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Table 1: Summary of Applied for Potable Water Demand

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Commercial - 3620 m ²	-				60
Leakage/Evaporation	-				215
Total	1085			-	1292

Permit
2009.191
Allows
1077 m³ pd.

Following further discussion with Council RSU staff regarding supplementary allocation, the applicant sought the following conditions:

- i. The consent shall include two primary allocation takes (Primary Allocation 1 & 2) as detailed below.
- ii. The Primary Allocation 1 may be abstracted from Pringles Creek at Lot 1 DP 344432 and/or the Cardrona River at or about NZMS 260: F41 953 857 or F41 949 851. Primary Allocation 2 may be abstracted from Pringles Creek at Lot 1 DP 344432.
- iii. Primary Allocation 1 shall only be abstracted from Pringles Creek when flows in Pringles Creek at Lot 1 DP 344432 exceed 15 l/s.
- iv. The total rate of abstraction for Primary Allocation 1 shall not exceed 15 l/s or 1,300 m³ per day.
- v. Primary Allocation 2 shall only be abstracted from Pringles Creek when flows in Pringles Creek at Lot 1 DP 344432 exceed 40 l/s (40 l/s comprising 15 l/s Primary Allocation 1 and a 25 l/s residual flow).

OR

Primary Allocation 2 shall only be abstracted from Pringles Creek when flows in Pringles Creek at Lot 1 DP 344432 exceed 30 l/s (30 l/s comprising 15 l/s Primary Allocation 1 and a 15 l/s residual flow). There shall be no Primary

2.3 Catchment Descriptions

2.3.1 Pringles Creek

Pringles Creek drains the upper slopes of the Captains Basin and Scum Valley areas of Cardrona Ski Field. Pringles Creek has a steep gradient, with a bed consisting mainly of schist boulders and cobbles with patches of coarse sand. The stream is fed from snowmelt and natural springs. Pringles Creek possesses two consented and one un-consented downstream water takes, which are used for irrigation and domestic supply.

The applicant has provided a synthetic flow (daily averages) record for Pringles Creek based on gaugings taken at their recorder site, which is adjacent to the proposed point of take, and daily average flows the Mt Barker flow recorder. The data period for the synthetic record is 1976 to 2009, with no data recorded from between 1989 and 2000.

A summary of the hydrological statistics calculated from this data are shown in Table 2.

Table 2 Summary of hydrological statistics for Pringles Creek.

Season	Min (l/s)	Max (l/s)	Mean (l/s)	Median (l/s)	MALF (l/s)
All year	6	1,345	58	43	23
Oct-April	17	228	44	33	20

Table 2 shows that the Mean Annual Low Flow (MALF) for Pringles Creek is 20 l/s for the irrigation season (October to April, inclusive) and the median flow is still well below the applied for maximum rate of take at 33 l/s.

Mean monthly minimum flow and median flows have also been calculated from the synthetic record and are shown in Figure 1.

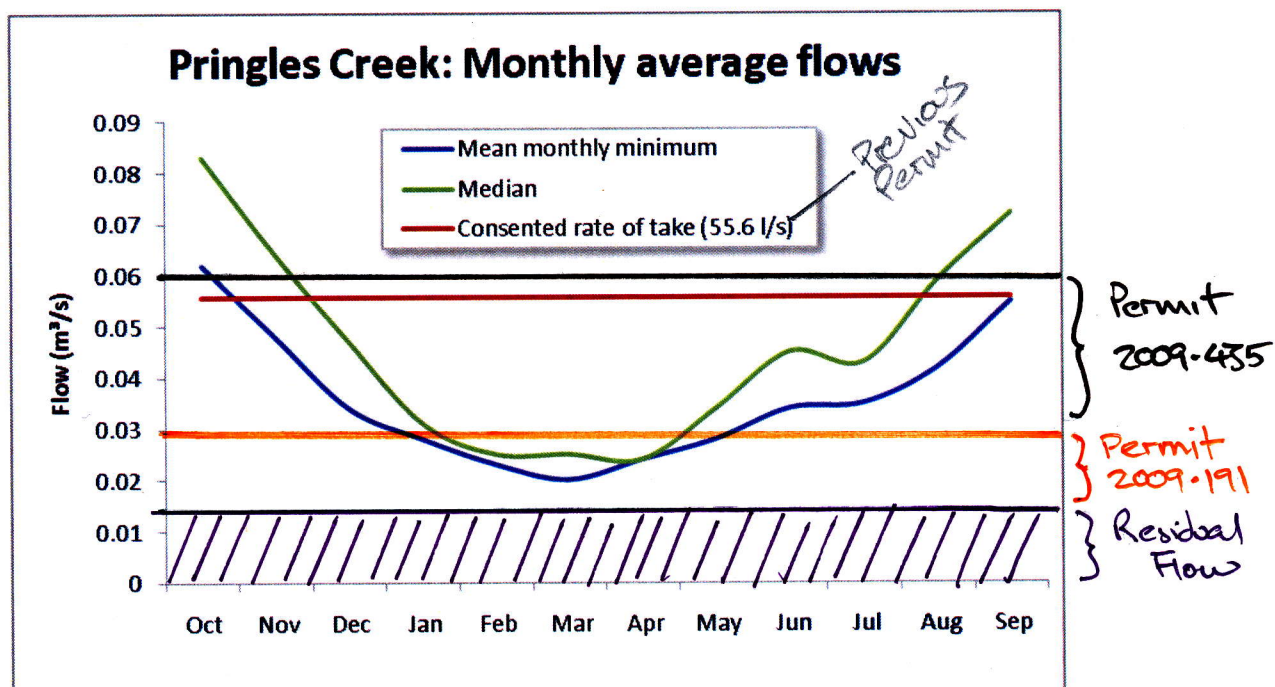


Figure 1. Average monthly minimum and mean flows for Pringles Creek.

Currently Water Permit 97216 authorises the taking of up to 55.6 l/s from Pringles Creek. Figure 1 shows that the median flow is below 55.6 l/s for almost the entire irrigation season (with the exception of October and November); dropping as low as 24 l/s in April and averaging 33 l/s over the irrigation season.

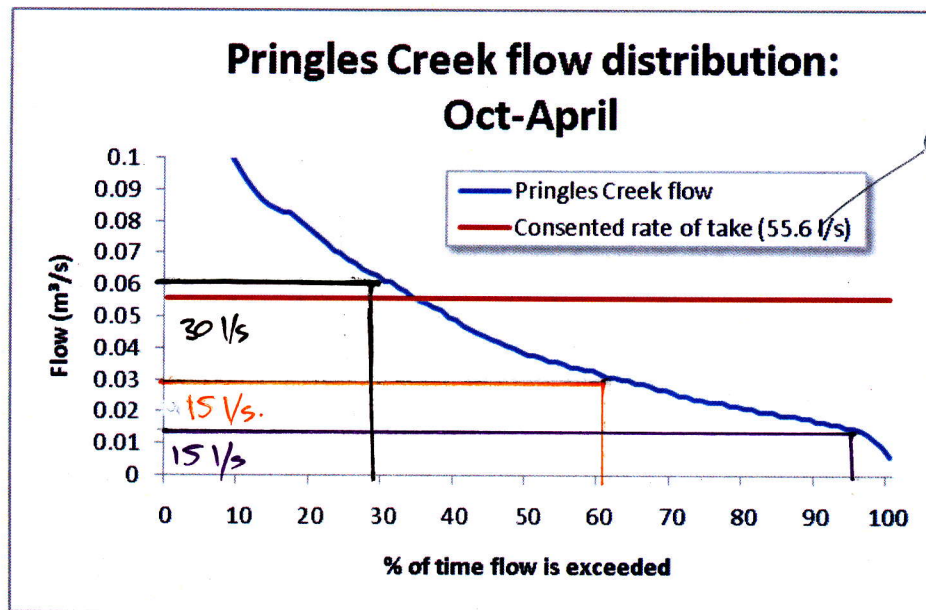


Figure 2. Pringles Creek flow distribution (October - April, inclusive)

Figure 2 shows that there was sufficient flow in Pringles Creek to take 55.6 l/s for only 34% of the irrigation season, and based on Figure 1 the majority of these flows occurred during October and November.

It is clear from the hydrological information provided by the applicant that there is insufficient water available in Pringles Creek for Water Permit 97216 to be fully exercised for most of the irrigation season.

2.3.2 Cardrona River

Within the Cardrona River catchment, the majority of water takes are utilised for irrigation, thus placing extra stress on the catchment's available water during the summer. The Cardrona River is listed in Schedule 1A of the Regional Plan: Water for Otago (RPW) as having natural values, including significant areas for the spawning and juvenile development of fish, significant presence of trout and eel, presence of indigenous fish species and invertebrates threatened with extinction, and significant habitat for flathead galaxiid. While Pringles Creek is not listed in Schedule 1A, neighbouring Boundary Creek and Spotts Creek which possess similar topography, are listed in Schedule 1A as being significant habitats for koaro and having natural values relating to the presence of indigenous fish threatened with extinction. There is a strong possibility also, that Pringles Creek possesses similar natural values.

Kai Tahu associate significant spiritual and cultural beliefs, values and uses with the Cardrona River. These include mana interests; kaitiakitanga, mauri, waahi tapu and/or waiwhakaheke, waahi taoka and access/customary use interests; mahika kai, kohanga, trails and cultural materials.

Hydrological Reference Data for Pringles Creek, **Cardrona**

The attached pages of reference material are from a report obtained from Otago Regional Council.

The report was prepared for the renegotiation of the Mount Cardrona Station water permits in 2010. The data refers to the old permit 972216 and I have annotated on the new water permit values for Permits 2009.191 & 2009.435

The full, original report and draft permits is included as a separate PDF

REPORT

File No: 2009.191
Application No: 2009.191 & 2009.435

Report No: 2009/0628
Prepared For: Staff Consents Panel
Prepared By: Peter Christophers, Principal Resource Officer

Date: 3 March 2010
Subject: **Applications 2009.191 and 2009.435 by Mt Cardrona Station Limited to take water from Pringles Creek and the Cardrona River, Queenstown Lakes District**

1. Purpose

To report and make recommendations on the determination of the above application to transfer the point of take under the non-notified provisions (section 93(1)(b) and section 94(2)) of the Resource Management Act 1991 (the Act).

2. Background Information

Mt Cardrona Station Limited (the applicant) holds Water Permit 97216 to take 144,000 cubic metres (m³) of water per month at a maximum rate of 200,000 litres per hour at a maximum rate of 55.6 litres per second (l/s) from Pringles Creek via an open water race for a term expiring 1 February 2013. The purpose of Water Permit 97216 was for irrigation.

2.1 Previous application 2006.375

As the applicant intends to develop some of the land for residential development, it sought Water Permit 2006.375. Application 2006.375 also sought to shift the Pringles Creek intake point approximately 300 metres (m) upstream, as well as to take water from Little Meg Creek, located approximately 1.75 kilometres (km) to the southwest. The water from Little Meg Creek was to be gravity fed to a water treatment plant located on land north of Pringles Creek, as well as to irrigate the applicant's land. There was proposed to be no increase in the water taken.

The applicant initially stated that 25.5 l/s will be used to k-line irrigate 61.6 hectares (ha) of Mt Cardrona Station Limited land and the Cardrona Alpine Village will use the remaining 11.1 l/s to k-line irrigate 32.4 ha of pasture. However, since lodging the application, the applicant amended its application to enable it to irrigate another 89.6 ha with up to 44.6 l/s.

Consequently the applicant sought the following:

- (i) *The rate of abstraction the applicant sought for irrigation was:*
 - (a) *55.6 litres per second;*

- (b) *124,621 cubic metres per month;*
 - (c) *799,500 cubic metres between 1 September in a year and 31 August in the following year.*
- (ii) *The rate of abstraction for communal domestic, commercial supply and garden irrigation shall not exceed*
- (a) *19 litres per second;*
 - (b) *638 cubic metres per day.*
- (iii) *The combined rate of abstraction authorised by condition 2 and condition 3 shall not exceed 55.6 litres per second and 144,000 cubic metres per month.*

Application 2006.375 was processed on a non-notified basis and the amount of water granted was based on a calculation of how much water each lot would require. However, the applicant objected to the decision because the amount of water calculated for each lot was inconsistent with the Queenstown Lakes District Council (QLDC) subdivision requirements (i.e. QLDC requirements were greater than that granted by Council).

The applicant has indicated that if the current applications are granted it will surrender application 2006.375.

2.2 Applications 2009.191 & 2009.435

Application 2009.191 is to replace an existing water permit to take 55.6 l/s (144,000 m³/month) from Pringles Creek (Water Permit 97216) which is currently located at F41: 946-852. Water Permit application 2001.191 is to shift the Pringles Creek point of take approximately 1.5 km upstream, as well as to allow water to be taken from the Cardrona River approximately 120 m east of the intersection of Tuohys Gully Road and State Highway 89 (F41:954-857) or 720 m southwest of the intersection of Tuohys Gully Road and State Highway 89 (F41: 954-857).

The applicant was informed that its initial application to take 55 l/s did not meet Policy 6.4.17 of the Regional Plan: Water (RPW) and that the Council's Resource Science Unit (RSU) would recommend that it be declined in its current form.

After several weeks of discussion the applicant varied its application as follows:

- Replace 97216 with two primary allocation takes. Application 2009.191 to take 15 l/s and 1,300 m³/day (40,300 m³/month) from Pringles Creek or the Cardrona River and application 2009.435 to take 30 l/s and 45,000 m³/month from Pringles Creek.
- A total water take of 45 l/s at a maximum volume of 85,300 m³/month, which is a total reduction of 10.6 l/s and 58,700 m³/month. Of the 85,300 m³/month up to 1,300 m³/day (40,300 m³/month) is to be used for potable purposes.

The applicant has proposed that residual flows in Pringles Creek be attached to the replacement applications. The water will be pumped from the Cardrona River and Pringles Creek and distributed via pipes to the development. As no large scale water storage facilities are planned the applicant is relying on an uninterrupted water supply from the Cardrona River catchment.

The applicant has noted that these applications propose a similar end use for the water, as it will still provide potable water to Mt Cardrona Station Village with the remainder of water being for the irrigation of the surrounding lands. Though this application will slightly alter the ratio of water used for irrigation and potable supply, as more water is now required for potable use due to the final rules of the QLDC and more work having been undertaken on the resulting zone yield than had been done at the time of the lodgement of application 2006.375. A summary of the proposed potable water is shown in Table 1.

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Following further discussion with Council RSU staff regarding supplementary allocation, the applicant sought the following conditions:

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Allocation 2 take for a continuous 6 hour period no less than once every four weeks.

- vi. The total rate of abstraction for Primary Allocation 2 shall not exceed 30 l/s or 45,000 m³/month.
- vii. The abstracted water shall be used for irrigation or potable water supply at Mount Cardrona Station or for the Mount Cardrona Station development.
- viii. The total instantaneous Primary Allocation 1 and 2 abstractions shall not exceed 45 l/s.
- ix. The consent holder shall take all reasonable action to minimise the leakage from the water delivery system. The term "reasonable action" is to include:
 - a A proactive leak detection programme, and
 - b A commitment to upgrading of the reticulation, as required, to minimise leakage, and
 - c A public awareness programme encouraging all water users to prevent water leakage from their connected systems.
- x. The consent holder shall promote the efficient use of water to all water users of the scheme at least once every two years through appropriate media or communication methods.
- xi. The consent holder shall submit a report to the Consent Authority by the 31 May each year, summarising the following:
 - a A map showing the extent of the Mt Cardrona Station Ltd Development;
 - b Management of the water supply to the Mt Cardrona Station Ltd Development;
 - c Any maintenance undertaken, and
 - d Any promotional material used to meet condition ix. (c) and condition x. of this condition.
- xii. The consent holder shall take all practicable steps to ensure that:
 - a The volume of water used for irrigation does not exceed the soil field capacity of the irrigated areas;
 - b The irrigation does not cause surface runoff that would discharge into natural water bodies;
 - c There is no leakage from pipes and structures;
 - d The use of water is confined to targeted areas;
 - e Irrigation induced soil erosion and soil plugging does not occur;
 - f Soil quality is not degraded as a consequence of irrigation; and
 - g Loss of water, nutrients, and agrichemicals by percolation to groundwater is minimised.

It is noted that proposed conditions ix – xii are from Water Permit 2006.375.

2.3 Catchment Descriptions

2.3.1 Pringles Creek

Pringles Creek drains the upper slopes of the Captains Basin and Scum Valley areas of Cardrona Ski Field. Pringles Creek has a steep gradient, with a bed consisting mainly of schist boulders and cobbles with patches of coarse sand. The stream is fed from snowmelt and natural springs. Pringles Creek possesses two consented and one un-consented downstream water takes, which are used for irrigation and domestic supply.

The applicant has provided a synthetic flow (daily averages) record for Pringles Creek based on gaugings taken at their recorder site, which is adjacent to the proposed point of take, and daily average flows the Mt Barker flow recorder. The data period for the synthetic record is 1976 to 2009, with no data recorded from between 1989 and 2000.

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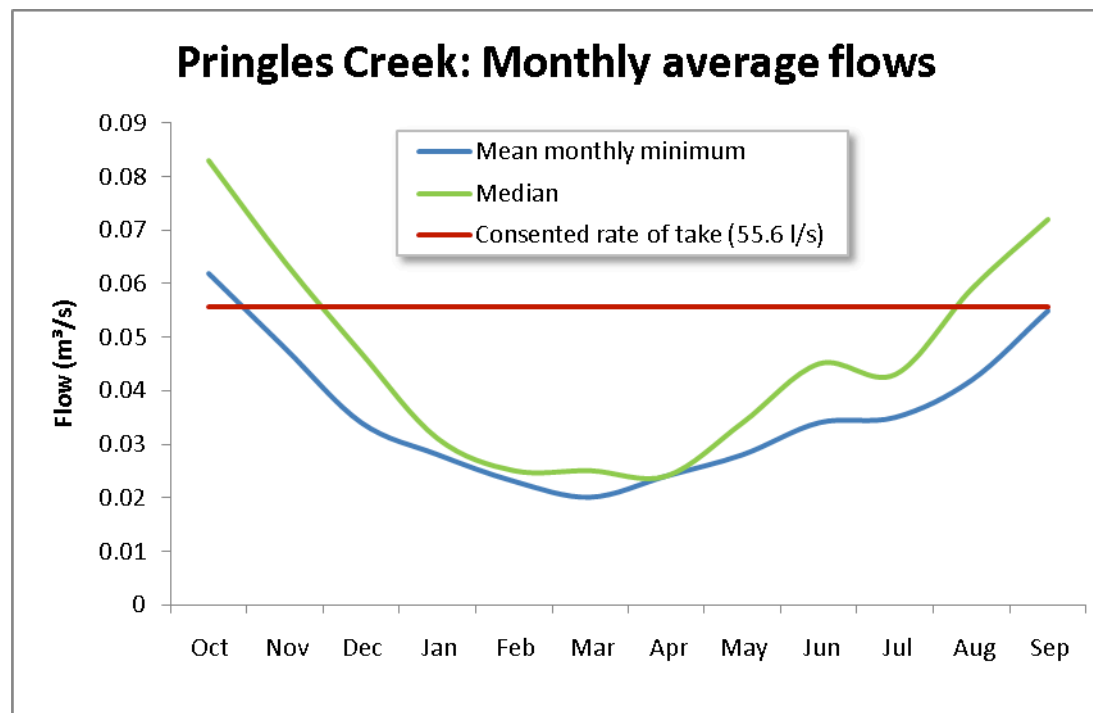


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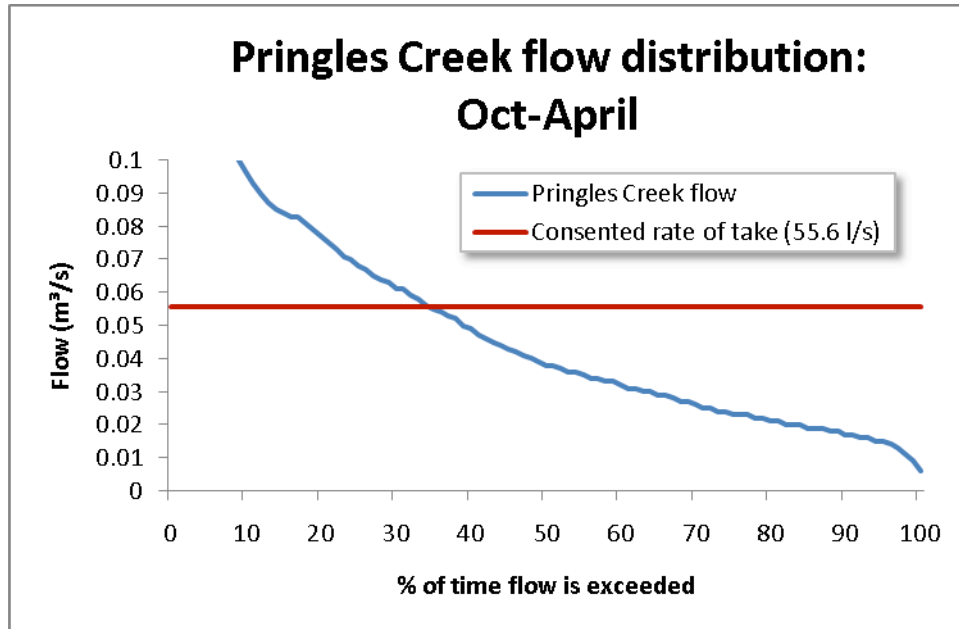


Figure 2. Pringles Creek flow distribution (October - April, inclusive)

Figure 2 shows that there was sufficient flow in Pringles Creek to take 55.6 l/s for only 34% of the irrigation season, and based on Figure 1 the majority of these flows occurred during October and November.

It is clear from the hydrological information provided by the applicant that there is insufficient water available in Pringles Creek for Water Permit 97216 to be fully exercised for most of the irrigation season.

2.3.2 Cardrona River

Within the Cardrona River catchment, the majority of water takes are utilised for irrigation, thus placing extra stress on the catchment's available water during the summer. The Cardrona River is listed in Schedule 1A of the Regional Plan: Water for Otago (RPW) as having natural values, including significant areas for the spawning and juvenile development of fish, significant presence of trout and eel, presence of indigenous fish species and invertebrates threatened with extinction, and significant habitat for flathead galaxiid. While Pringles Creek is not listed in Schedule 1A, neighbouring Boundary Creek and Spotts Creek which possess similar topography, are listed in Schedule 1A as being significant habitats for koaro and having natural values relating to the presence of indigenous fish threatened with extinction. There is a strong possibility also, that Pringles Creek possesses similar natural values.

Kai Tahu associate significant spiritual and cultural beliefs, values and uses with the Cardrona River. These include mana interests; kaitiakitanga, mauri, waahi tapu and/or waiwhakaheke, waahi taoka and access/customary use interests; mahika kai, kohanga, trails and cultural materials.

The Cardrona River is significantly over-allocated, with an allocation limit of 490 l/s and a total primary allocation of 2,418 l/s. No further primary allocation is available in the Cardrona Catchment. Any additional water abstraction from the primary allocation “block” will reduce existing users’ access to water

The MALF of the Cardrona River is 980 litres per second (l/s), and its mean flow is 3,400 l/s. Council’s RSU has calculated the mean flow of Pringles Creek to be 58 l/s (44 l/s between Oct – April) and its MALF to be 23 l/s (20 l/s Oct – April).

2.4 Draft Section 42 A Report

A draft Section 42A staff report was forwarded to the applicant on 27 November 2009. The applicant provided its response to the draft report on 14 December 2009. Its response included confirmation of proposed areas of irrigation use as well as suggested amendments to the proposed draft report and associated water permits. This information has been considered in the final preparation of this report. In particular the applicant requested to allow half of the originally applied for volume of system leakage, because all systems have leakage particularly when they age and the volume of water applied for is the very minimum that the community requires. However, given that the Cardrona River catchment is significantly over-allocated, it is inappropriate to authorise ongoing leakage from a modern purpose built water supply system. Furthermore, with small scale on-site storage and a proactive leak detection programme, the community water requirements will be able to be met.

The applicant has also requested that during the time it will take to complete the development, Water Permit 2009.191 is also able to be used to irrigate the development area. It is noted that the addition of 1,077 m³/day (33,387 m³/month) of water for irrigation will not exceed the Aqualinc irrigation recommendation for either 122 ha (table 3) or 312 ha (including the proposed residential development land).

3. Status of the Applications

The taking and use of surface water as existing primary allocation from catchments not listed in Schedule 2A of the RPW, is a **restricted discretionary** activity under Rule 12.1.4.5 of the RPW. The Council may grant or decline the applications, but if granted may impose conditions under Section 108 of the Act for matters over which discretion has been restricted.

The matters to which the Council has restricted discretion are listed in Rule 12.1.4.8 of the RPW.

4. Notification Status and written approvals

Rule 12.1.4.8 states that an application for this activity does not require notification under Section 93 of the Act, or to be served on affected parties under Section 94(1) of the Act (provided that the catchment is subject to minimum flows in Schedule 2A of the RPW, or any consent (if granted) would not be subject to a residual flow or specific provision of native fish) unless the Council considers that there are special circumstances.

As the effects of the activity are considered to be minor, but the water take will be subject to a residual flow requirement (see section 5), written approvals of affected parties are typically required. However, this is a replacement of an existing water permit that was granted with no residual flow and the applicant is proposing the applications be granted with residual flows, as well as reducing the primary allocation from 55.6 l/s to 45 l/s. As the only other consented water user (Cardrona Ski Resort) is located at the top of the catchment, there are considered to be no affected parties to this proposal.

Te Runanga o Ngai Tahu (TRoNT) was also forwarded a letter of interest as the activity falls within a Statutory Acknowledgement Area. As TRoNT did not respond to this letter, the application proceeded. It is also noted that on 15 December 2009, after it was explained that residual flow conditions, water use efficiency and monitoring conditions would be imposed, as well a reduction in the allocation from the catchment, Kai Tahu ki Otago Ltd verbally confirmed that it had no concerns with the application.

5. Assessment of Environmental Effects

5.1 Allocation Status

Primary allocation is defined by policy 6.4.2(b) of the RPW:

“ To limit allocation for the taking of surface water in any catchment, through the identification of a quantity, known as primary allocation, which is:

(b) For catchment areas other than those in Schedule 2A the greater of:

(i) 50% of the 7-day mean annual low flow; or

(ii) The consented maximum instantaneous or consented 7-day take at 28 February 1998, less:

- Any consents surrendered, lapsed, cancelled or not replaced on expiry, after 28 February 1998; and*
- Any takes that immediately return all of the take to the source water body.”*

The 7-day MALF for the Cardrona River catchment has been calculated by the Council's RSU as 980 l/s at the Mount Barker flow monitoring site. Therefore, total theoretical primary allocation is 490 l/s. The existing primary allocation of the Cardrona River catchment (i.e. current consumptive water permits that were granted prior to 28 February 1998) equates to 3,180 l/s. Therefore, the actual primary allocation of the Cardrona River catchment is 3,180 l/s.

While the status of the catchment is over-allocated, because the water permit that this application seeks to replace was originally granted prior to 28 February 1998, and because the applicant has applied to replace this consent within the statutory timeframes given in section 124 of the Act, this take will retain its primary allocation status.

5.2 Minimum and Residual Flows

Minimum flows may be set for a river or catchment for the purpose of restricting primary allocation takes of water, and to provide for aquatic ecosystems and natural character. Once set in Schedule 2A of the RPW, they are imposed on all relevant consents in that catchment.

In addition to minimum flows, a residual flow may be set at the point of take (including tributaries of rivers on which minimum flows have been set), for the purpose of providing for instream values of the source water body.

The Council's RSU has reviewed the applicant's final proposal and recommended the following:

- Application 2009.191 is divided into two separate primary takes, with their own rates of take and residual flows. For the purpose of this report they are called "Primary Take 1" and "Primary Take 2".
- Both takes are metered and datalogged.
- The total rate of take for "Primary Take 1", including both the Pringles Creek and Cardrona River points of take, does not exceed 15 l/s.
- A residual flow of 15 l/s is imposed for "Primary Allocation 1" from Pringles Creek.
- A residual flow of 25 l/s is imposed for "Primary Allocation 2" from Pringles Creek.
- The consent is to be subject to any minimum flows implemented for the Cardrona River.

The applicant's preferred residual flow for Primary Take 2 was for water only being abstracted from Pringles Creek when flows in Pringles Creek at Lot 1 DP 344432 exceed 30 l/s (30 l/s comprising 15 l/s Primary Allocation 1 and a 15 l/s residual flow) and that there shall be no Primary Allocation 2 take for a continuous 6 hour period no less than once every four weeks. This would allow a short term 'flushing flow', which Ryder Consulting in 2006 noted may be necessary to flush any nuisance algae out of the downstream channel.

This option was rejected by the RSU as it considers that maintaining a residual flow of 25 l/s for Primary Take 2 will provide greater protection for instream values than the flushing flow regime proposed by the applicant. The RSU added that the intensity and duration of low flow events is a major controlling factor for instream biota in small streams, whereas flushing flows need to be 3-6 times the median flow (159 – 318 l/s) to have any significant effect. As such, the 30 l/s flushing flow proposed by the applicant will have little effect.

5.3 Efficiency of Water Use

5.3.1 Domestic Use

As shown on table 1, the applicant is proposing to develop a large number of residential and apartment units, lodges and hotels on the lower slopes of Mt Cardrona Station on land located above the current Cardrona Road ski field turnoff, from State Highway 89. The applicant has stated that this development will require up to 1,292 m³ per day of domestic water. As outlined in table 1, the applicant has calculated residential and apartment water use on 1,050 l/lot-apartment/day. Previously, between 3,000-5,000 l/day/dwelling was allocated for a lifestyle block, which would allow for all internal use, as well as minor external uses such as irrigating lawns etc. During the processing of Water Permit 2006.375, the applicant recognised that the area is water short and applied for essentially internal water use only, with an anticipation that sullage will be used for small scale landscape irrigation. The applicant also noted that landscaping will involve appropriate dry climate species. The Australian/New Zealand Standard for on-site domestic waste water management (AS/NZS 1547:2000) guidelines allows for 180

litres/person/day (720 l/day/household) with standard household fittings being used. However, during the summer period (October-March), it is reasonable to also expect minor irrigation of curtilage and landscaping rather than full scale garden irrigation. As such, it is considered that the domestic water use volume applied for is both realistic and efficient.

It is also noted that AS/NZS 1547:2000 indicates dwellings with standard water reduction devices require 145 litres/person/day and dwellings with full water reduction devices 115 litres/person/day. Therefore, if the applicant was to ensure water saving devices were in use (such as reduced flush toilets, shower flow restrictors etc.) there would be more water available for irrigation or other domestic use. Furthermore, any daily quota of water not used, along with roof water, could be stored in on-site tanks and also used for irrigation or other domestic purposes as required.

The applicant has requested that 215 cubic metres per day be allowed for evaporation/leakage. However, good management and new pipe systems should ensure these losses are minimal. Consequently, no allowance is made for leakage and evaporation.

As water for firefighting purposes can be taken as of right and stored in a holding tank, extra water should not be allocated for this purpose. Any firefighting holding tanks can be refilled after a fire, but the water cannot be used for any other purpose.

5.3.2 Irrigation

Water is currently taken at up to 55.6 l/s is taken from Pringles Creek under Water Permit 97216. The water is taken in an open race and used to irrigate pasture owned by Mt Cardrona Station Limited and Cardrona Alpine Village Limited. As the applicant has confirmed that there is only very minor change to the land area or irrigation that was proposed for application 2006.375, up to 122 ha of pasture will be k-line irrigated.

As there is great demand for irrigation water in Otago, it is important that it is used efficiently. In addition, proposed Policy 6.4.0A of the RPW requires that the quantity of water granted is no more than that is reasonably required for the intended use. The Council commissioned a report by Aqualinc Research Ltd (Aqualinc) entitled “*Water Requirements for Irrigation Throughout the Otago Region*”, and dated October 2006, to assess water volumes required to efficiently irrigate pasture.

Aqualinc developed a water-balance model that was used to estimate soil moisture levels over a 25-year period. This model takes into account the local climate, the types of soils, crop types (rooting depth and evapotranspiration factors) and the irrigation system (management rules, applied depth, timing and performance). The irrigation strategy (depth and return interval combinations) meets a specific irrigation objective, being that production levels were to be maintained close to maximum for most of the time, and that even in the driest of conditions sufficient water would still be available to sustain plant growth.

The soil type of an area and the rooting depth of a crop or pasture affect plant available water (PAW). The average PAW value of the applicant’s property and the area to be irrigated is used to calculate their water requirement, over daily, weekly, monthly and seasonal periods. A seasonal limit on the volume of water has been given to reflect that less water is required during the 'shoulder' of the irrigation season.

The applicant has stated that there has been only minor change to the land area that was proposed to be irrigated by Water Permit 2006.375. Based on the Aqualinc report, for the purpose of calculating water requirements on the applicant's land a PAW value of 70 mm has been used for 30 ha of the irrigated land. Therefore to maintain optimum plant growth the maximum weekly limit for irrigation has been estimated at 32 mm (or 316 m³/ha/week). It is also estimated that no more than 595 mm of water (or 5,950 m³/ha) should be applied over an irrigation season.

For the remaining 92 ha a PAW value of 45 mm has been used. To maintain optimum plant growth over this area of land, the maximum weekly limit for irrigation has been estimated at 36 mm (or 356 m³/ha/week). It is also estimated that no more than 676 mm of water (or 6,750 m³/ha) should be applied over an irrigation season

However, it is acknowledged that actual use will only be known through the keeping of accurate pumping records.

As discussed the applicant has proposed a reduction in the rate and volume of water to be taken. Of the 85,300 m³/month proposed to be taken 40,300 m³/month is to be used for potable purposes. Consequently, up to 45,000 m³/month will be taken for irrigation purposes.

Table 3 summarises water volumes and application rates (calculated by Council based on the total area able to be irrigated) as applied for by the applicant, and compares them to water volumes and application rates recommended by Aqualinc.

Table 3: Summary of Applied for Irrigation Water vs Aqualinc Recommendations

	Applied for by Applicants	As recommended by Aqualinc ¹
Total volume per month	45,000 m ³ / month	186,900 m ³ / month
Irrigation period	7 months	8 months
Irrigated area	122 ha	-
Application depth per week (mm) (Total weekly volume / irrigated area)	8.3 mm	34.6 mm
Total volume per season (volume per month * irrigation period)	315,000 m ³ / season	799,500 m ³ /season
Total volume per hectare per season (Total volume per season / irrigated area)	2581 m ³ / ha / season = 258 mm / ha / season	6553 m ³ / ha / season = 655 mm / ha / season

¹ Based on PAW values of 45 mm (72 ha) and 70 mm (30 ha)

² Based on a continuous 24-hour take rate

Based on the applicant's total irrigated area of 122 ha, a maximum volume of 186,900 m³/month and 799,500 m³/irrigation season would indicate efficient use of the resource.

As discussed, the monthly and seasonal volumes applied for are less than that recommended by Aqualinc and under-application of water can also be an inefficient use of the water resource. However, this is only the case in a very dry year. In a year with average rainfall, or a wet year, the applicant may well be able to fully irrigate all of their 122 ha.

5.3.3 Recommended Water Use Consent Conditions

The recommended maximum allocation limits from Aqualinc can only discourage water being wasted during a dry year. In order to avoid water being wasted in an average year, a condition of consent is recommended to ensure that irrigation does not cause soil field capacity to be exceeded, surface runoff, erosion and soil pugging, that leakage from pipes and structures and the use of water onto non-productive land is avoided, that soil quality is not degraded as a consequence of irrigation, and that loss of water, nutrients, and agrichemicals by percolation to groundwater is minimised.

It is also recommended that a review condition is included on the consent for the purpose of adjusting the consented rate or volume of take should monitoring or future changes in water use indicate the water is not being fully utilised.

The two main areas in which wastage of water can occur in community supply networks is through:

- (a) poor maintenance of the network (where considerable amounts of water may be lost), or
- (b) inefficient use of the finite water resource (sometimes due to limited awareness by water subscribers).

Therefore, it is recommended that conditions be imposed so ongoing maintenance and education is undertaken to reduce water use inefficiencies. In particular, that leakage from the water delivery system is minimised through an ongoing leak detection programme, with commitment to upgrades of the system as necessary, and implementation of a public awareness programme encouraging consumers to prevent leakage of water from their connected systems, and inefficient usage.

It is also recommended that a review condition is included on the consent for the purpose of adjusting the consented rate or volume of take should monitoring or future changes in water use indicate the allocated volume of water is not being fully utilised.

5.4 Effects on Other Water Users

The applicant holds Water Permit 97216 to take 144,000 m³ of water per month at a maximum rate of 200,000 litres per hour and 55.6 l/s from Pringles Creek. To enable development of the area the applicant has proposed to shift the Pringles Creek intake point approximately 1.5 km upstream. As there are no known water users located on Pringles Creek between the applicant's current point of take and their proposed upstream abstraction point, no water users will be affected by this shift in the point of take.

Regarding the take from the Cardrona River as the water take is proposed to be shifted from a tributary to the main stem and the applicant is proposing to reduce the allocation from the catchment no consented water users within the Cardrona River will be affected by the proposed water take.

5.5 Effects on Instream Values

As discussed, Pringles Creek is not listed in Schedule 1A, however, it is possible that it possesses significant instream values that should be protected, including the presence of koaro. The recommended residual flows of 15 l/s and 25 l/s respectively, have been set giving regard to maintaining natural character and aquatic ecosystems. As there

will be a reduction in primary allocation within the Cardrona River catchment, there will be no effect on the Cardrona River's instream values.

5.6 Water Allocation Committees

Water allocation committees are a useful tool in managing water abstractions during water short periods, particularly for over-allocated rivers. Water allocation committees are appointed subcommittees of Council, typically made up of local representatives of water permit holders within a catchment. The instructions of a water allocation committee must be adhered to as if they were made by Council. In addition to prolonging flows above the minimum flow when water is scarce, water allocation committees are also considered to:

- help raise awareness of minimum flow issues within the river;
- promote efficiency of water use;
- allow the minimum flow dependent water abstraction system to become self-policing;
- unite water users within the catchment; and
- share the available water resource fairly amongst consented water users.

Once minimum flows are set for the Cardrona River catchment, the Council will investigate if such management would be worthwhile. Therefore, it is a recommended condition of consent that the consent be exercised as directed by any water allocation committee set up within the catchment, or the Council.

5.7 Monitoring of the Water Takes

Compliance with consent conditions relating to the instantaneous take rate, monthly and seasonal volumes cannot be assessed unless the water take is monitored. There are many benefits in monitoring water take compliance, including:

- Better compliance with consent requirements (i.e. illegal or excessive takes will be deterred).
- More efficient use of water as the actual volume of water irrigated per hectare can be compared against application rates recommended by irrigation experts.
- The identification of "under users" or "non users" of water, which will allow the Council to reduce the level of over-allocation in various catchments.
- The improved ability of the Council to assess flows of surface water bodies, which is vital for water allocation purposes, in particular for catchments with water allocation committees (where it will help in the design and management of rostering schedules).

To ensure the accurate and regular reading of the water meter it is recommended that dataloggers are installed (to achieve this a "pulse" water meter is required) at all points of take. A number of recommended consent conditions relate to achieving required technical specifications for accurate meter and datalogger installation and ongoing operation. The dataloggers will require regular downloading (estimated at about twice a year although the exact frequency will depend on the type of datalogger purchased), and the data sent electronically to Council. It will need to be consistent with the format and the specifications of Council's databases. "Comma separated value" (csv) format is considered the simplest and most widely compatible file type for this purpose. The Council is currently investigating providing a datalogger downloading service although this may be undertaken independently by consent holders. Reasonable costs may be charged to consent holders who use this service under Section 36 of the Act.

Any consent granted should be subject to a review in accordance with Sections 128 and 129 of the Act, to allow the Council to adjust the amount or rate of abstraction of water allowed by each consent, should monitoring indicate that the allocation is more than required for efficient ongoing use, and to ensure that the consent specifications regarding water take data recording and transmission can be kept up-to-date as required.

While it is accepted that the requirement for these systems will be an expense incurred by the consent holders, when this cost is averaged over the recommended consent period and weighed against the benefits obtained from use of a public resource, then the cost is not excessive.

6. Statutory Considerations

Section 104 of the Act sets out the matters to be considered when assessing an application for a resource consent. Those matters which should be considered for this application are as follows:

6.1 Part 2 of the Act

The taking of water from Pringles Creek and the Cardrona River is consistent with the purpose and principles of the Act, as outlined in section 5. The water takes will have a minor effect on the downstream waterways' ability to meet the reasonably foreseeable needs of future generations, or on the life-supporting capacity of the waterways or any ecosystems associated with them.

The application is also consistent with the requirements of sections 6-8 of the Act. There are no matters of national importance under section 6 of the Act that will be affected by this application. The application is also consistent with the requirements of section 7 of the Act, with particular regard given to the efficient use and development of natural and physical resources, maintenance and enhancement of amenity values, intrinsic values of ecosystems maintenance and enhancement of the quality of the environment, finite characteristics of natural and physical resources, the protection of habitat of trout and salmon and benefits to be derived from the use. The proposed take is consistent with these matters, provided recommended consent conditions are adopted. Regarding section 8 of the Act, the proposed activity is not inconsistent with the principles of the Treaty of Waitangi.

Overall, the application is considered to be consistent with Part 2 of the Act, given the minor nature of the activity and the proposed conditions of consent.

6.2 Section 104(1)

The remaining matters of Section 104(1) to be considered when assessing an application for a resource consent are as follows:

- (a) *any actual and potential effects on the environment of allowing the activity; and*
- (b) *any relevant provisions of*
 - (i) *a national policy statement;*
 - (ii) *a New Zealand coastal policy statement;*
 - (iii) *a regional policy statement or proposed regional policy statement;*
 - (iv) *a plan or proposed plan; and*

- (c) *any other matter the consent authority considers relevant and reasonably necessary to determine the application.*

These matters are discussed in the following sections.

6.2.1 Environmental Effects

The actual and potential environmental effects of the proposed activity were considered in section 5 of this report. Recommended conditions of consent will ensure that any adverse effects are avoided, remedied or mitigated.

6.2.2 Regional Policy Statement

The Regional Policy Statement for Otago (RPS) provides an overview of the resource management issues of the Otago Region and the ways of achieving the integrated management of its natural and physical resources. The provisions of section 6 (Water) of the RPS are relevant to this application. The taking of water is consistent with the policies of the RPS, provided that it is done in a conservative manner that does not adversely affect the instream biota, natural character, or other lawful water users. As discussed in section 5 of this report, the water takes are not excessive and will not cause any of the aforementioned effects.

6.2.3 Regional Plan: Water

The RPW identifies issues and states objectives regarding water quantity and management issues, and contains policies that address those issues and meet those objectives. While the RPW became operative on 1 January 2004, two proposed plan changes to the RPW were notified on 20 December 2008: Proposed Plan Change 1B (Minimum Flows) and Proposed Plan Change 1C (Water Allocation). Proposed additions to the RPW are shown as underlined, whereas proposed deletions are shown with ~~striketrough~~. The further through the plan change process these amendments progress, the more weight that may be given to them. Hearings on the proposed plan changes have been held and both changes are expected to become operative in early 2010. The following policies from the RPW are relevant to these applications:

5.4.2: *States that in the management of any activity involving surface water, priority will be given to avoiding, in preference to remedying or mitigating:*

- (1) *Adverse effects on:*
 - (a) *Natural values identified in Schedule 1A;*
 - (b) *Water supply values identified in Schedule 1B;*
 - (c) *Registered historic places identified in Schedule 1C, or archaeological sites in, on, under or over the bed or margin of a lake or river;*
 - (d) *Spiritual and cultural beliefs, values and uses of significance to Kai Tahu identified in Schedule 1D;*
 - (e) *The natural character of any lake or river, or its margins;*
 - (f) *Amenity values supported by any water body; and*
- (2) *Causing or exacerbating flooding, erosion, land instability, sedimentation or property damage.*

- 5.4.3: *States that in the management of any activity involving surface water, priority will be given to avoiding adverse effects on existing lawful uses and existing lawful priorities for the use of lakes and rivers.*
- 5.4.9: *States particular regard will be given to aesthetic values and recreational opportunities, when considering adverse effects on amenity values.*

The proposed activities will not affect values of Pringles Creek or the Cardrona River as given in Schedules 1A, 1B, 1C and 1D, nor will it affect the natural character or amenity values associated with the watercourses or cause flooding, erosion, land instability, sedimentation or property damage. As discussed in section 5, no further water is being allocated from the Cardrona River catchment and the residual flow requirements will provide for instream values and as a result will safeguard downstream water users.

- 5.4.4: *Recognises Kai Tahu's interests in Otago's lakes and rivers by promoting opportunities for their involvement in resource consent processing.*

Iwi were notified of the takes via the statutory acknowledgment process and did not identify any concerns with the application. In addition, regard has been given to the Kai Tahu ki Otago 2005 Natural Resource Management Plan (see section 6.2.4).

- 6.4.0A: To ensure that the quantity of water granted ~~under a resource consent for the taking of water to take~~ is no more than that required for the intended purpose of use of that water having regard to the local conditions, taking into account matters including the extent to which:
- (a) Local climate, soil, vegetation and water availability affect the quantity of water requested; and
 - (b) The proposed water transport system is efficient; and
 - (c) The application system is efficient.

The efficiency of the applicant's potable takes was assessed against the AS/NZS 1547:2000 guidelines for domestic waste water management, and the irrigation take was assessed using the Aqualinc document. Recommended consent conditions will ensure that the transport system is well maintained.

- 6.4.2: *To limit allocation for the taking of surface water in any catchment, through the identification of a quantity, known as primary allocation, which is:..*

- 6.4.2A: In considering any application for a replacement resource consent to take surface water within primary allocation specified in Policy 6.4.2(a)(ii) or (b)(ii), to grant consent only for a rate and volume of water no more than that which has been historically accessed under the previous consent.

- 6.4.2B: In considering any new resource consent to take surface water within primary allocation in terms of Policy 6.4.2(a)(ii) or (b)(ii) for any catchment, to grant consent only when actual allocation is less than the quantities specified in Policy 6.4.2(a)(i) or (b)(i).

The applicant has not been able to provide a record of historical water use, but has stated that Water Permit 97216 was historically fully used. The applicant has provided a synthetic record of water flows within the Pringles Creek catchment. The applicant also stated that, compared to the volume authorised to be taken by 97216, the recommended consent conditions will ensure that, on a long term average annual basis, the average monthly annual take will be reduced by approximately 42 % and the smallest percentage monthly reduction of 33 % will occur during March.

6.4.0C: To prioritise the use of water within the area it is taken from, over its use elsewhere, taking into account matters including:

- (a) Competing local demands for that water; and*
- (b) Whether the take and use of that water is an efficient use of the water resource; and*
- (c) Whether another possible source of water, including a water supply scheme, is available; and*
- (d) The economic, social, environmental and cultural costs and benefits that result from the proposed take and use of water.*

The abstracted water will be used on land in close proximity to the point of take. Competing local demands will not be affected by the take and there are no practical alternative water sources. Use of the water will result in local economic and social benefits by allowing the development of a large scale development.

6.4.4: For existing takes outside Schedule 2A catchments, minimum flows will not be applied until a plan change has occurred. For new takes, until the minimum flow has been set by a plan change, minimum flows will provide for maintenance of aquatic ecosystems and natural character of the source water body.

6.4.5: Outlines when minimum flows will be applied to catchments outside Schedule 2A upon a plan change.

As the application seeks to replace an existing water permit in the Cardrona catchment, no minimum flow will be imposed until a plan change has occurred.

6.4.7: The need to maintain a residual flow at the point of take will be considered with respect to any take of water, in order to provide for the aquatic ecosystem and natural character of the source water body.

Residual flows have been considered and recommended, to allow for the protection of the aquatic habitat and natural character of Pringles Creek.

6.4.12: To promote, establish and support appropriate water allocation committees to assist in the management of water rationing and ~~flow~~ monitoring during periods of water shortage.

6.4.12A: To promote, appoint and support water management groups to assist the Council in the management of water by the exercise of at least one of the following functions:

- (a) Coordinating the take and use of water authorised by resource consent; or*

- (b) Rationing the take and use of water to comply with relevant regulatory requirements; or
- (c) Recording and reporting information to the Council on the exercise of resource consents as required by consent conditions and other regulatory requirements; or
- (d) Reporting information to the Council for enforcement of regulatory requirements.

6.4.13: *To suspend the taking of water as required to comply with any Council recognised rationing regime ~~established by a water allocation committee established in terms of Policy 6.4.12, or by the Council in the absence of such a water groups or committees allocation committee.~~*

It is recommended that these water permits be exercised under the control of any Water Allocation Committee that operates in this catchment, or Consent Authority as required.

6.4.15: *To ensure that the quantity of water granted under a resource consent for the taking of water is no more than that required for the intended use of that water having regard to the local conditions.*

The monthly volume of water sought is considered to be an efficient and not unreasonable use of the water resource.

6.4.16: *In granting resource consents to take water, or in any review of the conditions of a resource consent to take water, to require the volume and rate of take to be measured in a manner satisfactory to the Council unless it is impractical or unnecessary to do so.*

It is a recommended condition of consent that for any consent granted, the taking of water is measured using a water meter and the data recorded electronically using a datalogger.

6.4.17: *On the application of any consent holder, to approve the transfer of consents to take water in terms of Section 136(2) (b)(ii) of the Resource Management Act, retaining the take's allocation status, providing:*

- (a) The transferred take is exercised within the same catchment as the original consent;*
- (b) The total take from the water body following transfer does not exceed that occurring prior to the transfer, as a result of the transfer;*
- (c) The quantity of water taken is no more than that required for the intended use of that water, having regard to the local conditions; and*
- (d) There is no more than minor adverse effect on any other take, any right to store water, or on any natural or human use value, as a result of the transfer.*

- (a) The current point of take is located on Pringles Creek. The applicant has proposed to take water from Pringles Creek as well as two locations on the Cardrona River. Pringles Creek is a tributary of the Cardrona River.

- (b) As there is proposed to be a reduction in the instantaneous and monthly volume of water abstracted, there will not be any increase in water taken from the catchment.
- (c) As discussed in section 5, the quantity of water being taken is no more than that required for the intended use of that water, having regard to the local conditions.
- (d) Given that a residual flow will be set below the Pringles Creek take and there will be a reduction in the primary allocation from the Cardrona River there should be no adverse effects caused to any water users or to the instream biota. Therefore shifting the point of take to the Cardrona River is in accordance with this policy.

6.4.18: Where a resource consent for the taking of water has not been exercised for a continuous period of 2 years or more, disregarding years of seasonal extremes, the Otago Regional Council may cancel the consent.

The recommended water metering condition will allow Council to monitor the rate and volumes of take, and ensure the water is being used efficiently. Should data recording show the water permits have been unexercised in accordance with this policy, the water permits may be cancelled, allowing more flow to be allocated to the river, in accordance with Policy 6.4.2.

6.2.4 Other Matters

The following sections of the Kai Tahu ki Otago Natural Resource Management Plan 2005 are relevant to this application:

- To require that resource consents applications seek only the amount of water actually required for the purpose specified in the application.
- To require that all water takes are metered and reported on, and information be made available upon request to Kai Tahu ki Otago.
- To oppose the granting of water take consents for 35 years.
- To encourage those that extract water for irrigation to use the most efficient method of application.
- To discourage over-watering.

The granting of these water permits with the recommended terms and conditions is consistent with these requirements.

There are no other matters that the Consent Authority considers relevant and reasonably necessary to determine the application.

7. Conclusion

With increasing pressure on Otago's surface water supplies, it is appropriate to consider the volumes of water being allocated for irrigation and domestic water supply.

As discussed in section 5, the volume of water applied for by the applicant, is considered a reasonable domestic use of the resource. Given that a new water reticulation scheme will be constructed it is inappropriate to allow water leakage losses. The applicant has outlined their anticipated domestic use and noted that this does not allow for the irrigation

of parks and gardens, the applicant has previously noted that the development's sullage will be used for minor irrigation purposes. It is also noted that an increased use of water saving and storage devices will enable increased irrigation to occur.

During dry summer periods it is unlikely that the applicant will be able to fully irrigate all of its pasture and therefore may need to consider reducing the amount of land being irrigated during these periods, to ensure under application of water does not occur.

Given the over allocated nature of the catchment, it is inappropriate to allow increased volumes of water to be taken. This is of concern as the applicant would not have been able to fully exercise Water Permit 97216 during dry summer periods, given the lack of flow in Pringles Creek. Initial concerns were identified by Council staff with the proposed shift to the Cardrona River, potentially allowing an increase in the actual take from the Cardrona River catchment to occur. To ensure there is no increase in the actual take, the applicant has proposed a reduction in the rate of take from 55.6 l/s to 45 l/s. It is also noted that the residual flows proposed for Pringles Creek will provide added protection to the instream biota as currently Water Permit 97216 can be fully exercised without having to leave any flow in Pringles Creek.

Consequently, provided the recommended consent conditions are complied with, the adverse effects on the environment of allowing the abstractions will be no more than minor.

8. Recommendation

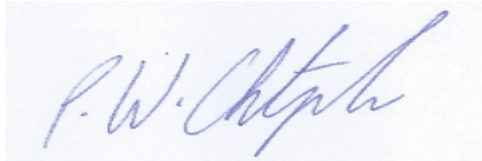
That Otago Regional Council grants to Mt Cardrona Station Limited Water Permits 2009.191 and 2009.435 to take and use surface water as primary allocation, subject to the terms and conditions as set out in the attached draft consent.

8.1 Reasons for Recommendation

- a) That it is expected that the adverse effects on the environment will be minor, and can be adequately addressed through the recommended consent conditions.
- b) That the application meets the non-notification requirements of section 93(1)(b) and 94(2) of the Act.
- c) That the proposed activities are consistent with the requirements of the Act and Council policy.

8.2 Term

The applicant is applying for a 20 year term. Given that other consents in the catchment have been granted for a 20 year term and given that no significant adverse effects on the environment are anticipated as a result of the proposed take, it is recommended that the term of consents be granted for the applied for 20 year term. Review conditions will allow the Council to address any unforeseen adverse effects of the proposed water take during the duration of the consent.

A handwritten signature in blue ink, reading "P. W. Christophers", on a light blue background.

Peter Christophers
Principal Resource Officer

WATER PERMIT

Pursuant to Sections 104C of the Resource Management Act 1991, the Otago Regional Council grants consent to:

Name: Mt Cardrona Station Limited

Address: C/- Spencer Financial Partners Limited, Level 4, 16 Viaduct Harbour Avenue, Auckland

To take and use water as primary allocation from Pringles Creek and the Cardrona River

For the purpose of communal domestic supply, commercial supply and irrigation

For a term to expire on 1 March 2030

Location of points of abstraction:

Pringles Creek, approximately 1.75 kilometres upstream of State Highway 89 (Cardrona Valley Road), 2.1 kilometres west of Cardrona township.

Cardrona River approximately 120 metres east of the intersection of Tuohys Gully Road and State Highway 89 (Cardrona Valley Road) or 720 metres southwest of the intersection of Tuohys Gully Road and State Highway 89 (Cardrona Valley Road).

Legal description of land at points of abstraction:

Pringles Creek	Lot 1 DP 344432
Cardrona River	Road Reserve

Approximate map reference of points of abstraction:

Pringles Creek	NZMS 260 F41:931-855
Cardrona River	NZMS 260 F41:954-857 or NZMS 260 F41:949-851

Legal description of land where water is to be used: Lot 48 Deeds Plan 858; Lots 3, 4, 7, 8 & 9 DP 21223; Lots 1, 2, 3, 4 & 5 DP344432 and other land as advised in writing to the Consent Authority.

Conditions:

Specific

1. This water permit shall not commence until Water Permits 97216 and 2006.375 have been surrendered.
2. The rate of abstraction shall not exceed:
 - (a) 15 litres per second

- (b) 1,077 cubic metres per day
3. A residual flow of no less than 15 litres per second shall be maintained in Pringles Creek immediately downstream of the Pringles Creek point of take for this water permit, at all times when it is being exercised from Pringles Creek.
4. The consent holder shall ensure that all water taken under this water permit is used only to service the Mt Cardrona Station Limited development as described in the application submitted to the Consent Authority on 28 May 2009, further information received dated 27 November 2009 and in the report submitted to the Consent Authority as required by condition 7 (a). If there are any discrepancies between the application and this consent, the conditions of this consent shall prevail.

Performance Monitoring

5. (a) The consent holder shall install a water meter at each point of take to record the water take, within an error accuracy range of +/- 5% over the meter's nominal flow range, and a datalogger with at least 12 months data storage to record the rate and volume of take, and the date and time this water was taken. (All practicable steps shall be taken to ensure that the meter's nominal flow range coincides with required pumping rate(s). An error accuracy of +/- 10% shall apply to meters when pumping rates are below the nominal flow range.)
- (b) The dataloggers shall record the date and time of each increment of 1000 litres of water.
- (c) The installation and maintenance of the water meters and dataloggers shall be performed in accordance with manufacturer's specifications and for the water meter only, to New Zealand Quality Standard ISO 4064 and subject to condition 5(d).
- (d) The water meters shall be installed in a straight length of pipe, before any diversion of water occurs. The straight length of pipe shall be part of the pump outlet plumbing, easily accessible, have no fittings and obstructions in it, and be of a length that is at least 15 times the diameter of the pipe. The water meters shall be installed at least 10 times the diameter of the pipe from the pump and at least 5 times the diameter of the pipe from the diversion of any water.
- (e) The consent holder shall ensure the full operation of the water meters and datalogger at all times during the exercise of this consent. All malfunctions of the water meters and/or dataloggers during the exercise of this consent shall be reported to the Consent Authority within 5 working days of observation and appropriate repairs shall be performed within 5 working days.
- (f) The installation of the water meters and dataloggers shall be completed to full and accurate operation within 1 month of the exercise of the consent. The consent holder shall forward a copy of the installation certificate to the Consent Authority within one month of installing the water meter and datalogger.

- (g) (i) If a mechanical insert water meter is installed it shall be serviced each and every year from the first exercise of this consent.
 - (ii) Any datalogger and an electromagnetic or ultrasonic flow meter shall be serviced every five years from the first exercise of this consent.
 - (iii) Each service shall be undertaken by a suitably qualified operator and receipts of service shall be supplied to the Consent Authority by 1 September each year, and upon request.
 - (h) The consent holder shall provide records from the dataloggers to the Consent Authority by 1 September each year and at any other time on request. Data shall be available electronically giving date, time and flow rates in no more than 15 minute increments, via a datalogger approved by the Consent Authority.
6. Copies of the results of any water quality analyses performed on the surface water shall be forwarded to the Consent Authority within two weeks of the analysis being undertaken.
 7. The consent holder shall submit a report to the Consent Authority by the 31 May each year, summarising the following:
 - (a) a map showing the extent of the Mt Cardrona Station Ltd Development;
 - (b) management of water supply to the Mt Cardrona Station Ltd Development,
 - (c) any maintenance undertaken, and
 - (d) any promotional material used to meet condition 9(c) and condition 10 of this consent.

General

8. The consent holder shall take all practicable steps to ensure that:
 - (a) the volume of water used for irrigation does not exceed soil field capacity of the irrigated areas;
 - (b) the irrigation does not cause surface runoff that would discharge into natural waterbodies;
 - (c) there is no leakage from pipes and structures used for irrigation;
 - (d) irrigation induced soil erosion and soil pugging does not occur;
 - (e) soil quality is not degraded as a consequence of irrigation; and
 - (f) loss of water, nutrients, and agrichemicals by percolation to groundwater is minimised.
9. The consent holder shall take all reasonable action to minimise the leakage from the water delivery system. The term “reasonable action” is to include:
 - (a) A proactive leak detection programme, and
 - (b) A commitment to upgrading of the reticulation, as required, to minimise leakage, and
 - (c) A public awareness programme encouraging all water users to prevent leakage of water from their connected systems.
10. The consent holder shall promote the efficient use of water to all water users of the scheme at least once every two years through appropriate media or communication methods.
11. The intakes shall be screened so as to prevent the ingress of small fish and elvers.

12. The permit shall be exercised as directed by the Consent Authority or any Water Allocation Committee established by the Consent Authority which operates in the Cardrona River catchment.
13. The Consent Authority may, in accordance with Sections 128 and 129 of the Resource Management Act 1991, serve notice on the consent holder of its intention to review the conditions of this consent for the purpose of imposing the minimum flow restriction, if and when an operative regional plan sets a minimum flow for the Cardrona River catchment.
14. The Consent Authority may, in accordance with Sections 128 and 129 of the Resource Management Act 1991, serve notice on the consent holder of its intention to review the conditions of this consent within 3 months of each anniversary of the commencement of this consent for the purpose of:
 - (a) adjusting the consented rate or volume of water under condition 2 should monitoring under condition 5 or future changes in water use indicate that the consented rate or volume is not able to be fully utilised; or
 - (b) determining whether the conditions of this consent are adequate to deal with any adverse effect on the environment which may arise from the exercise of the consent and which it is appropriate to deal with at a later stage; or
 - (c) ensuring the conditions of this consent are consistent with any National Environmental Standards; or
 - (d) adjusting or altering the method of water take data recording and transmission.

Advice Note:

1. *The water meters and data loggers should be safely accessible by the Consent Authority and its contractors at all times.*
2. *The water should regularly be tested to ensure it meets the Drinking-water Standards for New Zealand 2005.*

Issued at Dunedin this ## day of ### 2010

Christopher P Shaw
Manager Consents

WATER PERMIT

Pursuant to Sections 104C of the Resource Management Act 1991, the Otago Regional Council grants consent to:

Name: Mt Cardrona Station Limited

Address: C/- Spencer Financial Partners Limited, Level 4, 16 Viaduct Harbour Avenue, Auckland

To take and use water as primary allocation from Pringles Creek

For the purpose of irrigation

For a term to expire on 1 March 2030

Location of points of abstraction: Approximately 1.75 kilometres upstream of State Highway 89 (Cardrona Valley Road), 2.1 kilometres west of Cardrona township.

Legal description of land at points of abstraction: Lot 1 DP 344432

Approximate map reference of points of abstraction: NZMS 260 F41:931-855

Legal description of land where water is to be used: Lot 48 Deeds Plan 858; Lots 3, 4, 7, 8 & 9 DP 21223; Lots 1, 2, 3, 4 & 5 DP344432 and other land as advised to the Council in writing.

Conditions:

Specific

1. This permit shall not commence until Water Permits 97216 and 2006.375 have been surrendered.
2. The rate of abstraction shall not exceed:
 - (a) 30 litres per second
 - (b) 1,452 cubic metres per day
 - (c) 45,000 cubic metres per month
 - (d) 315,000 cubic metres between 1 September in a year and 31 August in the following year
3. A residual flow of no less than 25 litres per second shall be maintained in Pringles Creek immediately downstream of the Pringles Creek point of take for this water permit.

Performance Monitoring

4. (a) The consent holder shall install a water meter to record the water take, within an error accuracy range of +/- 5% over the meter's nominal flow

range, and a datalogger with at least 12 months data storage to record the rate and volume of take, and the date and time this water was taken. (All practicable steps shall be taken to ensure that the meter's nominal flow range coincides with required pumping rate(s). An error accuracy of +/- 10% shall apply to meters when pumping rates are below the nominal flow range.)

- (b) The datalogger shall record the date and time of each increment of 1000 litres of water.
- (c) The installation and maintenance of the water meter and datalogger shall be performed in accordance with manufacturer's specifications and for the water meter only, to New Zealand Quality Standard ISO 4064 and subject to condition 4(d).
- (d) The water meter shall be installed in a straight length of pipe, before any diversion of water occurs. The straight length of pipe shall be part of the pump outlet plumbing, easily accessible, have no fittings and obstructions in it, and be of a length that is at least 15 times the diameter of the pipe. The water meter shall be installed at least 10 times the diameter of the pipe from the pump and at least 5 times the diameter of the pipe from the diversion of any water.
- (e) The consent holder shall ensure the full operation of the water meter and datalogger at all times during the exercise of this consent. All malfunctions of the water meter and/or datalogger during the exercise of this consent shall be reported to the Consent Authority within 5 working days of observation and appropriate repairs shall be performed within 5 working days.
- (f) The installation of the water meter and datalogger shall be completed to full and accurate operation within 1 month of the exercise of the consent. The consent holder shall forward a copy of the installation certificate to the Consent Authority within one month of installing the water meter and datalogger.
- (g)
 - (i) If a mechanical insert water meter is installed it shall be serviced each and every year from the first exercise of this consent.
 - (ii) Any datalogger and an electromagnetic or ultrasonic flow meter shall be serviced every five years from the first exercise of this consent.
 - (iii) Each service shall be undertaken by a suitably qualified operator and receipts of service shall be supplied to the Consent Authority by 1 September each year, and upon request.
- (h) The consent holder shall provide records from the datalogger to the Consent Authority by 1 September each year and at any other time on request. Data shall be available electronically giving date, time and flow rates in no more than 15 minute increments, via a datalogger approved by the Consent Authority.

5. Copies of the results of any water quality analyses performed on the surface water shall be forwarded to the Consent Authority within two weeks of the analysis being undertaken.

General

6. The consent holder shall take all practicable steps to ensure that:
 - (a) the volume of water used for irrigation does not exceed soil field capacity of the irrigated areas;
 - (b) the irrigation does not cause surface runoff that would discharge into natural waterbodies;
 - (c) there is no leakage from pipes and structures;
 - (d) irrigation induced soil erosion and soil pugging does not occur;
 - (e) soil quality is not degraded as a consequence of irrigation; and
 - (f) loss of water, nutrients, and agrichemicals by percolation to groundwater is minimised.
7. The consent holder shall take all reasonable action to minimise the leakage from the water delivery system. The term “reasonable action” is to include:
 - (a) A proactive leak detection programme, and
 - (b) A commitment to upgrading of the reticulation, as required, to minimise leakage.
8. The intake shall be screened so as to prevent the ingress of small fish and elvers.
9. The permit shall be exercised as directed by the Consent Authority or any Water Allocation Committee established by the Consent Authority which operates in the Cardrona River catchment.
10. The Consent Authority may, in accordance with Sections 128 and 129 of the Resource Management Act 1991, serve notice on the consent holder of its intention to review the conditions of this consent for the purpose of imposing the minimum flow restriction, if and when an operative regional plan sets a minimum flow for the Cardrona River catchment.
11. The Consent Authority may, in accordance with Sections 128 and 129 of the Resource Management Act 1991, serve notice on the consent holder of its intention to review the conditions of this consent within 3 months of each anniversary of the commencement of this consent for the purpose of:
 - (a) adjusting the consented rate or volume of water under condition 2 should monitoring under condition 4 or future changes in water use indicate that the consented rate or volume is not able to be fully utilised; or
 - (b) determining whether the conditions of this consent are adequate to deal with any adverse effect on the environment which may arise from the exercise of the consent and which it is appropriate to deal with at a later stage; or
 - (c) ensuring the conditions of this consent are consistent with any National Environmental Standards; or
 - (d) adjusting or altering the method of water take data recording and transmission.

Advice Note:

1. *The water meters and data loggers should be safely accessible by the Consent Authority and its contractors at all times.*

2. *The water should regularly be tested to ensure it meets the Drinking-water Standards for New Zealand 2005.*

Issued at Dunedin this ## day of ### 2010

Christopher P Shaw
Manager Consents

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