

Long Gully Race Society

Replacement of Permit to
Take and Use Surface Water

Resource Consent Application
and
Supporting Information



Prepared by McKeague Consultancy
June 2017

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Part 1 – Resource Consent Application Forms

Form 9 of the Resource Management Act

Application for Resource Consent under Section 88 of the Resource Management Act 1991.

To: Otago Regional Council
Private Bag 1954
Dunedin

Applicant: Long Gully Race Society Incorporated
Address: c/- Robin Dicey, 266 Felton Road, Cromwell, 9384
Phone: 027 445 1006 [Robin Dicey]
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Consultant: Sally Dicey
Environmental Planner
McKeague Consultancy
sally@mckconsultancy.co.nz

The applicant applies for the resource consents described below:

- A **water permit** - to take 56 litres per second of water from Long Gully, a tributary of the Kawarau Arm of Lake Dunstan

1 The names and addresses of the owner and occupier which this application relates are:

Owner: Long Gully Race Society Inc
Occupiers: Various, as described in Table 1

2 The location of the proposed activity (at the point of take) is:

Grid reference: NZMS 260 F41:034-629

Legal description: Pt Sec 51 Blk II Cromwell SD (land adjacent to point of take)

3 A description of the activities to which the application relates is:

To take surface water for the purpose of irrigation, industrial use, storage, domestic use, and stock drinking water.

4 The following additional resource consents are required in relation to this proposal and have or have not been applied for:

No others are required.

5 Assessment of environmental effects

Attached in accordance with the Fourth Schedule of the Resource Management Act 1991, is an assessment of environmental effects in the detail that corresponds with the scale and significance of the effects that the proposed activity may have on the environment in accordance with Section 88 of, and the Fourth Schedule to, the Act.

6 Further Information

Attached is information (if any), required to be included in the application by the district plan, regional plan, the Resource Management Act 1991, or any regulations made under the Act or regulations.

By signing this form the signatory is:

- a) agreeing to pay all actual and reasonable application processing costs incurred by the Otago Regional Council and,
- b) stating that the information given in the application is true and correct to the best of his/her knowledge and belief.



.....

Signature of applicant or person authorised to sign on behalf of applicant

27 June 2017

.....

Date

Address for Service for purpose of processing this consent application:

McKeague Consultancy

Attention: Sally Dicey
Resource Management Planner

Email: sally@mckconsultancy.co.nz

Postal: PO Box 1320
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Telephone No: 03 477 9242

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Form 4 of the Otago Regional Council

The information required by Form 1 and 4 of the Otago Regional Council is included in Form 9 above and the supporting information and assessment of environmental effects following.

Part 2 – Supporting Information

1. Introduction

This is an application to replace an:

- Existing Deemed Permit
- Current Consent No: 2000.173.V1
- Expiry Date: 1 Oct 2021
- Current Consented Abstraction: 200,000 l/hour or 4,800,000 l/day (56 l/s)

1.1 Water Management Group – Incorporated Society

Long Gully Race Society (LGRS) was established in 2011. A constitution and water supply agreement govern the management of the race and distribution of water amongst shareholders.

Prior to LGRS this consent was one consent shared between a number of water users – this situation had evolved over time as land was subdivided.

LGRS abstracts water and distributes it via 120 shares, divided amongst 14 shareholders, as outlined in Table 1 below.

Table 1: LGRS shareholders and properties where LGRS water is used

Landowner/ Water User	Share	Legal Description where water used	Address
320 Felton Road Partnership Coutts & Forsyth	2	Lot 7 Deposited Plan 27311	320 Felton Road, Bannockburn, Cromwell 9384
Clyde Orchards	44	Lot 8 DP 27311	Felton Road
Terra Sancta	2	Lot 1 DP 21102	306 Felton Road
Felton Road Wines Ltd	12	Lot 1 DP 377436 Lot1 DP 429036 Lot 3 DP466236 Lot 1 DP 466 236	319 Felton Road, 180 and 124 Felton Road
Mt Difficulty Wines Ltd	16	Lot 2 DP 320845 Lot 1 DP320845 Lot 3 DP 25990 Lot 1 DP 23478 Lot 4 DP 377436 Lot 2 DP 300780 Lot 2 DP 466236	266 Felton Road 196B Felton Road 319 Felton Road 201 Felton Road 75 Felton Road
Legend Terrace Vineyard	5	Lot 2 DP 377936	Beaton Track, Felton Road
N & J Barker	2	Lot 4 DP 379936	259 Felton Road

Wanaka Road Wines /Mount Edward	16	Lot 1, 4 DP 398105	264 Felton Road
R&M Dicey Trust	6	Lot 5 DP 379936	265 Felton Road
Crosbie / Defiance Vineyard	5	Lot 1 DP 379936	263 Felton Road
Macalister Trustees Ltd [McLachlan]	2	Lot 2 and 3 DP 398105	246 Felton Road
Gate 20 Two Vineyard	4	Lot 2 DP 330243 Lot 1 DP 330243	143 Felton Road
AG and AB Thomson as Trustees of Thomson Family Trust	2	Lot 1 DP 24757 Lot 6 DP 26776 Secs 1-3 SO 300354	101 Felton Road
Kershaw / Leslie	2	Lot 3 DP 379936	Felton Road

2. Description of Activity

2.1. Location

The water take is situated on Long Gully, at the base of Mt Difficulty in Bannockburn, Central Otago. Water from this take supplies a number of properties situated along Felton Road.

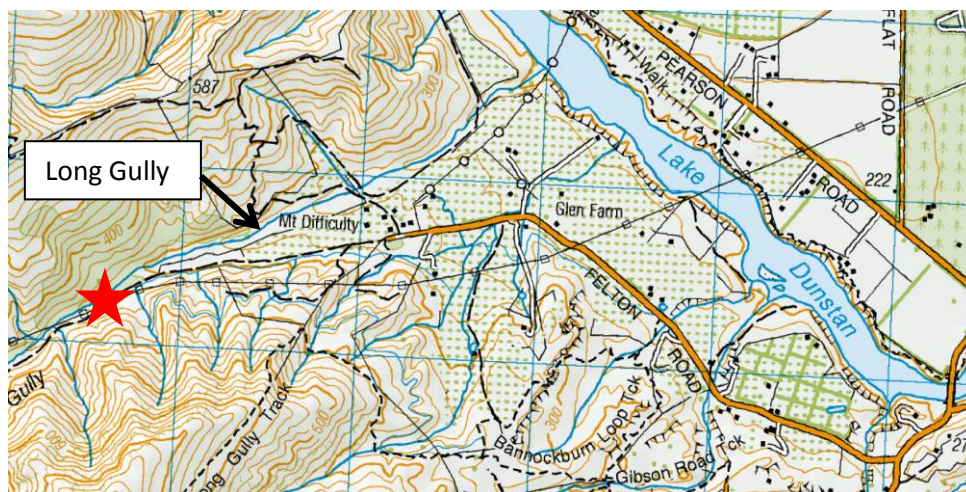


Figure 1: Long Gully and Location of Intake

2.2. Overview of water takes and use

Water is taken from Long Gully via an open channel. It is gravity fed primarily by open race with sections of pipeline to 6 small holding dams. The majority of shareholders take water from two of these dams, known as Sam’s Dam (750m³ in capacity) and Target Gully Dam (3,000 m³). The other dams are owned and utilised by individual shareholders:

- Clyde Orchards: 1,000 m³
- Felton Road: 3,000 m³
- Crosbie: 1,000 m³
- Wanaka Road Wines: 750 m³
- Gate 20 Two: 1,400 m³

The race is piped along small sections, where necessitated by terrain. The race is maintained on a voluntary basis, with all shareholders taking responsibility for this on a monthly roster basis.

Sam's Dam is the last dam in LGRS's system. This dam is kept full to ensure sufficient water is available for shareholders. The spillway for this dam is linked to a small dam adjacent to Bailey's Gully and Felton Road. Felton Road has rights to this dam and irrigates 2 vineyard blocks from this dam.

The Calvert's dam has a spillway which releases water into Bailey's Gully. This overflow system from Sam's Dam and the Calvert's dam acts as a safety release valve in the LGRS irrigation system and is vital given the small size of Sam's Dam to ensure it does not overtop, erode or fail. Bailey's Gully would otherwise be dry except when carrying flood flow, and there are no surface water takes from Bailey's Gully.

Each LGRS shareholder is responsible for taking the appropriate amount of water. Management of the group under its constitution combined with the capacity of each shareholder's off-take infrastructure reduces any potential for any shareholder taking more than their share. No issues have been experienced with this approach to proportional use.

The intake site, race and pipeline route, and area of land irrigated by this water are shown in Figure 2 and in the schematic in Figure 3.

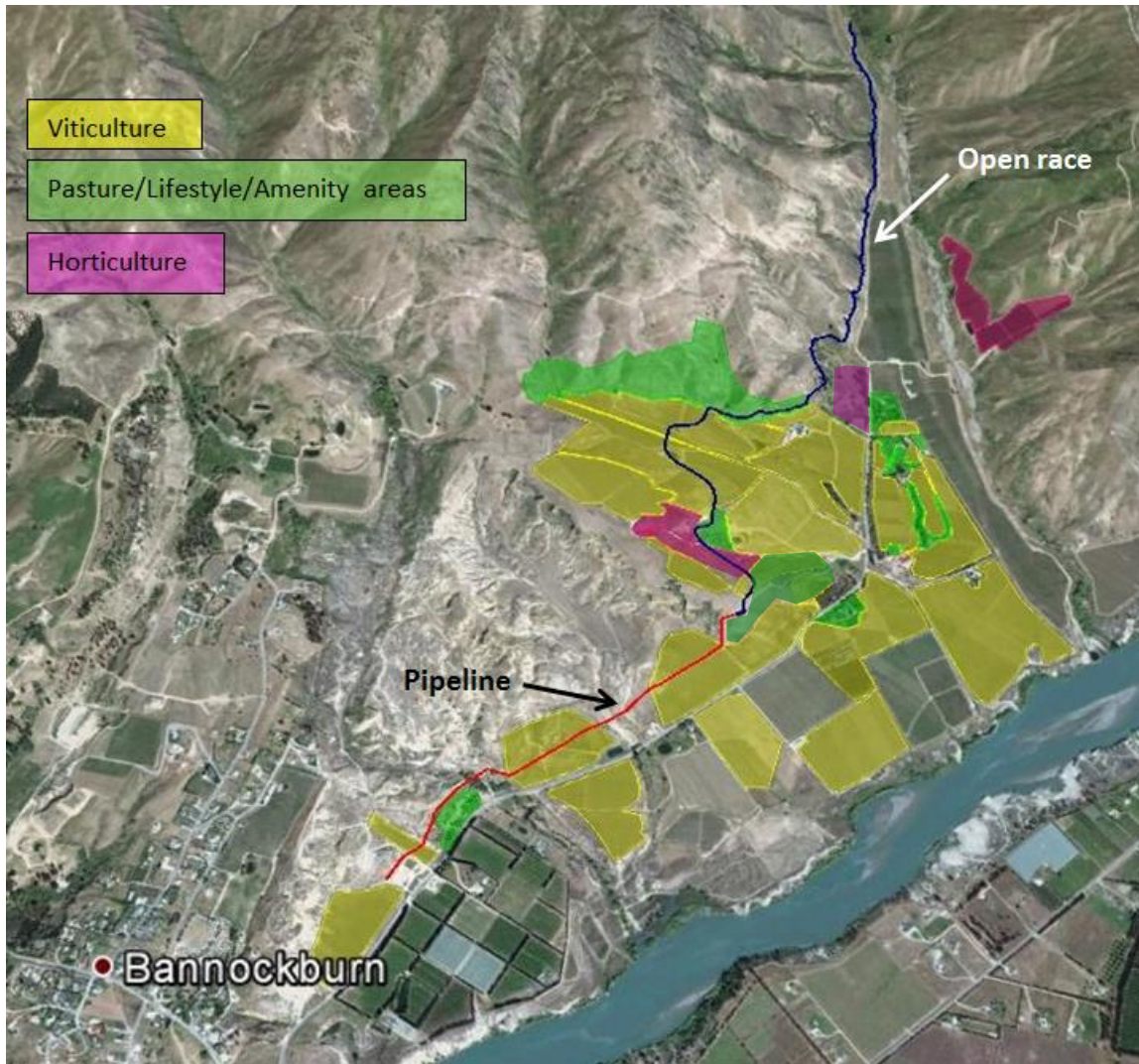


Figure 2: LGRS Command Area, showing irrigation areas by type of land use

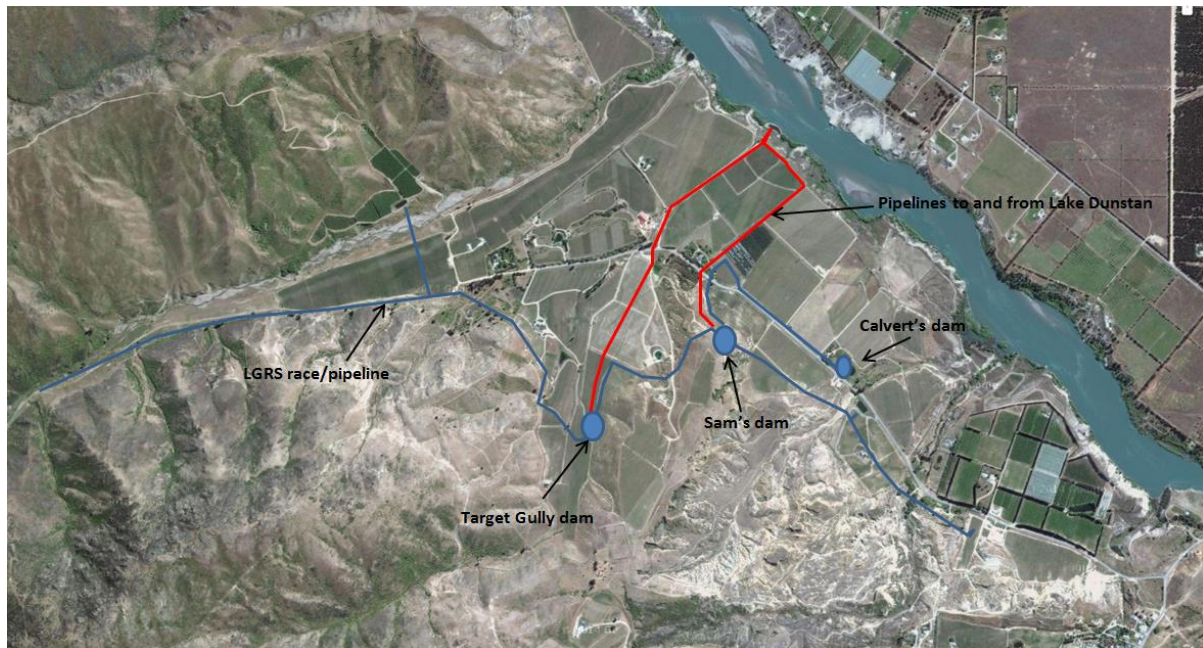


Figure 3: Schematic of LGRS system (shows approximate routes and locations only)

As shown in Figure 2 and outlined in Table 2, the majority of the area irrigated by water from the LGRS take is irrigation of viticulture. Density of plantings on these vineyards varies, depending largely on the soils on specific properties and the trellis system used. Vine density ranges from 1666 vines per hectare up to 4,667 vines per hectare. Vineyards are irrigated using drippers or trickle irrigation.

The remaining areas irrigated by LGRS water are for horticulture and pasture/lifestyle/amenity land-uses. Horticulture includes 6 hectares of commercial horticulture (cherries), amenity areas (including trees) around Terra Sancta vineyard and winery as well as a small amount of horticulture connected to a lifestyle block. Pasture includes an area adjacent to Felton Road's winery or vineyards, and irrigation around a number of lifestyle blocks. The cherries are irrigated via sprinkler irrigation, as are the pasture and larger amenity areas around vineyards and wineries (which are by k-line or sprinkler irrigation), while smaller amenity/lifestyle areas utilise garden sprinklers. Water is also used for frost-fighting on the cherry orchard.

Water needs by each shareholder vary greatly, depending on the nature of the land-use, soil type, irrigation system and density of vines per hectare.

Table 2: Irrigation by LGRS Shareholder and land use type

Owner	Viticulture Area* (Ha)	Horticulture Area* (Ha)	Pasture Area* (Ha)
Mt Difficulty	50	0	0
Legends Terrace	9	0	0
Felton Road	28.6	0	24
Clyde Orchards	0	15	0
Thomson	0	0	1.3
Gate 20 Two	6	0	0
Barkers	0	4	1.2
Crosbie	10	0	0
Terra Sancta	11	0	3.2
Kershaw	6	0	0
Macalister Trust	0	0	1.1
Forsyth	0.6	0	1.3
Wanaka Rd Wines	8.6	0	0
Total Area Irrigated (Ha)	129.8	19	32.1

*Areas include 32 ha in total that is being or will be developed and irrigated as follows: Clyde Orchards - 9 ha of horticulture; Felton Road - 19 ha of pasture; Kershaw - 3 ha of viticulture; Crosbie - 1 ha of viticulture

A minimal amount of water is used for stock drinking-water purposes, with 50 goats, 4 cows and 6 sheep being supplied with LGRS water. Water needed for stock drinking water has been assessed based on ORC guidelines on how many litres per head per day is appropriate.

In addition, water is used year round in 2 wineries, Felton Road and Terra Sancta, with the peak for water use in these wineries occurring during harvest (March – May inclusive). LGRS water is also used to supply 3 households with domestic water.

a) Efficiency of Use

The clearest method of determining whether LGRS use water efficiently for irrigation is to assess the applicant's abstraction records and assess these records against Aqualinc's assessment of an efficient use of water, taking into account the type of irrigation that the water is used for, and the area that this occurs over.

This assessment is shown in Tables 3 - 5 (below). Table 5 shows that the total monthly use of water (if it is assumed to all be used for irrigation), is efficient, as defined by Aqualinc. This is established by comparing the maximum monthly volume taken (see Table 3) with total monthly need/maximum efficient use (as determined by Aqualinc) for area in Table 4. The monthly need takes into account land use types and the size of the area irrigated by three different types of land use.

It is important to note that not all of the water used by LGRS is for irrigation, due to out-of-season use of the water in wineries (not for irrigation) as explained in more detail below.

Table 3: Summary Table of actual Maximum Monthly and Annual Volumes abstracted for each Year.

Season (1 st July - 30 th June)	Max Monthly Volume Taken (m ³)	Annual Volume Taken (m ³)
2012-13	79,879 (April)	278,000 ¹
2013-14	93,360 (April)	459,077
2014-15	93,315 (February)	486,640
2015-16	95,186 (January)	485,051
2016-17	89,388 (February)	474,088 ²

¹half a season of data

² until 1 June 2017

Table 4: Monthly and Seasonal Water Demand Based on Aqualinc (2006) Figures for the Upper Clutha Sub-Region.

Land use	Area (Hectares)	Aqualinc Monthly Volume (m ³ /hectare)	Monthly Need for area (m ³)	Aqualinc Annual Volume (m ³ /hectare)	Annual Need for area (m ³)
Viticulture	130	720	93,600	1,650	214,500
Horticulture	19	1,280	24,320	3,280	62,320
Pasture	32	1,575	50,400	6,750	216,000
Total			168,320		519,820

Table 5: Actual use (based on abstraction data) versus Aqualinc assessment of efficient use / need

Maximum monthly volume taken (m ³)	Aqualinc assessment of monthly need (m ³)	Maximum annual volume taken (m ³)	Aqualinc assessment of annual need (m ³)
95,186 (Jan 15/16)	168,320	486,640 (2014-15)	519,820

b) Winter use of water

The use of LGRS water in the two wineries and for domestic purposes means that the LGRS race runs intermittently during winter for the purpose of filling the Felton Road Winery dam and domestic water tanks and Terra Sancta's winery water tanks. As with all off-takes from the scheme, the off-takes for the wineries and domestic users are only designed to take a proportion of the water from the race.

This winter use of water is an important component of the water used by LGRS. Accordingly continued access to winter water from Long Gully is necessary for LGRS.

2.3. Water monitoring

LGRS's abstraction has been monitored since January 2013. Abstraction records show consistent use up to 56 l/s, as shown in Figure 4.

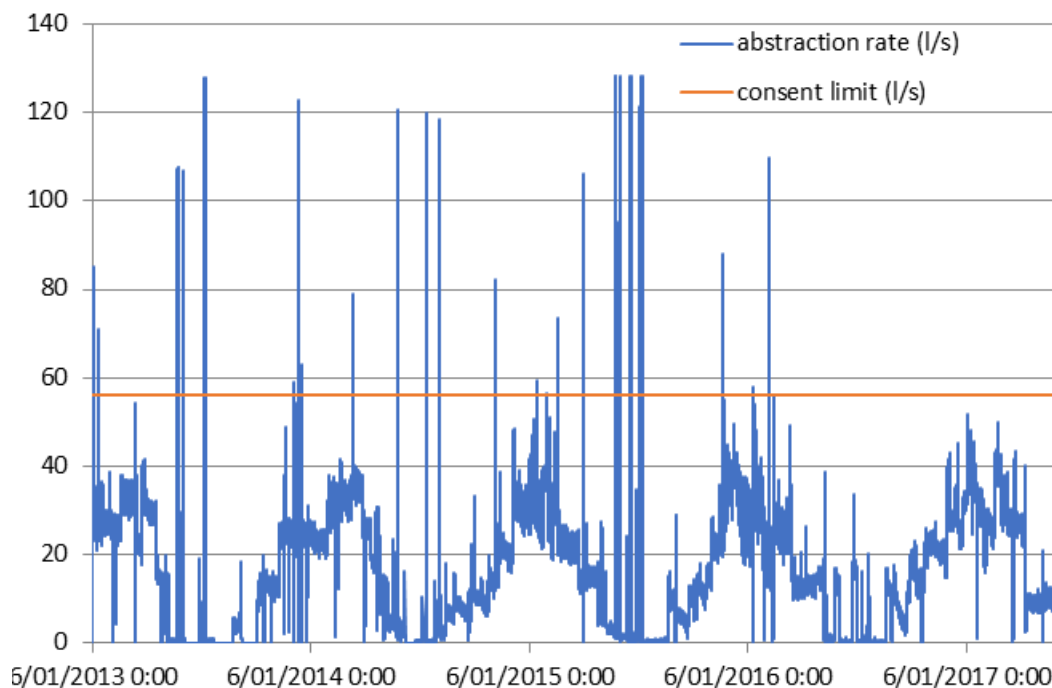


Figure 4: LGRS's Instantaneous Rate of Abstraction (l/s) from 6/01/2013 to 30/052017

LGRS's monitoring device is situated approximately 1 km down its race due to lack of telemetry at the intake site. An exemption was obtained for this monitoring site (WEX 0017). The intake site has a by-wash which ensures excess water from freshes re-enters Long Gully.

Where LGRS's monitoring data shows spikes above the permitted abstraction rate, these are likely to be caused by heavy rainfall run-off from the slope of the hillside entering the race between the intake site and the monitoring device, as thunder-plumps are not uncommon in this area. Spikes in the monitoring data can also be caused in winter by a film of ice forming and resulting in a false level being recorded by the monitoring device, or a build-up of debris behind the monitoring device which results in a back-up of water and a falsely high reading. LGRS are actively working to reduce avoidable instances of false data readings by regularly checking the monitoring device.

Maximum monthly use of water and the annual volume of water are shown in Table 3 above – this is based on LGRS's abstraction data.

2.4. Impact of Seasonal Extremes

Central Otago experienced drier than normal seasons in both 2014/15 and 2015/16, with Alexandra recording its 4th lowest rainfall for the period since records began (1983) for both of these seasons. In contrast the 2016/17 was cooler than usual (with Alexandra recording the 4th lowest mean minimum air temperature since records began in 1929).

These seasonal extremes are likely to have had an impact on the amount of water abstracted during these years, as flows in Long Gully are likely to have been lower during the 2014/15 and 2015/16 seasons, while a cooler summer in 2016/17 is likely to have resulted in less water being required for irrigation.

2.5. Summary of Abstraction Requested

LGRS have an established history of use of water from its Long Gully abstraction.

LGRS use water for irrigation efficiently, as calculated by Aqualinc. Water is also used throughout winter for industrial (winery) and domestic purposes.

The maximum annual volume requested is based on existing annual use (as this has been established as an efficient use of this water – see Section 2.2(a)) with an allowance made in the annual and monthly allocation limits for the potential impact of seasonal extremes on the amount abstracted during the period of monitoring undertaken by LGRS, combined with an efficient allocation for the small area proposed to be developed for irrigation at the time this application was lodged.

Accordingly LGRS are seeking:

- A maximum abstraction rate of 56 l/s
- A maximum monthly volume of 170,000 m³
- A maximum annual volume of 520,000m³

Under its existing permit LGRS could abstract up to 1,752,000m³ annually. The maximum annual volume sought under this application represents a significant reduction in this annual allocation. In addition, if water was being used to irrigate pasture only, LGRS would be likely to be using (and applying for) approximately 1,221,750m³ per year (based on an irrigation area of 181 ha x 6,750m³/ha as per Aqualinc's calculation of efficient use for pasture in this area).

Accordingly the monthly and annual volumes sought in this application are considered to reflect a highly efficient use of the water sought, and represent a significant reduction in over-allocation.

3. Environmental Setting

3.1. Hydrology of Long Gully

Long Gully drains a 23km² catchment that flows into the Kawarau Arm of Lake Dunstan. Flow records were collected by the ORC from December 2011 to April 2013 from a monitoring site located immediately above LGRS's point of take.

These records show that Long Gully is dominated by low stable flows. Generally the summer flow pattern for Long Gully is characterised by low flows interspersed with sharp peaks due to rain events. Higher sustained flows were noted from August to November due to rain and snow melt.

Table 8: Characteristics of Long Gully Near LGRS Point of Take

Characteristic	At/Near Point of Take
Type of Waterbody	Creek/Stream – perennial in mid to upper reaches, ephemeral in lower reaches (over 1km)
Average Channel Width	1 m
Average Channel Depth	0.5m – 1m
Bed of watercourse	Sandy, silty loams with gravels and rocks
Minimum flow rates	19 l/s
Maximum flow rates	568 l/s
Source of Flow Data	Based on ORC flow site 3km upstream Dec 11 – April 13

The hydrology of Long Gully is described in further detail in Appendix A.

3.2. Climate

This area is characterised by short, very hot, dry summers, and very cold winters. Rainfall is low, with the median annual rainfall ranging between 451 and 500 mm, but in a dry year rainfall can be as low as 351mm annually (source: <http://growotago.orc.govt.nz/>).

3.3. Soils

Soils in the command area are raw, recent soils and podzol soils consisting generally of shallow to moderately deep fine sandy loams and stony sands (see Figure 5). Soils on the river terrace are well drained with very low profile available water. Soils on the hills to the south of Felton Road are moderately drained and have low profile available water.

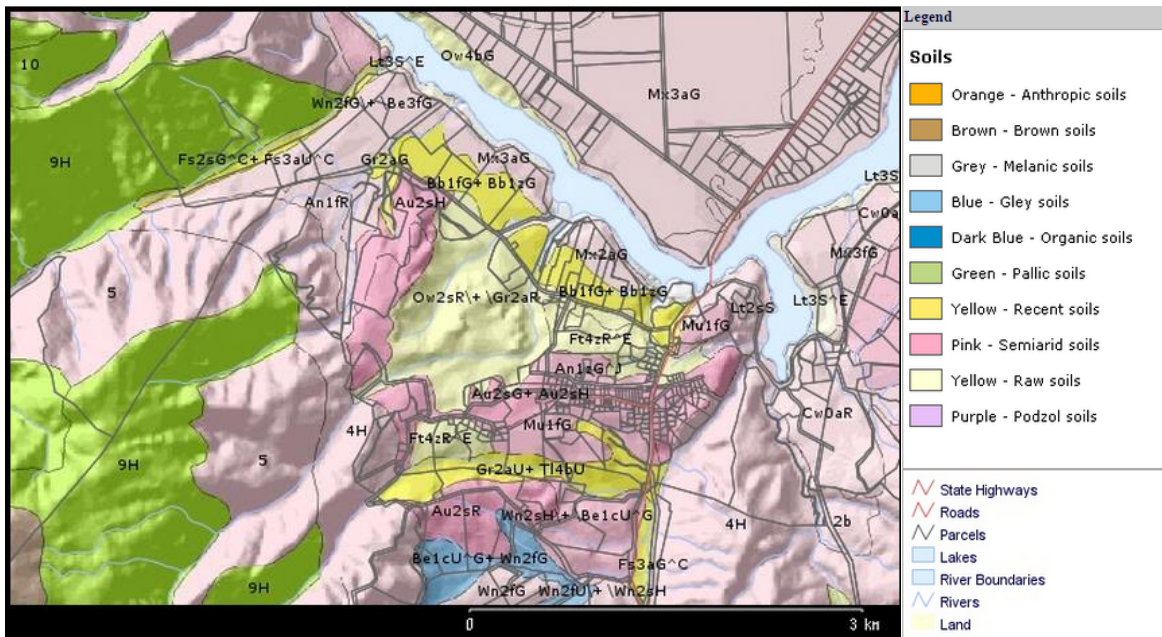


Figure 5: Soil types of properties irrigated with LGRS water (source: <http://growotago.org.govt.nz/>)

4. Legislative Analysis

4.1. Resource Management Act

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.

4.2. 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.

While it is primarily relevant to the setting of objectives by the Otago Regional Council for the management of freshwater, it may still inform the approach to be taken at a consent level.

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.

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

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

This application is consistent with these objectives. Natural flows below the point of take in Long Gully are ephemeral, and there are very limited ecological values in this reach of the waterway. In addition, the applicant is seeking to replace an existing permit to take surface water, supported by monitoring data, and can clearly show that water is used in an efficient manner.

4.3. 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. This application is considered to be consistent with these objectives and policies.

4.4. 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.

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.

a) Status of Activity

This application is for the replacement of a deemed permit, that was a renewal of a mining right originally granted in 1905. This activity has a **restricted discretionary activity** status under Rule 12.1.4.5, and the taking and use of water has primary allocation status.

The matters to which Council has restricted its discretion are set out in Rule 12.1.4.8:

Rule 12.1.4.8 - Restricted discretionary activity considerations

In considering any resource consent for the taking and use of water in terms of Rules 12.1.4.2 to 12.1.4.7 and 12.2.3.1A, the Otago Regional Council will restrict the exercise of its discretion to the following:

- (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*
- 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; and*
- (xxiv) For resource consents in the Waitaki catchment the matters in (i) to (xxiii) above, as well as matters in Policies 6.6A.1 to 6.6A.6.*

These matters, where relevant, are addressed throughout this document.

b) Relevant Policies

Key policies 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.

The efficiency of the use of water by Long Gully was established in Section 2.2.

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 registered community drinking water supply where an allowance may be made for growth that is reasonably anticipated.*

LGRS have an abstraction record that establishes a clear history of use. The explanation to this policy states that “In all cases, the effect of seasonal extremes will be considered.” When the effect of the seasonal extremes experienced over period of monitoring is considered, the monthly and annual allocation sought by this application is considered reasonable.

Accordingly, this application is considered to be consistent with both these policies.

c) Application of a Residual Flow

Policy 6.4.7 sets out the basis of establishing a residual flow.

***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.*

This policy makes it clear that residual flows are limited to the provision of the aquatic ecosystem and natural character of the source water body. In this case the source water body is Long Gully.

As outlined in the report in Appendix A, Long Gully is naturally an ephemeral waterway in its lower reaches, below the LGRS point of take. This means that even without any abstraction by LGRS, Long Gully would naturally go dry below LGRS's point of take during periods of low flow (as measured at or above the LGRS point of take). This is the 'natural character' of Long Gully, and as such a residual flow is not necessary to provide for this natural character.

In addition, there are very limited in-stream ecological values associated with Long Gully, and these will be non-existent when the lower reaches of Long Gully (below the LGRS point of take) are dry. As these lower reaches would be dry regardless of the LGRS abstraction, a residual flow is not considered justified in terms of providing for aquatic eco-system values.

On this basis, a residual flow is not considered appropriate for the LGRS abstraction.

5. Consideration of Alternatives

Mt Difficulty Wines Ltd and Terra Sancta each own infrastructure (pumps and pipelines) which enables them to take water from Lake Dunstan in compliance with permitted activity rules (i.e. it does not exceed 100 litres per second, or 1,000,000 litres per day from Lake Dunstan).

This alternative supply is not sufficient for all of Mt Difficulty Wines' irrigation needs and only supplements rather than replaces the water Mt Difficulty receives via its shares in LGRS.

Terra Sancta is a very small shareholder of LGRS (2 shares), and thus cannot rely on LGRS water alone for all their irrigation needs.

LGRS shareholders Felton Road Wines Ltd, Crosbie and Wanaka Road Wines Ltd, are also shareholders of the Felton Road Joint Irrigation Scheme (FRJIS) and have rights to water from that scheme also.

However the infrastructure associated with FRJIS is such that Felton Road's winery and the vineyard blocks around the winery cannot access water from FRJIS.

While the Crosbie's are entitled to water from FRJIS they have no infrastructure (pipes or dams) or access agreements to convey this water to their property and use it there. Because of these barriers the Crosbie's have never used water from the FRJIS intake.

Wanaka Road Wines Ltd has 16 shares in LGRS, but during periods of low flow in Long Gully (and thus more limited supply by LGRS), Wanaka Road Wines Ltd utilises FRJIS water and leaves a greater proportion of the water they are entitled to from LGRS for use by other LGRS shareholders. This equates to flow sharing during times of low flow, and highlights the importance of LGRS water, as the majority of shareholders do not have an alternative supply available to them.

It is crucial to note that Mt Difficulty Wines and FRJIS infrastructure pre-dates Contact Energy's consent relating to the Clyde Dam. Both of these parties are members of the Kawarau Arm Siltation Action Group Incorporated (KASAG). This group obtained consent conditions on Contact Energy's consent which requires Contact Energy to ensure the Mt Difficulty Wines and FRJIS abstraction from Lake Dunstan remains operational, and to bear financial responsibility for this. Abstractions established after this time do not benefit from these consent conditions.

The Kawarau Arm of Lake Dunstan has the characteristics of a braided river rather than a lake, and can regularly carry silt laden flood waters, originating from the headwaters. This often occurs while there is low to no rainfall in the Long Gully catchment, so the Long Gully water will be silt free.

The high levels of silt in the Kawarau Arm mean that abstraction from there can only be via an infiltration gallery. Without this the dripper irrigation system used by the vineyards would fail to operate due to the silty nature of the water in the Kawarau Arm. The existing infiltration gallery servicing Mt Difficulty Wines and FRJIS has recently been reconstructed, with the costs of this being met by Contact Energy, as required by Contact Energy's consent conditions. Due to the dynamic nature of the Kawarau Arm, including rising river levels due to siltation, the infiltration gallery will need to be rebuilt and raised periodically in the future. This work is very expensive, but these costs are met by Contact Energy. Mt Difficulty and Felton Road, Terra Sancta, Crosbie and Wanaka Road Wines Ltd (as part of FRJIS) and Mt Difficulty are the only LGRS shareholders with a share in the ownership of this infiltration gallery.

Increasing abstraction from the Kawarau Arm of Lake Dunstan would be prohibitively expensive and incredibly difficult to establish. A new infiltration gallery would need to be constructed, and as there is no room at the site of the existing infiltration gallery servicing Mt Difficulty and FRJIS, a new site would need to be identified. Agreement would need to be obtained from LINZ and Contact Energy to occupy a site directly adjacent to the Kawarau Arm of Lake Dunstan. Contact Energy is unlikely to give its approval to this, as it is actively discouraging new abstractions from Lake Dunstan.

Easements would also be necessary for the pipeline and power supply route from the Kawarau Arm, and there is no guarantee that these could be obtained from private landowners. If all of these factors could be overcome, and a new infiltration gallery was constructed, it would need to be constructed to a very high standard - at a high cost - to withstand the strong, silt laden flows in the Kawarau Arm. High levels of ongoing maintenance and periodic reconstruction of the infiltration gallery would be necessary. The very high costs associated with an infiltration gallery would be

borne entirely by the owners (rather than by Contact Energy). There would also be high ongoing operational costs, with water being double or triple pumped before being used.

The combination of these factors means that water in the Kawarau Arm of Lake Dunstan is not a viable alternative to any portion of the LGRS abstraction from Long Gully. Felton Road, Terra Sancta, Crosbie and Wanaka Road Wines Ltd, as members of FRJIS, and Mt Difficulty cannot increase the amount that they can currently abstract from Lake Dunstan, and other abstractors would find it incredibly difficult and expensive to establish and maintain a new abstraction from the Kawarau Arm of Lake Dunstan.

6. Assessment of Environmental Effects

6.1 Introduction

The RPW 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.

The effects on waterways from utilising water (including by irrigation) are largely addressed through RPW provisions on water quality. Those using water for farming purposes are required to comply with these provisions – this assessment of effects on the environment (AEE) is premised on the basis that the applicant will meet the expectations for water quality set out in the RPW.

In contrast the RPW recognises that the economic and social effects of water abstraction are linked to its use, and this AEE also takes this approach.

6.2 Effects on Ecological Values

NIWA's Freshwater Fish Database for Long Gully contains 3 records, with only one listing the presence of a trout. Brown trout have also been observed in Long Gully.

As noted in Appendix A, Long Gully is likely to contain very limited values for trout spawning due to relatively low flows from May to September combined with losses in the lower reaches of Long Gully.

There are no records of native fish species in Long Gully. As noted in the assessment of Long Gully's hydrology (in Appendix A) during periods of low flows in the upper reaches of Long Gully, the lower reaches of Long Gully will be dry, regardless of the LGRS abstraction. This means that even if native fish are present in Long Gully, there would be no habitat available to them in the lower reaches of Long Gully during these periods, regardless of the LGRS abstraction.

In summary, very limited aquatic ecological values are present in Long Gully, particularly below the LGRS point of take. The natural hydrology of Long Gully is considered to have the greatest influence and impact on limiting these values, due to the losing reach below the LGRS point of take and the relatively low flows during winter. On this basis the LGRS abstraction is considered to have very minor adverse effects on ecological values in Long Gully.

In addition, Long Gully makes a very limited, if any, flow contribution to Lake Dunstan, particularly during the drier periods, and provides limited spawning value for the trout fishery in Lake Dunstan. On this basis the LGRS abstraction is considered to have very minor, if any, adverse effects on ecological values in Lake Dunstan.

6.3 Effects on Cultural Values

Kai Tahu is the principal Māori iwi of the southern region of New Zealand. In Otago the four Papatipu Rūnaka and associated whānau and rōpū are:

- Te Rūnanga o Moeraki
- Kāti Huirapa Rūnaka ki Puketeraki
- Te Rūnanga o Ōtākou
- Hokonui Rūnanga

Associated whānau and rōpū include:

- Moturata Taieri Whānau
- Waikoau Ngāi Tahu Rūnanga

The four Papatipu Rūnaka of Otago worked to develop the Kāi Tahu Ki Otago Natural Resource Management Plan (2005) (NRMP). This is the principal planning document for Kāi Tahu ki Otago (KTKO), a consultancy service acting on behalf of these Rūnaka.

The over-arching principles governing the NRMP include that of kaitiakitaka (guardianship, care, wise management), including kaitiakitaka of waterways.

KTKO's NRMP identifies issues for the Otago Region as a whole, and these include over-allocation of water and inefficient use of water. Relevant policies focus on only granting the amount of water necessary for the proposed use of water and to encourage efficient use of water.

Issues and policies are also set out for the Clutha/Mata-au Catchment and include a focus on the impacts of the dams within the catchment, bio-diversity, and protection of wahi-tapu. Policies of relevance to this application focus on the encouragement of sound environmental practices and sustainable land use (10.2.3.9 and 10).

Schedule 1D of the ORC's RPW lists a range of spiritual and cultural beliefs, values and uses of significance to Kai Tahu associated with waterways. Nothing is listed for Long Gully.

As noted in Section 6.2 and in Appendix A, the natural hydrological characteristics of Long Gully have the greatest impact on ecological values in Long Gully, including instream bio-diversity, and the LGRS abstraction is considered to have very minor adverse effects on ecological values.

The LGRS abstraction is within the primary allocation limit for Lake Dunstan, and is used efficiently, as outlined in Section 2.2.

No known wahi tapu sites, trails, or presence of cultural materials are known to the applicant within Long Gully.

Accordingly the potential adverse effects of continued abstraction by LGRS (as outlined in this application), on cultural values is considered to be very minimal.

6.4 Effects on Recreational Values

Long Gully is a small waterway with limited flow and limited access. It is surrounded by privately owned land (much of which does not have an associated dwelling situated on the property), and is not adjacent to formed public roads.

In addition, as noted in Appendix A, Long Gully makes a very limited, if any, contribution as spawning habitat for the trout fishery in Lake Dunstan.

On this basis there are very limited recreational values, if any, associated with Long Gully, and continued abstraction by LGRS (as outlined in this application), will have very minimal to no adverse effects on recreational values.

6.5 Effects on Amenity and Natural Character

Long Gully is a small tributary, and the LGRS abstraction is located in its lower reaches. In its lower reaches Long Gully is surrounded by viticulture, horticulture and pastoral farming. Immediately above the confluence with the Lake Dunstan it is overgrown with willow trees and briars. Regardless of the LGRS abstraction, the lower reaches of Long Gully are dry for much of the summer. Accordingly, Long Gully does not have a high degree of amenity and natural character, and continued abstraction by LGRS will have very minimal, if any, adverse effects on amenity or natural character.

Above the LGRS point of take Long Gully is situated within a dryland farming landscape and is within private land, and within this context has a degree of amenity and natural character, which will remain undisturbed by the LGRS abstraction.

6.6 Economic and Social Effects

Fourteen shareholders derive direct economic benefit from the abstraction from Long Gully. A number of these shareholders are businesses. These businesses support a large number of families, and employ a large number of staff, including both full time and seasonal workers, as well as many contractors and other service providers including pruners, pickers, irrigation consultants and surveyors.

Continued abstraction by LGRS is absolutely vital for the economic viability of these businesses. In addition, it is necessary to supply the households that are reliant on this water.

Continued abstraction from Long Gully will result in continued positive economic effects, for shareholders and the local community, and associated positive social effects.

6.7 Summary

The abstraction by LGRS is an existing activity, and is the only abstraction from Long Gully. Continued abstraction by LGRS, as outlined in this application, is considered to have very minimal, and in some cases, no adverse effects on ecological, cultural, amenity, natural character and recreational values. In contrast, it will have a significant positive economic effect, and associated positive social effects.

7. Consultation with Affected Parties

The Assessment of Effects on the Environment establishes that there will be very minimal to no adverse effects on aquatic ecological (including introduced or native fish species) or cultural values.

No other water users are considered to be adversely affected by this application.

Accordingly, on this basis, no person or agency is considered to be an affected party, and written approval has not been sought from any party.

8. Term of Consent

There will be minimal adverse effects as a result of this activity.

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

9. Consent Conditions

Our Reference: Consent No. RM

WATER PERMIT

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

Name: Long Gully Race Society Incorporated

Address: Checketts McKay Law Limited, 35 The Mall, Cromwell

Purpose: To take and use surface water for the purpose of irrigation, industrial use, storage, domestic use and stock drinking water.

For a term expiring: *[35 years from date of issue]*

Location of point of abstraction: On the true right bank of an unnamed tributary of the Kawarau Arm of Lake Dunstan (known locally as Long Gully), approximately 2.8 kilometres upstream of the confluence of the tributary with Lake Dunstan.

Legal description of land adjacent to point of take: Pt Sec 51 Blk II Cromwell SD

Legal description of land where water is to be used:

Lot 7 DP 27311, Lot 8 DP 27311, Lot 1 DP 21102, Lot 1 DP 377436, Lot 1 DP 429036, Lot 3 DP 466236, Lot 1 DP 466 236, Lot 2 DP 320845, Lot 1 DP 320845, Lot 3 DP 25990, Lot 1 DP 23478, Lot 4 DP 377436, Lot 3 DP 25990, Lot 2 DP 377936, Lot 4 DP 379936, Lot 1 and 4 DP 398105, Lot 5 DP 379936, Lot 2 DP 300780, Lot 2 DP 330243, Lot 1 DP 330243, Lot 1 DP 24757, Lot 6 DP 26776 Secs 1-3 SO 300354, Lot 3 DP 379936, Lot 2 and 3 DP 398105, Lot 2 DP 466236, Lot 1 DP 379936 and other land as advised in writing to the consent authority.

Map Reference at point of abstraction: NZMS 260 F41:034-629

Conditions

Specific

1. The rate of abstraction must not exceed:
 - a) 56 litres per second
 - b) 170,000 m³ per month
 - c) 520,000 m³ per year to be measured from 1 July to 30 June in the following year.

Performance Monitoring

2. The consent holder must:
 - a) maintain a water meter to record the water take, within an error accuracy range of +/- 10% for an open channel system, over the meter's nominal flow range, a telemetry compatible datalogger with at least 12 months data storage and a telemetry unit to record the rate and volume of take, and the date and time this water was taken.
 - b) install and use a datalogger that shall record the date, time and flow in litres per second.
 - c) provide data once daily to the Consent Authority by means of telemetry. The consent holder shall ensure data compatibility with the Consent Authority's time-series database.

General

3. The consent holder shall take all practicable steps to ensure that there is no leakage from pipes and structures.

Appendix A: Assessment of Effects on Instream Ecology

Assessment of Effects on Instream Ecology due to a Water Take from Long Gully.

Assessment undertaken by Matt Hickey

Water Resource Management Ltd

April 2017



Prepared for Long Gully Race Society

April 2017

by Matt Hickey



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Background

The Long Gully catchment has an area of 23 km² and it flows into the Kawarau Arm of Lake Dunstan on the true right near Bannockburn. Currently, there is 1 surface water take (for 13 users) from the Long Gully catchment.

The Long Gully Race Society is applying to renew its water permit to take and use water from Long Gully at a rate up to 56l/s.

Scope

The scope of this report is to provide an assessment of Long Gully's hydrology and aquatic ecology. The potential application of a residual flow regime is also investigated.

Available Information

This assessment relies heavily on the following four pieces of information:

1. Flow record collected by ORC for the 2012/13 irrigation season from Long Gully immediately above the proposed point of take.
2. Water metering information supplied by the Long Gully Race Society which provides abstraction data from January 2013 to Present.
3. Information from NIWA's Freshwater Fish Database and personal observations.
4. Photographic observations by the Long Gully Race Society showing the extensive flow losses in the alluvial reach below their take.

Long Gully Hydrology

Hydrological information for Long Gully is limited, however in the 2012/13 irrigation season the ORC published a report card for hydrology in the Bannockburn area, and Long Gully was one of the creeks that had flow monitoring equipment installed (ORC 2013). The Long Gully flow site was located some 3 Km upstream of its confluence with Lake Dunstan and immediately above the current abstraction point (Figure 1).

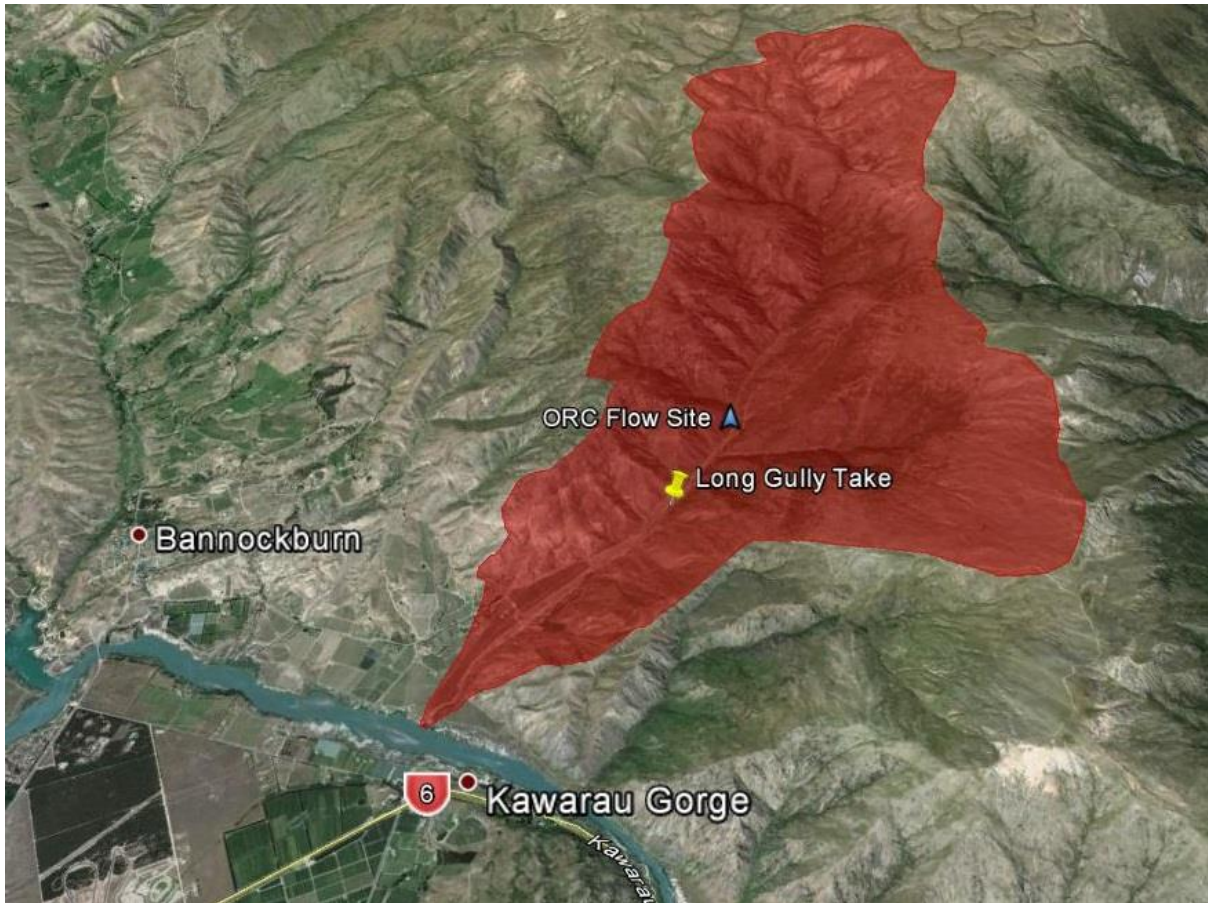


Figure 1. Map showing The Long Gully Catchment, ORC’s temporary flow site and the current abstraction point.

Table 1 below provides basic flows statistics for the entire data record for Long Gully, it shows that Long Gully is dominated by low stable flows of 38 l/s or less occurring 50% of the time.

Table 1: Daily Average Natural Flows for Long Gully Recorded During December 2011 – April 2013 incl.

Site	Catchment Area (Km ²)	Min (l/s)	Median (l/s)	Mean (l/s)	Max (l/s)	7-Day Low Flow (l/s)
Long Gully at Crossing	13	19	38	57	568	19

Figure 2 below provides a hydrograph over a 12-month period as close as possible to a hydrological year due to the flow record length to understand the natural flow pattern on an annual time scale.

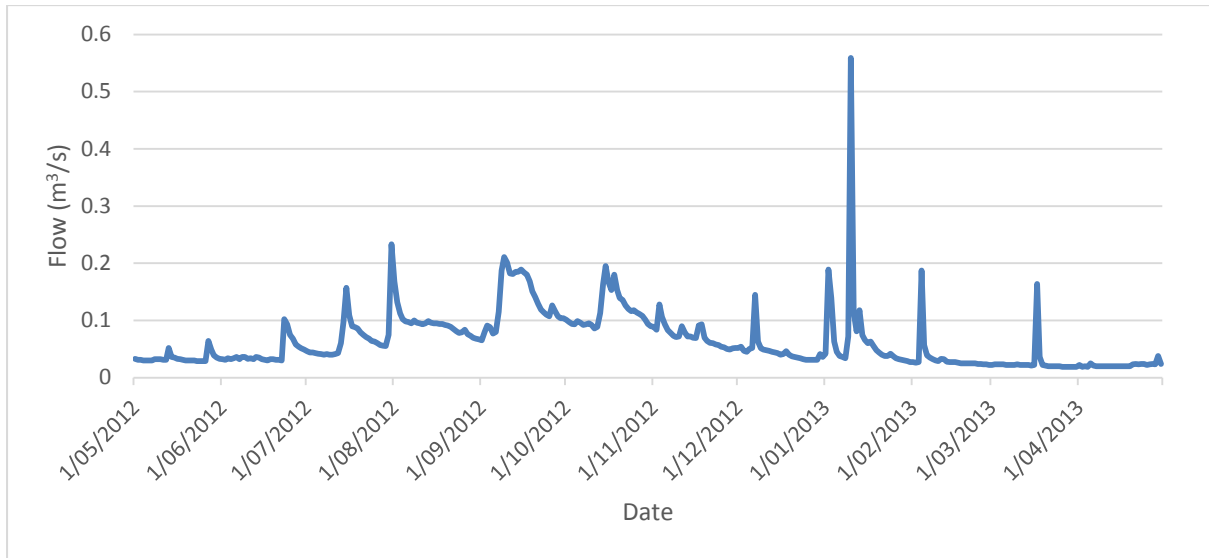


Figure 2. Natural daily flows for Long Gully at the Crossing for a 12-month period (May 2012 -April 2013).

Figure 2 shows that generally, the summer flow pattern for Long Gully is characterised by low flows interspersed with sharp peaks due to rain events. From August to November Long Gully has higher sustained flows due to rain and snow melt.

Although the ORC’s flow record shows permanent flow at its measuring location this is some 3 Km upstream of where Long Gully meets Lake Dunstan (Figure 1). Between the ORC’s flow site and Lake Dunstan during periods of low flow the lower reaches of Long Gully naturally run dry. During March 2017 photos were taken at two different flows (~12 l/s and ~35 l/s) in Long Gully below the point of take and all flow was lost to ground before reaching Lake Dunstan (Appendix 1 and 2).

Instream Ecology

Schedule 1A of the Regional Plan Water makes no mention of significant ecosystem values being present in Long Gully (ORC, 2016).

A search of NIWA’s Freshwater Fish Database for Long Gully contains three records with only one listing the presence of fish, a single rainbow trout. Water users from the race have observed brown trout in their storage dams which are assumed to have come from Long Gully via the race.

It is possible that during sustained high flows adult brown or rainbow trout from Lake Dunstan enter Long Gully to spawn during May through October (Figure 3).

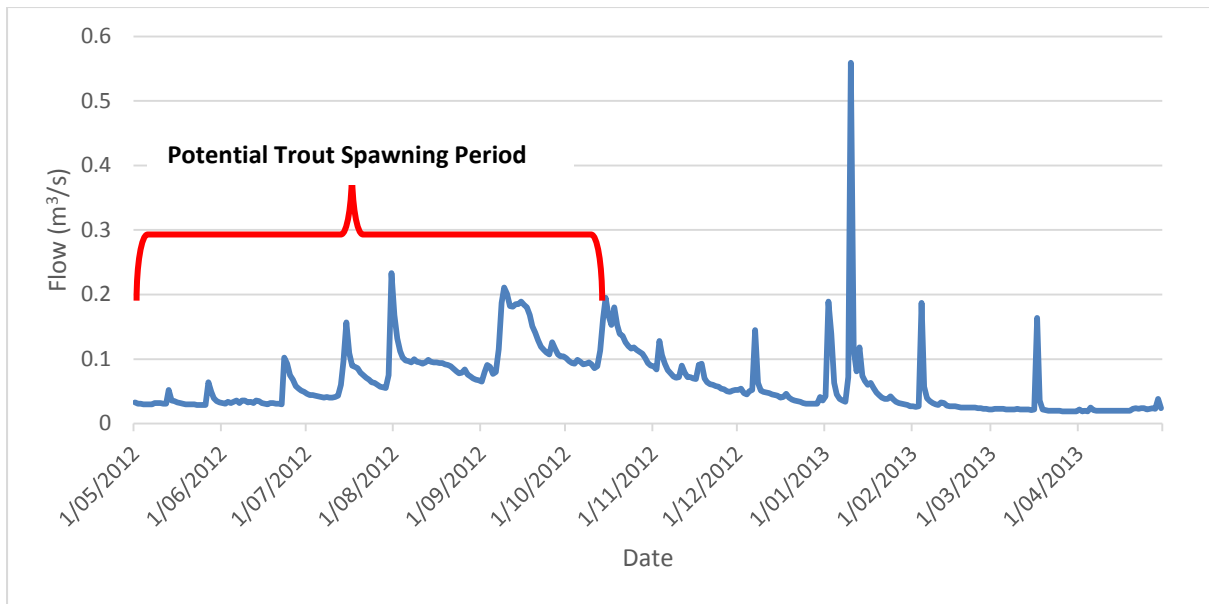


Figure 3. Typical time of year brown and rainbow trout spawn in the Upper Clutha and Kawarau Catchments.

However, given the relative low flows that dominate this period (generally less than 100 l/s) and the losses in the lower reaches it is likely that spawning effort in Long Gully by Lake Dunstan trout is low.

There are no records of any native fish species in Long Gully.

Residual Flow Discussion

Summer Regime

Long Gully naturally would dry whether abstraction occurs or not. Observations and photos show that flows greater than 35 l/s is required to ensure Long Gully connects to Lake Dunstan with surface flow (Appendix 2). The natural 7-day MALF for Long Gully has been reported as 19 l/s and for over half the period of available flow record flows are less than 38 l/s (Table 1).

Given the lower reaches of Long Gully dry naturally, probably in excess of 50% of the time (Table 1), there would be no benefit in setting a residual flow that maintains surface flows for ecological reason in the lower reaches of Long Gully.

Summary:

- Long Gully naturally experiences low summer flows (less than 20 l/s).
- Due to losses to gravel Long Gully naturally dries up in its lower reaches (Appendix 1 and 2).
- Flows greater than 35 l/s are needed to maintain surface connection with Lake Dunstan.
- Long Gully doesn't offer a recreational sports fishery.

- There are no records of native fish in the Long Gully catchment above or below the point of take.
- There is potential for trout from Lake Dunstan to spawn in Long Gully during winter but this is unlikely to be significant due to the losing nature of the lower creek and relatively small flows.
- No residual flow is recommended as it would add no ecological benefit as Long Gully dries naturally.

References

Otago Regional Council. 2013. Bannockburn & Shepherds Creek water resource study. River flows and statistics for the Bannock Burn and Shepherds Creek catchments October 2012 to April 2013.

Otago Regional Council. 2016. Regional Plan Water for Otago. **ISBN** 978-0-908324-24-8.

Appendix 1: Long Gully observations with flows of ~12 l/s below the take.

To summarize:

- At that time of observations Long Gully was running at ~12 l/s
- Photos were taken along Long Gully between the race intake and Black Quail Culvert (Figure 1)



Figure 1. Photo Locations corresponding with photos below. Red stream reaches = dry and blue stream reaches = flowing. 18th March 2017.



Figure 2. Long Gully at the location of [Photo 1](#) in the map above – looking upstream.



Figure 3. Long Gully at the location of [Photo 2](#) in the map above – looking upstream



Figure 4. Long Gully at the location of [Photo 3](#) in the map above – looking upstream.



Figure 5. Long Gully at the location of [Photo 4](#) in the map above – looking upstream.



Figure 6: Long Gully at the location of **Photo 5** in the map above (looking upstream) – no surface flow observed below this point.



Figure 7: Long Gully at the location of **Photo 6** in the map above – looking downstream.



Figure 8: Long Gully at the location of [Photo 7](#) in the map above (Black Quail Culvert) – looking upstream.

Appendix 2: Long Gully observations with no abstraction and flows of ~30 l/s.

To summarize:

- Long Gully water race was turned out on Tuesday evening 21st March at 8.00 pm (Figure 1).
- At that time, it was running at 26 l/s (Figure 1 and 2)
- The Long Gully raceman estimates there was already 12 l/s flowing down Long Gully (refer to Appendix 1).
- Using Black Quail culvert (to the Keillor vineyard) as the observation point (Figure 3) the raceman took a series of photos on Tuesday, Wednesday, Thursday and Friday afternoons to show the status of flow at this point.
- At no stage was there any flow observed at the Black Quail culvert (Figures 4).
- The race was turned in again at 11.00 am on Friday 24th March (Figure 1).

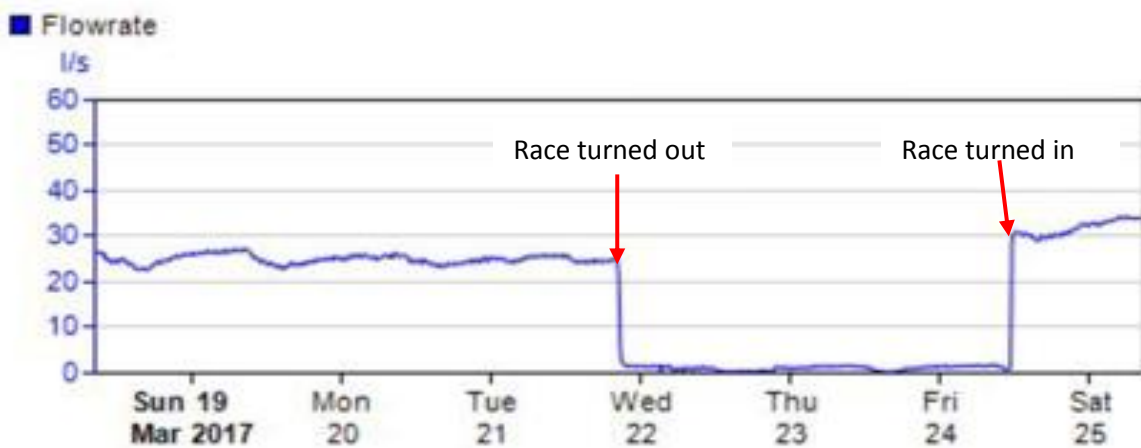


Figure 4. Long Gully Water take show rate of take from 19th March 2017 – 25th of March 2017.



Figure 5. Water turned out from Long Gully Race 26 l/s.

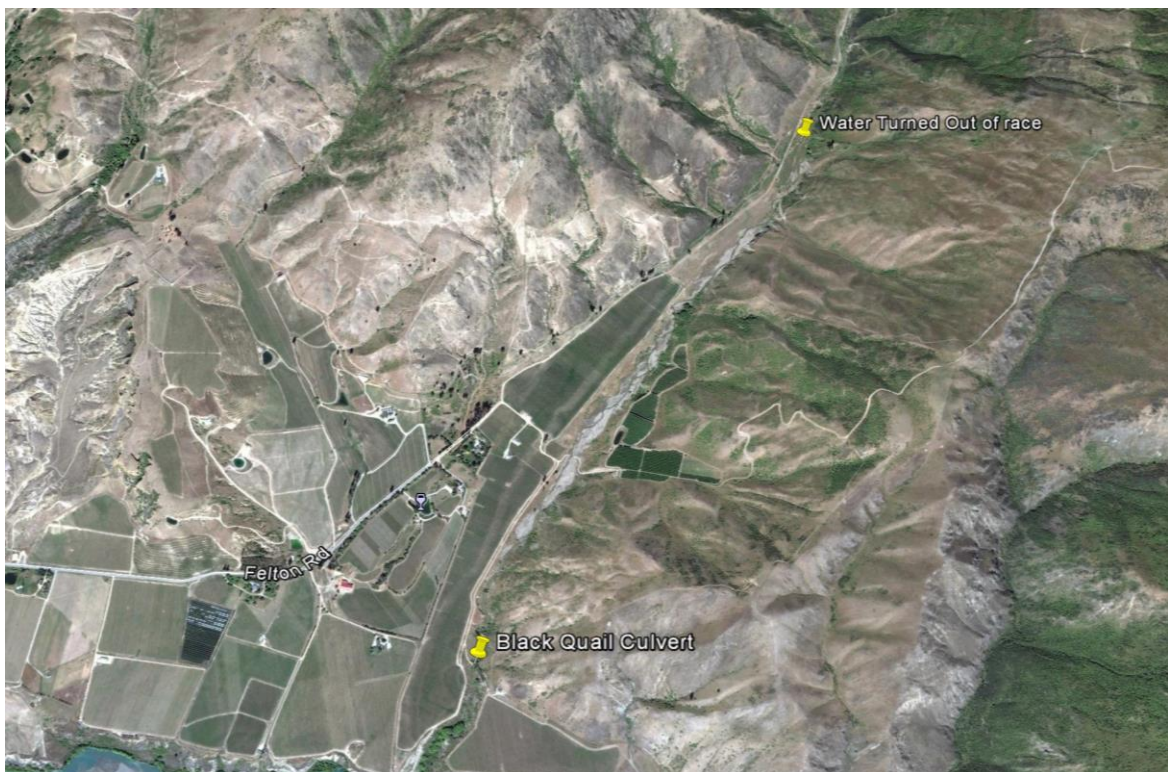


Figure 3. Map showing the point where the race was turned out and the Black Quail observation point approximately 2Km downstream.



Figure 4. Black Quail culvert Friday the 24th of March.

From: [Sally Dicey](#)
To: [Ethan Glover](#)
Cc: [Joanna Gilroy](#); ["Louise Taylor"](#); [Gareth King](#)
Subject: RE: Long Gully Race Society RM17.176
Date: Friday, 24 January 2020 2:03:23 p.m.
Attachments: [image001.jpg](#)

Hi Ethan,

I can confirm that LGRS do not accept the condition that there be fish screens, (as required for the Te Ao Marama written approval to be valid), and are not amending the application to include acceptance of fish screens as a condition of consent. I would be happy to discuss the rationale for this prior to preparation of any recommending report.

I believe this was the last outstanding matter before the application was limited notified?

Kind regards,

Sally

From: Sally Dicey
Sent: Friday, 24 January 2020 9:29 AM
To: Ethan Glover <Ethan.Glover@orc.govt.nz>
Cc: Joanna Gilroy <Joanna.Gilroy@orc.govt.nz>; 'Louise Taylor' <louise.taylor@mitchelldaysh.co.nz>
Subject: RE: Long Gully Race Society RM17.176

Hi Ethan

Thanks for that.

With regard to the monthly maximum – we are applying for no monthly maximum, as any alternative would be a simple extrapolation up from the instantaneous rate and as this adds nothing, we'd simply like a l/s rate and an annual volume.

I hope this makes sense?

Cheers

Sally

From: Ethan Glover <Ethan.Glover@orc.govt.nz>
Sent: Friday, 24 January 2020 9:06 AM
To: Sally Dicey <sally@mckconsultancy.co.nz>
Cc: Joanna Gilroy <Joanna.Gilroy@orc.govt.nz>; 'Louise Taylor' <louise.taylor@mitchelldaysh.co.nz>
Subject: RE: Long Gully Race Society RM17.176

Hi Sally,

Thanks for that. I will add that information to the report.

I have sought confirmation from Te Ao Marama Inc as to which runanga their affected party approval is on behalf of. I have not yet heard back.

You were also going to confirm the monthly maximum volume being applied for. The application states 170,000m³, however, this would require an exceedance of the 56L/s rate applied for.

Regards,

Ethan

From: Sally Dicey [<mailto:sally@mckconsultancy.co.nz>]
Sent: Friday, 24 January 2020 8:40 a.m.
To: Ethan Glover <Ethan.Glover@orc.govt.nz>
Subject: RE: Long Gully Race Society RM17.176

Hi Ethan

The only change to the table is to add an additional legal description to Clyde Orchards: Lot 1

Deposited Plan 513604.

I have made this change in the attached table. This area has already been accounted for in the maps and irrigation area in the application.

I think you are just waiting on us to get back to you about whether we still accept the Te Ao Marama written approval (25 year term + fish screens)? The applicant does accept the 25 year term, I'm just waiting for confirmation re fish screens.

If you are waiting on me for anything else then please feel free to remind me!

Cheers

Sally

From: Ethan Glover <Ethan.Glover@orc.govt.nz>

Sent: Monday, 20 January 2020 11:49 AM

To: Sally Dicey <sally@mckconsultancy.co.nz>

Subject: RE: Long Gully Race Society RM17.176

Hi Sally,

Can you please confirm that the details listed in Table 1 of the application are still correct.

Table 1: LGRS shareholders and properties where LGRS water is used

Landowner/ Water User	Share	Legal Description where water used	Address
320 Felton Road Partnership Coutts & Forsyth	2	Lot 7 Deposited Plan 27311	320 Felton Road, Bannockburn, Cromwell 9384
Clyde Orchards	44	Lot 8 DP 27311	Felton Road
Terra Sancta	2	Lot 1 DP 21102	306 Felton Road
Felton Road Wines Ltd	12	Lot 1 DP 377436 Lot1 DP 429036 Lot 3 DP466236 Lot 1 DP 466 236	319 Felton Road, 180 and 124 Felton Road
Mt Difficulty Wines Ltd	16	Lot 2 DP 320845 Lot 1 DP320845 Lot 3 DP 25990 Lot 1 DP 23478 Lot 4 DP 377436 Lot 2 DP 300780 Lot 2 DP 466236	266 Felton Road 196B Felton Road 319 Felton Road 201 Felton Road 75 Felton Road
Legend Terrace Vineyard	5	Lot 2 DP 377936	Beaton Track, Felton Road
N & J Barker	2	Lot 4 DP 379936	259 Felton Road

Regards,

Ethan

From: Sally Dicey [<mailto:sally@mckconsultancy.co.nz>]

Sent: Wednesday, 15 January 2020 1:14 p.m.

To: Ethan Glover <Ethan.Glover@orc.govt.nz>

Cc: Joanna Gilroy <Joanna.Gilroy@orc.govt.nz>

Subject: RE: Long Gully Race Society RM17.176

Wonderful thanks Ethan.

Kind regards

Sally

From: Ethan Glover <Ethan.Glover@orc.govt.nz>

Sent: Wednesday, 15 January 2020 12:45 PM

To: Sally Dicey <sally@mckconsultancy.co.nz>

Cc: Joanna Gilroy <Joanna.Gilroy@orc.govt.nz>

Subject: RE: Long Gully Race Society RM17.176

Hi Sally,

I'm working through the notification recommendation report as we speak. We will seek to have this completed and the consent limited notified by the end of the week.

Regards,

Ethan

From: Sally Dicey [<mailto:sally@mckconsultancy.co.nz>]

Sent: Wednesday, 15 January 2020 12:43 p.m.

To: Joanna Gilroy <Joanna.Gilroy@orc.govt.nz>; Ethan Glover <Ethan.Glover@orc.govt.nz>

Subject: RE: Long Gully Race Society RM17.176

Hi Joanna and Ethan

Just checking that this email was received and has been actioned?

Thanks so much,

Sally

From: Sally Dicey

Sent: Monday, 23 December 2019 10:50 AM

To: Joanna Gilroy <Joanna.Gilroy@orc.govt.nz>; Ethan.Glover@orc.govt.nz; Charles Horrell <Charles.Horrell@orc.govt.nz>

Subject: Long Gully Race Society RM17.176

Hi Joanna and Ethan,

Long Gully Race Society have advised me that they would like to proceed to limited notification as soon as possible.

Please could this process be started for this application?

Thanks,

Sally



Mobile: 021 154 6568

Office: 701, 7th Floor, John Wickliff House | 265 Princes St | Dunedin 9016

Email: sally@mckconsultancy.co.nz

From: [Sally Dicey](#)
To: [Ethan Glover](#)
Subject: RE: Notice of Limited Notification of RM17.176.01 - Long Gully Race Society Incorporated
Date: Friday, 14 February 2020 4:39:45 p.m.
Attachments: [image001.png](#)

Hi Ethan

Thanks for that.

I can confirm that LGRS have agreed to formally amend their application so that the rate of abstraction on the replacement consent that they are seeking is as follows:

1. The rate of abstraction must not exceed:
 - a. 15 L/s from 1 May to 15 October
 - b. 30 L/s from 16 Oct to 15 Nov
 - c. 56 L/s from 16 Nov to 30 April

The purpose of this stepped rate of abstraction is to facilitate out migration of juvenile trout into Lake Dunstan during winter and into late spring.

I would rather amend the application now, so that submissions are prepared and made on this basis – this may save some of the affected parties going to more trouble than they need to.

Cheers

Sally

From: Ethan Glover <Ethan.Glover@orc.govt.nz>
Sent: Friday, 14 February 2020 4:24 PM
To: Sally Dicey <sally@mckconsultancy.co.nz>
Subject: RE: Notice of Limited Notification of RM17.176.01 - Long Gully Race Society Incorporated

Hi Sally,

Are you able to provide further detail of the proposed amendment? If it's an amendment aimed at relieving submitter concerns, this could likely be dealt with following receipt of submissions.

Regards,

Ethan

From: Sally Dicey [<mailto:sally@mckconsultancy.co.nz>]
Sent: Friday, 14 February 2020 3:51 p.m.
To: Ethan Glover <Ethan.Glover@orc.govt.nz>
Subject: RE: Notice of Limited Notification of RM17.176.01 - Long Gully Race Society Incorporated

Hi Ethan

We might have missed noting an amendment to the application that I should have asked to be sent out with the limited notification documents (around a stepped rate of abstraction) - I am currently confirming this with Long Gully Race Society and hope to get back to you by Monday to confirm this.

If this is the case, how would you like me to address it – would you like me to send an email or letter to all the affected parties and the ORC formally amending the application, or would you like me to send it to you and allow you to send it to the affected parties? I am aware that the time period for the submission period might need to be extended and am happy for that to happen.

If you would like me to follow up then please can you send me the email addresses for all of the affected parties who were emailed regarding the limited notification of application No. RM17.176.01 (I am not sure who to contact at Aukaha at present or the email for Te Ao Marama).

Thanks,
Sally

From: Karen Bagnall <karen.bagnall@orc.govt.nz>
Sent: Wednesday, 5 February 2020 11:52 AM
To: Sally Dicey <sally@mckconsultancy.co.nz>
Subject: RE: Notice of Limited Notification of RM17.176.01 - Long Gully Race Society Incorporated
No problem Sally – did you want me to resent the notification e-mail to Gareth ?
Regards
Karen

From: Sally Dicey <sally@mckconsultancy.co.nz>
Sent: Wednesday, 5 February 2020 11:46 a.m.
To: Karen Bagnall <karen.bagnall@orc.govt.nz>
Cc: Ethan Glover <Ethan.Glover@orc.govt.nz>
Subject: RE: Notice of Limited Notification of RM17.176.01 - Long Gully Race Society Incorporated
Hi Karen
Please could you change the point of contact for Long Gully Race Society to Gareth King at gareth@feltonroad.com and phone 021445905.
Sorry – I should have let you know this earlier.
Kind regards
Sally

From: Karen Bagnall <karen.bagnall@orc.govt.nz>
Sent: Tuesday, 4 February 2020 3:44 PM
To: rhmdicey@gmail.com; Sally Dicey <sally@mckconsultancy.co.nz>
Subject: Notice of Limited Notification of RM17.176.01 - Long Gully Race Society Incorporated
Good morning
Please find attached a letter and submission form that were e-mailed to affected parties regarding the limited notification of application No. RM17.176.01.
Long Gully Race Society Incorporated - To take and use water from Long Gully, a tributary of the Kawarau Arm of Lake Dunstan for the purpose of irrigation, industrial use, storage, domestic use and stock drinking water.
If you have any concerns regarding the above application could you please contact **Ethan Glover** at this office or by emailing ethan.glover@orc.govt.nz.
Kind regards



Karen Bagnall
SENIOR CONSENTS SUPPORT OFFICER

P 0800 474 082
karen.bagnall@orc.govt.nz
www.orc.govt.nz

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NOTIFICATION ASSESSMENT DEEMED PERMIT REPLACEMENT WATER PERMIT

ID Ref: A1318010

Application No(s): RM17.176

Prepared for: Staff decision panel - Joanna Gilroy and Mat Bell

Prepared by: Ethan Glover

Date: 24 Jan. 2020

Subject: Notification consideration for deemed permit replacement water permit

1. Purpose

To report and make recommendations on the determination of the notification decision of Resource Consent application RM17.176 in accordance with Sections 95A-G of the Resource Management Act 1991 (the Act).

2. Background Information

Applicant: Long Gully Race Society Incorporated

Applicant's Agent: Sally Dicey (McKeague Consultancy Ltd)

Site address or location: Long Gully, approximately 3.85 kilometres west of the intersection of Felton Road and Gibson Road, Bannockburn

Legal description of land at Point of Take: Pt Sec 51 Blk II Cromwell SD

Legal descriptions of land where water is to be used: Lot 7 DP 27311, Lot 8 DP 27311, Lot 1 DP 21102, Lot 1 DP 377436, Lot 1 DP 429036, Lot 3 DP 466236, Lot 1 DP 466 236, Lot 2 DP 320845, Lot 1 DP 320845, Lot 3 DP 25990, Lot 1 DP 23478, Lot 4 DP 377436, Lot 3 DP 25990, Lot 2 DP 377936, Lot 4 DP 379936, Lot 1 and 4 DP 398105, Lot 5 DP 379936, Lot 2 DP 300780, Lot 2 DP 330243, Lot 1 DP 330243, Lot 1 DP 24757, Lot 6 DP 26776 Secs 1-3 SO 300354, Lot 3 DP 379936, Lot 2 and 3 DP 398105, Lot 2 DP 466236, Lot 1 DP 379936 and other land as advised in writing to the consent authority.

Map reference(s): NZMS 260 F41:034-629

Consent sought: Water Permit

Purpose of take: Irrigation, Industrial Use, Storage, Domestic Use and Stock Drinking.

Deemed permit: 2000.173.V1

3. Summary of Recommendation

I recommend, for the reasons outlined in this report, that this application, which is for a restricted discretionary activity, be processed on a limited notified basis in accordance with section 95B of the Resource Management Act 1991.

Please note that this report contains the recommendations of the Consent Officer and represents the opinion of the writer. It is not a decision on the notification of an application.

4. The Application

This application seeks to replace a single deemed permit for the abstraction of surface water from Long Gully. Water is currently abstracted via an open channel and is then conveyed to 6 small holding dams via a water race which is mainly open with some sections of pipeline. The majority of shareholders take water from two of the holding dams, known as Sam's Dam (750m³) and Target Gully Dam (3,000 m³). The other dams are owned and utilised by individual shareholders:

- Clyde Orchards: 1,000 m³
- Felton Road: 3,000 m³
- Crosbie: 1,000 m³
- Wanaka Road Wines: 750 m³
- Gate 20 Two: 1,400 m³

Sam's Dam is the last dam in the system and is kept full to ensure sufficient water is available for shareholders. The spillway for this dam is linked to a small dam (Calvert's Dam) adjacent to Bailey's Gully and Felton Road. Calvert's dam has a spillway which releases water into Bailey's Gully. The intake site, race and pipeline route, and area of land irrigated by this water are shown in Figure 1 and in the schematic in Figure 2.

Each shareholder is responsible for taking the appropriate amount of water. Management of the group under its constitution, combined with the capacity of each shareholder's off-take infrastructure reduces any potential for any shareholder taking more than their share.

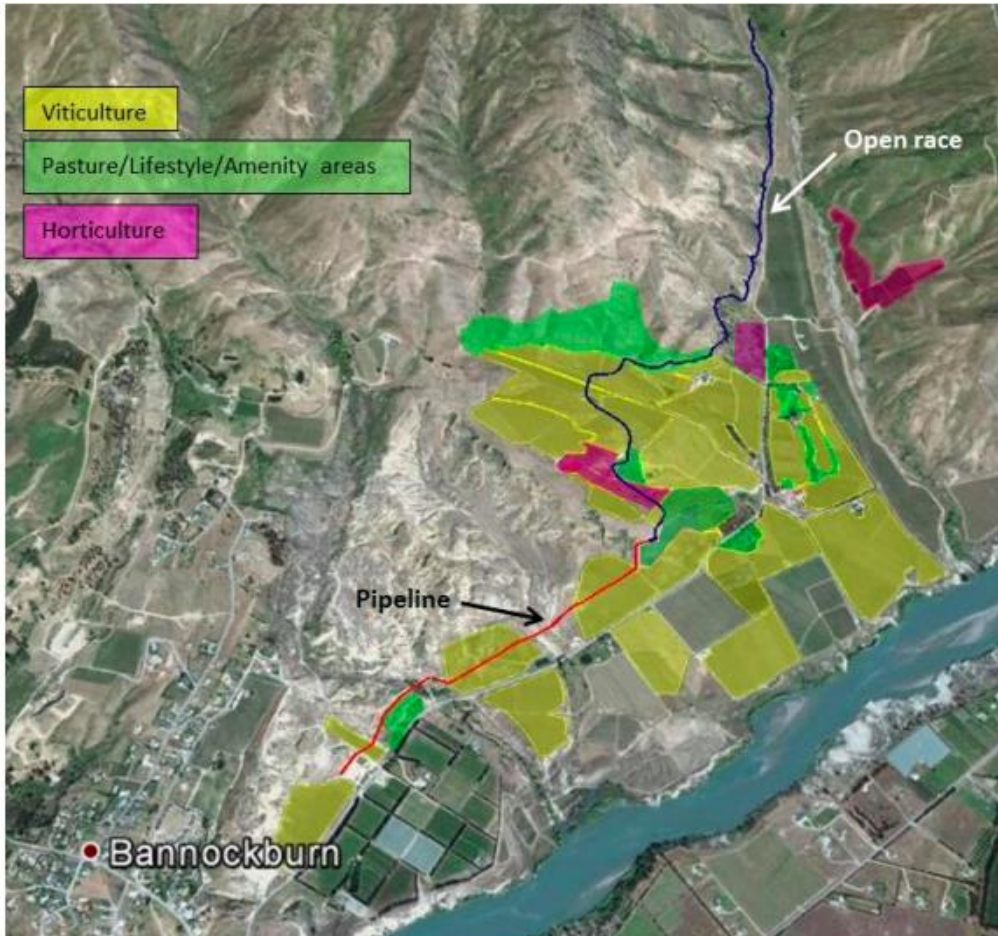


Figure 1: Annotated aerial photograph showing water race and irrigated command area (Source: Application)



Figure 2: Schematic of the water conveyance infrastructure (Source: Application)

The majority of the area irrigated is viticulture. The density of the vineyards varies depending largely on the soils. Vineyards are irrigated using drippers or trickle irrigation. The remaining land irrigated is horticulture and pasture/gardens. Horticulture includes 6 Ha of commercial horticulture (cherries), amenity areas (including trees) around Terra Sancta vineyard and winery as well as a small amount of horticulture connected to a lifestyle block. Pasture includes an area adjacent to Felton Road's winery or vineyards, and irrigation around a number of lifestyle blocks. The cherries are irrigated via sprinkler irrigation, as are the pasture and larger amenity areas around vineyards and wineries (which are by k-line or sprinkler irrigation), while smaller amenity/lifestyle areas utilise garden sprinklers. Water is also used for frost-fighting on the cherry orchard.

In addition to irrigation, water is also used for domestic supply and stock water drinking. The domestic supply is for three households and the stock water is for 50 goats, 4 cows and 6 sheep.

Rates and Volumes Applied For:

Rate of take: 56 L/s
Annual volume: 520,000 m³/year

The applicant has not sought a maximum monthly volume. The application has therefore been assessed on the basis of the maximum instantaneous rate and the annual volume sought.

Details of Deemed Permits Being Replaced

The applicant is seeking to replace Water Permit 2000.173.V1, which expires on 1 October 2021. Water Permit 2000.173.V1 authorises the applicant to take up to 4,800 cubic metres (m³)/day of water from Long Gully, at a maximum rate of 56 litres per second (L/s).

2000.173.V1 was reissued in 2006 to replace the original mining privilege WR1842Cr which was issued on 16 December 1905 at the Cromwell Warden's Court. The license authorised the taking of two (2) government heads of water (a 'head' is accepted as being 100,000 litres/hour) from Long Gully. Interest in the licence has since been transferred, in shares, numerous times. As of June 2012, the deemed permit has been solely held by one entity. This one entity, Long Gully Race Society Incorporated is a water group consisting of 14 shareholders. The distribution of the 120 shares is summarised in Table 1 below.

Table 1: Distribution of shares amongst the water users of Long Gully Race Society Incorporated.

Water User	Share	Legal description of where water is used	Address
Landowner/ Water User Share Legal Description where water used Address	2	Lot 7 DP 27311	320 Felton Road
Clyde Orchards	44	Lot 8 DP 27311, Lot 1 DP 513604	Felton Road
Terra Sancta	2	Lot 1 DP 21102	306 Felton Road

Felton Road Wines Ltd	12	Lot 1 DP 377436, Lot 1 DP 429036, Lot 3 DP 466236, Lot 1 DP 466236	319, 180 & 124 Felton Road
Mt Difficulty Wines Ltd	16	Lot 1 & 2 DP 320845, Lot 3 DP 25990, Lot 1 23478, Lot 4 DP 377436, Lot 2 DP 300780, Lot 2 DP 466236	266, 196B, 319, 201 & 75 Felton Road
Legend Terrace Vineyard	5	Lot 2 DP 377936	Beaton Track, Felton Road
N & J Barker	2	Lot 4 DP 379936	259 Felton Road
Wanaka Road Wines / Mount Edward	16	Lot 1, 4 DP 398105	264 Felton Road
R & M Dicey Trust	6	Lot 5 DP 379936	265 Felton Road
Crosbie / Defiance Vineyard	5	Lot 1 DP 379936	263 Felton Road
Macalister Trustees Ltd (McLachlan)	2	Lot 2 & 3 DP 398105	246 Felton Road
Gate 20 Two Vineyard	4	Lot 2 & 3 DP 330243	143 Felton Road
AG & AB Thomson as Trustees of Thomson Family Trust	2	Lot 1 DP 24757, Lot 6 DP 26776, Secs 1-3 SO 300354	101 Felton Road
Kershaw / Leslie	2	Lot 3 DP 379936	Felton Road

Rights in Substitution (3690 A, B and C) were issued by the Council on 27 August 1990 in substitution of WR1842Cr. Permits 3690A and B related to the taking of water for irrigation use and were issued to various parties. These permits were conditional in that the total quantity taken under both rights at any time could not exceed 200,000 litres/hour. Permit 3690C authorised the continued use and maintenance of the race related to WR1842Cr. Permit 3069 A, B and C all expired on 1 July 2000. Following this, Deemed Permit 2000.173.V1 replaced the take and use component, and a Section 417 Certificate (Objective reference: A1027199) was issued to replace the use and maintain component. This Section 417 certificate authorises easement rights over land where the applicants water race occupies.

The applicant has sought the full rate of take being 56 L/s and a maximum seasonal volume of 520,000 m³. This water is to be allocated amongst the shareholders in order to irrigate 130 hectares (Ha) of viticulture, 19 Ha of horticulture and 32 Ha of pasture. A breakdown of the irrigation requirements for each of the shareholders is given in Table 2 below.

Table 2: Breakdown of irrigated land by shareholder and land use type (Source: Application)

Owner	Viticulture Area* (Ha)	Horticulture Area*(Ha)	Pasture Area* (Ha)
Mt Difficulty	50	0	0
Legends Terrace	9	0	0
Felton Road	28.6	0	24
Clyde Orchards	0	15	0
Thomson	0	0	1.3
Gate 20 Two	6	0	0
Barkers	0	4	1.2
Crosbie	10	0	0
Terra Sancta	11	0	3.2
Kershaw	6	0	0
Macalister Trust	0	0	1.1
Forsyth	0.6	0	1.3
Wanaka Rd Wines	8.6	0	0
Total Area Irrigated (Ha)	129.8	19	32.1

The applicant has also indicated that frost fighting will be required, however has not indicated the proposed volumes. It is assumed that the applicant has accounted for this in their proposed volumes. Water for frost fighting is likely to be stored water due to the high rate of take required for effective frost fighting. Given the proposed volumes are considered efficient for irrigation and no further water has been sought for frost fighting, this use of water is considered efficient.

This application was lodged with the Council at least six months before the expiry date. In accordance with Section 124 of the Act, the applicant may continue to operate under Deemed Permit 2000.173.V1 until a decision on this application is made and all appeals are determined.

Historic Rate and Use Data and Deemed Permit Conditions

Council have water use records for Deemed Permit 2000.173.V1 that date back to 2013. The applicant's monitoring device is situated approximately 1 km down its race, due to lack of telemetry at the intake site. An exemption was obtained for this monitoring site (WEX 0017). A summary of the monitoring data provided is illustrated in Figure 4 below.

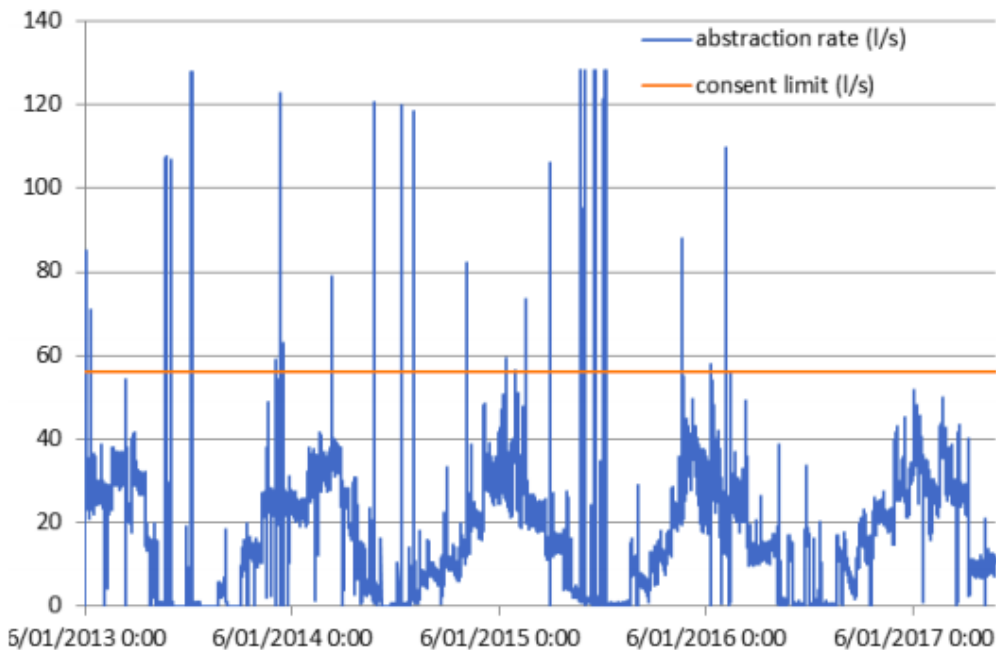


Figure 4: Summary of the instantaneous rate of take data from 6/01/2013 to 30/05/2017 (Source: Application)

Where LGRS’s monitoring data shows spikes above the consented rate, the applicant has noted that this has been caused by heavy rainfall run-off from the slope of the hillside entering the race between the intake site and the monitoring device, as thunder-plumps are not uncommon in this area. Spikes in the monitoring data can also be caused in winter by a film of ice forming and resulting in a false level being recorded by the monitoring device, or a build-up of debris behind the monitoring device which results in a back -up of water and a falsely high reading.

Other Activities

No other activities require resource consent.

Application Documents

The Assessment of Environmental Effects (AEE) was prepared by McKeague Consultancy Limited on behalf of the applicant. In support of the AEE, the applicant also provided an ecological assessment by Water Resource Management Limited.

No further information has been requested to date.

Site Visit

A site visit has not yet been undertaken for this application as:

- There was considered to be sufficient photographic evidence, plans and aerial mapping information of the site to understand the nature of the site; and
- Council’s Resource Science Unit are familiar with the site.

5. Description of the Environment

5.1 Description of the Site and Surrounding Environment

The take is located at the base of Mt Difficulty in Bannockburn, Central Otago. Water is abstracted from the waterway locally known as Long Gully. Water is conveyed via a water race to the shareholders summarised in Table 1 and used on their as summarised in Table 2 for irrigation. The surrounding land use is rural in nature. Figure 1 shows the general location of the take in relation to Long Gully.

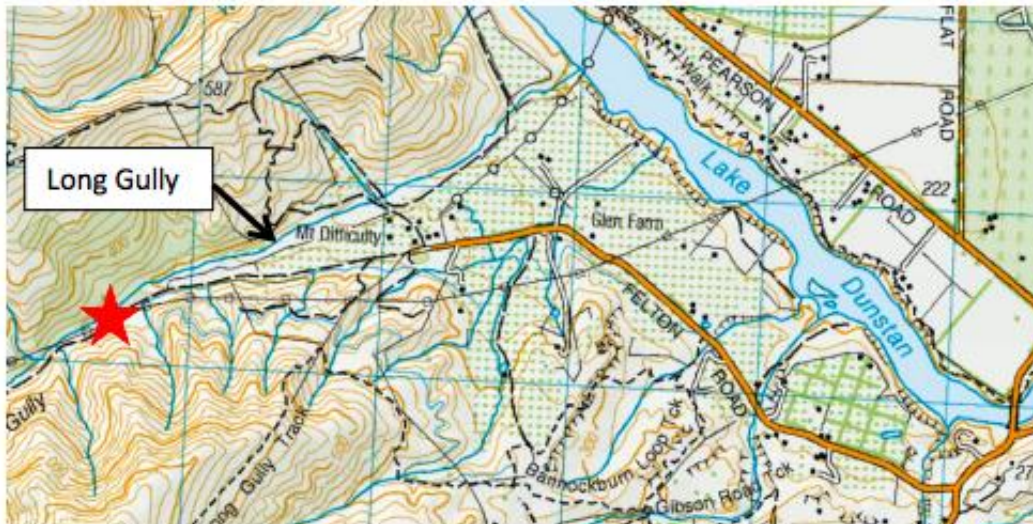


Figure 1: General location of point of take (red star) in relation to Long Gully (Source: Application)

GrowOtago indicates that the median annual rainfall at the site is between 501-550 mm and that the median potential evapotranspiration in January and February is 191-195 mm. Soils in the command area are raw, recent soils and podzol soils consisting generally of shallow to moderately deep fine sandy loams and stony sands. Soils on the river terrace are well drained with very low profile available water. Soils on the hills to the south of Felton Road are moderately drained and have low profile available water.

5.2 Description of Surface Water Body

Long Gully drains a 23 square kilometre catchment that flows into the Kawarau Arm of Lake Dunstan. Flow records have been collected by Council between December 2011 to April 2013 from a monitoring site located immediately above the applicants point of take. These records show that Long Gully is dominated by low stable flows. Generally, the summer flow pattern for Long Gully is characterised by low flows interspersed with sharp peaks due to rain events. Higher sustained flows were noted from August to November due to rain and snow melt. The river characteristics and the flows for Long Gully are given in Table 3 below.

Table 3: River characteristics and flows of Long Gully (Source: Application)

Characteristic	At/Near Point of Take
Type of Waterbody	Creek/Stream – perennial in mid to upper reaches, ephemeral in lower reaches (over 1km)
Average Channel Width	1 m
Average Channel Depth	0.5m – 1m
Bed of watercourse	Sandy, silty loams with gravels and rocks
Minimum flow rates	19 l/s
Maximum flow rates	568 l/s
Source of Flow Data	Based on ORC flow site 3km upstream Dec 11 – April 13

A search of NIWA’s Freshwater Fish Database shows that there have been three fish surveys undertaken in Long Gully, all in 1996. Two of the surveys indicate no fish species present with the third showing a record of Rainbow Trout. A further fish survey conducted by Otago Fish and Game Council in 2017 identified the presence of juvenile trout and evidence of trout spawning in Long Gully.

Council is not aware of any observations of native fish in Long Gully.

6. Regional Planning Context

6.1 Schedule 1 of the Regional Plan: Water

Schedule 1A of the Regional Plan: Water for Otago (RPW) outlines the natural and human use values of Otago’s surface water bodies. Long Gully is not identified, however the Clutha River/Mata Au between Alexandra and Lake Dunstan and Kawarau is identified as having the following values:

- 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.
- Gravel and rock bed composition of importance to resident biota.
- Presence of significant fish spawning areas for trout and salmon.
- Presence of significant areas for development of juvenile trout and salmon.
- Presence of a significant range of indigenous fish species.
- Presence of riparian vegetation of significance to aquatic habitats.
- Presence of indigenous fish species threatened with extinction.
- Significant presence of trout, salmon and eel.
- Significant habitat of rare fish.
- Absence of pest plants upstream of Lake Dunstan.
- The following outstanding natural features/landscapes:
 - Wild, scenic characteristics
 - Natural characteristics, in particular the return flow in the upper section when the Shotover River is in flood
 - Scientific values, in particular the return flow in the upper section when the Shotover is in flood
 - Recreational purposes, rafting, jet boating and kayaking
 - Spectacular and rugged river gorge, schistose landscape, fast flowing white water and rapids, old gold sluicing landscape, from confluence with Arrow River to Lake Dunstan
- Significant habitat for koaro including many tributaries

Schedule 1AA of the RPW identifies Otago resident native freshwater fish and their threat status. The Clutha River/Mata Au between Alexandra and Lake Dunstan and Kawarau is known to provide habitat for koaro including in many tributaries, which is within this schedule. Koaro or *Galaxias brevipinnis* has a threat status of 'declining'.

Schedule 1B of the RPW identifies water takes used for public supply purposes (current at the time the RPW was notified in 1998), while Schedule 1C identifies registered historic places which occur in, on, under or over the beds or margins of lakes and rivers. There are no Schedule 1B and 1C values in the RPW listed in close proximity to the proposed activity.

Schedule 1D of the RPW identifies the spiritual and cultural beliefs, values and uses associated with water bodies of significance to Kai Tahu. Long Gully is not identified, however the Clutha River/Mata Au between Alexandra and Lake Dunstan and Kawarau is identified as having the following values:

- **Kaitiakitanga:** *the exercise of guardianship by Kai Tahu, including the ethic of stewardship.*
- **Mauri:** *life force.*
- **Waahi taoka:** *treasured resource; values, sites and resources that are valued.*
- **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).*

6.2 Schedule 2 of the Regional Plan: Water

The provisions of Schedule 2A-2D do not apply to this application.

6.3 Regionally Significant Wetlands

There are no Regionally Significant Wetlands in the vicinity of the activity.

7. Status of Application

Resource consent is required under the RPW. The taking and use of surface water originally applied for prior to 28 February 1998 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 matters to which the Council has restricted discretion are listed in Rule 12.1.4.8 of the RPW.

Restricted Discretionary Activity Rule 12.1.4.5

Taking and use of surface water as primary allocation applied for prior to 28 February 1998 in catchments not listed in Schedule 2A:

- (i) *This rule applies to the taking of surface water, as primary allocation, in catchment areas not listed in Schedule 2A, if the taking was the subject of a resource consent or other authority:*
 - (a) *Granted before 28 February 1998; or*
 - (b) *Granted after 28 February 1998, but was applied for prior to 28 February 1998; or*
 - (c) *Granted to replace a resource consent or authority of the kind referred to in paragraph (a) or (b).*
- (ii) *Unless covered by Rule 12.1.1A.1, the taking and use of surface water to which this rule applies is a restricted discretionary activity. The matters to which the Otago Regional Council has restricted the exercise of its discretion are set out in Rule 12.1.4.8.*

- (iii) *Unless covered by Rule 12.1.1A.1, the taking and use of surface water in the Waitaki catchment to which this rule applies is a restricted discretionary activity provided that by itself or in combination with any other take, use, dam, or diversions, the sum of the annual volumes authorised by resource consent, does not exceed the allocation to activities set out in Table 12.1.4.2. The matters to which the Otago Regional Council has restricted the exercise of its discretion are set out in Rule 12.1.4.8.*
- (iv) *Takes to which this rule applies will not be subject to a minimum flow condition until the minimum flow has been determined by investigation and added to Schedule 2A by a plan change.*

Note: If a minimum flow has been determined for a catchment previously not listed in Schedule 2A, and that minimum flow has been set by a plan change, the catchment will then be listed in Schedule 2A and Rule 12.1.4.2 or Rule 12.1.4.4 will apply.

Rule 12.1.4.8 Restricted Discretionary Activity considerations

In considering any resource consent for the taking and use of water in terms of Rules 12.1.4.2 to 12.1.4.7 and 12.2.3.1A, the Otago Regional Council will restrict the exercise of its discretion to the following:

- (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*
- (iv) *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; and*
- (xxiv) *For resource consents in the Waitaki catchment the matters in (i) to (xxiii) above, as well as matters in Policies 6.6A.1 to 6.6A.6.*

Overall, the application comprises a **restricted discretionary** activity.

All relevant permitted activity rules are complied with.

8. Statutory Considerations

8.1 Public Notification (Section 95A)

This application was lodged with Council before 18 October 2017 when amendments to Section 95 of the Act came into effect. As such, Section 95 as it existed at the date of lodgement of the application must be applied.

Section 95A of the Act provides that:

- (1) *A consent authority may, in its discretion, decide whether to publicly notify an application for a resource consent for an activity.*
- (2) *Despite subsection (1), a consent authority must publicly notify the application if –*
 - (a) *it decides (under section 95D) that the activity will have or is likely to have adverse effects on the environment that are more than minor; or*
 - (b) *the applicant requests public notification of the application; or*
 - (c) *a rule or national environmental standard (NES) requires public notification of the application.*
- (3) *Despite subsection (1), a consent authority must not publicly notify the application if –*
 - (a) *a rule or national environmental standard precludes public notification of the application; and*
 - (b) *subsection (2)(a) and (b) do not apply.*
- (4) *Despite subsection (3), a consent authority may publicly notify an application if it decides that special circumstances exist in relation to the application.*

The applicant has not requested public notification of the application and there are no rules or National Environmental Standards that require public notification of the application.

It is noted that the Council is precluded from giving public notification for a resource consent under Rule 12.1.4.8 if the application is to take and use water from:

- (i) A river for which a minimum flow has been set by or under the RPW; or
 - (ii) A river for which it is not necessary for the Council to consider whether, if consent is granted, the taking should be subject to a condition requiring a residual flow to remain in the river at the point of take, or a condition requiring other provision for native fish, other than a condition requiring fish screening.
- (b) If the take and use is from a water body other than a river.

A minimum flow has not been set for Long Gully and arguably a residual flow at the point of take is not required nor any other provision for native fish. In this circumstance, Council is precluded from public notification in accordance with Rule 12.1.4.8.

Despite public notification being precluded, s95A(2)(a) requires consideration of the adverse effects on the environment in determining whether the application is publicly notified. The adverse effects on the environment are limited to the restricted discretionary considerations of Rule 12.1.4.8. I consider whether or not the adverse effects on the environment that I have identified will be or are likely to be more than minor, for the purposes of public notification, below.

Effects on Available Water Allocation

The RPW provides for the taking of surface water by defining allocation quantities able to be taken, while providing for water body levels.

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

“To define the primary allocation limit for each catchment, from which surface water takes and connected groundwater takes may be granted, as the greater of:

- (a) That specified in Schedule 2A, but where no limit is specified in Schedule 2A, 50% of the 7-day mean annual low flow; or*
- (b) The sum of consented maximum instantaneous, or consented 7-day, takes of:*
 - (i) Surface water as at: 19 February 2005 in the Welcome Creek catchment; or 7 July 2000 in the Waianakarua catchment; or 28 February 1998 in any other catchment; and*
 - (ii) Connected groundwater as at 10 April 2010,*

less any quantity in a consent where:

- (1) In a catchment in Schedule 2A, the consent has a minimum flow that was set higher than that required by Schedule 2A.*
- (2) All of the water taken is immediately returned to the source water body.*
- (3) All of the water being taken had been delivered to the source water body for the purpose of the subsequent take.*
- (4) The consent has been surrendered or has expired (except for the quantity granted to the existing consent holder in a new consent).*
- (5) The consent has been cancelled (except where the quantity has been transferred to a new consent under Section 136(5)).*
- (6) The consent has lapsed.”*

The 7-day mean annual low flow (MALF) for the Long Gully catchment has been calculated by the Council’s Resource Science Unit (RSU) as 19 L/s. Therefore, total theoretical primary allocation is 9.5 L/s. The existing primary allocation of the Long Gully catchment (i.e. calculated in accordance with Policy 6.4.2(b)) equates to 56 L/s. Therefore, the primary allocation of the Long Gully catchment is 56 L/s.

While the status of the catchment is fully-allocated, because the consent 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.

The application seeks to take the total volume of water defined as the primary allocation by Policy 6.4.2(b)(i). No more water than was consented at 28 February 1998 is being sought.

Minimum Flows

Minimum flows may be set for a river or catchment for the purpose of restricting primary allocation takes of water. A minimum flow provides for the maintenance of aquatic ecosystem and natural character values of water bodies, while providing for the sustainable taking of water for use. Once set in Schedule 2A of the RPW, they are imposed on all relevant consents in that catchment. When a minimum flow is breached, all consents to take water as primary allocation (with some exceptions), must cease.

Policy 6.4.4 of the RPW states that in the case of existing resource consents to take water outside of Schedule 2A catchments, any proposed minimum flows must be set in Schedule 2A by a plan change, before it can be applied to any consent in accordance with Policy 6.4.5(d). No minimum flow has yet been set for the Long Gully catchment nor the Clutha River/Mata Au. Any relevant consent within that catchment may be reviewed under Section 128 of the Act in order to impose conditions that will allow the minimum flow to be met.

Effects on Fish and Instream Values

With regard to the effects on the instream values of a surface water body, only the following can be considered under the restricted discretionary considerations listed by Rule 12.1.4.8:

- the need for a residual flow at the point of take;
- the rate, volume, timing and frequency of water to be taken and used;
- the proposed methods of take;
- the need to prevent fish entering the intake and to locate new points of take to avoid adverse effects on fish spawning sites; and
- any effect on any Regionally Significant Wetland or on any regionally significant wetland value.

Council's RSU were initially of the opinion that the naturally ephemeral nature of Long Gully supported limited fish values. They now consider that recent flows in Long Gully are high enough to allow spawning Rainbow Trout from Lake Dunstan to access the creek. These flows exceed what RSU thought was possible at the time of their assessment. In light of this new information they have revised their earlier conclusions that potential effects on sports fisheries will be minimal. This position is supported by a fish survey conducted by Fish and Game that identified juvenile trout and evidence of spawning activity in the stream bed of Long Gully.

While some uncertainty exists around the effects of the proposed take on sport fish values, due to relatively low flows from May to September combined with losses in the lower reaches, values for trout spawning in Long Gully are likely to be very limited. While adverse effects on sports fish values are likely to exist, these effects are likely to be minor but not more than minor.

Council's RSU have noted that Koaro are generally found in rapid flowing, tumbling rocky streams similar to Long Gully. They can either form sea-going populations or landlocked populations, with landlocked populations utilising the lake in a similar manner as sea-going

populations utilising the sea. Spawning times within lake populations may vary widely with the lake populations. There is anecdotal evidence that suggests since the formation of Lake Dunstan koaro numbers have increased in tributaries waterways below the outlet of Lake Wanaka and in the Kawarau arm of Lake Dunstan. However, no koaro have been found in Long Gully which is likely restricted due to its naturally ephemeral nature. Therefore, Council's RSU consider that the impacts on native fishes are likely to be minor.

In addition to a minimum flow, a residual flow may be set at the point of take, for the purpose of providing for instream values of the source water body. The applicant has not proposed a residual flow and Council's RSU have not recommended a residual flow be required. This is due to the naturally ephemeral nature of Long Gully.

The applicant has not proposed to screen the water race intake to prevent fish uptake and entrapment. While this may have an adverse effect on aquatic fauna, the effect is not likely to be more than minor.

There are no Regionally Significant Wetlands or any known regionally significant wetland values that will be affected by the proposed water take.

Overall effects on aquatic ecosystems are considered to be no more than minor.

Effects on Other Water Users

The majority of landowners located within Long Gully are shareholders in Long Gully Race Society Incorporated. There are no consented or known lawful downstream water users on Long Gully. Effects on other water users are considered to be less than minor.

Conclusion as to effects

Overall, it has been assessed that the adverse effects that the activity will have or is likely to have on the environment are not more than minor.

8.2 Recommendation as to public notification

For the reasons outlined above, I recommend that the application **is not publicly notified** in accordance with section 95, 95A or 95C of the RMA.

8.3 Limited notification (Section 95B)

Having established that the application need not be publicly notified under section 95A, the consent authority must consider under section 95B, whether there are any affected persons to whom limited notification must be given.

Section 95B of the Act provides that

- (1) *If a consent authority does not publicly notify an application for a resource consent for an activity, it must decide (under sections 95E to 95G) whether there is any affected person, affected protected customary rights group, or affected customary marine title group in relation to the activity.*

- (2) *The consent authority must give limited notification of the application to any affected person unless a rule or national environmental standard precludes limited notification of the application.*

Section 95E of the Resource Management Act provides that:

- (1) *A consent authority must decide that a person is an affected person, in relation to an activity, if the activity's adverse effects on the person are minor or more than minor (but are not less than minor).*
- (2) *The consent authority, in making its decision, -*
- (a) *may disregard an adverse effect of the activity on the person if a rule or national environmental standard permits an activity with that effect; and*
 - (b) *in the case of a controlled or restricted discretionary activity, must disregard an adverse effect of the activity on the person that does not relate to a matter for which a rule or national environmental standard reserves control or restricts discretion; and*
 - (c) *must have regard to every relevant statutory acknowledgement made in accordance with an Act specified in Schedule 11.*
- (3) *Despite anything else in this section, the consent authority must decide that a person is not an affected person if –*
- (a) *the person has given written approval to the activity and has not withdrawn the approval in a written notice received by the authority before the authority has decided whether there are any affected persons;*

In accordance with Sections 95B and 95E, I consider the following parties to adversely affected by the proposed water take.

Party	Address	Why the party is considered affected
Department of Conservation on behalf of the Director General of Conservation (DOC)	PO Box 176 Alexandra 9340	The Clutha River/Mata Au and Kawarau River (Lake Dunstan), including in many tributaries, are identified as supporting significant habitat for Koaro (Schedule 1A). DOC, who represent the Director General of Conservation have a statutory responsibility to manage native freshwater fish habitats. As Council's RSU have noted, Koaro are generally found in rapid flowing, tumbling rocky streams similar to Long Gully. While a fish survey did not identify any Koaro or other native fish within Long Gully, there is some uncertainty around the natural state of Long Gully and whether surface flows would connect to Lake Dunstan in a manner that supports native fish habitat. Therefore, Long Gully may have conservation values in its natural state and the take may have an adverse effect on these values.
Otago Fish and Game Council (Fish and Game)	PO Box 76 Dunedin 9054	Fish and Game under the Conservation Act is a body cooperate which has the rights, powers and privileges of a natural person. The primary function of Fish and Game is to manage, maintain and enhance sports fish and game resources in the recreational interest of anglers and hunters. A fish survey identified juvenile Rainbow Trout populations and evidence of trout spawning within Long Gully. There is some uncertainty around the natural state of Long Gully and whether surface flows would connect to

			Lake Dunstan in a manner that supports trout habitat. Therefore, Long Gully may have important sports fish values in its natural state. The applicant has not proposed fish screens and the proposed water take could result in the applicant at times taking the full flow of Long Gully. As such, the proposed water take is likely to have an adverse effect on the functions of Fish and Game.
Kai Tahu ki Otago Limited (now known as Aukaha) on behalf of Kati Huirapa Runaka ki Puketeraki and Te Runanga o Otakou	PO Box 446 Dunedin 9054		The cultural values in the area, as displayed in Schedule 1D, may be affected by the activity. The removal of water from the river as a consumptive take has an effect on the mauri of the water that is minor or more.
Te Ao Marama Incorporated on behalf of Te Runanga o Waihopai	PO Box 7078 Invercargill 9844		The cultural values in the area, as displayed in Schedule 1D, may be affected by the activity. The removal of water from the river as a consumptive take has an effect on the mauri of the water that is minor or more.

Of the above parties, Te Ao Marama Incorporated (TAMI) have provided written approval on behalf of the Te Runanga o Waihopai subject to the following conditions:

1. Term of consent is no more than 25 years; and
2. A fish screen is installed on the intake.

As the applicant has not accepted the above conditions this approval cannot be accepted and the effects on Te Ao Marama cannot be disregarded.

The following parties have been assessed and are not considered to be affected by the application:

- The infrastructure associated with the take and use of water is located over land not owned by the applicant. Given the applicant holds a Section 417 certificate that authorises the easement over these properties, effects on these parties is considered less than minor.

I do not consider that there are any other affected persons, affected protected customary rights groups, or affected customary marine title groups in relation to the activity.

8.4 Recommendation as to Limited Notification

For the reasons outlined above, I recommend that the application **is limited notified** in accordance with section 95 and 95B of the RMA to the following affected parties who have not provided their written approval:

- Department of Conservation on behalf of the Director General of Conservation (DoC);
- Otago Fish and Game Council (Fish and Game);

- Kai Tahu ki Otago Limited (now known as Aukaha) on behalf of Kati Huirapa Runaka ki Puketeraki and Te Runanga o Otakou.
- Te Ao Marama Incorporate on behalf of Te Runanga o Waihopai

9. Notification Recommendation

Pursuant to sections 95A-95E, I recommend this application be processed on a limited notified basis as:

- a. in accordance with section 95A the application is precluded from public notification and is not likely to have adverse effects on the environment that are more than minor.
- b. in accordance with section 95B affected persons have been identified in relation to the proposed activity.
- c. in accordance with section 95C the applicant has not failed or refused to provide further information as no further information was requested.
- d. in accordance with section 95D the application is not likely to have adverse effects on the environment that are more than minor.
- e. in accordance with section 95E the application will have minor or more than minor adverse effects on the following affected parties whose written approval has not been obtained.
 - Department of Conservation on behalf of the Director General of Conservation (DoC);
 - Otago Fish and Game Council (Fish and Game);
 - Kai Tahu ki Otago Limited (now known as Aukaha) on behalf of Kati Huirapa Runaka ki Puketeraki and Te Runanga o Otakou.
 - Te Ao Marama Incorporated on behalf of Te Runanga o Waihopai

Ethan Glover
Consents Officer

24 January 2020

Attachments

Attachment 1: Written Approvals

Decision on notification

Sections 95A to 95G of the Resource Management Act 1991

Date: 24 Jan. 20

File Reference: RM17.176

Application No: RM17.176.01

Subject: *Decision on notification of resource consent application under delegated authority*

Summary of Decision

The Otago Regional Council decides that the application is to be processed on a **limited notified** basis in accordance with sections 95A to 95G of the Resource Management Act 1991.

The above decision adopts the recommendations and reasons outlined in the Notification Report prepared by Ethan Glover on 24 January 2020 in relation to this application.

We have considered the information provided, reasons and recommendations in the above report. We agree with those reasons and adopt them.

Decision under delegated authority

The Otago Regional Council decides that this resource consent application is to be processed on a **limited notified** basis in accordance with sections 95A to 95G of the Resource Management Act 1991. This decision is made under delegated authority by:

.....



Joanna Gilroy
Manager Consents



Mat Bell
Team Leader Consents



19 March 2020

Otago Regional Council

P O Box 1954

DUNEDIN 9054

Tēnā koutou, ko tēnei mihi atu ki a koutou, ngā mema o te komiti, ngā kaiwhakawa o ngā mea e pa ana tēnei kaupapa taumaha, me ki, o tātou nei rohe moana, he taoka o tātou nei whānau, hapū me te iwi. Ki a rātou kua whetu rangitia, te hunga wairua, haere, moe mai, oki oki mai, kati.

RE: Resource Consent Application – Long Gully Society

Resource Consent Application – RM17.176

Take and use water for the purpose of irrigation, industrial use, storage, domestic use and stock water Supply – Long Gully, a tributary of the Kawarau Arm of Lake Dunstan.

This is a submission on a publicly notified resource consent application pursuant to Section 95A of the Resource Management Act 1991.

Kāti Huirapa Rūnaka ki Puketeraki, Te Rūnanga o Ōtākou and Hokonui Rūnanga (Ngā Rūnanga) **oppose** this application.

We **do wish** to be heard in support of this submission at a hearing.

1. INTRODUCTION

- 1.1 The takiwā of Kāti Huirapa Rūnaka ki Puketeraki centres on Karitane and extends from the Waihemo River/Shag River to Purehurehu/north of Heywards Point. Kāti Huirapa Rūnaka ki Puketeraki share an area of interest in the inland roto and mauka with Kāi Tahu Papatipu Rūnanga within Otago, and with those Papatipu Rūnanga located beyond the boundaries of the Otago region.

- 1.3 The takiwā of Te Rūnanga o Ōtākou centres on Muaūpoko/Otago Peninsula and extends from Purehurehu Point/north of Heyward Point to the Clutha River/Mata-au River. Te Rūnanga o Ōtākou share an area of interest in the inland roto and mauka with Kāi Tahu Papatipu Rūnanga within Otago, and with those Papatipu Rūnanga located beyond the boundaries of the Otago region.
- 1.4 The takiwā of Hokonui Rūnanga centres on the Hokonui region and includes a shared interest in the lakes and mountains between Whakatipu-Waitai and Tawhitarere and other Murihiku Rūnanga and those located from Waihemo southwards.
- 1.5 To acknowledge the association with the district and its resources, Māori words (underlined) are used within this document. See Appendix 1 for translation.

2. KAITIAKITAKA

- 2.1 The Kāi Tahu ki Otago Natural Resource Management Plans 1995 and 2005 are the principal resource management planning documents for Kāi Tahu ki Otago. The kaupapa of the plans is 'Ki Uta ki Tai' (Mountains to the Sea), which reflects the holistic Kāi Tahu ki Otago philosophy of resource management.
- 2.2 The plans express Kāi Tahu ki Otago values, knowledge and perspectives on natural resource and environmental management issues. The plans are an expression of kaitiakitaka. While the plans are first and foremost planning documents to assist Kāi Tahu ki Otago in carrying out their kaitiaki roles and responsibilities, they are also intended to assist others in understanding tākata whenua values and policy.
- 2.3 The 2005 Natural Resource Management Plan is divided into catchments, with specific provisions for the whole Otago area and each catchment. The current proposal is located within the Clutha/Mata-au Catchments.
- 2.4 The relevant objectives and policies of the 2005 Natural Resource Management Plan are attached to this submission as Appendix 2.

3. SCOPE OF THE SUBMISSION

- 3.1 This submission relates to the application in its entirety.

4. REASONS FOR THE DECISION SOUGHT

- 4.1 Kāi Tahu has a cultural, spiritual, historic and traditional relationship with the Clutha/Mata-au Catchments / Te Riu o Mata-au
- 4.2 The Clutha/Mata-au Catchments and its headwaters were the traditional focus of seasonal migrations for many of the hapū and whānau living in the Araiteuru/Coastal Otago. Its vast length, many tributaries and three large roto at its headwaters, fed by the mauka in Kā Tiritiri o Te Moana/Southern Alps, had much to offer Kāi Tahu. The Clutha/Mata-au Catchments was therefore highly valued by all the different hapū and their whānau who used it. The use of these Catchments was a focus of our very distinctive seasonal lifestyle.
- 4.3 The Clutha/Mata-au River takes its name from a Kāi Tahu whānau whakapapa that traces the genealogy of water. On that basis, the Clutha/Mata-au River is seen as a descendant of the creation traditions.
- 4.4 The three roto at the headwaters of the Clutha/Mata-au River are an important source of freshwater. They are all fed by hukawai, these are waters with the highest level of purity and were accorded traditional classifications by Kāi Tahu ki Otago that recognised this value. Thus they are puna that sustains many ecosystems important to Kāi Tahu ki Otago.
- 4.5 The Clutha/Mata-au River was part of ara tawhito, mahika kai trail that led inland. Mahika kai sourced from the Clutha/Mata-au Catchment includes indigenous ika and manu such as:- tuna, kanakana, kōkōpu, moa, inaka, weka.
- 4.6 The Clutha/Mata-au River gave access to wide inland ngahere clad plains and to the roto and mauka beyond.
- 4.7 All water plays a significant role in our spiritual beliefs and cultural traditions, the condition of water is seen as a reflection of the health of Papatūānuku. The loss and degradation of this resource through drainage, pollution and damming is a significant issue for Kāi Tahu ki Otago and is considered to have resulted in material and cultural deprivation.
- 4.8 Kāi Tahu had a very distinctive and unique culture and lifestyle in the southern half of the South Island included permanent coastal settlements and seasonal migrations inland over often vast distances to harvest and collect food and resources. The seasonal inland migrations were determined by whakapapa as to who could exercise those rights. This practice is referred to as

'mahika kai' and became a corner stone of our culture. Mahika kai is the basis of culture and the unrelenting cultural imperative is to keep the mahika kai intact, to preserve its productivity and the diversity of species.

4.9 Mahika kai literally means “food works”. It encompasses the ability to access the resource, the site where gathering occurs, the act of gathering and using resources and ensuring the good health of the resource for future generations. This is enshrined in the Kāi Tahu proverbial saying and tribal motto “Mō tātou, a mō kā uri I muri ake nei – for us and for the generations that come after us.”

4.10 The primary management principle for Ngā Rūnanga is the maintenance and enhancement of the mauri or life-giving essence of a resource. Mauri can be tangibly represented in terms of elements of the physical health of the land, a river, or surrounding biodiversity. The forest, waters, the life supported by them, together with natural phenomena such as the mist, wind and rocks, possess a mauri or life-force. While there are also many intangible qualities associated with the spiritual presence of a resource, elements of physical health which Ngā Rūnanga use to reflect the status of mauri and to identify the enhancements needed include:

- Aesthetic qualities e.g. natural character and indigenous flora and fauna;
- Life supporting capacity and ecosystem robustness;
- Fitness for cultural usage

4.11 A resource's mauri is desecrated if it no longer supports the traditional uses and values. A water body or other natural resource can be desecrated by improper resource management activities. These may extinguish the mauri and in turn diminish the association upon which a range of values are based, including mahika kai, for Ngā Rūnanga who hold traditional rights and responsibilities in respect to the resource.

4.12 Across the rohe, one of the principle indicators by which Ngā Rūnanga assesses the mauri of a resource is its productivity and the food and other materials sourced from it. Hence Ngā Rūnanga use the nature and extent of mahika kai as an environmental indicator. If the mauri of an entity is desecrated or defiled, the health and well-being of the resource itself, resource users and others depending on the resource are at risk

4.13 Ngā Rūnanga are not confident in the current regional planning framework, and therefore request a short term consent that allows for a new regional planning framework to be established before a longer term consent is applied for by the applicant; one that is compliant with:

- the purpose and principles of the Resource Management Act 1991, including Section 6(e), Section 8 and Section 7(a);
- the *National Policy Statement for Freshwater Management 2014*, as amended in 2017 (the Freshwater NPS);
- the partially operative *Otago Regional Policy Statement 2019 (Otago RPS)* (including both the already operative parts, and those that still await sign-off from the Environment Court); and
- *Te Rūnanga o Ngāi Tahu Freshwater Policy Statement 1999* and the *Kāi Tahu ki Otago Natural Resource Management Plan 2005*, which have not yet been incorporated into the *Regional Plan: Water*.

4.14 Kāi Tahu aspirations for freshwater management are recorded in the *Te Rūnanga o Ngāi Tahu Freshwater Policy Statement 1999*, and the *Kāi Tahu ki Otago National Resource Management Plan 2005*. These documents both allude to water ownership as an outstanding matter for resolution, which is relevant to the manner in which water continues to be allocated. Kāi Tahu iwi management plan objectives and policies provide guidance to decision-makers working within the context of the *Resource Management Act 1991 (RMA)*. Notable priorities include protection and restoration of mahika kai habitats, and ensuring that environmental flows are sufficient to sustain the range of Kāi Tahu rights, interests and values associated with waterbodies.

4.15 The Freshwater NPS requires consideration and recognition of Te Mana o te Wai, through identification of values and management of those values. The Freshwater NPS specifically provides for the involvement of iwi and hapū to ensure that tākata whenua values and interests are identified and reflected in the management of freshwater. Included within freshwater objectives is intent to phase out over-allocation.

4.16 Under the National Policy Statement for Freshwater Management (NPS-FM), it is a matter of national significance that fresh water is managed through a framework that considers and recognises Te Mana o Te Wai as an integral part freshwater management. When speaking about Te Mana o te Wai we are referring to the integrated and holistic wellbeing of a freshwater body. Upholding Te Mana o te Wai acknowledges and protects the mauri of water.

- 4.17 The Regional Plan: Water for Otago and the Regional policy Statement were both written prior to the 2017 amendment of the NPS-FM and therefore Ngā Rūnanga believe kaupapa as significant as Te Mana o te Wai and Ki Uta Ki Tai should be considered above the issues, objectives and policies of the Regional Plan: Water for Otago and the Regional Policy Statement.
- 4.18 Otago Regional Councils' (the Council) permissive rules have allowed most of the catchments to become 'over-allocated' meaning that the volume of water abstracted through resource consents exceeds the volume of water available in the catchment. The current rules of the Regional Plan: Water for Otago are permissive and set default minimum flow levels well below the national average.¹
- 4.19 The Minister for the Environment, Hon David Parker (the Minister), in the letter to the Councilors of the Otago Regional Council, has set direction for the Council to "... develop a fit for purpose freshwater management planning regime that gives effect to the relevant national instruments and sets a coherent framework for assessing all water consent applications..."². The Minister identifies that granting long term resource consents for water abstractions would be unwise. This is because this would "... lock in unsustainable water use, inhibiting the council from effectively implementing the outcomes of its intended new RPS (*Regional Policy Statement*) and LWRP (*Land and Water Regional Plan*)"³. Direction from the Minister requires Council to prepare a plan change to provide for interim planning and consenting framework to manage freshwater, which includes processing of recourse consents. These consents should be issued with a short consent term, for example, a maximum term of 5 years.

¹ *Investigation of Freshwater management and Allocation Functions at Otago Regional Council: Report to the Minister for the Environment*. Professor Peter Skelton. Page 9.

² Communication: Letter from Officer of Hon David Parker, Minister for the Environment, to Chair and Councilors of Otago Regional Council.

³ Communication: Letter from Officer of Hon David Parker, Minister for the Environment, to Chair and Councilors of Otago Regional Council.

5. DECISION SOUGHT

- 5.1 Kāi Tahu submits that the application, as applied for, should **be declined**.
- 5.2 Kāi Tahu would support an amended application or, any consent that would be subject to the following conditions:-
- That the term of consent be no longer than 6 years.
 - That at least 50% of the flow in the waterway is left in the waterway.
 - That a fish screen is installed over the intake structure.
 - That the water take is metered and results recorded

E noho ora mai

Address for Service:

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Consents Officer*

*Aukaha
PO Box 446
Dunedin 9054*

Phone: (03) 477 0071

E-mail: tania@aukaha.co.nz

Appendix: 1

Glossary

Ara tawhito	Ancient trails
Hapū	Sub-tribe
Hukuwai	Type of water
Ika	Fish
Inaka/Inganga	Whitebait
Kaitiaki/Kaitiakitaka	Guardian / to exercise guardianship
Kāi Tahu	Descendants of Tahu, the tribe
Kanakana	Lamprey
Kaupapa	Topic, plan
Kōkōpu	Cockabully
Mahika kai	Places where food is produced or procured.
Mana Whenua	Customary authority or rakātirataka exercised by an iwi or hapū in an identified area.
Manawhenua	Those who exercise customary authority or rakātirataka
Manu	Bird
Mauka	Mountain
Mauri	Essential life force or principle, a metaphysical quality inherent in all things both animate and inanimate
Moa	large extinct flightless bird of nine subspecies
Ngahere	Forest/Bush
Ngā Rūnanga/Rūnaka	Local representative group of Otago
Papatipu Rūnanga	Traditional Kāi Tahu Rūnanga
Papatūānuku	Earth Mother
Puna	spring (of water)
Rakātirataka	Chieftianship, decision-making rights
Rohe	Boundary
Roto	Lake
Takiwā	Area, region, district
Tākata whenua	Iwi or hapu that holds mana whenua (customary authority) in a particular area
Te Mana o te Wai	Concept for fresh water that encompasses the mauri of a water body
Tuna	Eel
Urupā	Burial place
Wāhi Tapu	Places sacred to takata Whenua
Weka	Bird-woodhen
Whakapapa	Genealogy
Whānau	Family

Appendix: 2

The following Issues/Objectives/Policies of the Kāi Tahu ki Otago Natural Resource Management Plan 2005 are seen as relevant to the above proposal. This relates to the holistic management of natural resources from the perspective of local iwi.

Kāi Tahu ki Otago Natural Resource Management Plan 2005

Otago Region / Te Rohe o Otago

Wai Māori

Wai Māori General Issues

Water Extractions

- Inefficient irrigation methods and reluctance to consider alternatives.
- Volume of some extractions being more than is required.
- Cumulative effects of water extractions.
- Lack of water harvesting.
- Long duration of water take consents.

Wai Māori General Policies

- To protect and restore the mauri of all water.

Water Extractions

- To require that resource consent applicants 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 Kāi Tahu ki Otago.
- To oppose the granting of water take consents for 35yrs. Consistent with a precautionary approach, either a review clause or a reduced term may be sought.

Irrigation

- To encourage those that extract water for irrigation to use the most efficient method of application. Flood irrigation, border dyke and contour techniques are less likely to be supported than spray irrigation techniques.
- To require that a consent term for water extractions for irrigation be of 5-10 years where Kā Papatipu Rūnanga considers the method of irrigation to be inefficient to allow for an upgrade to a more efficient method.
- To discourage over-watering
- To encourage irrigation to occur at times when winds are light and evaporation low.
- To encourage dry land farming practices where appropriate.



Monday 16 March 2020

Consents Manager
Otago Regional Council
Private bag 1954
Dunedin, 9054
publicenquiries@orc.govt.nz

Tēnā Koe,

RE: Submission on Resource consent application – RM17.176

Please find attached a submission lodged, on behalf of Te Rūnanga o Waihopai on Resource Consent applications to take and use water from Long Gully, a tributary of the Kawarau Arm of Lake Dunstan for the purpose of irrigation, industrial use, storage, domestic use and stock drinking water.

We trust the information contained within the submission is sufficient; however, should you wish to discuss any aspect further, please do not hesitate to contact me.

Nāhaku noa nā,

A handwritten signature in black ink, appearing to read "SRBL", with a horizontal line extending to the right.

Stevie-Rae Blair
Te Ao Marama Inc.
Iwi Environmental Advisor

CC Long Gully Race Society Inc
Te Rūnanga o Waihopai

Te Ao Marama Inc.
408 Tramway Road
PO Box 7078
South Invercargill 9812
Phone: (03) 9311242
office@tami.maori.nz

INTRODUCTION

Introduction

1. This submission has been prepared by Te Ao Marama Incorporated on behalf of Te Rūnanga o Waihopai (from herein referred to as rūnanga).
2. Rūnanga are supportive of development within its takiwā, provided activities are undertaken in a way that respects the environment where the activity to be undertaken does not adversely affect Ngāi Tahu cultural values, customs and their traditional relationship with land and water.
3. The Mata-au catchment has been recognised as a Statutory Acknowledgement under the Ngāi Tahu Claims Settlement Act, 1998 (Please see attachment 1).
4. Rūnanga understand that Long Gully Race Society Inc. wish to take and use water from Long Gully, a tributary of the Kawarau Arm of Lake Dunstan for the purpose of irrigation, industrial use, storage, domestic use and stock drinking water. It is understood this is an existing activity and the application is to change the deemed permit to a resource consent.
5. The Ngāi Tahu ki Murihiku Iwi Management Plan ('Te Tangi a Tauira')¹ has policy that is directly relevant to the management of water and water abstractions and these can be found in Sections 3.5.10, 3.5.11, 3.5.14 (Please see attachment 2).

Papatipu Rūnanga

1. Te Rūnanga o Ngāi Tahu Act, 1996 (the TRoNT Act) and the Ngāi Tahu Claims Settlement Act, 1998 (the Settlement Act) gives recognition to the status of Papatipu Rūnanga as kaitiaki and manawhenua of the natural resources within their takiwā boundaries.
2. The consent application proposals relate to an existing activity to which the applicant would like to continue. The takiwā of Te Rūnanga o Waihopai.

Te Ao Marama Incorporated

3. Ngāi Tahu ki Murihiku formed an entity known as Te Ao Marama Incorporated, which is made up of representatives from Te Rūnanga o Awarua and Te Rūnanga o Oraka Aparima and Te Rūnanga o Waihopai. Te Ao Marama Incorporated is authorised to represent the three Southland Rūnanga Papatipu in resource management and local government matters.

REASONS FOR SUBMISSION

4. Rūnanga is opposed to this application because of the risks to the environment and Ngāi Tahu values that it poses.
5. The Otago region does not have a fit for purpose planning framework in place to adequately manage applications for new water permits.

¹ Ngai Tahu ki Murihiku 2008.

6. The consent term applied for is inconsistent with Te Tangi a Tauira, 2008.
7. The application fails to recognise Te Mana o te Wai as per the National Policy Statement for Freshwater.
8. The application appears to take more water than is available and refuses to have a minimum/residual flow.
9. There is no information within the application on fish screens on the structures.

DECISION WE WISH COUNCIL TO MAKE

10. That the application is declined as it stands or if the council is of mind to grant it should impose the following consent conditions:
 - a. That the consent term is a maximum of 6 years.
 - b. That there are suitable fish screens fitted on any intake structures.
 - c. That at least 50% of the natural flow is left in the waterway.
 - d. That the water take is metered and reported.

CONCLUSION

11. Te Rūnanga o Waihopai are **opposing** this application and wish to be heard in support of this submission.
12. The submission relates to the whole of the application.
13. If others are making a similar submission, rūnanga will consider presenting a joint case with them at a hearing.
14. A copy of this submission has been sent to the applicant.
15. We wish to be heard in support of our submission.
16. Ngā Rūnanga wish to be a part of any pre-hearing meeting that may be held for this application.

Nāhaku noa nā



Stevie-Rae Blair

Te Ao Marama Inc.

Iwi Environmental Advisor

STATUTORY ACKNOWLEDGEMENT FOR MATA-AU (CLUTHA RIVER)

Statutory Area

The statutory area to which this statutory acknowledgement applies is the river known as Mata-au (Clutha River), the location of which is shown on Allocation Plan MD 122 (S.O. 24727).

Preamble

Under section 206, the Crown acknowledges the Te Runanga o Ngāi Tahu statement of Ngāi Tahu cultural, spiritual, historic, and traditional association to the Mata-au, as set out below.

Ngāi Tahu Association with the Mata-au

The Mata-au river takes its name from a Ngāi Tahu whakapapa that traces the genealogy of water. On that basis, the Mata-au is seen as a descendant of the creation traditions. For Ngāi Tahu, traditions such as this represent the links between the cosmological world of the gods and present generations, these histories reinforce tribal identity and solidarity, and continuity between generations, and document the events which shaped the environment of Te Wai Pounamu and Ngāi Tahu as an iwi.

On another level, the Mata-au was part of a mahinga kai trail that led inland and was used by Otakou hapu including Ngāti Kuri, Ngāti Ruahikihiki, Ngāti Huirapa and Ngāti Tuahūriri. The tupuna had considerable knowledge of whakapapa, traditional trails and tauranga waka, places for gathering kai and other taonga, ways in which to use the resources of the river, the relationship of people with the river and their dependence on it, and tikanga for the proper and sustainable utilisation of resources. All of these values remain important to Ngāi Tahu today

The river was also very important in the transportation of pounamu from inland areas down to settlements on the coast, from where it was traded north and south. Thus there were numerous tauranga waka (landing places) along it. The tupuna had an intimate knowledge of navigation, river routes, safe harbours and landing places, and the locations of food and other resources on the river. The river was an integral part of a network of trails which were used in order to ensure the safest journey and incorporated locations along the way that were identified for activities including camping overnight and gathering kai. Knowledge of these trails continues to be held by whanau and hapu and is regarded as a taonga. The traditional mobile lifestyle of the people led to their dependence on the resources of the river.

The Mata-au is where Ngāi Tahu leader, Te Hautapunui o Tu, established the boundary line between Ngāi Tāhu and Ngāti Mamoe. Ngāti Mamoe were to hold mana (authority) over the lands south of the river and Ngāi Tahu were to hold mana northwards. Eventually, the unions between the families of Te Hautapunui o Tu and Ngāti Mamoe were to overcome these boundaries. For Ngāi Tahu, histories such as this represent the links and continuity between past and present generations, reinforce tribal identity, and document the events which shaped Ngāi Tahu as an iwi.

Strategic marriages between hapū further strengthened the kupenga (net) of whakapapa, and thus rights to travel on and use the resources of the river. It is because of these patterns of activity that the river continues to be important to rūnanga located in Otago and beyond. These rūnanga carry the responsibilities of kaitiaki in relation to the area, and are represented by the tribal structure, Te Rūnanga o Ngāi Tahu.

Urupā and battlegrounds are located all along this river. One battleground, known as Te Kauae Whakatoro (downstream of Tuapeka), recalls a confrontation between Ngāi Tahu and Ngāti Mamoe that led to the armistice established by Te Hautapunui o Tu. Urupā are the resting places of Ngāi Tahu tupuna and, as such, are the focus for whanau traditions. These are places holding the memories, traditions, victories and defeats of Ngāi Tahu tupuna, and are frequently protected by secret locations.

The mauri of Mata-au represents the essence that binds the physical and spiritual elements of all things together, generating and upholding all life. All elements of the natural environment possess a life force, and all-forms of life are related. Mauri is a critical element of the spiritual relationship of Ngāi Tahu Whanui with the river.

Purposes of Statutory Acknowledgement

Pursuant to section 215, and without limiting the rest of this schedule, the only purposes of this statutory acknowledgement are—

- (a) To require that consent authorities forward summaries of resource consent applications to Te Runanga o Ngai Tahu as required by regulations made pursuant to section 207 (clause 12.2.3 of the deed of settlement); and
- (b) To require that consent authorities, the Historic Places Trust, or the Environment Court, as the case may be, have regard to this statutory acknowledgement in relation to the Mata-au, as provided in sections 208 to 210 (clause 12.2.4 of the deed of settlement); and
- (c) To empower the Minister responsible for management of the Mata-au or the Commissioner of Crown Lands, as the case may be, to enter into a Deed of Recognition as provided in section 212 (clause 12.2.6 of the deed of settlement); and
- (d) To enable Te Runanga o Ngai Tahu and any member of Ngai Tahu Whanui to cite this statutory acknowledgement as evidence of the association of Ngai Tahu to the Mata-au as provided in section 211 (clause 12.2.5 of the deed of settlement).

Limitations on Effect of Statutory Acknowledgement

Except as expressly provided in sections 208 to 211, 213, and 215,—

- (a) This statutory acknowledgement does not affect, and is not to be taken into account in, the exercise of any power, duty, or function by any person or entity under any statute, regulation, or bylaw; and
- (b) Without limiting paragraph (a), no person or entity, in considering any matter or making any decision or recommendation under any statute, regulation, or bylaw, may give any greater or lesser weight to Ngai Tahu's association to the Mata-au (as described in this statutory acknowledgement) than that person or entity would give under the relevant

statute, regulation, or bylaw, if this statutory acknowledgement did not exist in respect of the Mata-au.

Except as expressly provided in this Act, this statutory acknowledgement does not affect the lawful rights or interests of any person who is not a party to the deed of settlement.

Except as expressly provided in this Act, this statutory acknowledgement does not, of itself, have the effect of granting, creating, or providing evidence of any estate or interest in, or any rights of any kind whatsoever relating to, the Mata-au.

Section 3.5.10 General Water Policy

1. Protect and enhance the mauri, or life supporting capacity, of freshwater resources throughout Murihiku.
2. Manage our freshwater resources wisely, mö tätou, ä, mö ngä uri ä muri ake nei, for all of us and the generations that follow.
3. Promote the management of freshwater according to the principle of ki uta ki tai, and thus the flow of water from source to sea.

Section 3.5.11 – Rivers

1. Promote river management that adopts the priorities established in the Te Rünanga o Ngäi Tahu Freshwater Policy 1997. The priorities are:

Priority 1: Sustain the mauri of the waterbodies within the catchment.

Priority 2: Meet the basic health and safety needs of humans (drinking water).

Priority 3: Protect cultural values and uses.

Priority 4: Protect other instream values (indigenous flora and fauna).

Priority 5: Meet the health and safety needs of humans (sanitation).

Priority 6: Provide water for stock.

Priority 7: Provide for economic activities including abstractive uses.

Priority 8: Provide for other uses.

2. Management of our rivers must take into account that each waterway has its own mauri, guarded by separate spiritual guardians, its own mana, and its own set of associated values and uses.

3.5.14 Water Quantity – Abstractions.

1. Adopt the precautionary principle when making decisions on water abstraction resource consent applications, with respect to the nature and extent of knowledge and understanding of the resource.
2. Support and encourage catchment management plans, based on the principle of ki uta ki tai, to manage the cumulative impacts of water abstractions in a given area.
3. Require that scientifically sound, understandable, and culturally relevant information is provided with resource consent applications for water abstractions, to allow Ngäi Tahu ki Murihiku to fully and effectively assess cultural effects.
5. Recommend, as a condition of consent, that any application for irrigation puts in on-farm rainwater holding facilities, to help with dairy washdown and irrigation.

6. Encourage water users to be proactive and use water wisely. To encourage best practice and efficient use of water, particularly in terms of:
 - sustainable irrigation design, delivery and management;
 - making best use of available water before water levels get too low;
 - reducing the amount of water lost through evaporation by avoiding irrigating on hot windy days.
7. Consideration of consent applications for water abstractions should have particular regard to questions of:
 - a) how well do we understand the nature and extent of the water resource;
 - b) how well can we monitor the amount of water abstracted;
 - c) whether land capability (e.g. soil type, vulnerability of underlying groundwater resources) matches the land use enabled by irrigation;
 - d) what might happen in the future (e.g. rainfall and recharge of aquifers, climate change).
8. Applications for water abstractions may be required to justify the quantities of water requested. Information may need to be provided to Te Ao Mārama Inc. regarding the proposed water use per hectare, estimated water losses, stocking rates, and the level of efficiency for the scheme. This will enable iwi to put the quantity of water sought in context, and ensure that a test of reasonableness can be applied to consents.
9. The establishment of environmental flow regimes must recognise and provide for a diversity of values, including the protection of tangata whenua values.
12. Ensure that environmental flow allocation and water management regimes for rivers recognise and provide for the relationship between water quality and quantity.
13. Avoid compromising fisheries and biodiversity values associated with spring fed creeks and rivers for the purposes of water abstractions.
14. Encourage the installation of appropriate measuring devices (e.g. water meters) on all existing and future water abstractions, to accurately measure, report, and monitor volumes of water being abstracted, and enable better management of water resources.
16. Advocate for durations not exceeding 25 years on resource consents related to water abstractions.
17. Require that Ngāi Tahu are provided with the opportunity to participate through pre hearing meetings or other processes in the development of appropriate consent conditions including monitoring conditions to address our concerns.
19. Avoid adverse effects on the base flow of any waterway, and thus on the mauri of that waterway and on mahinga kai or taonga species.

Submission Form 16 to the Otago Regional Council on consent applications

This is a Submission on (a) limited notified/publicly notified resource consent application/s pursuant to the Resource Management Act 1991.

Submitter Details:
(please print clearly)Full Name/s: The Otago Fish and Game Council
_____Postal Address: PO Box 76, Dunedin 9016

Post Code: _____

Phone number: Business: 03 477 9076 Private: _____

Mobile: _____

Email address: _____

I/ we wish to **SUPPORT / OPPOSE** / submit a **NEUTRAL** submission on (circle one) the application of:

Applicant's Name: Long Gully Race Society Incorporated

And/or Organisation: _____

Application Number: RM17.176
_____Location: Long Gully
_____Purpose: To take and use water from Long Gully

The specific parts of the application/s that my submission relates to are: *(Give details)*

Please see attached submission

My/Our submission is *(include: whether you support or oppose the application or specific parts of it, whether you are neutral regarding the application or specific parts of it and the reasons for your views)*.

Please see attached submission

I/We seek the following decision from the consent authority (*give precise details, including the general nature of any conditions sought*)

Please see attached submission

I/we:

- Wish to be heard in support of our/my submission
- Not wish to be heard in support of our/my submission

If others make a similar submission, I/we will consider presenting a joint case with them at a hearing.

- Yes
- No

I, ~~am~~/**am not** (choose one) a trade competitor* of the applicant (for the purposes of Section 308B of the Resource Management Act 1991).

**If trade competitor chosen, please complete the next statement, otherwise leave blank.*

I, ~~am~~/**am not** (choose one) directly affected by an effect as a result of the proposed activity in the application that:

- a) adversely affects the environment; and
- b) does not relate to trade competition or the effects of trade competition.

I, ~~do/do not~~ (choose one) wish to be involved in any pre-hearing meeting that may be held for this application.

I ~~do/do not~~ request* that the local authority delegates its functions, powers, and duties to hear and decide the application to 1 or more hearings commissioners who are not members of the local authority.

I ~~have/have not~~ served a copy of my submission on the applicant.

See attached submission

19 March 2020

Signature/s of submitter/s

(or person authorised to sign on behalf of submitter/s)

(Date)

Notes to the submitter

If you are making a submission to the Environmental Protection Authority, you should use [form 16B](#).

The closing date for serving submissions on the consent authority is the 20th working day after the date on which public or limited notification is given. If the application is subject to limited notification, the consent authority may adopt an earlier closing date for submissions once the consent authority receives responses from all affected persons.

You must serve a copy of your submission on the applicant as soon as is reasonably practicable after you have served your submission on the consent authority.

Privacy: Please note that submissions are public. Your name and submission will be included in papers that are available to the media and the public, including publication on the Council website. Your submission will only be used for the purpose of the notified resource consent process

If you are a trade competitor, your right to make a submission may be limited by the trade competition provisions in [Part 11A](#) of the Resource Management Act 1991.

If you make a request under [section 100A](#) of the Resource Management Act 1991, you must do so in writing no later than 5 working days after the close of submissions and you may be liable to meet or contribute to the costs of the hearings commissioner or commissioners.

You may not make a request under section 100A of the Resource Management Act 1991 in relation to an application for a coastal permit to carry out an activity that a regional coastal plan describes as a restricted coastal activity.

Please note that your submission (or part of your submission) may be struck out if the authority is satisfied that at least 1 of the following applies to the submission (or part of the submission):

- it is frivolous or vexatious:
- it discloses no reasonable or relevant case:
- it would be an abuse of the hearing process to allow the submission (or the part) to be taken further:
- it contains offensive language:
- it is supported only by material that purports to be independent expert evidence, but has been prepared by a person who is not independent or who does not have sufficient specialised knowledge or skill to give expert advice on the matter.

The address for service for the Consent Authority is:

Otago Regional Council, Private Bag 1954, Dunedin, 9054
or by email to submissions@orc.govt.nz



19 March 2020

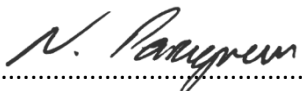
Otago Regional Council
Private Bag 1954
Dunedin, 9054
submissions@orc.govt.nz

Submission on Application No. RM17.176

This feedback is provided on behalf of the Otago Fish and Game Council (Fish and Game). For additional information please contact Nigel Paragreen using the details below.

Submitter Details

Submitter: The Otago Fish and Game Council
Contact person: Nigel Paragreen, Environmental Officer
Email: nparagreen@fishandgame.org.nz
Office phone: 03 477 9076
Postal address: PO Box 76, Dunedin 9016


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19 March 2020
.....

Introduction

- [1] Fish and Game is the statutory manager of sports fish and game bird resources within Otago. It holds functions and responsibilities set out in the Conservation Act (1987). Part of the organisation's function is to represent the interests and aspirations of anglers and hunters in the statutory planning process and to advocate the interests of the Council, including its interests in habitats.
- [2] Due to the popularity of angling in New Zealand, the demographic Fish and Game represents when carrying out its statutory functions is significant; however, this is not always obvious. The 2013/2014 Active NZ Survey conducted by Sport and Recreation New Zealand reported that 19.5% of respondents had been fishing (including both marine and freshwater angling) in the past 12 months¹. The survey found fishing had a higher rate of participation than rugby, tramping, football, cricket and basketball for men; and that fishing had a higher participation rate than netball, tennis, snow sports and tramping for women. Within Otago, license sales have exceeded 10,000 licenses in the past two decades and in the last decade has increased to over 20,000 licenses across all categories. Participation rates estimated from the National

¹ Sport and Recreation New Zealand. 2015. *Sport and Active Recreation in the Lives of New Zealand Adults: 2013/14 Active New Zealand Survey Results*. Wellington: Sport New Zealand.

Angling Survey (NAS)² between 1994 and 2015 show that total freshwater fishing effort in the Otago Fish and Game region ranged from 180,860 to 215,430 angler-days over the fishing season.

- [3] As required by the Conservation Act (1987), Fish and Game has prepared a sports Fish and Game Management Plan for Otago³, which has guided the development of this submission. This document describes the sports fish and game bird resources in the region and outlines issues, objectives and policies for management over the period. The document may be useful for decision makers when considering this application.
- [4] Fish and Game submits in respect to the whole application, in which it **opposes**. Fish and Game seeks that the application be declined unless the following relief is provided:
- a. that the consent term is no longer than 6 years;
 - b. that the abstraction does not restrict adult and juvenile rainbow trout fish passage until the end of December, where it would occur naturally; and
 - c. that conditions regarding race management are imposed on the consent to:
 - i. ensure unobstructed fish passage back to the stream;
 - ii. limit the frequency and extent of dewatering races and dams;
 - iii. specify opportunities to capture or utilise entrained fish
 - iv. regulate vegetation management; and
 - v. regulate emergency works.
- [5] Fish and Game **does** wish to be heard in support of its submission.
- [6] Fish and Game **would** consider presenting a joint case at a hearing and **would** be involved in a pre-hearing meeting.
- [7] Fish and Game is **not** a trade competitor of the applicant.
- [8] Fish and Game **does not** request that the local authority delegates its functions, powers, and duties to hear and decide the application to 1 or more hearings commissioners who are not members of the local authority.
- [9] Fish and Game **has** served a copy of its submission on the applicant.

Background on the application

- [10] Long Gully Race Society (LGRS) is applying for consent for a significant take of water from Long Gully Creek for irrigation (including high value horticulture) stock water and domestic purposes. Currently the take is authorised by a deemed permit and a consent both of which expire in 2021.

² Unwin, M. J. (2016). *Angler Usage of New Zealand Lake and River Fisheries*. Christchurch: National Institute of Water and Atmospheric Research.

³ Otago Fish and Game Council. (2015). *Sports Fish and Game Management Plan for Otago Fish and Game Region 2015 - 2025*. Dunedin: Otago Fish and Game Council.

[11] Key statistics for the application are:

Indicator	Value
MALF at the point of take	19L/s
Primary allocation requested	56L/s*
Monthly volume requested	170,000 m3
Annual volume requested	520,000m3
Residual proposed	0L/s

* the instantaneous rate of take is proposed to be stepped through the irrigation season.

- [12] From the application and subsequent discussions with LGRS, Fish and Game understands that the abstracted water is transported via predominately open race to the society's members. At the take point there is a sediment trap and by-wash facility but no fish screen. A number of buffer ponds are used to store water temporarily and Fish and Game staff have been informed that the race and dam infrastructure have trout residing within them. On a site visit on the 30th of June 2019, Fish and Game staff observed that the habitat provided by this infrastructure may be suitable for trout, due to the vegetated nature of the banks to provide cover. Fish and Game understands that during the irrigation season some members of the LGRS pump water from Lake Dunstan under other consents, as their irrigation demand cannot be met by abstracting from Long Gully Creek alone.
- [13] Long Gully Creek is currently in an impacted state due to water abstraction and for many years the stream has lost surface connection during much the irrigation season. As the current deemed permit has been operating without the need to share any water with the environment, Fish and Game understands that all flows are often abstracted. In the past, Fish and Game has received confirmed reports from the public of fish kills and strandings.
- [14] The initial assessment of ecological values by LGRS was based on old freshwater fish survey database data and understated the fish values present. Subsequent fish survey work undertaken by Fish and Game in August and September 2017 revealed yearling trout at all survey sites and a pair of spawning adults at the upstream site. Young of the year rainbow trout were observed in the lower reaches in November 2017 during flow assessment work by Clutha Fisheries Trust in co-operation with LGRS⁴. Fish and Game conclude that this stream sustains a rainbow trout spawning run and nursery population of 0+ and 1+ rainbow trout.
- [15] The initial hydrological assessment of the stream by LGRS was based on a cessation of the water take for a 48 hour period and informal LGRS observations of stream behaviour over time. They concluded that Long Gully Creek goes dry naturally in late November or December each year. Fish and Game considers this assessment is not sufficient to determine effects because little is known about the connected aquifer. Thus, the stream's behaviour under natural flows and the timing of any disconnection is still uncertain.
- [16] Fish and Game and Clutha Fisheries Trust, the latter of which has not been considered as an affected party to date, have expended considerable time and effort assessing ecological values and flows in Long Gully Creek and meeting with LGRS representatives. This has improved overall understanding of water use and environmental effects and has come close to resulting in agreements on mitigation packages, particularly the stepped abstraction regime. Unfortunately, the conclusion was that agreement could not be reached.

⁴ These references have been attached as Appendices 1, 2 and 3

- [17] Since then ORC has undertaken hydrological survey work in the stream from the take downstream. That reveals some initial losses to groundwater and then a neutral reach where there are neither losses nor gains above measurement error.

Intrinsic value and natural character of Long Gully

- [18] Fish and Game considers that Long Gully has intrinsic value in and of itself. Regardless of values imbued upon it by humans, the waterbody should be allowed exist. This is a fundamental concept which resonates with many anglers and hunters.
- [19] Recognition and protection of the intrinsic value of a water body is key also to ensuring the functions that are difficult to measure are maintained. For smaller streams such as Long Gully this is critical as information is often lacking and these factors may be overlooked due to their complexity. Examples include:
- a. the resilience of the ecosystem;
 - b. invertebrate production;
 - c. surface-ground water interactions;
 - d. landscape amenity; and
 - e. natural character.
- [20] The concept of intrinsic value is related to, but more fundamental than, natural character. Natural character is a value imbued upon the waterbody by humans – an appreciation of biophysical, ecological, geological and geomorphological aspects. The RPW discusses natural character in Policy 5.4.8, which includes both the natural functioning of the waterbody and the way it has been altered. This is substantially different approach to that of natural form and character value in the National Objectives Framework of the NPS-FM, which does not consider how human activities may have impacted upon the aspects listed above.
- [21] In the context of Long Gully, the natural character could be described as a small stream, part of which intermittently loses surface connection, which provides for a range of native and introduced flora and fauna in a rural setting. The deemed permit held by LGRS has likely altered the duration and extent of the intermittently dry reach. When considering this against the natural form and character context described in the NPS-FM, the abstraction will be affecting natural character.
- [22] The overarching concept of intrinsic value is partly encapsulated in the National Policy Statement for Freshwater Management (NPS-FM) Objective AA1 and Policy AA1, regarding Te Mana o te Wai. The NPS-FM describes Te Mana o te Wai as:
- “... the integrated and holistic well-being of a freshwater body. Upholding Te Mana o te Wai acknowledges and protects the mauri of the water.”*
- [23] It should be noted that Objective AA1 and Policy AA1 have not been given effect to within the Regional Plan: Water for Otago (RPW)⁵. However, this concept is being integrated into other planning documents. In evidence given to the Environment Court regarding the Southland

⁵ The Otago Regional Council. (2020, March 18). Section 32 Evaluation Report: Proposed Plan Change 7 to the Regional Plan: Water for Otago. Dunedin, Otago, New Zealand: The Otago Regional Council. Retrieved March 19, 2020, from https://www.orc.govt.nz/media/8319/water_permits_plan_change_public-report-20200311.pdf

Land and Water Plan, a witness giving evidence on behalf of various Rūnanga and Te Rūnanga o Ngāi Tahu described Te Mana o te Wai:

“... Te Mana o te Wai disrupts the regulation of the status quo by RMA tools as it makes the mana of water, its health and status, the paramount priority. It gives reverence to water, rather than regarding it solely as a commodity to benefit land-based production, economic development, and land use change.”⁶

- [24] The application seeks to abstract comparatively large amounts of water from the ecosystem. Indeed, the application suggests the LGRS does not see Long Gully as having value when surface water is disconnected, taking a binary approach to the value of the waterbody when a surface water disconnection occurs. Fish and Game does not consider that this approach is consistent with Te Mana o te Wai, as it does not acknowledge and protect the mauri of the water. Nor does it recognise the adverse effect of the abstraction on natural character, in the context of the NPS-FM. Rather, the application views the water as a generic commodity which is wasted if used on natural functions not of direct use to LGRS.

Trout fishery values

- [25] The survey work demonstrates that Long Gully Creek is used by rainbow trout from Lake Dunstan as a spawning and rearing area sustaining both 0+ and 1+ juvenile fish. The lake fishery is recognised as nationally important in trout fishery terms and is entirely dependent on wild spawning, rearing and recruitment into the lake. Angling effort on the lake is high for the region, with annual angler days estimated at around 20,000 and a peak count of 26,000. This represents up to 12% of total angling in the Otago Fish and Game Region. The lake contains brown trout (*Salmo trutta*) and rainbow trout (*Oncorhynchus mykiss*) with brown trout predominating but rainbow trout are a valued component of the catch.
- [26] Rainbow trout spawning has been recorded in Low Burn, Bannock Burn and Long Gully, with brown trout spawning in the Lindis River. Some spawning occurs in a number of smaller tributaries such as Devils Creek. While there are also contributions to recruitment from further up the Kawarau and Clutha catchments, tributary spawning areas which directly feed into Lake Dunstan are considered of direct importance. Ultimately, the productivity and resilience of the Lake Dunstan fishery is dependent on the cumulative contributions of each of these tributaries. Habitat loss or degradation in tributaries due to overallocation relating to deemed permits will be having impacts on the wider fishery even though effects are difficult to measure.
- [27] Sexually mature adult rainbows run into Long Gully in September to spawn in suitable locations and trout eggs develop and hatch in river-bed gravels and emerge to become free swimming young of the year (0+). They then either migrate downstream to Lake Dunstan or remain in permanently flowing reaches of the creek to become 1+ fish. Older juveniles have a better chance of survival to become adult trout.
- [28] Outmigration of juvenile fish is thought to be triggered by changes in habitat conditions and can include changes in temperature or flow caused by floods or freshes and fish density pressures. Studies of rainbow trout elsewhere in NZ showed outmigration peaked in November and December.

⁶ Cain, A. (2019, February 15). Statement of evidence of Ailsa Margaret Cain. ENV-2018-CHC-26 to 50. Retrieved March 19, 2020.

- [29] Under current circumstances, the value of Long Gully Creek is limited through loss of flow in November each year. As flow becomes limited, habitat is reduced and fish in the reach below the take will become stranded and die. Fish moving downstream from above the race take are being entrained into the race system. Improved flows, especially in November and December will improve the likelihood of successful trout recruitment to the lake and contribute to increased lake productivity.
- [30] Fish and Game submits that decision makers should consider the value of the wider fishery when considering this application. Because many of the deemed permits in Lake Dunstan tributaries are considered individually (or in groups within a specific tributary), there is a risk of each tributary being written off as unimportant. At a cumulative level, this will mean the significance of the cumulative contribution made by the tributaries is not recognised. Adverse effects felt in the tributaries of Lake Dunstan, such as Long Gully, will be felt in the wider fishery.

Hydrology

- [31] The LGRS have told Fish and Game staff that Long Gully Creek is naturally ephemeral and therefore providing a residual flow will not be of benefit. Implicitly, this position means that there is no value in the habitat downstream of the take if there is a disconnection in surface flows.
- [32] Fish and Game sought an independent hydrological assessment of the information presented in the application and supplementary information that had been gathered and shared by the parties since. The advice was provided by Jens Rekker and is attached in Appendices 4 and 5.
- [33] In summary, Mr Rekker identified that:
- a. The natural character of the creek would be better described as intermittent with the take worsening the situation during the irrigation season.
 - b. With the information on hand, he was not able to provide guidance on the impact of the take on the dry stretch, such as how much water is required to retain/remake connection; the relationship between amount of water taken and the consequential reduction in habitat; or the typical duration of the disconnection.
 - c. In order to determine the above, he recommended installing two surface water measurement sites (one up and downstream of the take), possibly combined with the use of a piezometer.
 - d. The fluctuating storage beneath the rising or falling water table almost certainly leads to changing rates of infiltration from Long Gully Creek to the alluvial aquifer.
 - e. From the perspective of maintaining flow continuity in Long Gully for as long as possible, the higher the creek flow and longer the period within which the alluvial aquifer can recharge the better.
 - f. There is a very slender body of data and information on which to make informed technical assessments and for decision makers to be adequately advised.
- [34] Unfortunately, LGRS has not provided an assessment of the relationship of the take to the dry stretch and how much habitat that provides to the creek in their application, so it is difficult to quantify the habitat lost or the value it holds. At one stage LGRS consultants did produce an estimate of the number of additional days they expected the creek to dry due to the take. However, this estimate was based on one year's worth of flow monitoring and an assumption

about the static flow at which disconnection will occur. This estimate is not considered to be reliable.

- [35] Fish and Game does not see that sufficient hydrology information has been presented to enable long term decisions about catchment management to be made. Because of this, Fish and Game submits that assessments of effects should be precautionary to account for potential inaccuracies in the data. In addition, it should be made clear that there is a difference between a lack of information around an adverse effect and an absence of an adverse effect. It may be that the adverse effects of this application are not fully appreciated due to the poor quality information.

A binary assessment of effects in an intermittent waterway

- [36] The applicant has stated in the application that the value of the stream is low. This is due to the stream being naturally intermittent, as has been characterised by Mr Rekker. At key points in the assessment of effects, a binary approach is taken, implying that, because parts of the stream go dry below the take it is not necessary to provide a residual flow:

“As outlined in the report in Appendix A, Long Gully is naturally an ephemeral waterway in its lower reaches, below the LGRS point of take. This means that even without any abstraction by LGRS, Long Gully would naturally go dry below LGRS’s point of take during periods of low flow (as measured at or above the LGRS point of take). This is the ‘natural character’ of Long Gully, and as such a residual flow is not necessary to provide for this natural character.

In addition, there are very limited in-stream ecological values associated with Long Gully, and these will be non-existent when the lower reaches of Long Gully (below the LGRS point of take) are dry. As these lower reaches would be dry regardless of the LGRS abstraction, a residual flow is not considered justified in terms of providing for aquatic eco-system values.”

- [37] While the areas that intermittently go dry naturally would certainly not be classified as the highest of value, this does not mean that mitigation is not necessary. The value of the stream should not be considered using a binary test of whether it goes dry at some stage below the take. Some areas will remain wetted, others will dry but not for the whole year. This complex hydrological state of flux changes depending on stream reach and season and forms the natural character and habitat for ecological value of the stream. It should not be reduced to a binary dry or not dry assessment.
- [38] Mr Rekker has identified that the take will most certainly be having an adverse effect on the length and duration of the dry reach. If the take were to cease, there may be areas that are no dried at all through the year. Other areas may be wetted for less time, enabling the aquatic ecosystem to recover quicker than with the effect of the take, improving the resilience of the ecosystem. Unfortunately, there is not enough information presented in the application to quantify the scale of the habitat affected, nor the additional timeframe they may be impacted for. As discussed above, a lack of information should not be equated to a lack of an effect.
- [39] Timing in this instance is critical as a major adverse effect identified by Fish and Game is that the take will create a surface flow disconnect sooner than would have been the case naturally. It is known that adult rainbow trout have been stranded in the catchment during their

⁷ Application section 4.3(c)

outmigration to Lake Dunstan. However, it is not clear when in the year parts of the waterway would dry naturally and restrict passage, or the variability of this date between years.

- [40] After limited notification, the application was amended to include a stepped rate of abstraction regime. A condition of this sort had been debated by the applicant and Fish and Game, long with a companion condition to electric fish and relocate trout which were still stranded. This discussion was hampered by a lack of hydrological understanding as to when the stream would run dry naturally and how the abstraction impacted upon this. The position reached by Fish and Game was that the benefit provided by the stepped abstraction regime was not sufficient to adequately mitigate the additional risk posed to fish outmigration by the abstraction. In addition, subsequent ecological advice raised concerns about the use of electric fishing devices on redds and developing eggs.
- [41] Fish and Game's advice to the applicant was that fish passage for adult and juvenile rainbow trout should be provided until the end of December to allow for outmigration, where it would be provided naturally. This could be achieved by significantly reducing the instantaneous rate of take; setting a high residual flow until the end of December; or committing to flow sharing at medium and high flows.

Theoretical guidance for water quantity decisions

- [42] While there are major information gaps in the application that hinder the setting of specific mitigation. This does not mean that decisions cannot be made. Theoretical guidance can be adapted to the case to inform decision making. In their recent review of the rationale for assessing fish flow requirements, Hayes *et al.*⁸ provide useful guidance on how the adverse impacts of water quantity may be assessed. This guidance was developed with leading scientists at the Cawthron Institute, NIWA, the Hawks Bay Regional Council and the Greater Wellington Regional Council.
- [43] The passage below from that review considers the adverse effects of flow and allocation limits as being on a sliding scale, with high residual and low allocation scenarios being of lower ecological risk and low residual with high allocation scenarios being of higher ecological risk. The authors use differing terms for ecological flows interchangeably; however, the concepts are applicable to both minimum and residual flows in the Otago context.

“When setting flow limits it is important to appreciate the interplay between the minimum flow and allocation limit. Assessment of allocation scenarios has traditionally focused on security of supply to abstractors. However, greater security of supply for users increases the magnitude and duration of low-flow stress on stream ecosystems. The risk of adverse effects on fish increases with decreasing minimum flow and increasing allocation rate, the latter depleting mid-range flows and increasing the duration of the minimum flow. For example, increasing the allocation rate diminishes the duration of higher flows above the minimum flow into the lower mid-range, which contribute to benthic invertebrate (fish food) production and drift-feeding opportunities for fish. Reduction in the frequency and duration of mid-range flows reduces the quantity of benthic invertebrate habitat and potentially reduces its quality due to reduced water velocity and increased siltation—especially in spring-fed

⁸ Hayes, John, Joe Hay, Rasmus Gabrielsson, Eric Goodwin, Phillip Jellyman, Douglas Booker, Thomas Wilding, and Mike Thompson. 2018. *Review of the rationale for assessing fish flow requirements and setting ecological flow and allocation limits for them in New Zealand - with particular reference to trout*. Nelson: Cawthron Institute.

streams. Potential flow management options to maintain more of the lower mid-range flows instream to mitigate effects on benthic invertebrate production, invertebrate drift and feeding opportunity for drift-feeding fish include:

1. Higher minimum flow (even above the MALF when allocation is large). This redefines the function of the minimum flow from one of providing temporary refuge habitat for fish to maintaining proportionally more benthic invertebrate habitat and feeding / growth opportunities for fish (i.e. retaining a share of the productivity that would otherwise be lost to a large allocation rate).
2. Lower primary allocation rates or more conservative flow sharing or abstraction step-down rules to reduce the rate of flow recession to the minimum flow.”

[44] Hayes *et al.* also provide general recommendations which are relevant to the application:

“In the general water planning context, we recommend precautionary minimum flow and allocation decision making based on the historical flow method with minimum flow retention options referenced to the naturalised MALF for fish and ‘seasonal’ median flows for benthic invertebrates. This is the most affordable method and less subject to potential biases in habitat modelling. There are benefits in complementing the historical flow method (for final limits decision making) with hydraulic-habitat modelling, invertebrate drift–flow relationships and trout NREI [net rate of energy intake] modelling from specific rivers in a region, or with insights from such studies elsewhere. Habitat modelling is still useful in this context, but sole reliance on habitat retention estimates as a basis for setting minimum flows is inadvisable because it presumes high precision when in fact there is a high degree of uncertainty in habitat, fish and ecosystem response.

Minimum flows that are within 80–90% of naturalised MALF and low primary allocation limits of up to 10–20% of the MALF are likely to be precautionary. These ranges are likely to provide high to moderate levels of protection, maintaining natural structure and function of ecosystems or result in measurable, but not large, changes in structure and minimal changes in function. Higher allocation, up to 30% of MALF as recommended in the proposed Draft National Environment Standard for Flows and Water levels for rivers with mean flow < 5 m³/s, might be justifiable when flow variability is such that flows are not held at the minimum flow for prolonged periods (i.e. weeks to months). There is greater scope for allocation with less risk to fish (habitat, food supply and feeding) over upper mid-range flows (i.e. around median flows and greater). Shifting the emphasis from primary allocation to higher flow (supplementary allocation) blocks will require storage to maintain security of supply to abstractors, the effects of which also need addressing”

(text in square brackets added by submitter)

[45] The authors caution that the recommended limits are approximate and subject to local conditions; however, the passage still highlights that the presence of a residual flow or allocation limit will not necessarily provide for the ecosystems in and of itself – it is the scale of those limits that matters.

Allocation, residual flows and race management

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[46] The application has the potential to abstract all water up to 56L/s and seeks to abstract all flow at low flows, leaving nothing for the environment. The application would permit the abstraction of comparatively large amounts of water from the catchment. All of the allocation applied for is from the primary block, equivalent to just under 300% of MALF and the monthly volume limit proposed is meaningless as it is higher than can be physically be abstracted at the maximum rate of take.

Percentage of MALF	Recommended levels	Proposed in application
Residual flow	80-90%	0%
Primary allocation*	10-20%	295%

* using the full 56L/s proposed primary allocation

[47] No residual flow is proposed to provide for aquatic ecosystems or natural character and there is no minimum flow in place in the greater Clutha catchment to regulate cumulative effects. The scale of the activity creates a high risk of environmental damage and the information provided is not sufficient to justify the claim that mitigation is not required.

[48] Fish and Game has previously indicated that it would be supportive of three scenarios to address these adverse effects:

- a. For the applicant to apply to take all water from Lake Dunstan rather than Long Gully. Fish and Game notes that part of the LGRS scheme already takes water from Lake Dunstan as the quantum of water in Long Gully is insufficient for their needs.
- b. To continue to abstract from Long Gully and impose consent conditions which bring the take within the recommended guideline levels, undertake race management and avoid the take impacting on outmigration.
- c. To continue to abstract from Long Gully and impose consent conditions for a consent term of 10 years, avoid the take impacting on outmigration, undertake race management and gather information over the life of the consent to better inform future consent applications.

[49] If the take is to continue operating within Long Gully, a further complication when considering a residual flow is the geomorphology of the stream at the point of take, where a large drop directly downstream may hinder fish passage at flows in the lower percentages of MALF. At flows near the recommended levels, the risk of restricting fish passage is lessened; however, it is not clear what flow is required to enable fish passage. A by-wash is located in the vicinity of the take and may present an opportunity to provide fish passage past this barrier.

[50] Fish and Game has been previously asked by LGRS to consider whether fish screens would be necessary on take. After inspecting the race and dam infrastructure, Fish and Game staff note that it can provide suitable habitat for trout but the issue is how can they be used in a beneficial way. Fish and Game understand the difficulty associated with fish screen condition on the consent if issued, especially where flows cease downstream.

[51] There is an opportunity for a win-win outcome in regard to fish screening. Based on previous discussions with LGRS, an agreement on the management of the race infrastructure seems feasible and may be an alternative to having a fish screen. This outcome would provide habitat for fish in the race during low flows and absolve LGRS of the cost of installing and maintaining a fish screen.

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- [52] Fish and Game is open to further discussion with the applicant on this topic. It is suggested any agreement that might be reached as a result be framed as volunteered conditions of consent and should cover:
- a. ensuring unobstructed fish passage back to the stream for example via the by wash;
 - b. frequency and extent of dewatering races and dams;
 - c. opportunity to capture or utilise entrained fish
 - d. vegetation management; and
 - e. emergency works.

Inadequacy of the Otago Water Planning framework and consent term

- [53] Fish and Game does not consider the application as proposed to be reasonable or consistent with the higher order policy documents. The high risk is not likely to provide for the life-supporting capacity of the stream (NPS-FM Objective B1), nor does it appropriately provide for Te Mana o te Wai (NPS-FM Objective AA1). Looking to Part 2 of the Resource Management Act (RMA), the proposal will enable LGRS to provide for their social and economic well-being; however, it does so at the cost of the waterbody. The adverse effects of the proposal have specifically not been effectively avoided, remedied or mitigated.
- [54] Fish and Game submits that such poor environmental protection has been enabled by the water policy framework in Otago being outdated and incomplete. The RPW in particular, was written decades ago does not give effect to the provisions of the NPS-FM. The RPW does not require decision makers to consider Te Mana o Te Wai; safeguard life supporting capacity; define and phase out over-allocation; or provide for economic well-being within limits, as in the NPS-FM, but rather to maintain or enhance values and grandfather existing allocations.
- [55] Significant future work is required for the RPW to give effect to the NPS-FM. This has been recognised by the ORC. In late 2018, ORC staff recommended that a Progressive Implementation Programme be adopted as they advised the RPW did not give effect to the NPS-FM.⁹
- [56] Since then, 2 recent investigations by external experts have brought consenting issues regarding surface water to light:
- a. Consents Function Review: A report prepared for the Otago Regional Council¹⁰, which concluded that the term for surface water consents issued by the ORC was too long; and
 - b. Report to the Minister for the Environment¹¹ (the Skelton Report).

⁹ Hawkins, L., & Dawe, A. (2018). *Progressive Implementation Program (PIP) for the NPSFM*. Dunedin: The Otago Regional Council. Retrieved from <https://www.orc.govt.nz/media/6263/council-agenda-31-october-2018.pdf>

¹⁰ Maw, Philip, and Stephen Daysh. 2019. *Consents Function Review: A report prepared for the Otago Regional*. Dunedin: Otago Regional Council.

¹¹ Professor Skelton, Peter. 2019. *Investigation of Freshwater Management and Allocation Functions at Otago Regional Council: Report to the Minister for the Environment*. Wellington: Ministry for the Environment.

[57] The Skelton Report is critical, as it represents an in-depth analysis of Otago water policy documents, ORC performance and the perspectives of stakeholders. It is the most in-depth investigation of the Otago water framework in recent years. The report found that:

- *“The Council’s existing water planning framework has suffered from a lack of investment in science, planning, and hydrological modelling.*
- *There is a lack of clear and robust minimum flows and a failure to address over-allocation.*
- *The existence of the deemed permits has also limited the ability of the Water Plan to manage water quality and quantity.*
- *There is large variation in the planning frameworks for the region’s catchments to deal with the expiry of deemed permits.*
- *Only the Pomahaka catchment is underway for transition to an RMA consenting process with an established primary allocation limit, minimum flows for primary allocation, supplementary allocation blocks, and minimum flows for supplementary allocations. This catchment, however, has only three deemed permits. Progress is also being made on the Arrow and Cardrona catchments which have started a planning process to set minimum flows and allocations*
- *Most other catchments are not so prepared. A minimum flow and allocation regime was proposed for the Lindis catchment some five years ago but has yet to be decided on by the Environment Court.*
- *A minimum flow and allocation regime for the Manuherekia catchment is still about two years away and even further is the Taieri catchment where hydrological modelling has yet to be started. The status of the Taieri catchment is significant since it includes the highest number of deemed permits (75).*
- *Due to the under investment in science and planning, I do not consider that the ORC is in a position to provide for the smooth transition from water allocation based on mining privileges to allocation based on RMA consents which are subject to appropriate flow and allocation limits before 1 October 2021. This is a major concern since we are now in 2019 – ‘Year 28’ of the 30 year transition period for the deemed permits.”*

[58] The allocation proposed for LGRS is an example where the Otago water policy framework enables the grandfathering of the primary allocation for a surface water consent with very little supporting information or modern scrutiny of ecological, social or cultural factors. In this sense, the Otago water policy framework is enabling outcomes that are out of step with modern policy direction.

[59] On this point, the Skelton report concludes:

“The immediate issue facing the Council is the challenge of developing a fit for purpose planning framework ahead of the expiry of the deemed water permits on 1 October 2021.

It will be important to complete a new regional policy statement and a new land and water regional plan before undertaking the assessment of any new or replacement water consent applications. This will enable applications to be considered under the new freshwater planning framework and will halt the current unsatisfactory situation of ad hoc ‘planning by consent’. This report recommends a pathway for achieving this.”

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[60] Upon receipt of the Skelton Report, Minister Parker recommended that the ORC develop a fit for purpose planning regime and take steps to manage surface water consents until that time¹². He suggested placing short term limits on consents, so they are aligned with the development of the new planning regime. The ORC has since adopted this approach and recently notified Plan Change 7 (PC7) on 18 March 2020.

Policy assessment

[61] While Fish and Game strongly asserts that the Otago water policy framework is not fit for purpose, the application must still be consistent with the framework as it stands. Fish and Game considers that the following policy documents should be had regard to in assessing this application:

- a. the Resource Management Act (1991);
- b. the National Policy Statement for Freshwater Management 2014 (amended 2017);
- c. The Regional Policy Statement, both proposed and operational;
- d. the RPW;
- e. the Kai Tahu ki Otago Natural Resource Management Plan 2005; and
- f. the Sports Fish and Game Bird Management Plan for Otago 2015-2025.

[62] The recent notification of PC7 is highly relevant to this application. PC7 sets up two pathways for assessing surface water abstraction consents, using a single objective, three policies and two rules. The rules alter the activity status of applications for surface water abstraction prior to 2025; however, they are not applicable to this case as LGRS has submitted their application prior to notification of PC7.

[63] However, the notified policies and objective are highly relevant, and the policies are listed below:

10A.2.1 *Irrespective of any other policies in this Plan, avoid granting resource consents that replace deemed permits, or water permits to take and use surface water (including groundwater considered as surface water under policy 6.4.1A (a), (b) and (c) of this Plan) where those water permits expire prior to 31 December 2025, except where:*

- (a) *The deemed permit or water permit that is being replaced is a valid permit; and*
- (b) *There is no increase in the area under irrigation, if the abstracted water is used for irrigation; and*
- (c) *There is no increase in the instantaneous rate of abstraction; and*
- (d) *Any existing residual flow, minimum flow or take cessation condition is applied to the new permit; and*
- (e) *There is a reduction in the volume of water allocated for abstraction.*

¹² Parker, David. 2019. "Section 24A Report: Investigation of Freshwater Management and Allocation Functions and Otago Regional Council under section 24A of the Resource Management Act 1991." Office of Hon David Parker

10A.2.2 *Irrespective of any other policies in this Plan concerning consent duration, only grant new resource consents for the take and use of water for a duration of no more than six years.*

10A.2.3 *Irrespective of any other policies in this Plan concerning consent duration, only grant new resource consents that replace deemed permits, or resource consents that replace water permits to take and use surface water (including groundwater considered as surface water under policy 6.4.1A (a), (b) and (c) of this Plan) where those water permits expire prior to 31 December 2025, for a duration of no more than six years, except where Rule 10A.3.2.1 applies and:*

- (a) The activity will have no more than minor adverse effects (including no more than minor cumulative effects) on the ecology and the hydrology of the surface water body (and any connected water body) from which the abstraction is to occur; and*
- (b) The resource consent granted will expire before 31 December 2035.*

[64] The application as proposed is not consistent with these policies. The duration is longer than six years and, based on the discussion above, Fish and Game considers that the adverse effects (including cumulative effects) are not less than minor on the ecology and hydrology of the waterbody or connected waterbodies. It is not clear from the application whether there is a reduction in volume of water allocated for abstraction or whether there will be no increase in the area under irrigation.

[65] The amount of weight to be given to PC7 will no doubt be contentious, and the notified plan has yet to be exposed to testing and independent decision making. Regardless, Fish and Game submits that a reasonable level of weight should be given to it. This is because:

- a. the plan change is intended to resolve a well-defined problem with the RPW, in that it is not fit for purpose does not give effect to higher order policy documents;
- b. the plan change has been developed to implement a coherent pattern of objectives and policies that align with higher order policy documents; and
- c. there is a level of injustice at play, as applicants may exploit the lengthy timeframe of the plan change process in order to get water allocated prior to PC7 becoming operational, with the knowledge that future reviews of any issued consent to phase out over-allocation may frustrate their consent.

Relief sought

[66] Fish and Game notes that the three alternatives proposed in paragraph 48 are consistent with the guidance of PC7, provided the consent term for the third option were limited to 6 years.

[67] It is also worth noting that for the purpose of this application process, issuing consents relating to the abstraction of water from Lake Dunstan is outside of the scope. If abstracting from Lake Dunstan were identified as a reasonable alternative, Fish and Game suggests the action to be taken by the decision maker in this process would be to decline the application.

[68] In line with the alternatives identified in paragraph 48(a) and 48(c), Fish and Game seeks that the application be declined unless the following relief is provided:

- a. that the consent term is no longer than 6 years;

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- b. that the abstraction does not restrict adult and juvenile rainbow trout fish passage until the end of December, where it would occur naturally; and
- c. that conditions regarding race management are imposed on the consent to
 - i. ensure unobstructed fish passage back to the stream;
 - ii. limit the frequency and extent of dewatering races and dams;
 - iii. specify opportunities to capture or utilise entrained fish
 - iv. regulate vegetation management; and
 - v. regulate emergency works.

[69] Fish and Game would encourage a pre-hearing meeting with the applicant so that agreement can be sought on the wording for the relief sought prior to a hearing.

Appendices attached to submission email:

Appendix 1 – Long Gully Creek Fisheries Investigation Survey

Appendix 2 – Long Gully Spawning Survey

Appendix 3 – Long Gully Flow Monitoring 2017

Appendix 4 – Long Gully Hydrology Assessment

Appendix 5 – Long Gully – Response to Detailed Questions

Appendix 6 – Form 16

Nigel Paragreen

From: Jens Rekker <jens@rekker.co.nz>
Sent: Thursday, 11 July 2019 3:49 PM
To: Nigel Paragreen
Cc: Ian Hadland; Morgan Trotter
Subject: RE: Long Gully - Response to Detailed Questions
Attachments: TR2009-028-Assessment-lengths-permanent-intermittent-ephemeral-streams-Auckland.pdf

Hi Nigel

I enjoyed our teleconference this afternoon. You asked me to respond in the same order as your initial request for advice, which I have done so below:

We would like to know:

1) *Is there enough information confidently determine the following:*

a. *Under naturalised low flows, is the stream perennial in all reaches?*

There is some information from the applicant from a same-day, multiple site waded gauging campaign on 22 May 2019 that shows Long Gully behaving in a perennial fashion. However, this is temporary and Long Gully can also become depleted in terms of its base-flow of its lower reaches where it flows over high permeability sandy gravels. Even without abstraction effects I could envisage climatic conditions (drought or extended dry period) where Long Gully could become intermittent. Intermittent (versus perennial or ephemeral) in relation to streams or rivers can be defined as follows:

<https://www.e-education.psu.edu/earth111/node/867>

In broad terms, a water course with intermittency is subjected to climatic or infiltration to groundwater stress that disconnect flow in the water course. Only the uppermost reaches of Long Gully (low order, watershed tributaries) are considered ephemeral. Auckland Council have done some work on defining intermittency in the attached report, although Auckland does not have the same climate and Quaternary geology as Central Otago.

b. *If the stream is not perennial under naturalised low flows, what is the character of the dry reach in relation to?*

i. *The typical geographical extent of any dry stretches*

The lower reaches as the water course passes over thicker measures of sandy gravel. GNS Science map the margins of Long Gully as “unconsolidated Holocene gravel, sand, silt, clay, and minor peat of modern to postglacial flood plains, may be terraced” in the last 4 kilometres to the Kawarau confluence. The groundwater system within the sandy gravel alluvium stores and releases water from the stream. However, when the water storage is depleted the system attempts to balance itself by infiltrating all flow to the water table, leaving the stream dry.

ii. *the typical duration that dry stretches will occur*

That is very hard to venture an estimate on since the current hydrology is almost permanently affected by diversion into the water race.

iii. *the flow (or range of flows) that will cause a disconnection going into low flow periods*

I have no answer to that unknown. Determining this would require continuous flow records at a minimum of two well-chosen sites.

iv. *the flow (or range of flows) that are likely to re-connect the water body during low flow freshes and moving out of low flow periods?*

See above.

c. *To what degree does the abstraction impact on the factors raised in (1)?*

i. *can this impact be measured (eg. the dry reach is typically extended by x meters/days because of the abstraction)?*

In broad terms, abstraction increases the duration of intermittency and possibly the stream length dried up. Abstraction has an effect of lowering the overall stocks of flow / volume in the Long Gully hydrological system. The sandy gravel alluvium in the lower reaches act in a

manner analogous to batteries charged or discharged by stream flow. The store is recharged to full capacity by elevated, constant flows. But, the store within the alluvium is discharged by extended periods of low flow. From the documents you provided I saw evidence for spring – summer abstraction steadily depleting the store of flow, resulting in the alluvium taking all of the residual flow and disconnection.

ii. *how sensitive are these factors to reductions in the amount of water abstracted?*

While the peak consented take is 56 L/s, the irrigation season median abstraction rate is 24.4 L/s, so this flow is being removed from a hydrology that may have a MALF of 19 L/s. Such an imbalance is sufficient to deplete the alluvium water storage, and in turn result in all flow being lost to the water table over the alluvial reaches.

2) *If there is not enough information to confidently determine the points raised in (1), could you identify the additional information and study required to do so? Both:*

a. *in the immediate, which Otago Fish and Game can request of the applicant, and*

On past experience, there is little useful information that can be specified and gathered through the s92(1) process that would be sufficient to relieve the wider hydrological data deficiencies. Same-day, multiple site flow gaugings and photographic surveys are definitely useful, especially if they can contrast the inferred depleted base-flow and fully charged base-flow states. Airphotos often allow wet versus dry river bed to be differentiated, so interpretation of digital records of airphotos through time is often helpful in order to characterise drying reaches.

b. *if an interim consent were issued for the purpose of continuing the activity and gathering additional information.*

i. *Please see the attached proposal from Maria Bartlett, which is currently untested. Would this enable us to confidently determine the points raised in (1)? If not, could you propose a practical, alternative monitoring regime and the required timeframe for it to be in place?*

Indeed, I believe that the installation of two well-placed continuous flow recorders (well calibrated and well maintained), possibly combined with a data-logged water table recorder (piezometer), would go a long way towards defining hydrological statistics and delineating the recharging and depletion dynamics of the stream system. The progressive implementation or management plan outlined by Maria would potentially be a platform for obtaining such useful records that would assist the subsequent consent renewal.

Cheers
Jens

From: Nigel Paragreen <nparagreen@fishandgame.org.nz>
Sent: Friday, 21 June 2019 4:36 PM
To: Jens Rekker <jens@rekker.co.nz>
Cc: Ian Hadland <ihadland@fishandgame.org.nz>
Subject: Long Gully

Hi Jens,

Thanks for agreeing to take on this work. The contract came through perfectly and the 1 July timeframe you proposed in the other email works for us.

I've tried to articulate exactly what we're looking for on Long Gully. I hope that clarifies, not complicates matters. My hope is that any information you come up with in (2) will have use in similar catchments and deemed permit applications across Otago.

Just give me a yell if what I've written doesn't make sense, if you think any key points are missing or if you think will take longer than the 5 hours you had expected.

We're interested in is getting the hydrological information for the Long Gully Race Society deemed permit application reviewed by you. We would like to know:

1) Is there enough information confidently determine the following:

- a. Under naturalised low flows, is the stream perennial in all reaches?
 - b. If the stream is not perennial under naturalised low flows, what is the character of the dry reach in relation to?
 - i. The typical geographical extent of any dry stretches
 - ii. the typical duration that dry stretches will occur
 - iii. the flow (or range of flows) that will cause a disconnection going into low flow periods
 - iv. the flow (or range of flows) that are likely to re-connect the water body during low flow freshes and moving out of low flow periods?
 - c. To what degree does the abstraction impact on the factors raised in (1)?
 - i. can this impact be measured (eg. the dry reach is typically extended by x meters/days because of the abstraction)?
 - ii. how sensitive are these factors to reductions in the amount of water abstracted?
- 2) If there is not enough information to confidently determine the points raised in (1), could you identify the additional information and study required to do so? Both:
- a. in the immediate, which Otago Fish and Game can request of the applicant, and
 - b. if an interim consent were issued for the purpose of continuing the activity and gathering additional information.
 - i. Please see the attached proposal from Maria Bartlett, which is currently untested. Would this enable us to confidently determine the points raised in (1)? If not, could you propose a practical, alternative monitoring regime and the required timeframe for it to be in place?

There are a lot of relevant attachments in addition to the application, so I've uploaded all the hydrology information we have to a one drive file (below). Some information has been gathered after the application was submitted, namely the gauging and the flow monitoring.

https://fishandgamenz-my.sharepoint.com/:f/g/personal/nparagreen_fishandgame_org_nz/EsXyblt18W1Dv-rdawCB7OsB4-JbaQ83_DGgoQxL_zZ4WQ?e=NScZCl

It's worth noting that Fish and Game were originally not considered affected for this application because old fishery data was used. Fish and Game provided up to date fishery data and was then considered affected. Some documents, such as the RSU file note, have not been updated since that new information was provided.

On behalf of Ian Hadland,
CE Otago Fish and Game Council

Cheers,

Nigel Paragreen | Environmental Officer
Otago Fish and Game Council

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2 August 2019

Fish & Game Otago
PO Box 76
DUNEDIN 9054

Attn: Nigel Paragreen

Dear Nigel

RE Long Gully Hydrology

Status of Long Gully

You had asked if Long Gully was perennial or ephemeral. In fact, Long Gully is more properly classed as intermittent. Ephemeral is a hydrological classification more generally reserved for first order water lines that flow only in response to concentrating rainfall or snow melt. Intermittency considers the water course to be normally flowing (i.e. perennial), but experiences episodes and localities of loss of flow due to climate, diversion or infiltration to the ground.

Why Does Long Gully run dry?

In the lower four kilometres above the Lake Dunstan confluence, Long Gully passes over alluvial material mapped by GNS Science as “unconsolidated Holocene gravel, sand, silt, clay, and minor peat of modern to postglacial flood plains”. In the Regional Plan: Water context the alluvial aquifer of the lower Long Gully is akin to the Lowburn Alluvial Ribbon Aquifer on the other side of Lake Dunstan. The records of same day multiple site gauging, photographic diaries at marked sites and comparison of aerial photographs suggests that Long Gully loses flow to an alluvial aquifer associated with the mapped silty, sandy gravel deposits. Riparian evapotranspiration would also be assumed to play a lesser role in depleting the lower reaches of Long Gully, especially during the high evapo-transpirative conditions coinciding with the main irrigation season (December to March).

The effect of the irrigation race diversion would be to reduce the flow of Long Gully during the irrigation season when the natural generation of flow in the creek is falling. The connected groundwater in the Long Gully alluvial aquifer is primarily sustained by creek water infiltration rather than recharge through the land surface. As inflows to the lower reaches decline in response to declining upper catchment yield and diversion for irrigation, the water table within the alluvial aquifer must fall in response to reduced infiltration. It is also reasonable to consider that the alluvial aquifer has a sub-surface outlet to Lake Dunstan, which makes the groundwater system at least partially open-ended.

The fluctuating storage beneath the rising or falling water table almost certainly leads to changing rates of infiltration from Long Gully to the alluvial aquifer. I could see no reasonable scenario where the rate of infiltration would be a static value. Creek bed infiltration changes as a function of the differential of creek and water table height, creek wetted perimeter and creek clay content. The height differential and wetted perimeter are proportional to creek flow rate.

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What Impact does Extended Low Flows have on Groundwater Storage and therefore Creek Flow?

Given that infiltration of Long Gully water to ground is temporally variable and subject to the balance of alluvial aquifer storage and creek flow rate, the effect of extended periods of lower flow rate would be to tip the aquifer into reduced storage and depletion. So, a consequence of the extended low flows would be to increase the rate of infiltration as the storage capacity in the aquifer is eroded and the gradient driving infiltration steepens. Thus, we may see somewhat artificially high infiltration rates as irrigation intensifies, until the point of local loss of flow continuity is reached and infiltration drops to zero under the reaches of dehydrated creek bed.

From the perspective of maintaining flow continuity in Long Gully for as long as possible, the higher the creek flow and longer the period within which the alluvial aquifer can recharge the better.

Would the Additional Flows released by Flow Sharing be wasted?

I have heard arguments advanced in relation to other intermittent streams in Central Otago that there are few if any hydrological or instream ecological advantages to be gained from flow sharing. I believe this argument follows that the flow sacrificed from irrigation by flow sharing would only be lost to the ground and not contribute to sustaining instream conditions. I do not consider that this argument holds in the case of the lower Long Gully. My reasoning is that flow sharing would result in higher flow rates in the Long Gully during the critical period when the alluvial aquifer is tipping into a depletion phase, and the additional flow would maintain the balance of recharge and discharge for longer. This restored balance would sustain a higher water table for longer and forestall the falling water table with consequential increased infiltration rates.

There is a temptation to utilise single estimates of creek infiltration (losses) and apply these more broadly as blanket indicators to sustain the above argument. I consider that this temptation should be avoided when it is clear we are in possession of very little hard data about the losses to ground (see below). The use of multiple site gaugings of creek flow, while more valuable than eye-balled flow estimates, need to consider the inherent accuracy bounds of the methods employed in making the gaugings relating to measurement error (between 5% and 10%) and the timing errors in calculating losses from flow differences between sites, which could match measurement error.

Do Decision Makers have Sufficient Information to make an Assessment?

I consider that there is a very slender body of data and information on which to make informed technical assessments and for decision makers to be adequately advised. In essence; the Long Gully has a single fragment of continuous flow record from the 2012/13 hydrological year, water take daily averages since 2013, some spot gaugings and a flow - photo diary at five sites from 31 October to 14 December 2017. The presence of the groundwater system of the lower Long Gully is solely inferred from creek flow behaviour and the presence of permeable substrates. No information on the groundwater system as bore records, hydrographs or aquifer tests have been collected.

I consider that the installation of two well-placed continuous flow recorders (well calibrated and well maintained), possibly combined with a data-logged water table recorder (piezometer), would go a long way towards defining hydrological statistics and delineating the recharging and depletion dynamics of the stream system. The progressive implementation or management plan would potentially be a platform for obtaining such useful records that would assist a subsequent consent renewal.

Closure

This letter is an adjunct to the question and responses that we developed in an email correspondence on 21 June and 11 July this year. They probably stand on their own right, respectively. However, this letter represents the more coherent and contemporary treatment on the subject. I would be happy to expand on any of the matters outlined above. In the meantime, I am contactable at mobile **027 836 4442** or jens@rekker.co.nz

Yours sincerely



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Hydro – Geo – Environmental

Long Gully Flow Assessment – Residual Flow Setting 2017

Aaron Horrell

Clutha Fisheries Trust

1. Survey Reach

To assess flows for Long Gully stream leading into the summer season, five photo points were established along the reach from confluence with the Kawarau Arm upstream to the irrigation take (Appendix: Map 1.).

2. Survey Method and schedule

Four surveys were completed on a fortnightly schedule. A warratah was erected at each site as a reference point and two images captured; one looking upstream and one downstream. Mr Robin Dicey kindly provided access to the flow gauge data so the race flow rate could be recorded for the time of each image capture.

3. Survey One: 31st October 2017

Initial site selection and photo survey undertaken with Mr Robin Dicey in attendance. The creek held flow to a point somewhere between photo site 4 and the culvert crossing to Black Quail. A walk upstream of the crossing for approximately 100metres identified no flow. The creek bed was damp at the road crossing culvert (Appendix: Image 1) and at site 5 indicating the flow had not long diminished.

An adult Rainbow trout was observed in a small refuge pool below site 3 and a dead adult Rainbow at site 5.

4. Survey Two: 16th November 2017

Long Gully stream had a connected flow to the Kawarau River. Though the flow was noticeably reduced from the previous survey at sites 3 and 4, site 5 which was dry during the previous survey now held surface water. Flow at site 5 was reduced to a trickle.

Returning to site 4 an hour and half after recording the flow images for that site, the reach was now observed to have no flow or surface water (Appendix: Image 2).

Immediately downstream of site 3, young of year trout and two 1+ fish were observed (Appendix: Image 3). Observations on previous fishery surveys (*ref report*) had only identified the presence of adult rainbows on their spawning migration and the only juvenile rainbows observed were during an electric fishing survey well upstream of the water take. Given that no spawning activity had been observed in the photo survey reach, it would appear these fish may be out-migrating from above the water take.

5. Survey Three: 30th November 2017

Flow appeared similar at sites 1 & 2 to the previous survey. However at site 3 the stream had dried up. Sites 4 & 5 were also dry. Back tracking upstream, the flow was observed to cease at a point E1294413 N5001660 (Appendix: Map 1.)

6. Survey Four: 14th December 2017

Final survey. The stream below the take had reduced to a minor trickle at the take site (Appendix: Image 4) and dried a short distance downstream of site 1. The stream bed was dry for its entire length to the Kawarau River.

7. Discussion with staff management at the site indicated that this season was particularly dry and considered to be a month earlier than a typical weather pattern for this time of year.

LONG GULLY STREAM. SITE ONE - UPSTREAM (Date, Time, Race Flow)

31 October 2017, 10.46am 30.53l/s.



16 November 2017, 12.25pm 40.07l/s.



30 November 2017, 12.16pm 21.71 l/s.



14 December 2017, 12.03pm 33.76l/s.



LONG GULLY STREAM. SITE ONE - DOWNSTREAM (Date, Time, Race Flow)

31 October 2017, 10.59am 30.53l/s



16 November 2017, 12.24pm 40.07l/s



30 November 2017, 12.17pm 21.71l/s




14 December 2017, 12.03pm 33.76l/s.







LONG GULLY STREAM. SITE TWO - UPSTREAM (Date, Time, Race Flow)	31 October 2017, 10:58am 30.72l/s	16 November 2017, 12:15pm 41.78l/s
		
	30 November 2017, 12:36pm 22.13l/s	14 December 2017, 11:53pm 33.76l/s.
		

LONG GULLY STREAM. SITE TWO - DOWNSTREAM (Date, Time, Race Flow)	31 October 2017, 10.59am 30.72l/s	16 November 2017, 12.16pm 41.78l/s
	30 November 2017, 12.38pm 22.13l/s	14 December 2017, 11:48am 33.76l/s.





LONG GULLY STREAM. SITE THREE - UPSTREAM (Date, Time, Race Flow)	31 October 2017, 11.21am 30.38 l/s	16 November 2017, 11.15am 42.69l/s
		
	30 November 2017, 11.49am 21.97l/s	14 December 2017, 11:48am 33.76l/s.
		

LONG GULLY STREAM. SITE THREE - DOWNSTREAM (Date, Time, Race Flow)	31 October 2017, 11.20am 30.38l/s	16 November 2017, 11.16am 42.69l/s
		
	30 November 2017, 11.51am 21.97l/s	14 December 2017, 11:27am 34.77l/s
		

LONG GULLY STREAM. SITE FOUR - UPSTREAM (Date, Time, Race Flow)	31 October 2017, 11.29am 29.74l/s	16 November 2017, 11.37am 42.63l/s
		
	30 November 2017, 11.40am 22.13l/s	14 December 2017, 11:12am 35.77l/s
		

LONG GULLY STREAM. SITE FOUR - DOWNSTREAM (Date, Time, Race Flow)	31 October 2017, 11.29am 29.74l/s	16 November 2017, 11.36am 42.63l/s
		
	30 November 2017, 11.39am 22.13l/s	14 December 2017, 11:14am 35.77l/s.
		

LONG GULLY STREAM. SITE FIVE - UPSTREAM (Date, Time, Race Flow)	31 October 2017, 11.41am 29.74l/s	16 November 2017, 11.49am 41.81l/s
		
	30 November 2017, 11.28am 22.13l/s	14 December 2017, 10:51am 36.59l/s.
		

LONG GULLY STREAM. SITE FIVE - DOWNSTREAM (Date, Time, Race Flow)	31 October 2017, 11.47am 29.74l/s	16 November 2017, 11.49am 41.81l/s
		
	30 November 2017, 11.27am 22.13l/s	14 December 2017, 10:53am 36.59l/s.
		

APPENDIX



MAP 1. Long Gully Stream



Image 1a: Black Quail culvert crossing 31 October 2017 – Race flow rate 29.74 l/s.

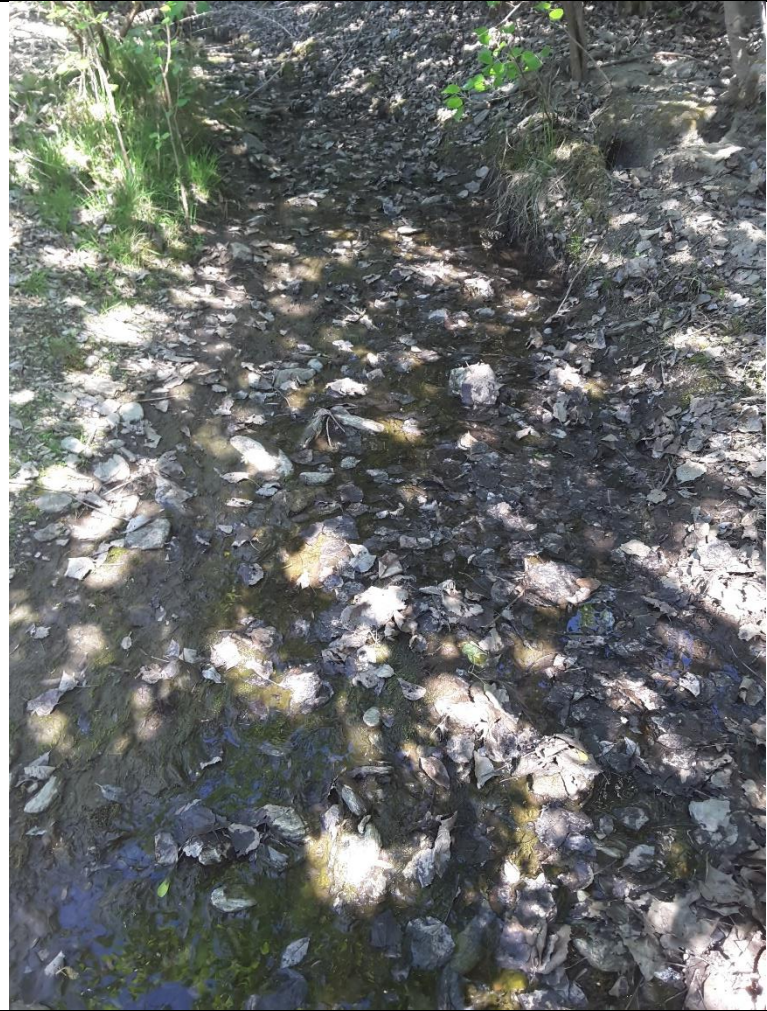


Image 1b: Upstream of Black Quail culvert crossing 31 October 2017



Image 2a: Site Four – Upstream - Race flow rate 41.80 l/s



Image 2b: Site Four - Downstream



Image 3a: Young of year below site 3



Image 3b: One year old rainbow below site 3



Image 4a: At irrigation take 16th November - Race flow rate 42.07 l/s



Image 4b: At irrigation take 14th December - Race flow rate 33.34 l/s

Long Gully Creek Fisheries Investigation Survey

Introduction

The Long Gully Race Society Incorporated has applied for resource consent to take and use surface water from Long Gully Creek, a small tributary of the Kawarau Arm of Lake Dunstan. The consent seeks to replace mining privileges.

A take of 56 litres per second is being sought by the Society for the purpose of irrigation, industrial use, storage, domestic use, and stock drinking water by 14 shareholders.

The ORC has documented the 7 - day MALF at 19 l/s from flow records obtained between December 2011 and April 2013. The application suggests that the lower section of the stream dries naturally during the summer based on limited work undertaken in March 2016.

Several reports confirm that trout are present in the stream:

- Electro fishing was undertaken at three sites in December 1996 with a rainbow trout found at one of the three sites. No other species were recorded.
- There has been a confirmed report of stranded juvenile trout being salvaged from the lower reaches in recent years and
- There has been an unconfirmed report of adult spawning trout being poached also in the lower reaches.
- The application notes the presence of brown trout in dams fed by the water race which are assumed to come from the stream.

Fish and Game considered fisheries values in the stream deserved further investigative work because of the age of the original electro fishing survey and the changes that have taken place in the wider catchment with the filling of Lake Dunstan around 1993.

Fisheries Surveys

On August 30 2017 a visit was made to inspect the section of stream from the culvert on the access road to the Black Quail Estate downstream to the Kawarau River for natural or manmade obstructions that could prevent fish from migrating upstream, or provide difficulties for outmigration.

The findings revealed this section of the stream had a steady gradient with some good resting habitat and cover for fish. There was evidence of recent flushing flows with scattered debris across the waterway and piled up on bends, but no major obstructions were identified.

It was considered that fish could navigate their way upstream from the Kawarau Arm of Lake Dunstan in suitable flows.

On September 4 2017 a more comprehensive survey was undertaken to assess brown and rainbow trout presence. Six sites (appendix 1) were electro fished, 3 above and 3 below the race intake. The following provides a summary of the findings.

Electro Fishing Method

Random sections of the stream were selected and electro fished with a capture net positioned downstream. Time and area fished was recorded.

Fish captured from each section were held until fishing ceased then they were measured and released.

GPS coordinates and total fishing time were recorded, and aquatic invertebrate presence was noted.

Table 1. The location, stream length fished, species, presence and size range (mm), Long Gully Creek 4 September 2017

Site	GPS location	Stream length fished	Species/ Number	Size Range (mm)
Site 1	E 1292591 N 5000052	25 metres	rainbow trout (10)	62 - 116
Site 2	E 1292989 N 5000538	25 metres	rainbow trout (19)	50 - 148
Site 3	E 1293429 N 5000896	30 metres	rainbow trout (16)	56 - 106
Site 4	E 1293518 N 5000951	30 metres	rainbow trout (12)	57 - 112
Site 5	E 1294319 N 5001347	70 metres	rainbow trout (2)	96 - 114
Site 6	E 1295006 N 5001665	30 metres	rainbow trout (2)	Spawning adults 1 male & 1 female. Larger hen approx 1.3 kgs.

Results

A total of 59 juvenile rainbow trout ranging in size from 50 – 148mm were captured from five of the six survey sites and 2 adult rainbow trout were captured from site 6. A further 3 juvenile rainbow trout around 50mm in length were seen in the race approximately 20 metres downstream on the take point.

No native bullies or galaxias species were captured or seen.

The adult rainbow captured at site 6 had migrated upstream from the Kowarau Arm of Lake Dunstan to spawn. (Figure 3) and there was evidence of spawning activity in the stream bed.

Invertebrate abundance

At sites 1-4 a moderate number of caddis, mayfly and stonefly were present. Numbers were low at the two downstream sites 5 and 6.



Figure 1: Site 2 survey section looking upstream that held good juvenile rainbow trout numbers



Figure 2: Juvenile rainbow trout



Figure 3: Spawning rainbow hen from site 6

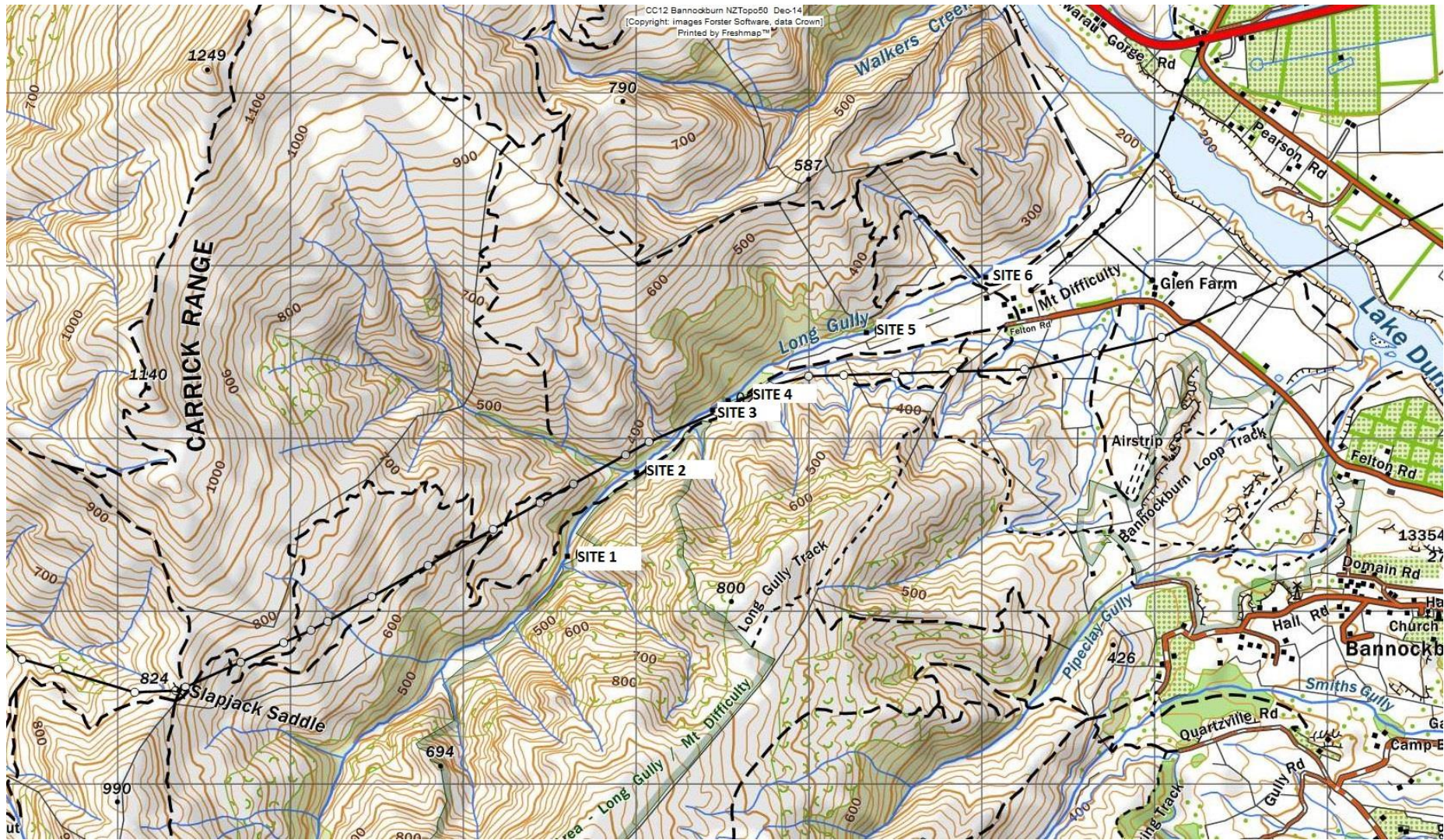
Summary

The stream holds a healthy population of juvenile rainbow trout and it is highly likely the population extends further upstream from the upper survey section. Adult rainbow trout access the stream from the Kawarau Arm of Lake Dunstan to spawn and recruitment will be beneficial to the Lake Dunstan fishery.

Stream productivity is likely to be limited by low summer flows under present conditions and it is not clear how that would change with the establishment of a residual flow.

Cliff Halford
Fish and Game Officer
September 2017

Appendix 1. Map showing the six survey sites on Long Gully Creek



File Note

SPAWNING RUN SURVEY – LONG GULLY STREAM; TRIBUTARY OF THE KAWARAU RIVER

Date: 3rd October 2017

Staff: Aaron Horrell – Clutha Fisheries Trust

On the afternoon of Tuesday 3rd October 2017, a foot survey was undertaken on Long Gully Stream from its confluence with the Kawarau River to a point 2.9kms upstream (Image 1.). Of this reach, approximately 300m was unable to be surveyed due to rank vegetative growth and confined terrain preventing access to the stream.

The initial 1.7kms of the stream has very little holding water. However, five adult Rainbow trout were observed in this section. The first fish observed was approx. 700m upstream of the confluence. Holding in a small pool, it was approx. 1kg in size. The next fish were sighted a further 800m upstream in a pool directly upstream of a vehicle crossing (image 3). A lean fish of <1kg and a healthier specimen of ~1.5kg. These fish differed from the two adult fish observed during a previous survey (Long Gully Creek Fisheries Investigation Survey – Cliff Halford; Otago Fish & Game). In the next pool (Image 2) 10m further upstream a large healthy specimen ~1.75kg was observed as well as dead hen fish of ~1kg.

The pools upstream of the road crossing are the first real refuge the fish encounter following a rather arduous migration over some 600m of shallow and predominantly riffle type habitat providing no cover.

Despite an increase in holding habitat and cover further upstream, no additional fish were observed.



Image 1: Aerial map showing survey reach and observed fish sites.



Image 2: Site of large adult Rainbow and dead adult hen fish upstream of road crossing



Image 3: Site of pair of adult Rainbows upstream of road crossing.

Conclusion

Recent rain events are likely to have provided a sufficient fresh to initiate a spawning migration. Given the size of the stream and lack of holding water it would be expected that the fish would pass through the surveyed reach quickly, with the fish observed remnant migrators. Alternatively, the peak spawning migration may yet to have taken place. Further surveys would need to be undertaken to try and quantify the spawning run and extent of migration.

However, from this and previous surveys, along with anecdotal reports from people familiar with the stream, we can confirm that an undetermined population of Rainbow trout currently, and historically, migrate from the Kawarau Arm and spawn in the upper reaches.