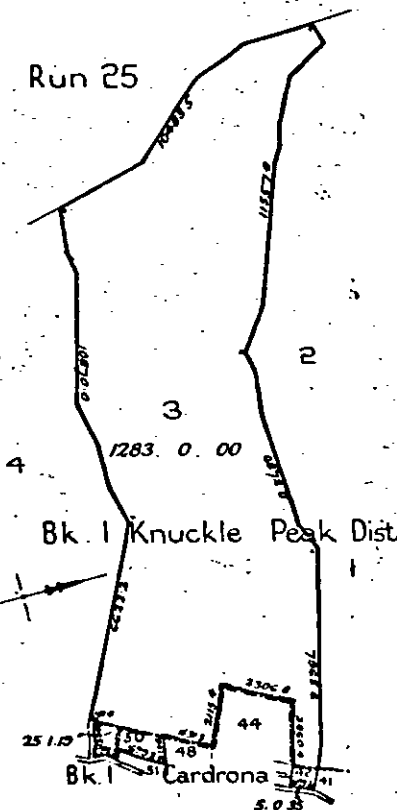
AREA IS of

CARDRONA

531.5900 ha

1313 a. 2 r. 14 p.

Run 25



in the Land District of O T A G O in the Dominion of New Zealand, with his executors, administrators, and permitted assigns, referred to as and included in the term "the Lessee"), of the other part, Witnesseth that, in consideration of the rent hereinafter reserved, and of the covenants, conditions, and agreements herein contained and implied and on the part of the Lessee to be paid, observed, and performed, the Lessor doth hereby demise and lease unto the Lessee All that piece or parcel of land, containing by admeasurement One thousand three hundred and thirteen --- acres two (2) roods and fourteen (14) --- perches, a little more or less, situated in the Land District of O t a g o aforesaid, and being Section s. numbered Forty-two (42) and Fifty (50), Block One (I), Cardrona Survey District and Block Section Three (3) --- Survey District of Block One (I) Knuckle Peak District, as the same is more particularly delineated and described in the plan drawn hereon, and therein coloured red in outline; together with the rights, easements, and appurtenances to the same belonging: To hold the said several premises intended to be hereby demised unto the Lessee for the term of sixty-six years, commencing from the 1st day of January, 1922, holding and paying therefor unto the Receiver of Land Revenue for the said District of O t a g o the annual rent of Fifteen pounds and four shillings

(£ 15 : 4 : -), payable half-yearly in advance on the 1st day of January and 1st day of July in each and every year during the said term, free from all deductions whatsoever. On 1st July 1922 the Lessee will pay rent for the period 17th November 1921 to 31st December 1921. And it is hereby declared and agreed that these presents are intended to take effect as a Renewable Lease under Part III of the Land Act, 1908 (hereinafter termed "the said Act"); and the provisions of the said Act applicable to such leases, so far as the same apply to the term, estate, or interest hereby granted or created, and to the relations between the Lessor and Lessee from time to time, shall, subject to the provisions of section 17 of the Mining Act, 1908, be binding in all respects upon the parties hereto in the same manner as if such provisions had been fully set out herein: And it is hereby further declared that if any dispute or disagreement shall arise between the parties hereto touching the construction of these presents, or in anywise relating hereto, such dispute or disagreement shall be referred to arbitration in the manner set forth in section 9 of the Land Laws Amendment Act, 1912, as modified by section 33 of the Land Laws Amendment Act, 1913; and neither of the said parties shall take or cause to be taken any steps or proceedings to set aside or call in question any award or decision which may have been given upon any such reference as final: And it is hereby further declared that the Lessee shall have no right or claim to any of the minerals, metals, or valuable stone under the surface of the land hereby demised, and the Lessee's rights are limited to the surface soil comprised in his lease: And also that all persons lawfully engaged in working such minerals, metals, stones, &c., shall have the right to sink shafts under or through the said land, and to take watercourses over the same, and the right to ingress, egress, or regress.

In Witness whereof the Commissioner of Crown Lands for the Land District of O t a g o on behalf of the Lessor, hath hereunto set his hand, and these presents have been also executed by the said Lessee.

Scale: 40 chains to an inch.

Signed by the said Commissioner, on behalf of the Lessor, in the presence of—
J. R. Wood
Chmn.
Land. Dept.
Dunedin

Signed by the above-named

JOHN FINLAISON McDougall

as Lessee, in the presence of

J. F. McDougall
Postmaster
Cardrona

Robert Laid
Commissioner of Crown Lands.

John Finlaison McDougall
Lessee.

DISCHARGED
Mortgage No. 60533 John Finlayson & Dougall to
the State Advances Corporation of New Zealand
at 10.56 am
236535 Transfer Eric William Anderson to
Maurice Menzies Anderson & Wainaleg
Farmer. Produced 4.8.1961 at 11:48 am
A.L.R.

193/153

Deferred Payment Licence 50/319
issued for within land

John
A.L.R.

DISCHARGED
Mortgage No. 131238 Eric William Anderson
to the State Advances Corporation of New Zealand
produced 2nd August 1961 at 11:00 am
A.L.R.

DISCHARGED
Mortgage 151433 Eric William Anderson to The
State Advances Corporation of New Zealand
produced 28 September 1959 at 10:50 am
A.L.R.

236535 Transfer Eric William Anderson to
Maurice Menzies Anderson & Wainaleg
Farmer. Produced 4.8.1961 at 11:48 am
A.L.R.

DISCHARGED
236534 Mortgage Maurice Menzies
Anderson to the State Advances Corporation and
Agency Company of New Zealand
Limited Produced 4.8.1961 at 1:52 pm
A.L.R.

271140 Transfer to Donald Andrew Macrae
of Cardrona, Farmer - 4.5.1964 at 10.15 am
A.L.R.

DISCHARGED
271141 Mortgage to The State Advances
Corporation of New Zealand - 4.5.1964
at 10.16 am
A.L.R.

DISCHARGED
290688 Mortgage to The State Advances Corporation
of New Zealand - 23.10.1970 at 12 noon
A.L.R.

DISCHARGED
328213 Mortgage to The State Advances Corporation
of New Zealand Varying the terms
of Mortgage 290688 - 18.6.1968 at 12.8 pm
A.L.R.

362122 Transfer to John Allendale Lee
of Cardrona, Farmer - 23.10.1970 at
10.47 am
A.L.R.

362124 Mortgage to The Dominion Life
Assurance Office of New Zealand Limited
- 23.10.1970 at 10.50 am
A.L.R.

362125 Mortgage to The State Advances
Corporation of New Zealand - 23.10.1970
at 10.51 am
A.L.R.

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. L. Macdonald A.L.R.

the 5th day of May
1922 at 2 o'clock.



OTAGO LAND DISTRICT.

RENEWABLE LEASE UNDER PART III OF THE LAND ACT, 1908
AND OF THE MINING ACT, 1908.

No. 15°.

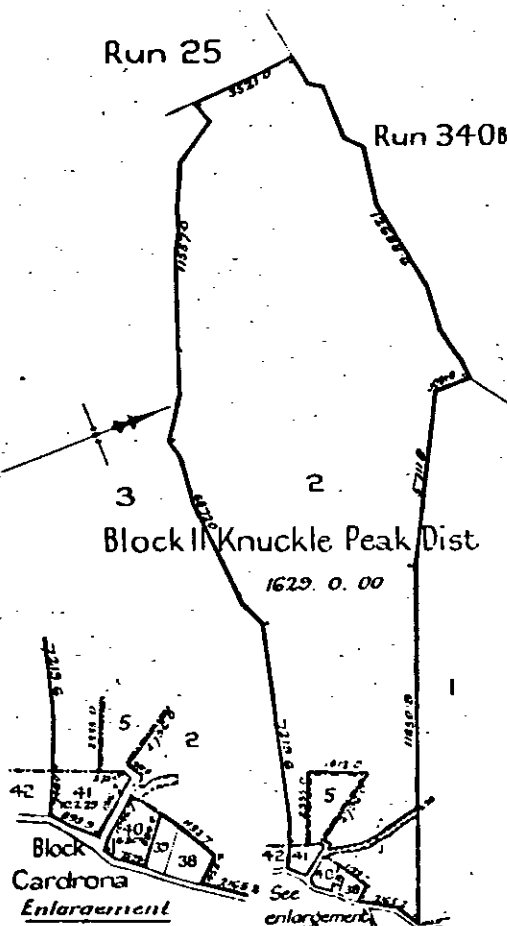
This Deed, made the Eighteenth day of November 1921, between His Majesty the King (who, with his heirs and successors, is hereinafter termed "the Lessor") of the one part, and TIMOTHY ENRIGHT the younger of the other part,

EQUIVALENT METRIC

AREA IS 666.3248 ha

CARDRONA

1646 a. 1r. 36p.



in the Land District of Otago, in the Dominion of New Zealand (hereinafter, with his executors, administrators, and permitted assigns, referred to as and included in the term "the Lessee"), of the other part, Witnesseth that, in consideration of the rent hereinafter reserved, and of the covenants, conditions, and agreements herein contained and implied and on the part of the Lessee to be paid, observed, and performed, the Lessor doth hereby demise and lease unto the Lessee All that piece or parcel of land, containing by admeasurement One thousand six hundred and forty-six --- acres one (1) roods and thirty - six (36) ---- perches, a little more or less, situated in the Land District of Otago aforesaid, and being Sections numbered Forty (40) and Forty-one (41), Block One (I), Cardrona Survey District and Section numbered Two (2), Block Two (II), Knucklepeak Survey District. as the same is more particularly delineated and described in the plan drawn hereon, and therein coloured red in outline; together with the rights, easements, and appurtenances to the same belonging: To hold the said several premises intended to be hereby demised unto the Lessee for the term of sixty-six years, commencing from the 1st day of January, 1922, holding and paying therefor unto the Receiver of Land Revenue for the said District of Otago the annual rent of Twenty pounds and four shillings

(£ 20 : 4 : -), payable half-yearly in advance on the 1st day of January and 1st day of July in each and every year during the said term, free from all deductions whatsoever. The Lessee will also pay rent for the period from date of this lease to 31st December, 1921. and it is hereby declared and agreed that these presents are intended to take effect as a Renewable Lease under Part III of the Land Act, 1908 (hereinafter termed "the said Act"); and the provisions of the said Act applicable to such leases, so far as the same apply to the term, estate, or interest hereby granted or created, and to the relations between the Lessor and Lessee from time to time, shall, subject to the provisions of section 17 of the Mining Act, 1908, be binding in all respects upon the parties hereto in the same manner as if such provisions had been fully set out herein: And it is hereby further declared that if any dispute or disagreement shall arise between the parties hereto touching the construction of these presents, or in anywise relating hereto, such dispute or disagreement shall be referred to arbitration in the manner set forth in section 9 of the Land Laws Amendment Act, 1912; and neither of the said parties shall take or cause to be taken any steps or proceedings to set aside or call in question any award or decision which may have been given upon any such reference as final: And it is hereby further declared that the Lessee shall have no right or claim to any of the minerals, metals, or valuable stone under the surface of the land hereby demised, and the Lessee's rights are limited to the surface soil comprised in his lease: And also that all persons lawfully engaged in working such minerals, metals, stones, &c., shall have the right to sink shafts under or through the said land, and to take watercourses over the same, and the right to ingress, egress, or regress.

In Witness whereof the Commissioner of Crown Lands for the Land District of Otago, on behalf of the Lessor, hath hereunto set his hand, and these presents have been also executed by the said Lessee.

Scale: 40 chains to an inch.

Signed by the said Commissioner, on behalf of the Lessor, in the presence of—

Signed by the above-named

TIMOTHY ENRIGHT, the younger, as Lessee, in the presence of—

Commissioner of Crown Lands.

Timothy Enright for Lessee.

Transfer 149163 Timothy Enright to Eric
William Anderson of Wanaka Farmer
produced 4th December 1945 at 2.00
Mortgage 123300 to The State Advances
Corporation of New Zealand produced
1945 at 2.00.

193/158

Deferred Payment Licence 5C/319 issued
for within land

A.L.R.

DISCHARGED Mortgage No. 131238 Eric William Anderson to
The State Advances Corporation of New Zealand produced 2nd August 1948 at 11.00

DISCHARGED Mortgage 181170 Eric William Anderson to
The State Advances Corporation of New Zealand produced 28th September 1955 at 11.00

236585 Transfer Eric William Anderson to
Maurice Menzies Anderson of Wanaka,
Farmer. Produced 4.8.1961 at 1.48

DISCHARGED 236534 Mortgage Maurice Menzies
Anderson to The Trustees Executors
and Agency Company of New Zealand
Limited. Produced 4.8.1961 at 1.57

271140 Transfer to Ronald Andrew
Mackenzie of Cardrona, Farmer
- 4.5.1964 at 10.15

DISCHARGED 271141 Mortgage to The State
Advances Corporation of New
Zealand - 4.5.1964 at 10.16

DISCHARGED 290688 Mortgage to The State Advances
Corporation of New Zealand - 23.10.1970 at 10.16

DISCHARGED 328213 Mortgage to The State Advances
Corporation of New Zealand Varying the
Terms of Mortgage 290688 - 18.6.1963
at 12.08

362122 Transfer to John Allondale
Lee of Cardrona, Farmer - 23.10.1970
at 10.47

362124 Mortgage to The Dominion Life
Assurance Office of New Zealand
Limited - 23.10.1970 at 10.50

362125 Mortgage to The State Advances
Corporation of New Zealand - 23.10.1970
at 10.51

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ORIGINAL REGISTER FOR THE PURPOSES OF
SECTION 215A LAND TRANSFER ACT 1952.

J. H. [Signature] A.L.R.

From: [Ben Teele](#)
To: [Jodi Halleux](#)
Subject: RE: Curtis Road - CT and Historical Searches
Date: Tuesday, 4 June 2019 12:42:24 PM
Attachments: [image002.png](#)
[image003.png](#)
[OT55-65.tif](#)
[OT17B-975.tif](#)
[OT193-153.tif](#)
[OT193-158.tif](#)
[OT5C-319.tif](#)
[OT9A-778.tif](#)
[OT9B-500.tif](#)
[OT13A-157.tif](#)
[OT13A-679.tif](#)
[DN_SO_3588_I_1.TIF](#)

Hi Jodi. Having now been out to site, I've got a much better idea of what is going on.

The site was originally split into two sections, 4 & 5, Block I Cardrona Survey District. The earliest documented reference to the site is from 1874, which shows J. McGrath and James Corbet as leasee's of the sections. (SO3588) A water race is shown near the western edge of the site, and what appears to be a track down along the creek before shifting to the south towards the Cardrona Township. The next documented record is from an undated but early (circa 1882) Crown Survey map of Cardrona. This shows that Wong You was leasing Section 5. Section 4 had been broken up into Section 2 and 3 of the Knuckle Peak survey District. A survey of Cardrona from 1921 shows these boundaries, as well as the water race's uphill (SO285). The Knuckle Peak survey map (SO286) shows the site, but not the races due to the larger scale.

The title information correlates with the survey information. The first title for Section 5 was issued to Wong You in 1881, and then to Wah Young in 1887. The title appears to have been inactive for a long period, as it was brought under a new title in 1996 to Cardrona Holdings Limited (OT17B/975). The other portion of the site was a small part of Section 2 and 3 of the Knuckle Peak Survey District. Section 2, which surrounded Section 5, Block I Cardrona, was issued as a renewable lease to Timothy Enright in 1921 (OT193/158). Section 3 was issued to John McDougall 1922 as a renewable lease (OT193/153). Each section had a number of transfers for the lease until it was brought under a deferred payment license in 1972, and issued to John Lee, a farmer (OT5C/319). It appears Lee succeed in purchasing the land by 1982, when a new title was issued in fee simple (OT9A/778). Waiorau Holdings Limited bought it in 1983, and a new title issued (OT9B/500). It was leased, and a new title issued in 1989 (OT13A/157). A new title was issued in 1990 (OT13A/679). There are two mining permits on this title, but any mining undertaken was likely away from the current site boundaries.

The documented history of the site was a mix of alluvial mining and early pastoral farming. Section 5 was the focus of early mining by Chinese, and a small hamlet is recorded on the site. They worked the streambed of Pringles Creek using small scale alluvial methods. Two water races were built across the site by 1874, but were not built by the Chinese. Water from these races would have supplied workings further downstream. Outside of the streambed the area was turned over to pastoral farming, likely by 1874. This continued through the 20th century, as the land was leased and then purchased by the farmer. I can't foresee any contamination issues from the mining activities, and the Chinese hamlet would have been small and discrete, and not likely to have used things like lead paint. The wider site has a long history of pastoral use, but the homestead located to the north of the current site boundaries.

Benjamin Teele

Building Surveyor & Principal Archaeologist

For and on behalf of Origin Consultants Ltd

[Architecture](#) [Heritage](#) [Archaeology](#)

Phone 03 442 0300 / 022 438 4552

Office 9 Arrow Lane, Arrowtown

Post PO Box 213, Queenstown 9348

Web www.originteam.co.nz [Facebook](#)



From: Jodi Halleux [mailto:jodi.halleux@e3scientific.co.nz]

Sent: Tuesday, 4 June 2019 9:24 a.m.

To: Ben Teele

Subject: RE: Curtis Road - CT and Historical Searches

Thanks Ben. I'll need the CTs for the appendices if you're obtaining them anyway.

From: Ben Teele <ben@originteam.co.nz>

Sent: Thursday, 30 May 2019 2:40 PM

To: Jodi Halleux <jodi.halleux@e3scientific.co.nz>

Cc: Fiona Rowley <fiona.rowley@e3scientific.co.nz>

Subject: RE: Curtis Road - CT and Historical Searches

Hi Jodi. We're covering this site from an archaeological perspective and I've just talked to Fi about it. I can't see any contamination concerns from the historic documentation. We're heading out to site tomorrow and I'll have a better idea then. I think you'll be able to just reference our report for the site history.

Benjamin Teele

Building Surveyor & Principal Archaeologist

For and on behalf of Origin Consultants Ltd

[Architecture](#) [Heritage](#) [Archaeology](#)

Phone 03 442 0300 / 022 438 4552

Office 9 Arrow Lane, Arrowtown

Post PO Box 213, Queenstown 9348

Web www.originteam.co.nz [Facebook](#)



From: Jodi Halleux [mailto:jodi.halleux@e3scientific.co.nz]
Sent: Wednesday, 29 May 2019 9:30 a.m.
To: Ben Teele
Subject: Curtis Road - CT and Historical Searches
Importance: High

Hi Ben

Further to our conversation this morning, the correct legal descriptions are as follows:

Lot 1 DP 425263
Lot 1 DP 433836
Lot 6 DP 344432

The topo map for the site shows Littles Water Race running through the western portion of the site. If you have any known mining archaeology it would be useful for us in targeting potential for tailing contamination. Our reference for your invoice is 19043.

Thanks

Jodi



Jodi Halleux
Senior Consultant

m. +64 022 312 4725 w. e3scientific.co.nz



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Appendix C:
Historic Aerials

At 119
11993
209.72



3041 E/8

SH 89
DIST 16
1001/10
25-2-68



At 119
13994
209.72



3041 E/9

5H 89
DIST 16
10.4/11
23-2-68

