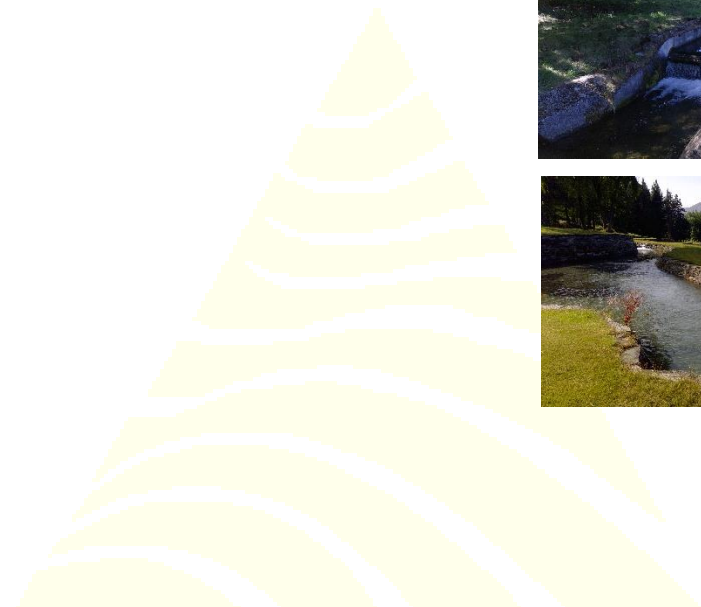


Replacement of Existing Water Permit

Arrow Irrigation Company Ltd



March 2020

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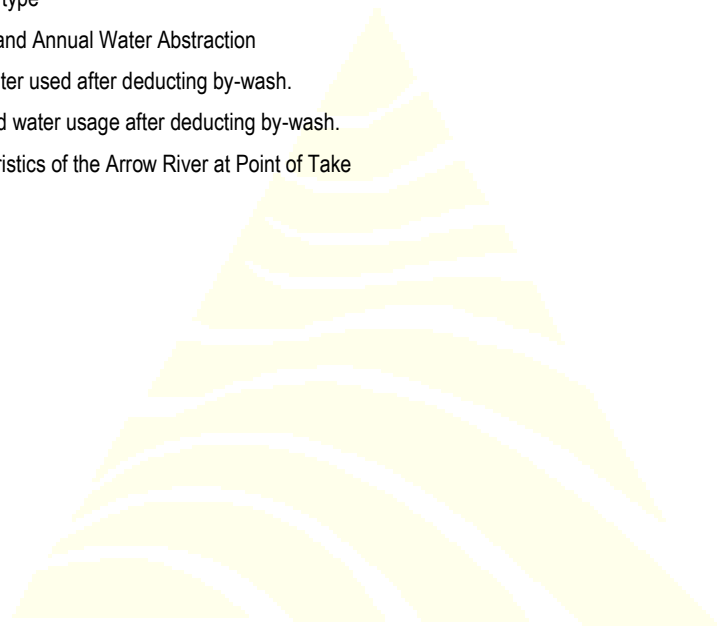
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1.0 Description of Activity

1.1 Arrow Irrigation Company Ltd

The Ministry of Works relinquished its ownership of infrastructure, assets and control of a water scheme (original scheme) in 1990 which was taken over by the schemes water users. Arrow Irrigation Company Limited (AIC) was established by the existing water users to administrate the scheme. The company's constitution and water supply agreements govern the management of the scheme and distribution of water amongst its shareholders.

Shareholders are allocated shares depending on the amount of "quota" they hold. The annual connection fee entitles the shareholder to a 1ha quota, which in terms of volume of water, allows 9000m³ annually over 1ha (or 900mm over 1ha). If a shareholder wishes to irrigate more than 1ha they can apply for additional quota which provides the same amount of water per ha but is charged at a different rate. Generally, a shareholder is allocated shares proportionate to the quota held. The quota allocated is not specific to a defined area. For example, a shareholder with a 1ha quota can choose to apply 900mm to 1ha, 300mm to 3ha, or permutations in between.

AIC abstracts water from the Arrow River and distributes it to 249 shareholders holding 889ha of quota. Shareholder details are contained in Appendix 1 and include:

- Landowners name;
- Legal description of where the water is used;
- Physical property address.

1.1.1 Water Intake

The water take is situated in the Arrow River Gorge, approximately 5km north of Arrowtown, Central Otago, and water is distributed to a large part of the geographical area known as the Wakatipu Basin, from Arrowtown in the east, Frankton in the west and south to the Kawarau River.



Figure 1: Weir



Figure 2: Intake

The intake is a 1.9 metre concrete weir with head gates feeding a 100m covered race leading to a concrete 3 hopper grit trap. The remainder of river water spills over the weir, and surplus water from the grit trap is returned to the river immediately below the weir. The valves, gates and grit trap at the intake are manually operated as there is no power supply. Access to the intake is via unbridged

river crossings over steep terrain. The difficult access coupled with manual intake controls makes any fine tuning of daily water take problematic.

1.1.2 Reticulation

A 5.5km *delivery* pipeline conveys water from the grit trap down the Arrow Gorge where it discharges into the open race system elevated on the hillside behind Arrowtown. There are two primary races and numerous secondary races branching off the two main races which convey water via open elevated hillside races, piped sections and lower valley syphons. The *Morven Ferry* race carries water from Arrowtown south east to Morven Ferry while the *Frankton* race carries water south west to the Frankton Flats.

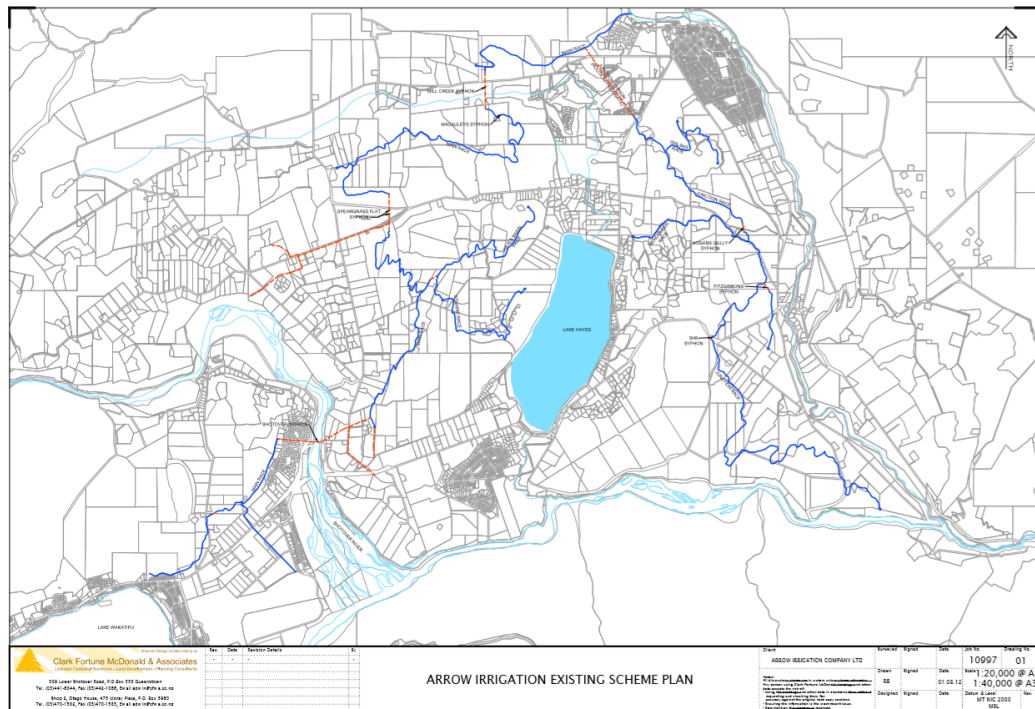


Figure 3: AIC Scheme, Appendix 6A.

Secondary race systems include piped water to the residential developments of Lake Hayes Estate, Shotover Country and Quail Rise for the purposes of irrigation (amenity water) while a new pumped system supplies amenity water to the rural living development of Bendemeer.



Figure 4: Amenity Water - Bendemeer



Figure 5: Amenity Water - Morven Ferry

Table 1.1 – Infrastructure overview

Delivery Pipeline	5.5km
Open Race	40 km
Piped Race & Syphons	7.9km
Pressurised pipe	7.3 km
Total	60.7 km

1.1.3 By-Wash

There are four main by-wash points within the primary reticulation network:

- (a) The *delivery* pipeline from the Arrow Gorge weir can discharge into Bush Creek which is a tributary of the Arrow River. This discharge (by-wash) point is above the primary races which enables the control of water volume into the primary and secondary races without the necessity to travel all the way up the gorge to adjust the intake gate. As such, this discharge point operates as a management tool by allowing the “throttling” of the delivery pipeline.
- (b) Similar to the *delivery* pipeline discussed above, the *Frankton* race affords a discharge point at Mooney Road which then flows into Mill Creek which enables the diversion of surplus water from the main race if demand reduces.
- (c) The *Frankton* race terminates at the Frankton Arm of Lake Wakatipu where a discharge point delivers water into the Lake.
- (d) The *Morven Ferry* race terminates at the Kawarau River where a discharge point delivers water into the river.

To illustrate, photographs of each by-wash point are contained in Appendix 2.

Prior to the 2017 / 2018 irrigation season each main by-wash point was installed with a measuring device which has ascertained the summer volumes as an offset to the total seasons take heron. These calculated volumes are recorded and discussed further in part 1.2.3 of this application document.

1.1.4 Operation & Management

From the AIC owned reticulation, shareholders reticulate water within their properties. Each AIC shareholder is responsible for taking the appropriate amount of water according to their quota. AIC employ a full-time manager who is responsible for the day to day functioning of the scheme and monitors individual water usage closely. Active monitoring reduces the potential for any shareholder to take more than their share, and very few issues have been experienced to date.

In times of drought, and low river flows, the manager requests shareholders to conserve water, and in the worst-case scenario, a water rostering regime can be imposed. The manager also undertakes water quality tests at by-wash points twice a year to confirm land uses are not affecting water quality and if so, the manager assists landowners in land management practices to ensure water quality is maintained.

Shareholders with larger allocations generally have water meters and AIC have a policy of insisting all new shareholders fit meters at their connection points which allows for a more accurate measure of each individual take.

The AIC owned scheme operates on an “on demand” basis meaning the races are constantly running, and as a result water unused at the end of the races is discharged via by washes. It is necessary to operate this way to ensure stock water is provided and to deliver irrigation water to the shareholders who are located on the downstream end of the reticulation network. The alternative to running the scheme on an “on demand” basis would result in an unreliable stock water supply and also result in a considerable amount of water is lost each time the race is dried and refilled.

The irrigation season generally runs from October through to April.

Notwithstanding, the scheme runs generally from September through to May, severity of the winter period dictating actual opening and closing dates. This extended season is done for two reasons:

1. The provision of stock water;
2. The provision of water for artificial ponds & water features on shareholder properties along with several wetland / wildlife areas.

1.1.5 Stock Water

Many AIC shareholders are absentee owners or resident owners who have their properties managed / grazed by contractors or neighbours and for this reason it is difficult to assess actual annual stock numbers and an arbitrary assessment has been made:

Table 1.2 – Stock

Class	Stock #
Horses	120
Deer	1100
Cattle	180
Sheep	3500

Water requirements for these stock are calculated at 12,500 m³/annually by using ORC guidelines and this typology of water use has been included in our requested abstraction volume.

1.1.6 Land Use

Table 1.3 – Land use summary

Land Use category properties	Property Area (ha)	Irrigated Area (ha)	No. of shareholder
A - Amenity areas	105	87	8
C – Curtilage / Lifestyle	400	222	117

G - Golf courses	370	207	3
P - Pastoral	1886	753	118
P+V - Pastoral + Vineyard	45	26	3
TOTAL	2806	1295	249

Amenity areas include public (common) areas around residential subdivisions including street frontages etc. *Curtilage / Lifestyle* areas include rural residential properties where there is no stock grazing or other productive land uses. Some of these rural residential properties are as large as 6-8ha where the entire property comprises of gardens and lawns. *Pastoral and Vineyard* includes three properties where there is pastoral usage and small areas of non-commercial vineyards and/or olive groves.

The *Curtilage / Lifestyle* category comprises of almost half (117) of the total number of properties but accounts for less than 1/5th of the total irrigated area. The *Pastoral* category makes up almost half (118) of the total number of properties but accounts for, by some margin, the greatest irrigated area at 753 ha.

The Queenstown Lakes District is recognised as being one of the highest growth areas in New Zealand where the Wakatipu Basin experiences the highest growth rate within the District. This is accurately reflected in the high demand for all typologies of housing including rural residential. As such, AIC expects an increase in the number of subdivisions from pastoral land uses to rural residential land uses which will increase the area land allocated to *Curtilage / Lifestyle* in table 1.2 above.

1.1.7 Irrigation Systems

Table 1.4 – Irrigation type

Irrigation Type Properties	Area Irrigated (ha)	No. of Shareholder
S -Sprinkler	612	134
M- Mixed system	258	77
K - K-Line	176	22
G – Gun	97	7
F – Wild Flood	29	2
T -Trickle	18	5
F+G – Flood +Gun	55	1
F+K – Flood +K-Line	50	1
TOTAL	1295	249

1.2 Water Use

Water from the scheme is used for a number of purposes. A substantial but much reduced pastoral area uses water to irrigate pasture, lucerne, hay crops and for stock water to support traditional farming practices. A large and growing rural lifestyle area utilises water for residential garden and lawn surrounds, water features, ornamental ponds, and in some cases larger ponds / wildlife

sanctuaries. These properties may also irrigate tree lanes and small paddocks, grazing horses or a few sheep. A number of these properties also operate tourist accommodation ventures with the need for green and attractive surrounds. Several residential subdivisions make use of irrigation water for street plantings and grass along street verges. Golf courses are a substantial user of water for fairways, greens, and amenity areas around resort facilities. Lastly, a small amount of water is used by vineyards. Other uses include top up water provided to wetlands / wildlife refuges and proposed flushing water for Lake Hayes as discussed further in part 1.2.2 below.

1.2.1 Efficiency

When the original scheme was completed in the 1930s, the predominate Irrigation System utilised was wild flooding. AIC has actively encouraged all its shareholders to elect alternative irrigation systems which present more controlled delivery of water to land. As depicted in Table 1.2 above, most of the land is now irrigated through controlled systems and there is very little wild flooding. As a result, the abstraction rate has fallen from the maximum take of 1840 l/s in the 1930s to current maximum take of 870 l/s.

When AIC took over the original scheme in 1990 the infrastructure was in a very degraded state, with very poor reliability of supply and a large amount of water loss. This loss was primarily associated with the delivery pipeline where the main focus of AIC since its conception has been to upgrade infrastructure in general but concentrate on the delivery pipeline. This has largely been completed and AIC is now in a financial position to look at increased efficiency in other parts of its reticulation network.

With 40 km of open race there is unavoidable water loss from both evaporation and seepage. In the 2019 season a start was made on open race piping programme and over 1 km of main race has been completed. This will continue as finances permit with emphasis on sections of race known to have seepage issues. Water quality will also benefit from this programme by keeping stock away from the race.

The automation of the intake mechanism is an obvious efficiency consideration which AIC have deliberated in detail over its tenure of the scheme. Automation would enable more control of the daily demand / supply requirement at the point of take in the Arrow Gorge. However, this consideration must be balanced against the understanding that the by wash system delivers surplus water back into the Arrow River and directly / indirectly the Kawarau River as discussed in part 1.1.3 above. Importantly, automation has been precluded by the absence of power, and telemetry at the at the point of take coupled with its accessibility.

1.2.2 Additional & Winter Use of Water

Discussions have been held between the Otago Regional Council (ORC), Friends of Lake Hayes Society (FLHS), and AIC over the possibility of AIC providing water to act as a flushing mechanism in Lake Hayes to improve water quality.



Figure 6: Lake Hayes



Figure 7: Millbrook Syphon

The ORC has funded the installation of a valve in the Millbrook syphon which allows water to be discharged into Mill stream and onward to Lake Hayes. To improve flushing, this water would preferably be as cold as possible. As such, water is provided to the Lake in spring / autumn and this period can potentially extend into early and late winter months at a time when river flows are higher. The seasonal volume for this flushing has expected to be up to 2,000,000 cubic metres and although this is not yet an existing annual use, AIC request that this volume be taken into account when assessing annual and monthly allocation limits.

There is some demand for water over the winter months and AIC intends to eventually supply year-round water. There are engineering and technical difficulties associated with winter operation, due to freezing conditions in the Arrow Gorge, but these are not insurmountable. Therefore, AIC requests that the allocation be on a year-round basis.

1.2.3 Abstraction & Water Monitoring

AIC's monitoring device is situated approximately 3.6km below the intake due to lack of telemetry at the intake site. An exemption was obtained for this monitoring site (WEX 0149). The monitoring meter was first installed in 2009 and in the earlier years problems were encountered with the functioning / accuracy of the readings. These problems have been solved and the last 5 years of readings present an accurate record of monthly and annual abstraction as shown in Table 1.4 below:

Table 1.5 – Monthly and Annual Water Abstraction

	2014 / 2015	2015 / 2016	2016 / 2017	2017 / 2018	2018 / 2019	Ave / Month
Sept	608,516	213,494	255,124	150106	418295	329107
Oct	915,484	778,002	800,206	820056	679855	798,720
Nov	701,780	921,024	705,720	1,117,208	833,200	855,786
Dec	1,066,590	1,330,690	998,290	1,380,450	710,410	1,097,286
Jan	1,494,800	1,472,830	1,140,850	1,483,360	1,112,530	1,340,874
Feb	1,334,520	1,064,470	999,780	917,160	1,049,110	1,073,008
March	1,078,640	1,111,720	987,350	1,171,760	847,040	1,039,302
April	936,920	630,340	568,120	950,620	618,480	740,896

May	702,700	276,260	131,330	225,330	47760	276,676
June	410,920	9,820	51,080	2,240	-	94,812
Totals	9,250,870	7,808,650	6,637,850	8,218,290	6,316,680	7,646,468

As depicted in Table 1.4 above, the average monthly take over the five seasons peaks in January (1,494,800m³), followed by December (1,097,286 m³), and February (1,073,008 m³). The monthly peak for the 5 seasons occurred in January 2018, at 1,494,800m³. As previously mentioned, AIC only have by-wash records for the 2017 / 2018 and 2018 / 2019 seasons.

Table 1.6 - Actual water used after deducting by-wash.

	2017 / 2018	2018 / 2019
Total Take	8,218,290	6,316,680
Total By-Wash	2,275,550	2,321,843
Water Consumed	6,042,740m ³	3,994,837m ³

By-wash for the above two seasons was very consistent, averaging about 2,300,000m³. It is reasonable to assume that by wash for the preceding three seasons would be similar and give a water consumed figure for the preceding 3 seasons as depicted in Table 1.6 below:

Table 1.7 – Estimated water usage after deducting by-wash.

2016 / 2017	4,337,000
2015 / 2016	5,508,000
2014 / 2015	6,950,000m ³

Annual water use ranged from 4,000,000m³ to 6,900,000m³ depending on the seasonal requirements. Since the high rate of abstraction in 2014 / 2015 AIC has improved their water delivery so are able to operate the scheme on 6,300,000m³.

AIC have engaged Dr Anthony Davoren, Manager, Soil Water & Irrigation Management Services to calculate Seasonal Irrigation Demands and Dr Davoren's report is contained in Appendix 3. Dr Davoren estimates AIC's demand requirement is 6,789,518m³. Therefore, in terms of average and peak use, AIC is well within its limit and is considered to be using water efficiently.

Stock water demand has been calculated at 12,500m³ annually which is an insignificant amount. However, to deliver this water to stock throughout the Wakatipu Basin and shareholders at the downstream end of the race, requires races to be running permanently and to achieve this there has to be a level of by-wash spill at the end of the races. The by-wash system is therefore an integral and vital part of the overall scheme.

In assessing what is a reasonable volume of by-wash spill the 2017 / 2018 season (Table 1.5) provides a guide as it was a very dry season and because of low river levels rationing was in place. By-wash spill was therefore being kept at a minimum, but still totalled 2,275,550m³, which would be an operationally acceptable figure for AIC. An abstraction of 6,789,518m³ for irrigation purposes,

12,500m³ for stock water, and 2,000,000m³ as by-wash, is therefore suggested as reasonable and adequate.

With regard to the monthly maximum volume, Dr Davoren's report recommends a figure of 2,254,120m³ based on Millbrook Resort golf course usage, where they use up to one third of annual water in the driest month. However, AIC maximum monthly take over the five seasons has been somewhat less. The difference can be explained by noting that Millbrook monitors soil moisture deficits daily and irrigates accordingly, whereas many shareholders do not measure soil moisture deficits and therefore tend to underestimate and under irrigate in dry periods.

1.2.4 Summary of Abstraction Requested

AIC have an established history of use of water from its Arrow River abstraction. AIC use water efficiently for irrigation, as calculated by Dr Davoren and also for stock water. Accordingly, AIC are seeking:

- A maximum instantaneous take of 870 litres/sec.
- A maximum annual volume 8,802,018m³.
- A maximum monthly volume of 2,254,120m³.
- Provision for an additional 2,000,000 m³ in shoulder seasons and in periods of high river flow to provide for Lake Hayes flushing water.

Under its existing permit AIC could abstract up to 50 head 1416 l/sec which over a 240-day irrigation season equates to approximately 30,000,000m³. The maximum annual volume sought under this application represents a 70% reduction in this annual paper allocation.

Pattern of use: As a scheme that supplies 249 shareholders AIC abstract water 24hours a day 7 days a week. Some shareholders are on continual supply and other shareholders are on a roster system receiving their water on a rolling schedule through the weeks.

In addition, AIC is the biggest single abstractor of water from the Arrow, with increasing demand from additional shareholders and a reduction in take volumes due to management practices and the volumes of water sought represent a reduced yet realistic future allocation of the water resource.

2.0 Existing Environment

2.1 Hydrology of Arrow River

The Arrow River has a catchment area above the AIC intake of 153.1 square kilometres ,199.1 sq/km above the Cornwall St meter, Arrowtown, and a total catchment area of 237.57 sq/km, at the point where the Arrow flows into the Kawarau River.

There is no flow monitoring site at the AIC intake and the only monitoring site currently on the river is the ORC site at Cornwall street, some 7km below the AIC intake. The ORC flow records from Cornwall St generally show that the Arrow has low flows over summer months, interspersed with

sharp peaks, due to rain events, with increasing flows in Autumn. Winter flows are moderate, but can fall during prolonged freezing periods, and spring has higher sustained flows, due to rain and snowmelt.

2.2 Climate

The area is characterised by short, hot, dry summers and very cold winters. Rainfall is variable within the catchment, ranging from 1000-1250mm in the mountain headwaters, 700-750mm in western and northern parts of the Wakatipu Basin, and 650-700mm heading south east toward Morven Ferry.

In very dry summers (Jan. to Feb.), rainfall can be 120-140mm or less, in 1 out of 5 summers. (source <http://growotago.orc.govt.nz>). These periods are when peak demand for irrigation water occurs.

2.3 Soils

A summary of areas of each soil type is shown in the Seasonal Irrigation Demand Report, prepared by Dr Tony Davoren, which is included in Appendix 3 of this application.

3.0 **Status of Activity**

This application includes the replacement of an existing water permit to take and use water from the Arrow River as primary allocation under deemed permit WR1440 AR.

The taking and use of surface water as primary allocation from the Arrow River is a **restricted discretionary** activity under Rule 12.1.4.5 of the RPW. The matters to which the consent authority has restricted its discretion in relation to the taking of water is listed under Rule 12.1.4.8, and includes:

- i. The primary and supplementary allocation limits for the catchment; and*
- ii. Whether the proposed take is primary or supplementary allocation for the catchment; and*
- iii. The rate, volume, timing and frequency of water to be taken and used; and*
- iv. The proposed methods of take, delivery and application of the water taken; and*
- v. The source of water available to be taken; and*
- vi. The location of the use of the water, when it will be taken out of a local catchment; and*
- vii. Competing lawful local demand for that water; and*
- viii. The minimum flow to be applied to the take of water, if consent is granted; and*
- ix. Where the minimum flow is to be measured, if consent is granted; and*
- x. The consent being exercised or suspended in accordance with any Council approved rationing regime; and*
- xi. Any need for a residual flow at the point of take; and*
- xii. Any need to prevent fish entering the intake and to locate new points of take to avoid adverse effects on fish spawning sites; and*

- xiii. *Any effect on any Regionally Significant Wetland or on any regionally significant wetland value; and*
- xiv. *Any financial contribution for regionally significant wetland values or Regionally Significant Wetlands that are adversely affected; and*
- xv. *Any actual or potential effects on any groundwater body; and*
- xvi. *Any adverse effect on any lawful take of water, if consent is granted, including potential bore interference; and*
- xvii. *Whether the taking of water under a water permit should be restricted to allow the exercise of another water permit; and*
- xviii. *Any arrangement for cooperation with other takers or users; and*
- xix. *Any water storage facility available for the water taken, and its capacity; and*
- xx. *The duration of the resource consent; and*
- xxi. *The information, monitoring and metering requirements; and*
- xxii. *Any bond; and*
- xxiii. *The review of conditions of the resource consent.*

4.0 Consideration of Alternatives

After the flood of 1999 when the AIC delivery pipeline was badly damaged, alternative water supplies were investigated. The only alternative considered worth pursuing was to pump water from Bush Creek or the aquifer adjoining. This was discounted in favour of repairing the existing pipeline, because of the high capital cost involved but more so because of the high ongoing pumping costs compared with the existing gravity supply. The same financial considerations would apply today but in addition QLDC have extended their borefield in the Bush Creek aquifer for the Arrowtown domestic supply, and so both supply and consenting could be issues.

Pumping from Mill Creek is not an option because, as previously discussed, the desire is to increase the flow of water through Lake Hayes, not reduce it.

The Kawarau River offers a reliable alternative source of water via a pumped pipeline to Arrowtown. However, without doing any feasibility studies, it would obviously be a hugely expensive exercise, when considering the volume, head, length of pipeline required, and the cost of negotiating easements, and the expense would be far beyond the resources of AIC.

AIC does not have a storage facility, but some shareholders have limited storage in tanks / ponds, and Millbrook resort have two onsite storage reservoirs. Potential storage opportunities for AIC have not been researched or discussed, as it is considered this is of more relevance to minimum flow, rather than abstraction, discussion.

Based upon the above, it is considered that there are no other reliable and feasible sources of water which represent alternatives to the current scheme.

5.0 Consultation with Affected Parties

AIC is aware that the ORC is developing guidance documentation for the replacement of water permits and that it will make this publicly available at a future time. The Application is therefore being lodged without the written approval of affected parties. Consultation with affected parties will occur based on the ORC's determination of who is an affected party according to any new streamlined processes embedded into Council practices.

6.0 Term of Consent & Lapse Period

Rule 12.1.4.8 of the RWP lists the matters that may be considered in relation to any resource consent for the taking and use of water, and the duration of the resource consent is a key matter the ORC considers under this Rule.

The capital investment made by the Applicant in recent years to utilise the water efficiently is substantial. Expenditure on improving scheme reliability and water use efficiency has averaged \$120,000.00 annually over the last 15 years. In the late 1980's the Ministry of Works, the operators of the scheme at that time, commissioned a replacement cost valuation of the entire irrigation scheme, which totalled \$60million dollars. A current valuation of the scheme is not available, but despite its age, the scheme represents an extremely large infrastructure investment. A longer-term permit is requested to acknowledge the considerable level of existing investment, and the ongoing investment required to achieve the benefits of better water use efficiency and farming practices.

Further, as established in the Assessment of Environmental Effects, any effects of the proposal are less than minor and can be adequately addressed through appropriate consent conditions.

Taking this into account, and to provide sufficient surety and confidence for AIC and future investment decisions, the applicant requests a term of 35 years for the replacement consent.

7.0 Assessment of Environmental Effects

7.1 Introduction

The Regional Plan: Water primarily focuses on the effects of water abstraction on the water body that the water is taken from, particularly in relation to ecological values, natural character, amenity and iwi values. As per Form 4, the following matters are addressed in the following Assessment of Environmental Effects:

- Effects on ecological / instream values
- Physical effects on the locality, including landscape and visual effects
- Effects on ecosystems, including effects on plants or animals, and any physical disturbance of habitats in the vicinity of the point of take
- Effect of the taking of water from the water body
- Effects on cultural values
- Effects on other water users or other human use values
- Positive effects
- Summary of proposed mitigations
- Whether instantaneous rate of abstraction will be reduced over time
- Alternative water sources or methods

7.2 Effects on Ecological Values

Schedule 1A of the Regional Plan Water recognises “ecosystem values” in relation to the Arrow River and describes the physical, habitat and species characteristics:

- *Size* – “Psize”, refers to a large water body supporting high numbers of particular species, or habitat variety, which can provide for diverse life cycle requirements of a particular species, or a range of species.
- *Substrata* – “Psand & Pgravel”; refers to the bed composition of importance for resident biota as Sand & Gravel.
- *Unimpeded Access* – “Ppass”; refers to access within the main stem of a catchment through to the sea or a lake unimpeded by artificial means, such as weirs, and culverts.
- *Spawning Areas* – “Hspawn”; refers to presence of significant fish spawning areas: (t)=trout; (s)=salmon.
- *Juvenile rearing areas* – “Hjuve”; refers to presence of significant areas for development of juvenile fish: (t)=trout; (s)=salmon.
- *Freedom from biological nuisances* – “Weedfree”; refers to absence of aquatic pest plants (eg Lagarosiphon) identified in the Pest Management Strategy for Otago 2009.
- *Exotic game fish: trout, salmon* – “Trout”; refers to significant presence of trout.

Schedule 1A of the Regional Plan Water recognises the Arrow River above 900 metres asl has a high degree of naturalness. The AIC intake is the most elevated part of the AIC scheme at approximately 520 metres asl.

Schedule 1A of the Regional Plan Water does not recognise the Arrow River as having any attributes of Outstanding Natural Feature or Landscape or any significant indigenous vegetation or significant habitat of indigenous fauna.

It should be noted that the assessment and recognition of values listed in Schedule 1A above has been undertaken whilst the AIC scheme has been in operation.

Residual Flow

The Arrow River drops steeply down directly below the AIC intake for approximately 500m, an area historically known as The Falls. This section of river is very narrow, steep and rocky with no foot track and as such is almost inaccessible. Access further up the Arrow is via the Macetown road, high on the hillside above. Because of the steepness of the falls, with the AIC weir at the top, it is also inaccessible to migratory aquatic life. The steepness, inaccessibility and lack of telemetry in the area would make finding a suitable flow monitoring site below the weir extremely difficult.

A large tributary, Brackens Gully, enters the river from the east at the base of the falls. Brackens Gully is a perennial stream and therefore, regardless of the amount of abstraction at the intake, there is always a flow maintained below the Brackens Gully junction. In addition, there are at least seven other creeks entering the gorge between Brackens and Arrowsmith. Anecdotal evidence suggests that four of these streams are perennial with the balance probably ephemeral. No flow monitoring has been carried out on any of these tributaries, but their combined flow has historically provided an adequate flow through the gorge, for aquatic eco-system values.

Dr Dean Olsen, Ryder Environmental Ltd, assessed the periphyton community in the Arrow River and he concludes that the level of allocation from the Arrow catchment is not expected to affect the frequency of high-flow events that are large enough to substantially reduce periphyton biomass¹.

Mr Matt Hickey, Water Resource Management Ltd assessed the instream ecology and undertook a residual flow recommendation in his report which is contained in Appendix 4. Mr Hickey recommends a residual flow of 500 l/s to protect juvenile and adult trout habitat during times of low flow retaining 85% and 77% habitat protection.

Based upon the recommended residual flow and the relative infrequency that flows fall to this level along with the very short duration of such low flows means that the effect of the AIC take is likely to be no more than minor.²

7.3 Physical effects on the locality, including amenity values

7.3.1 Physical effects on the locality

¹ Paragraph 5, page 1, "Arrow River Periphyton Assessment", Ryder Consulting Ltd, December 2019 – Appendix 5.

² Paragraph 3, page 16, "Assessment of Effects on Instream Ecology and Residual Flow Recommendation for Arrow Irrigation Companies Mainstem Take", Water Resource Management Ltd, January 2020 – Appendix 4.

The scale and nature of the AIC irrigation scheme has been detailed in part 1. The current application seeks to replace of an existing water permit to take and use water from the Arrow River. The proposal does not include any physical works to the existing AIC irrigation scheme. As such, consideration of any *physical effects on the locality* becomes extremely confined when the application seeks to maintain the status quo or has applied for a volume of water which is less than the current permit under which AIC operates.

The only physical effects on the locality are associated with residual flow recommendations and any consequential effect upon ecological communities within the margins of the river. The flow recommendations are considered by Mr Matt Hickey in this report and an effects assessment has been undertaken in part 7.2 above which concludes that the effect of the AIC take is likely to be no more than minor.³

Based upon the above, it is considered that any adverse effects in terms of physical effects on the locality will be no more than minor.

7.3.2 Visual Amenity Values

Schedule 1A of the RPW identifies that the Arrow river has a level of naturalness above 900 metres which is around Macetown and substantially elevated above the AIC's intake. Schedule 1A does not recognise the Arrow river as an outstanding natural feature or landscape in terms of s.6 (matters of national importance) of the RMA. It does not recognise the Arrow river as supporting any significant indigenous vegetation.

This does not mean that the Arrow river does not have any associated amenity values. Recreational and human use values are discussed in part 7.5 below. Activities which enable people to travel the road to Macetown, utilise trail networks above the rivers active channel are two activities where members of the public appreciate the visual amenity value of the river and its margins.

The AIC pipeline and its associated structures were installed almost a century ago to carry water from the intake in the gorge to supply gold mining operations. When the demand for water from these operations ceased, the pipeline and associated structures within the Arrow river valley were converted to the delivery of water for irrigation purposes and the pipeline network was extended to facilitate delivery of irrigation water to properties within the Wakatipu Basin.

The use of the pipeline and its associated structures for irrigation has enabled the maintenance and upkeep of the pipeline through the Arrow river valley above Arrowtown to the intake weir in the gorge. The AIC pipeline is the only remaining physical infrastructure visitors to the Arrow river valley above Arrowtown have as visual reference to the rich history of gold mining in the area. Without the

³ Paragraph 3, page 16, "Assessment of Effects on Instream Ecology and Residual Flow Recommendation for Arrow Irrigation Companies Mainstem Take", Water Resource Management Ltd, January 2020 – Appendix 4.

conversion of this pipeline for the purpose of irrigation, this pipeline structure would not be there today.

Given that the pipeline was established over a century ago, it has become an accepted visual component in the visual setting of the Arrow river valley above Arrowtown. Sufficiently so, that it is an attraction itself and is a dramatic and telling relic of the Valley's rich history in gold mining.

The current application represents a continued use of the pipeline and its associated structures which ensures this element of gold mining history is not lost but maintained while its longevity has resulted in this infrastructure being an accepted visual component in this visual setting. The current application does not seek to undertake any additional physical construction.

Based upon the above, any adverse effects associated with the proposal in relation to the visual amenity values will be de minimis.

7.4 Effects on Cultural Values

Schedule 1D of the RPW identifies spiritual or cultural beliefs, values or uses associated with water bodies of significance to Kāi Tahu. The following values and customary use interests for the Arrow River and tributaries are identified:

- *Kaitiakitanga – the exercise of guardianship by Kai Tahu in accordance with tikanga Maori in relation to Otago's natural and physical resources; and includes the ethic of stewardship.*
- *Mauri – life force; for example, the mauri of a river is most recognisable when there is abundance of water flow and the associated ecosystems are healthy and plentiful; a most important element in the relationship that Kai Tahu have with the water bodies of Otago.*
- *Waahi taoka – treasured resource; values, sites and resources that are valued and reinforce the special relationship Kai Tahu has with Otago's water resources.*
- *Mahika kai – places where food is procured or produced. Examples in the case of waterborne mahika kai include eels, whitebait, kanakana (lamprey), kokopu (galaxiid species), koura (freshwater crayfish), freshwater mussels, indigenous waterfowl, watercress and raupo.*
- *Kohanga – important nursery/spawning areas for native fisheries and/or breeding grounds for birds.*
- *Trails – sites and water bodies which formed part of traditional routes, including tauraka waka (landing place for canoes).*
- *Cultural materials – water bodies that are sources of traditional weaving materials (such as raupo and paru) and rongoa (medicines).*

The values of importance to iwi in the Arrow River and tributaries are not anticipated to be adversely affected as a result of this proposal provided appropriate conditions of consent are included on any consent granted.

The proposed replacement take is an existing use occurring in a catchment with a long history of water abstraction. The current application does not seek to increase the volume currently abstracted from the Arrow River and as discussed in part 1.2.3, this volume is appropriate and efficient.

The values listed in Schedule 1D were identified and recognised in the Plan at a time when the AIC were abstracting more volume due to wild flooding irrigation practices (part 1.1.5 Irrigation Systems). Since the Plan became Operative, improvements in the AIC scheme have been made and abstraction rates have dropped (part 1.2.3 Abstraction & Water Monitoring). Based upon historical abstraction and the volume applied for under the current application it is considered highly unlikely this could be considered to diminish the values listed above.

7.5 Effects on other water users or other human use values (recreational values)

The proposed abstraction represents an existing take with primary allocation status. Continuation of this take will not result in any new adverse effects on the primary allocation abstraction by other users within the catchment.

The Arrow River is used extensively for recreational purposes. The river environs adjacent to Arrowtown are very popular with local residents, holidaymakers and tourists for swimming, picnicking, walking and especially in Autumn, photography. Arrowtown has a range of walking / hiking / biking tracks some of which run adjacent to the river and/or gorge.

Gold panning is also a popular tourist activity. The road up the gorge from Arrowtown, which is accessible by 4-wheel drive vehicles only, continues past the intake and on to Macetown, which is a deserted historic gold mining town. This is a popular destination for visitors on foot, bicycles, or 4-wheel drive vehicles.

The Arrow River is not regarded as a prolific trout fishing river, but some large spawning fish are taken in the lower reaches and the reaches below Arrowtown provide easily accessible, safe, fishing for children and beginners. There are no commercial activities on the river itself, but several commercial operators run river related, bicycle hire, gold pan hire, and 4-wheel drive trips up the gorge.

It is accepted that recreational values must be protected, and it is important that visitors experience a natural and accessible river. However, from a multitude of meetings concerning proposed minimum flows on the river, overwhelming feedback, from a recreational user's viewpoint, favour lower flows over summer months. Lower flows downstream of, and bordering Arrowtown, make the river safer and more accessible for swimming, gold panning, and angling. Lower flows upstream of Arrowtown make fording the river in the gorge safer for cyclists, hikers, and vehicles.

In summary, although the river has important recreational values, continued abstraction will have very minimal, if any adverse effects on other water users or other human use values. Therefore, based upon the above, any adverse effects associated with the proposal upon the recreational values is considered to be de minimis.

7.6 Positive Effects

Conventional irrigation systems almost solely provide for primary production. Stock numbers and land uses have been described and discussed in part 1 of this report. AIC accepts that the stock numbers supported by the scheme's water delivery are the equivalent of only one large farming unit.

However, the Operative and Proposed District Plans have mapped the majority of the Wakatipu Basin as a section 7(c) landscape for its character and associated amenity value while the Wakatipu Basin contains a number of section 6(b) outstanding natural landscapes and features. Both District Plans also recognise that tourism is a key driver of the local economy and these landscapes are the "jewels in the crown" of Queenstown's international reputation as a tourist attraction.

The AIC scheme is the only irrigation system available in the Wakatipu Basin. It is considered to support the continued pastoral and arcadian appearance of these landscapes which are highly valued.

The two largest users of irrigation water, Millbrook and The Hills golf courses, contribute substantially to the local economy by providing premier tourist facilities as venues for tournaments (NZ Open), conferences, and weddings. They both also represent organisations which employ a significant number of staff directly and indirectly through local contractors and tradespeople. These facilities have gained international recognition for their landscaped settings. This recognition would not have been possible without irrigation water from the AIC scheme and their continued operation is reliant upon AIC.



Figure 8: Hole 9, Millbrook Resort



Figure 9: Hills Golf Course

Millbrook in conjunction with the Hills golf course have been co-hosting the NZ Open golf tournament for the past eight years. The Post Event Report from the 2019 indicated national economic benefits of just under \$10m with much of that being a regional benefit to the Queenstown area.

As discussed in part 1, almost half of the shareholder properties are occupied by rural residential land uses and local government projections provided as part of the District Plan Review expect the

recent increase in demand for this typology of land use to continue⁴. These existing properties rely solely upon AIC irrigation to support the expansive landscape garden areas which occupy a majority of these rural residential land uses. Future growth in rural residential land use will also rely solely upon AIC for irrigation water supply.

Indirectly, rural residential land uses support local contractors who manage and maintain these properties while the owners of these properties and their families contribute to the local economy by utilisation of other local services.



Figure 10: Rural Living



Figure 11: Section 6(b) & 7(c) Landscape

As discussed in part 1, the AIC scheme is expected to be used to improve the water quality of Lake Hayes by flushing through the value in the Millbrook syphon which is supported by ORC.

Amenity use of the water on lifestyle blocks is highly valued by the people who live and work in the catchment. The accessibility and flight frequency at the local Queenstown airport has resulted in many professional people working remotely in the catchment and commuting to meetings and functions. The water supports the enhancement of the command area to be the attractive visitor and local recreation space that it has become. There is a popular walking and biking trail through the catchment that is enhanced by hedges, gardens, tree plantings and lifestyle holdings all supported by AIC water. The popular Queenstown marathon utilised this pathway. There are small hospitality and tourism businesses in the shareholder group that use the water to create a desirable outdoor area. The AIC water has been instrumental for the development and recreational enhancement of the catchment area.

Based upon the above, the positive effect associated with the continued use of the AIC scheme in providing irrigation water to the above activities is considered to be “more than minor”.

7.7 Summary

Overall, the proposed taking and use of water results in positive effects for the applicant, their shareholders, local businesses, local, national and international visitors and the local community as discussed in part 7.6 above. The magnitude of this positive effect is considered to be “more than minor”.

⁴ Part 4.2, Page 12-13, Wakatipu Basin Land Use Planning Study, Final Report, March 2017.

A number of adverse effects have been identified and assessed in part 7 above where the magnitude of the largest equates to “no more than minor”⁵ while others remain as “de minimis”⁶. In consideration of the balance of effects under section 104 of the RMA it is considered that the proposal represents an adverse effect which is “less than minor”.

8.0 Legislative Analysis

8.1 Resource Management Act 1991

The Resource Management Act provides for the sustainable management of New Zealand’s natural resources and sets out the roles and responsibilities of central and local government in doing so. Under the s14 of the Resource Management Act the taking and use of surface water can be authorised by a rule in a regional plan or by a resource consent.

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 addressed in the following sections.

8.2 Part 2 RMA 1991

For completeness, consideration is given to the ability of the proposal to meet the purpose of the Act, which is to promote sustainable management of natural and physical resources. Other resource management issues require consideration when exercising functions under the Act. The relevant sections are set out in Section 5, 6, 7 and 8 of the Act.

5 Purpose

- (1) *The purpose of this Act is to promote the sustainable management of natural and physical resources.*
- (2) *In this Act, sustainable management means managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural well-being and for their health and safety while—*
 - (a) *sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and*
 - (b) *safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and*
 - (c) *avoiding, remedying, or mitigating any adverse effects of activities on the environment.*

With regard to Section 5(2)(a)-(c) the nature and location of the take will safeguard the life-supporting capacity, ecosystem processes and indigenous species of the Arrow River, as described in part 7 (Assessment of Environmental Effects) of this report.

⁵ “No more than minor” - Part 7.2, “Effects on Ecological Values”.

⁶ “De minimis” - Part 7.3, “Physical effects on the locality, including amenity values” & Part 7.5, “Effects on other water users or other human use values (recreational values)”.

The Applicant seeks to replace an existing permit to take surface water as primary allocation and the proposed rate and volumes sought represents an efficient allocation and efficient use of water.

Providing the recommended conditions of consent are imposed, the proposed take will have no more than a minor effect on the ability of the waterway 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 proposed taking of water from the Arrow River for the purpose of stock water, irrigation and flushing Lake Hayes is therefore consistent with the purpose and principles set out in Section 5 of the Act.

6 Matters of national importance

In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall recognise and provide for the following matters of national importance:

- (a) the preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use, and development:*
- (b) the protection of outstanding natural features and landscapes from inappropriate subdivision, use, and development:*
- (c) the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna:*
- (d) the maintenance and enhancement of public access to and along the coastal marine area, lakes, and rivers:*
- (e) the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga:*
- (f) the protection of historic heritage from inappropriate subdivision, use, and development:*
- (g) the protection of protected customary rights:*
- (h) the management of significant risks from natural hazards.*

With regard to **s.6(a)**, the attributes of natural character are listed in Schedule 1A of the Regional Plan for Water which notes the Arrow River above 900 metres asl has a high degree of naturalness and the existing AIC take is 520 metres asl. Based upon part 7.2 above, it is considered that any adverse effects associated with the current application upon the level of natural character of the Arrow River are acceptable.

In addition, the proposed replacement take is an existing use occurring in a catchment with a long history of water abstraction. The current application does not seek to increase the volume currently abstracted from the Arrow River and as discussed in part 1.2.3, this volume is appropriate and efficient.

Given the above, the continuation of abstraction from this point of take is not anticipated to compromise the natural character amenity of the Arrow River environment.

With regard to **s.6(b)**, Schedule 1A of the Regional Plan for Water confirms the Arrow River is not considered to be an outstanding natural feature. However, as discussed in part 7.6, the AIC scheme indirectly supports s.6(b) and s.7(c) landscapes.

With regard to **s.6(c)**, Schedule 1A of the Regional Plan for Water confirms the Arrow River is not considered as having any significant indigenous vegetation or significant habitat of indigenous fauna. Based upon part 7.2 above, it is considered that any adverse effects associated with the current application upon ecological values are acceptable.

With regard to **s.6(d)** the proposed activity will not result in any changes to the existing level of public access to and along any water body.

With regard to **s.6(e)**, the values of importance to iwi in these water bodies are not anticipated to be adversely affected as abstraction rates have lowered since these values were identified.

With regard to **s.6(f)**, the protection of historic heritage from inappropriate subdivision, use, and development, there are no known heritage values relevant to this application.

With regard to **s.6(g)**, there are no known protected customary rights relevant to this application.

With regard to **s.6(h)**, there are no known risks from natural hazards relevant to this application.

7. Other matters

In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall have particular regard to—

- (a) kaitiakitanga:*
- (aa) the ethic of stewardship:*
- (b) the efficient use and development of natural and physical resources:*
- (ba) the efficiency of the end use of energy:*
- (c) the maintenance and enhancement of amenity values:*
- (d) intrinsic values of ecosystems:*
- (f) maintenance and enhancement of the quality of the environment:*
- (g) any finite characteristics of natural and physical resources:*
- (h) the protection of the habitat of trout and salmon:*
- (i) the effects of climate change:*
- (j) the benefits to be derived from the use and development of renewable energy.*

The application is consistent with the requirements of s.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 and the finite characteristics of natural and physical resources.

Summary

The application is consistent with Part 2 of the Act, given the nature of the proposed activities and subject to the continued adherence to the residual flow as recommended.

8.3 Section 104(1)

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

104 Consideration of applications:

- (1) *When considering an application for a resource consent and any submissions received, the consent authority must, subject to Part 2, have regard to—*
- a) *any actual and potential effects on the environment of allowing the activity; and*
 - b) *any relevant provisions of—*
 - i. *a national environmental standard;*
 - ii. *other regulations;*
 - iii. *a national policy statement;*
 - iv. *a New Zealand coastal policy statement;*
 - v. *a regional policy statement or proposed regional policy statement;*
 - vi. *a plan or proposed plan; and*
 - c) *any other matter the consent authority considers relevant and reasonably necessary to determine the application.*

...

(2A) When considering an application affected by section 124 or 165ZH(1)(c), the consent authority must have regard to the value of the investment of the existing consent holder.

With regard to s104(1)(a), the actual and potential environmental effects of the proposed activity have been considered in part 6 of this report where there are no adverse effects which are considered to be more than minor.

With regard to s104(1)(b)(i) there are no national environmental standards relevant to this application.

In terms of any other regulations under s104(1)(b)(ii) the Resource Management (Measurement and Reporting of Water Takes) Regulations 2010 are directly relevant to this application. The regulations impose minimum requirements on the holders of certain water permits to keep and provide records of fresh water taken under the permits. As discussed in part 1, the applicant is committed to achieving compliance with the relevant measurement requirements imposed by these regulations.

With regard to s104(1)(b)(iii), the National Policy Statement on Freshwater Management is relevant to this application. The relevant provisions of this document are considered in part 7.4 below and within the report from Dr Dean Olsen⁷.

⁷ "Arrow River Periphyton Assessment", Ryder Consulting Ltd, December 2019 – Appendix 5.

Under s104(1)(b)(v) and (vi), the ORC Regional Policy Statement (RPS) and Proposed Regional Policy Statement (PRPS) are both relevant to this application, as is the Regional Plan: Water for Otago (RPW). The relevant provisions of these documents are considered in in part 7.5 and 7.6 below.

In terms of s104(2A), this application is affected by section 124, as it involves the replacement of existing consents within the ambit set out by section 124(1). This means that the value of the investment of the existing consent holders is a matter to which regard must be had in considering this application.

In recent years the applicant has upgraded and invested significant funds on its scheme to ensure that its operation meets modern expectations of water use and efficiency.

8.4 National Policy Statement on Freshwater Management (2014)

A key planning instrument under the RMA is the National Policy Statement on Freshwater Management (NPSFM). The NPSFM aims to recognise the national significance of fresh water by promoting the sustainable use of water, through the setting of environmental limits based on a more nationally consistent approach that is scientifically robust.

The ORC has not fully implemented the NPSFM, however applications should still be considered against the objectives of the NPSFM to ensure they are not inconsistent with it.

8.4.1 Water Quantity

Objectives of the NPSFM include:

Objective B1: To safeguard the life-supporting capacity, ecosystem processes and indigenous species including their associated ecosystems of fresh water, in sustainably managing the taking, using, damming, or diverting of fresh water.

Part 6.3 of this report has considered effects upon ecological values where any adverse effects are considered to be acceptable. For the reasons discussed in part 6.3, the proposal is considered to be consistent with Objective B1.

Objective B2: To avoid any further over-allocation of fresh water and phase out existing over-allocation.

This application does not seek any further primary allocation water and will result in a reduction in the volume abstraction limit. This represents a 70% reduction in the paper allocation within the catchment and reduction in the physical allocation. On this basis, the proposal is consistent with Objective B2.

Objective B3: To improve and maximise the efficient allocation and efficient use of water.

In recent years the applicant has upgraded and invested significant funds on the existing scheme to ensure a continued reduction in water use and increased efficiencies as discussed in part 1.2. For the reasons listed in part 1.2 the application is considered to be consistent with Objective B3.

Objective B5: To enable communities to provide for their economic well-being, including productive economic opportunities, in sustainably managing freshwater quantity, within limits.

As discussed in part 6, the AIC scheme directly supports the economic well-being of its shareholders and indirectly the Wakatipu Basin's landscapes, rural residential developments and the quality of water in Lake Hayes while sustainably managing the use of water within freshwater quantity limits. The Applicant is seeking to replace an existing permit to take surface water, and the proposed rate and volumes sought represents an efficient allocation and efficient use of water. As such, the application is considered to be consistent with Objective B5.

8.4.2 Water Quality

In setting objectives and limits in accordance with the National Objectives Framework (Objective CA1 and corresponding policies of the NPSFM) regional councils must manage for two compulsory values - ecosystem health and human health and can also recognise and manage freshwater for a range of other national values. In doing so, the objectives and limits in regional plans must be set at an attribute state (as contained in Appendix 2 of the NPS, required by Policy CA2) at or above the minimum acceptable state for that attribute (CA2(d)). In addition, Policy CA3 requires regional councils to ensure that freshwater objectives (and corresponding limits) for the compulsory values (eco-system health and human health for recreation) are set at or above the national bottom lines for all FMUs.

In the case of water quality this means the ORC must set targets for contaminant levels that are at or better than the minimum acceptable state or national bottom line as contained in Appendix 2 and 6 of the NPSFM while also ensuring that values already identified for a FMU will not be worse off when compared to existing freshwater quality (Policy CA2).

The ORC has assessed all the contaminant limits contained in Schedule 15 of the RPW as being more restrictive than the national bottom lines specified in the NPSFM. While Schedule 15 does not include limits for all attributes specified in Appendix 2 of the NPSFM (of which Periphyton and Dissolved Oxygen are relevant to rivers), the ORC state these will be monitored in the future to assess compliance with the NPSFM.

Notwithstanding the above, Dr Dean Olsen has considered water quality and periphyton in detail within his report contained in Appendix 5. Based upon the assessment of Dr Olsen coupled with the assessment contained in part 7 of this document, it is considered that the proposal remains consistent with relevant water quality standards.

Objective A1: To safeguard:

- a) *the life-supporting capacity, ecosystem processes and indigenous species including their associated ecosystems, of fresh water; and*
- b) *the health of people and communities, as affected by contact with fresh water; in sustainably managing the use and development of land, and of discharges of contaminants.*

Objective A2

The overall quality of fresh water within a freshwater management unit is maintained or improved while:

- a) *protecting the significant values of outstanding freshwater bodies;*
- b) *protecting the significant values of wetlands; and*
- c) *improving the quality of fresh water in water bodies that have been degraded by human activities to the point of being over-allocated.*

Objective A3

The quality of fresh water within a freshwater management unit is improved so it is suitable for primary contact more often, unless:

- a) *regional targets established under Policy A6(b) have been achieved; or*
- b) *naturally occurring processes mean further improvement is not possible.*

The AIC scheme draws from the Arrow River catchment. ORC seeks to work with the community to agree on local values that sit alongside national values for human and ecological health that will eventually inform the setting of water quality and quantity objectives within the Freshwater Management Unit. AIC has participated in community consultation in developing options for managing water in the catchment and aquifers.

However, the AIC is not aware that any formal objectives have been released. Until such time, the applicant is committed to achieving compliance with the relevant water quality limits that apply.

Objective A4

To enable communities to provide for their economic well-being, including productive economic opportunities, in sustainably managing freshwater quality, within limits.

As discussed in part 6, the AIC scheme directly supports the economic well-being of its shareholders and indirectly the Wakatipu Basin's landscapes, rural residential developments and the quality of water in Lake Hayes while sustainably managing the use of water within freshwater quantity limits. The Applicant is seeking to replace an existing permit to take surface water, and the proposed rate and volumes sought represents an efficient allocation and efficient use of water.

8.5 Otago Regional Council Regional Policy Statement

Both the RPS and the Proposed RPS include objectives which focus on enabling sustainable and efficient use while also maintaining, enhancing and protecting values associated with waterways, including iwi values, and include policies to achieve these.

The Proposed Regional Policy Statement (PRPS) was notified on 23 May 2015. The Council released its decision on Saturday 1 October 2016. The PRPS was made partially operative on 14 January 2019 given the limited range of provisions still subject to appeal.

As Chapter 3 is not included, the 'mediation version' of these provisions (dated 27 October 2017) are referred to here as it is the most up to date version of these provisions and is understood to be generally accepted by parties to the appeal on the PRPS.

Objective 3.1 of the mediation version of the PRPS reads:

The functions and values of Otago's ecosystems and natural resources are recognised, maintained and or enhanced where degraded. (the track changes are the result of mediation on the PRPS and have been retained here).

Several other objectives and policies in the RPS and PRPS are also relevant. In terms of productive use, economic and social well-being, the application seeks to be consistent with, or implement the provisions of the RPS and PRPS, by:

- *providing for economic well-being of Otago's people and communities by enabling the resilient and sustainable use and development of natural and physical resources (Partially Operative RPS Policy 1.1.1):*
- *ensuring the efficient allocation of water, including by encouraging the development or upgrade of infrastructure that increases efficiency (mediation version PRPS Policy 3.1.3)*
- *encourage a collective approach to water management in the catchment, including rationing during low flows (mediation version PRPS Policy 3.1.4).*

The functions and values of the ecosystems and natural resource relating to the Arrow River and the AIC scheme have been discussed in detail within part 6 of this application document. Any adverse effects in this regard are considered to be acceptable.

The duty set out in Objective 3.1 above is the *maintenance or enhancement where degraded*. AIC are unaware of any evidence which suggests that any attributes of the Arrow River are degraded.

The AIC scheme's abstraction pre-dates the Operative and Proposed Regional Policy Statements. Improvements in the AIC scheme have been made and abstraction rates have dropped (part 1.2.3 Abstraction & Water Monitoring). Based upon historical abstraction and the volume applied for under the current application the functions and values of Otago's ecosystems and natural resources are considered to be maintained.

As discussed in part 6, the AIC scheme directly supports the economic well-being of its shareholders and indirectly the Wakatipu Basin's landscapes, rural residential developments and the quality of water in Lake Hayes while sustainably managing the use of water within freshwater quantity limits. The Applicant is seeking to replace an existing permit to take surface water, and the proposed rate and volumes sought represents an efficient allocation and efficient use of water.

In terms of natural and cultural values, the application seeks to be consistent with or implement the following RPS and PRPS objectives and policies:

- Safeguard the life-supporting capacity of the Arrow River and its tributaries (RPS Objective 6.4.3):
- Enhance:
 - ecological and intrinsic values of waterways within this catchment (RPS Objective 6.4.4):
 - ecosystem health, indigenous species, habitats and migratory patterns (mediation version PRSP Policy 3.1.9); the range and extent of habitats provided by fresh water, the natural functioning of waterbodies and riparian margins (mediation version PRSP 3.1.1)
 - *The habitat of trout and salmon unless detrimental to indigenous biological diversity (PRPS Policy 3.1.1 and PRPS Policy 3.1.9):*
- Provide for the relationship that Kai Tahu have with these waterways (Policy 6.5.1).
- Enhance the cultural values associated with the waterways within this catchment (RPS Objective 6.4.4), provide for cultural wellbeing, (Partially Operative RPS Policy 1.1.2) support Kai Tahu well-being (PRPS Policy 2.2.1) and recognising and provide for the protection of wāhi tupuna (Partially Operative RPS Policy 2.2.2)
- Protect the natural character of the waterways within this catchment (RPS Objective 6.4.8) or enhance the natural character and amenity values associated with these waterways; as far as practicable (mediation version PRPS Policy 3.1.2).

The nature and location of the proposed takes will safeguard the life-supporting capacity, ecosystem processes and indigenous species of the Arrow River, as described and discussed throughout the Assessment of Environmental Effects, part 6 of this application document.

The Applicant is seeking to replace an existing permit to take surface water and the proposed rates and volumes sought represent an efficient allocation and efficient use of water. This application is considered to be consistent with the relevant objectives and policies listed above.

8.6 The Otago Regional Council: Regional Plan Water for Otago

The Otago Regional Council's Regional Plan: Water for Otago (RPW) contains objectives, policies and rules addressing the taking and use of water in Otago, including rules which require a resource consent for the taking and use of water in certain circumstances. The RPW objectives, policies and rules relating to water use and management form a framework that aims to recognise existing use of water, reduce over-allocation, increase efficiency of use and safeguard the life-supporting capacity

and natural character of Otago's water resources. Key objective and policy provisions in the RPW that are of relevance to this application are discussed below.

8.6.1 Schedule 1 Values, Natural Character & Amenity

Schedule 1A lists the natural values identified for this catchment, while 1D lists the spiritual and cultural beliefs, values and uses of significance to Kāi Tahu. The key objectives and policies in relation to these values include:

Objective 5.3.1 To maintain or enhance the natural and human use values, identified in Schedules 1A, 1B and 1C, that are supported by Otago's lakes and rivers.

Objective 5.3.2 To maintain or enhance the spiritual and cultural beliefs, values and uses of significance to Kai Tahu, identified in Schedule 1D, as these relate to Otago's lakes and rivers.

Policy 5.4.2 In the management of any activity involving surface water, groundwater or the bed or margin of any lake or river, to give priority 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.*

Policy 5.4.8 To have particular regard to the following features of lakes and rivers, and their margins, when considering adverse effects on their natural character:

- (a) The topography, including the setting and bed form of the lake or river;*
- (b) The natural flow characteristics of the river;*
- (c) The natural water level of the lake and its fluctuation;*
- (d) The natural water colour and clarity in the lake or river;*
- (e) The ecology of the lake or river and its margins; and*
- (f) The extent of use or development within the catchment, including the extent to which that use and development has influenced matters (a) to (e) above.*

Policy 5.4.9 To have particular regard to the following qualities or characteristics of lakes and rivers, and their margins, when considering adverse effects on amenity values:

- (a) Aesthetic values associated with the lake or river; and*
- (b) Recreational opportunities provided by the lake or river, or its margins.*

As discussed in the Assessment of Environment Effects, the proposed taking and use of water will not result in any adverse effects that are more than minor on natural, human use, spiritual or cultural values.

The AIC scheme's abstraction pre-dates the Operative and Proposed Regional Policy Statements. Improvements in the AIC scheme have been made and abstraction rates have dropped (part 1.2.3 Abstraction & Water Monitoring). Based upon historical abstraction and the volume applied for under the current application the functions and values of Otago's ecosystems and natural resources are considered to be maintained.

As discussed in part 6, the AIC scheme directly supports the economic well-being of its shareholders and indirectly the Wakatipu Basin's landscapes, rural residential developments and the quality of water in Lake Hayes while sustainably managing the use of water within freshwater quantity limits. The Applicant is seeking to replace an existing permit to take surface water, and the proposed rate and volumes sought represents an efficient allocation and efficient use of water.

Based upon the above, this application is considered to be consistent with the relevant objectives and policies listed above.

8.6.2 Access to Water

The key policies directing access to water as primary allocation of relevance to this application include:

Policy 6.4.0A - *To ensure that the quantity of water granted to take is no more than that required for the purpose of use taking into account:*

- (a) How local climate, soil, crop or pasture type and water availability affect the quantity of water required; and*
- (b) The efficiency of the proposed water transport, storage and application system.*

As discussed in part 1.2 of this application document, the applicant is requesting a total annual volume which has been determined as an efficient volume of water. The quantity of water requested under this permit reflects the actual quantity required for the proposed purpose of use.

In recent years the applicant has upgraded and invested significant funds on its scheme to ensure that its operation meets modern expectations of water use and efficiency.

Based upon the above, this application is considered to be consistent with Policy 6.4.0A.

Policy 6.4.2A - Where an application is received to take water and Policy 6.4.2(b) applies to the catchment, to grant from within primary allocation no more water than has been taken under the existing consent in at least the preceding five years, except in the case of a registered community drinking water supply where an allowance may be made for growth that is reasonably anticipated.

As discussed, the proposed rates and volume of water sought is based on a demonstrated history of water use. As such, this application is considered to be consistent with Policy 6.4.2A.

6.4.0B - *To promote and support shared use and management of water that: (a) Allows water users the flexibility to work together, with their own supply arrangements; or (b) Utilises shared water infrastructure which is fit for its purpose.*

The AIC is not aware of any other relevant water users which share the subject resource. This may be due to the continued ability of AIC to accommodate additional shareholders within the schemes existing capacity which has resulted in their being no additional water takes from the Arrow River similar to the AIC scheme. As such, the current application is considered to be consistent with Policy 6.4.0B.

8.6.3 Application of Minimum and Residual Flows

Policy 6.4.7 directs the need for residual flows where necessary to provide for the aquatic ecosystem and natural character of the source water body.

Policy 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 flow has been discussed in part 7.2 of this application where a residual flow is recommended by Mr Matt Hickey in his report (Appendix 4), and that monitoring and compliance with this at Cornwall St provides adequate protection for the section of river above.

8.7 **The Otago Regional Council: Regional Plan Water for Otago - Plan Change 7**

The Otago Regional Council notified Proposed Plan Change 7 - Water Permits (PC7) to the Regional Plan: Water on 18th March 2020. The submission period for PC7 has not closed. As such, the weighting to be applied to PC7 is extremely limited. However, the current application must have regard for any relevant provisions of PC7.

The current application seeks consent for a duration that is more than six years which is contrary to condition 10A.3.1.1 (i). Pursuant to 10A.3.2.1, any activity that does not meet any one or more of the conditions in Rule 10A.3.1.1 is a **non-complying** activity.

Part 7 of the current application identifies a number of adverse effects in relation to the proposal where the magnitude of the largest equates to “no more than minor”⁸ while others remain as “de minimis”⁹. In consideration of the balance of effects under section 104 of the RMA it is considered

⁸ “No more than minor” - Part 7.2, “Effects on Ecological Values”.

⁹ “De minimis” - Part 7.3, “Physical effects on the locality, including amenity values” & Part 7.5, “Effects on other water users or other human use values (recreational values)”.

that the proposal represents an adverse effect which is “less than minor”. The Application therefore satisfies the section 104D (1)(a) test.

Part 8.4 – 8.6 of the current application assesses the objectives and policies relevant to the proposal and confirms that the proposal is consistent with each relevant objective and policy. Therefore, the application satisfies the section 104D (1)(b) test.

