6 December 2019

Our ref: 18365
Council ref: RM19.312

Otago Regional Council
70 Stafford Street
Private Bag 1954
Dunedin 9054
Attn: Ethan Glover

Dear Ethan,

Re: Request for Further Information under Section 92(1) of the Resource Management Act 1991 – Application for Deemed and Water Permit Replacements on Behalf of Queensbury Ridges Limited

In reference to your request for further information dated 22 November, please find outlined below our response to this request.

1. **Please provide further information regarding the nature and configuration of the piping of water from the Albert Burn, including detail regarding any modifications made to the natural channel to facilitate the abstraction/diversion. Please confirm that no resource consents are required for any modifications made here.**

As discussed in our response to Question 3, it is believed that the present-day water take configuration has been in place for over 30 years. It is our understanding that the natural channel of the Albert Burn directly below the Alfern Creek confluence was originally located where the weir is currently situated. Due to the age of the infrastructure, details are somewhat lacking, but it is believed that the original owners placed boulders and fill in the natural channel and re-routed the creek to the north – a configuration that remains to this day. This enabled the abstraction of water from the creek, which then formed a shallow pool, with water diverted via pipe under the fill to the small reservoir above the weir. Since taking over the property, the applicant made some modifications to the intake and conveyance infrastructure, including sealing the bed of the reservoir behind the weir and installing new HDPE pipes from below the weir to the tank farm and area of k-line (as described in the AEE).

Based on our response to Question 3, it is assumed that the weir was installed prior to the point at which the Otago Catchment Board bylaws of 1988 came into effect, therefore the structure itself is a permitted activity under Rule 13.1.1.1 of the RPW. This does, however, likely mean that Rule 12.3.3.1(i) applies:

> *12.3.3.1 (i) The damming of water, which has been previously carried out under a resource consent or other lawful authority, is a restricted discretionary activity, unless: (a) It is prohibited by Rules 12.3.1.1 to 12.3.1.4; or (b) It is permitted by Rule 12.3.2.1; or (c) It is in Welcome Creek.*

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The damming of water has been previously carried out under lawful authority, is not a prohibited activity, and is not a permitted activity as the upstream catchment is greater than 50 ha. For this reason, the damming of water via the weir is a restricted discretionary activity. It is noted that the AEE considered that the weir may have been subject to Rule 12.3.4.1 of the RPW (discretionary activity), but in light of recent conversations with the applicant Rule 12.3.3.1 (restricted discretionary activity) appears to be the relevant rule. As the weir was assessed as a potential discretionary activity, it stands that the effects assessment of this activity as included in the AEE is robust. A completed Form 2 has subsequently been provided in Appendix A.

2. **Based on a review of the application against the Regional Plan Water (RPW) rules, it appears the application may require a resource consent for the diversion of water. Please provide an assessment and confirmation as to whether the piped abstraction/diversion from the Albert Burn to the dammed reservoir requires resource consent for the diversion of water in accordance with Rule 12.3.4.1. If so, please complete Form 3 and update the application and assessment of environmental effects and s104 matters accordingly.**

As noted above, water is piped from the Albert Burn to a pond, whereby some of the flows are collected by intake pipes below the weir and some of the flows are returned to the Albert Burn, further downstream. Landpro agrees that this is likely a discretionary activity under Rule 12.3.4.1(i) of the RPW. As such, Form 3 has been completed and is attached in Appendix B, and an assessment of effects on the environment as they relate to the diversion is provided below.

Assessment of alternatives

This has already been given due consideration in Section 6.1 of the AEE provided to Council.

Effects on stream ecology and hydrology

This has already been given due consideration in Section 6.2 of the AEE provided to Council. The screen on the intakes (see Figure 30 of the AEE) will prevent harm to fish, and it is noted that the only fish species present in the Albert Burn above the point of take is immature or stunted brown trout. There may be some impact on the hydrology of the creek between the start of the diversion and the point at which the overflow discharges back into the creek (a distance of approximately 35 m), however given the distance it is assumed that this effect is relatively minor.

Residual flow

This has already been given due consideration in Section 6.3 of the AEE provided to Council.

Effects on other water users

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This has already been given due consideration in Section 6.4 of the AEE provided to Council.

Available water allocation

This has already been given due consideration in Section 6.5 of the AEE provided to Council.

Efficiency of use

This has already been given due consideration in Section 6.6 of the AEE provided to Council.

Effects on groundwater resources

This has already been given due consideration in Section 6.7 of the AEE provided to Council.

Cultural values

This has already been given due consideration in Section 6.8 of the AEE provided to Council.

Positive effects

This has already been given due consideration in Section 6.11 of the AEE provided to Council.

An assessment of the activity against the provisions listed in s104(1)(b) and (c) is also provided in Section 7 of the AEE provided to Council. It is considered that this section is fully relevant to the diversion of Albert Burn water.

3. **It is unclear whether the existing dam structure on the Albert Burn was lawfully established. No rights were required for the construction of dam structures until the Otago Catchment Board Bylaws became operative in 1988. As such structures constructed before this date are considered to be lawfully established. Please confirm whether the dam structure was constructed before 1988. If not, the proposal requires retrospective resource consent in accordance with Rule 13.2.3.1. If necessary, please apply for the erection of a dam structure in accordance with Rule 13.2.3.1 and update the application to provide a full assessment of effects and s104 matters. Please include a completed a Form 10C.**

The applicant bought the property in the early 90s, and the present-day weir structure was already in place at that time (albeit of a slightly cruder design). It is the applicant's understanding that this structure pre-dates 1988, however unfortunately there is a gap in the historic aerial imagery record between around 1984 and 2001, therefore it is difficult to provide evidence of this. The applicant is currently seeking confirmation

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from the original property owner to confirm that this understanding is correct, and this can be forwarded to Council in due course.

4. **Please describe the purpose of the pipe visible in Figure 4 of the application. I note this pipe appears to bypass the storage pond as evidenced in Figure 5.**

The purpose of the pipe visible in Figure 4 is for stockwater supply, as described in Section 2.1.1, paragraph 2 of the AEE. There are four pipes abstracting water from the above the take point, three of which are for stockwater (approx. 25 mm ID) and one of which is a permitted domestic water take, currently supplying potable water to 20 private lots within the scheme. Each lot is provided up to 750 L/day domestic water from this take, meaning this activity is permitted under Rule 12.1.2.1 of the RPW:

> *12.1.2.1 The taking and use of surface water for domestic needs or the needs of animals for drinking water is a permitted activity providing: (a) No take is for a volume greater than 25,000 litres per day; and (b) No take is at a rate greater than 0.5 litres per second in the North Otago, Maniototo or Central Otago subregions (as identified on Maps A1-A8), or greater than 1 litre per second elsewhere in Otago; and (c) The taking or use does not have an adverse effect on the environment*

Calculations relating to stock water requirements are provided in Section 6.6 and Appendix D of the AEE supplied to Council. Note that these pipes are also visible in the right image of Figure 7 in the AEE.

5. **Please confirm whether Rule 12.3.4.1 and 13.2.3.1 apply to the Schoolhouse Creek water race and the ponding of water that occurs at pond 1 and pond 2, identified in Figure 3 of the application.**

- *Rule 12.3.4.1 (i): Except as provided for by Rules 12.3.1.1 to 12.3.3.1 and except in the Waitaki catchment, the damming or diversion of water is a discretionary activity.*
    - There is no diversion of Schoolhouse Creek water, however, as discussed in the AEE, there is a large leak downstream of the abstraction point on the Creek. This will be addressed with the proposed ((details TBD) upgrades to the Schoolhouse Creek take and conveyance infrastructure. Ponds 1 and 2 are not located in the bed of a watercourse, and so are not considered damming. Therefore, Rule 12.3.4.1 is not applicable.
- *Rule 13.2.3.1 Except as provided for by Rules 13.2.1.1 to 13.2.2.1, the erection or placement of any structure fixed in, on, under, or over the bed of any lake or river, or any Regionally Significant Wetland, is a discretionary activity.*
    - Aside from a derelict flume above the abstraction point (that no longer serves any purpose), there is no structure in, on, under or over the bed of Schoolhouse Creek. Therefore, Rule 13.2.3.1 is not applicable.

6. **We understand that changes to the water metering infrastructure at the Schoolhouse Creek point of take are proposed. Please provide further information regarding the proposed changes to the water metering**

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infrastructure currently in place, including the type and location of the proposed water meter. Please set out how water taken from the point of take will metered under the proposed configuration. Please also describe how the proposed location and placement of the water metering infrastructure will avoid damage from flooding or washout.

Upgrades to the Schoolhouse Creek take and conveyance infrastructure, including metering, are still in the process of being designed. It is noted in the AEE provided to Council that a meter will be installed prior to the exercise of any replacement consent to the Schoolhouse Creek deemed permit, and a series of consent conditions proposed require that the meter be installed and maintained to a standard in line with ORC requirements and which exceeds minimum requirements as stipulated under the Resource Management (Measurement and Reporting of Water Takes) Regulations, 2010. Once the upgrade design has been finalised, details (including proposed meter installation and maintenance) can be forwarded to ORC for review prior to implementation.

7. **We understand that maintenance of the Schoolhouse Creek water race is proposed in the near future. Please provide further information regarding this proposed maintenance including the measures that will be taken to prevent leakage and ensure that all water taken from Schoolhouse Creek is conveyed and used efficiently.**

The applicant has indicated that they are likely to upgrade the Schoolhouse Creek conveyance infrastructure to a piped system, meaning the existing major leak and any other issues with the water race will be rectified. It is stressed, however, that details relating to these upgrades are still being formulated, and no further details can be provided to Council at present. This is because the applicant needs certainty in future water security (through replacement of the current deemed permits) before progressing to a detailed design.

Any instream works required for the upgrade will be undertaken in accordance with RPW requirements (particularly 13.5.1, as noted in Section 4.1 of the AEE), and applicable parties (DoC, ORC) will be consulted with regards to how to prevent harm to galaxiids potentially present in the vicinity and any other in-stream values.

8. **We note that no residual flow is proposed for Schoolhouse Creek to protect native fish values from trout predation. Please provide further information regarding the configuration and dimensions, including the fall height, of the pipe beneath State Highway 6 that feeds Pond 1 (depicted in Figure 10 of the application). Please confirm whether or not this pipe prevents the upstream passage of trout. If it does not, please provide information setting out any proposed mitigation measures to avoid the upstream passage of trout to protect native fish values. We note that draining the pond and removing trout may be appropriate to manage these effects.**

The Schoolhouse Creek race culvert under SH6 runs for a distance of approximately 40 metres, with an elevation drop of approximately 8 metres. This is a gradient of approximately 20%, and it is assumed that this steep gradient would prevent the upstream passage of trout from the pond into the race. Photos of the culvert inlet and outlet are attached to this document in Appendix C. It is also noted that the applicant's intention to pipe the Schoolhouse Creek abstraction in future (design TBD) would also provide an effective barrier for trout up-migration.

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I trust that the information set out above satisfies the request for further information. However, if you have any further queries, please do not hesitate to contact me.

Yours sincerely,

Will Nicolson
Resource Management Planner
will@landpro.co.nz

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APPENDIX A – ORC Form 2

2 Application To Dam Water

Otago Regional Council

This form is to be used for applications seeking to dam water within a watercourse, or outside a watercourse where natural runoff will be captured.

(For Office Use Only)

Consent No.: _____

Job No: _____

PLEASE READ THIS PAGE BEFORE COMPLETING THE APPLICATION FORM

A number of resource consents may be required for the construction of a dam and the impoundment of water behind it. This schedule addresses the requirements for a water permit to dam water only.

Depending on the location of your dam structure, and if the dam structure is existing or new, you may not need to fill out all parts of this schedule.

Please note that additional permits may be required when damming water. These include:

- a water permit to take surface water or groundwater, should the dam impound water for which no consent is held to be taken (see Schedule 4 or 5), and
- a water permit to divert water, if flows are to be diverted during construction (see Schedule 3).
- a discharge permit to discharge water from a dam (see Schedule 7),
- a land use consent to disturb the bed of a watercourse and erect a dam structure in the bed of a watercourse, should construction activities occur in the bed of a watercourse (see Schedule 10C), and
- a discharge permit to discharge contaminants to water during dam construction (see Schedule 7) and
- a building consent for the dam structure *Please note that dam structures and dam modifications require a building consent under the Building Act (2004). The Otago Regional Council currently issue building consents for dams. You will need to apply to Council directly for a building consent. Application Forms are available on our website under 'Dams, their safety and building consents'"*

In order for any consent application to be processed efficiently in the minimum time and at minimum cost, it is critical that as much relevant information as possible is included with the application.

Form 1 and Schedule 2, when properly completed, may provide an adequate "Assessment of Effects on the Environment" (AEE) where the adverse effects of the dam proposal are not significant. The required detail for an AEE should reflect the scale and significance of the potential adverse effects the proposed dam may have on the environment. If the size of the proposed dam or scale of its potential effects is significant, a report by a professional advisor in support of your application may be required.

Guidance to answering the questions appear at the end of this schedule: "Notes to provide Guidance on Completing Schedule 2". Details of the information required in an AEE are included in the Fourth Schedule of the Resource Management Act 1991 appended to Form 1: Resource Consent Application.

If all the necessary information is not supplied with the application then Otago Regional Council may return your application, request further information or decline your application. This will lead to delays in the processing of your application and may increase processing costs.

If the effects of your proposal are considered to be minor and written approvals are gained from all parties that may be adversely affected by it, then your application(s) will proceed under non-notified consent provisions. If you are unable to supply the necessary written approvals from the affected parties, or if the effects of the proposal are more than minor, then Council must limited notify or fully notify the application. Such applications take longer to be processed than non-notified applications and may incur additional processing costs. Details of consultation required are presented in this document.

PART A: Description of the Proposed Damming and Associated Activities

A.1 Is the application to dam water:

☒ a new consent, or

☐ to replace an existing consent? _____ (consent number)

A.2 Please Indicate what provisions of Permitted Activity Rule 12.3.2.1 of the Regional Plan: Water for Otago, cannot be met by the proposed damming activity:

☒ The size of the catchment upstream of the dam is greater than 50 hectares in area.

*Size of catchment upstream of dam:*_____

☐ The water immediately upstream of the dam is more than 3 metres deep.

*Maximum water depth behind dam:*_____

☐ The volume stored by the dam is more than 20,000 cubic metres.

*Maximum volume able to be stored behind dam:*_____

☐ A lawful take will be adversely affected by the dam.

*Name whose take will be affected, and water permit number if known:*_____

☐ A wetland identified in schedule 9 of the Regional Plan: Water or any wetland higher than 800 metres above sea level will be adversely affected by the dam.

please name/describe wetland: _____

☐ The dam will cause either flooding, erosion, land instability, sedimentation or damage of another person's property.

Name which effect above, and whose property (if relevant): _____

A.3 Purpose for damming water: (Tick as appropriate)

☒ Irrigation

☐ Water harvesting / storage

☒ Stock water

☒ Domestic water supply

☐ Stormwater treatment

☐ Hydro-electric power generation

☐ Ornamental (specify): _____

☐ Other (specify): _____

A.4 Other Resource Consents required

A.4.1 (a) Do you hold a water permit or deemed permit / mining privilege to take the water that is dammed?

☒ Yes *(permit number):* 2002.348, 2002.349, 2002.351, 2002.352 *(go to Question A.4.2)*

☐ No *(go to question A.4.1(b))*

☐ Not applicable *(specify why):* _____

(b) Do you comply with the Permitted Activity Rules 12.1.2 or 12.2.2 of the Regional Plan: Water?

☒ Yes *(no resource consent to take water is required)*

☐ No *(a water permit may be required, see Schedule 4 or 5)*

A.4.2 **(a) Do you intend on discharging water from the dam into water (i.e. not to a pipe or race, but into a natural watercourse).**

☒ Yes *(please specify how):* via a weir and connecting open channel (see AEE for details) *(go to Question A.4.2(b))*

☐ No *(go to Question A.4.3)*

☐ Not applicable *(specify why):* _____

(b) Do you hold a Discharge Permit to discharge water to water from the dam?

☐ Yes *(permit number):* _____ *(go to Question A.4.3)*

☒ No *(go to Question A.4.3)*

A.4.3 **(a) Do you propose to construct a new dam in a watercourse?**

☐ Yes *(go to Question A.4.3(b))*

☒ No *(go to Part B)*

(b) For the associated bed disturbance, if consent to dam water is needed you will be unable to comply with the Permitted Activity Rules given in Section 13.5.1 of the Regional Plan: Water. As such a land use consent is required, please fill out Schedule 10C. For the associated discharge of contaminants (sediments, concrete, etc) during bed disturbance, a discharge permit is required, please fill out Schedule 7).

☐ *Please tick if Schedule 10C attached*

☐ *Please tick if Schedule 7 attached*

(c) For the erection/placement/alteration of the proposed dam structure within the bed of a lake or river, if consent to dam water is needed you will be unable to comply with the Permitted Activity Rules given in Section 13.2.1 and 13.3.1 of the Regional Plan: Water, and a land use consent is required, please fill out Schedule 10C).

☐ *Please tick if Schedule 10C attached*

(d) If you propose to divert the flow of the watercourse to construct a dam, are you able to comply with the Permitted Activity Rules given in Section 12.3.2 of the Regional Plan: Water?

☐ Yes (no resource consent to divert water is required)

☐ No (a *water permit for the diversion is required, see Schedule 3)*

PART B: Location of the Proposed Activity

B.1 Describe the property on which the proposed dam structure is to be located *(if the dam is located on Crown Riverbed, please note on (e) below)*

(a) Full name(s) of owner(s) Queensbury Ridges Limited

(b) Full name(s) of occupier(s) Queensbury Ridges Limited

(c) Address/Location Albert Burn, upstream of SH6

(d) Legal Description(s) *(as shown on Certificate of Title)*

Lot _____ DP _____ Sec 1 SO Plan 300501

Survey District (SD) _____

Area (Nearby town etc.) Queensberry

Other (specify) _____

Council will obtain a Certificate of Title to confirm details, if necessary. provided in deemed permit AEE

(e) Is the dam located on Crown Riverbed: Yes: ☐ No ☐

If Yes, give the legal description of the property adjacent to the point of take

_____

B.2 If land is to be inundated as a result of the proposed dam structure, please describe the property(s) to be inundated

(a) Full name(s) of owner(s) _____

(b) Full name(s) of occupier(s) _____

(c) Address/Location _____

(d) Legal Description(s) *(as shown on Certificate of Title)*

Lot _____ DP _____ Sec _____

Survey District (SD) _____

Area (Nearby town etc.) _____

Other (specify) _____

B.3 Map reference of the proposed dam structure in NZTM 2000:

NZTM 2000: E 1308761 N 5028101

B.4 If your proposed dam to be located within a watercourse, please provide the name of the watercourse:

Albert Burn

(If the water body is unnamed then note this and give the name of the water body to which it flows into)

B.5 Please provide a plan (A4 or A3 size) with this application that shows the following:

(a) The location of the proposed dam.

(b) Natural ground contours.

(c) The pattern of land inundation that will occur when the proposed dam is full.

(d) The legal boundaries of all property(s) that will be affected by the proposal, including the names of the owners and/or occupiers of those properties.

the dam is pre-existing, and is believed to pre-date 1988. All pertinent information (including plans) is provided in the AEE provided to council for deemed permit replacements.

(e) The location of any spillway or overflow.
(f) The flow-path of any watercourse(s) *(please indicate the direction of flow with an arrow).*
(g) Any other relevant features that will allow identification of the location of the dam, such as roads, bridges, dwellings, historic or waahi tapu sites, or other landmarks.
(h) Overflow / flood paths *(include buildings and infrastructure that may be within the flood path)*.
(i) Any upstream or downstream water users *(include name(s) and distance(s) if known).*
(j) A north symbol; and
(k) A scale

PART C: Description of the Water Resource/Catchment

C.1 If the proposed dam is located in a watercourse:

(a) Is the watercourse:

Perennial (flows all year round) : ❑

Ephemeral (flows intermittently or when there is rain) : ❑

(b) Mean flow of watercourse *(if known)*: 133 L/s (based on MfE modelling) (l/s or m^3/s)

(c) Mean annual low flow of watercourse (MALF) *(if known)*: 34 (l/s or m^3/s)

(d) Describe frequency and duration of flows if ephemeral *(if known)*
Frequency varies, but the creek appears to run dry every year in late summer

(e) Flow for 50 year return period flood *(if known)*_____(l/s or m^3/s)

(f) Flow for 100 year return period flood *(if known)*_____(l/s or m^3/s)

(g) Flow for 100 year plus/super design event *(if known)*_____(l/s or m^3/s)

(h) Please describe the gradient of the watercourse or land on which the dam is to be located: Unknown. Dam is pre-existing

(i) Please describe composition of the bed of the watercourse on which the dam is to be located: boulders, cobbles and gravel/mud

(j) Please describe any aquatic life present in the watercourse (i.e. fish, invertebrates, aquatic vegetation and riparian vegetation):
brown trout, some invertebrates, no vegetation in the vicinity of the dam. See AEE for further details.

(k) Aquatic waterfowl associated with the watercourse?

C.2 If the proposed dam is located outside of a watercourse:

(a) Does the dam receive any natural runoff from the surrounding catchment?

❑ Yes (please describe): _____

_____

❑ No

(b) What is the surrounding land used for immediately downstream of the proposed dam? *(please ensure that land use downstream is described to a distance appropriate to the scale of possible downstream effects in the event of dam failure)*

_____

_____

C.3 Have you identified any fault zones, flood zones, landslip areas or other flood hazards that may impact on the dam structure?

❑ Yes (please describe): _____

The Pisa Fault is approx 1 km to the southeast of the dam. Because the dam is very small (<50 m3), it is not envisaged that the dam in relation to the faultline poses a hazard.

❑ No

PART D: Dam Design Details

D.1 Design and Construction Methodology

(a) Have you employed a professional advisor to design the dam?

❑ Yes (give details):_____

❑ No

(b) Have the New Zealand Society on Large Dams (NZSOLD) Guidelines (2000) been considered for this dam?

❑ Yes

❑ No (describe why not):_____

(c) What is the estimated start date of dam construction:_____

(d) What is the estimated completion date of dam construction:_____

(e) When will initial filling of the reservoir commence:_____

(f) When will initial filling of the reservoir finish:_____

(g) Give a description of site conditions and construction methodology, including (but not limited to)

- Foundation conditions, including any bore logs, results of shear strength testing etc.
- Excavation and key requirements
- Compaction requirements
- Proposed construction

(please note that for all larger dams of greater than "low" risk (as defined by NZSOLD), a professional engineering report will be required):

Pond dimensions (approx.): average width 7 m, average length 9.5 m, average depth 0.75 m (estimated volume 50 m3). Bed and weir are concrete, with metal grate below the weir.

(h) Please enclose labelled photographs of the site with this application, including

(i) Proposed dam site, or ❑

(ii) If an existing structure, the upstream batter, downstream batter, abutments, spillway, outflow pipe, dam crest, overflow path; and ❑ see AEE

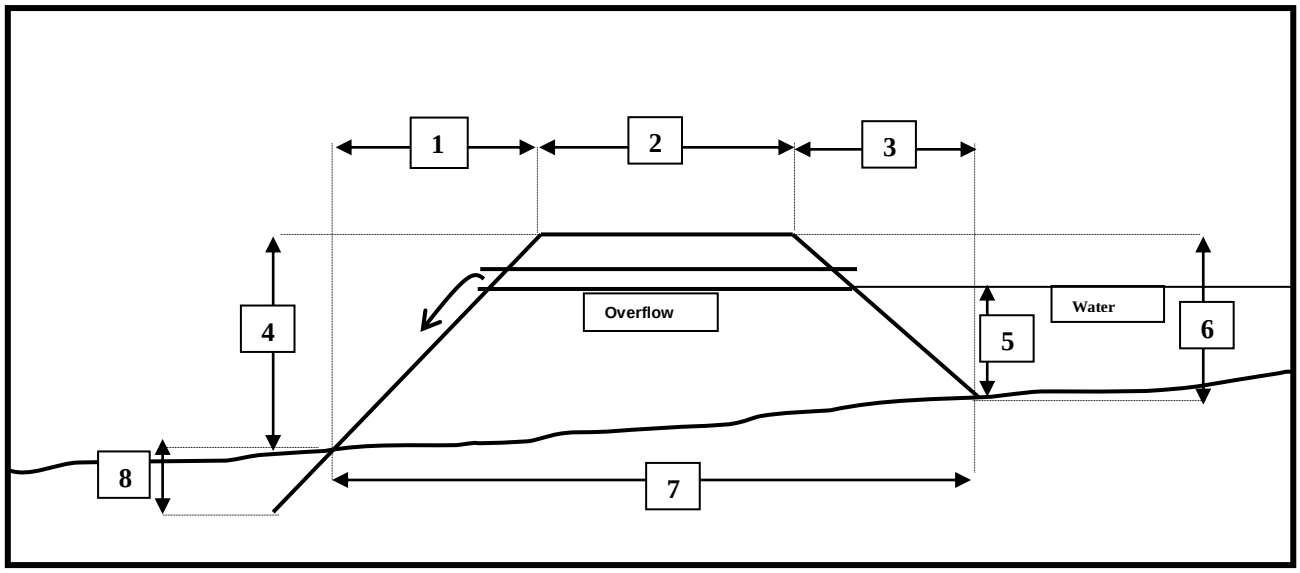
(iii) View upstream of the dam site ❑

(iv) View downstream of the dam site ❑

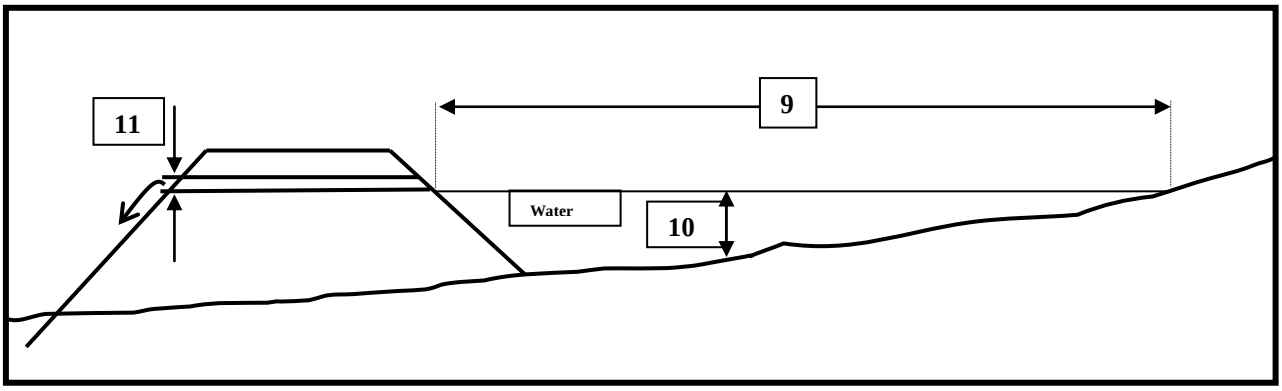
(v) Other (anything else of relevance) ❑

D.2 Dam Design and Dimensions

D.2.1 Please fill in the dimensions shown on the diagrams in the lists below (if the dam design is different from that shown below, please include a diagram showing all dimensions).



1. Downstream batter width _____ m
2. Crest width _____ m
3. Upstream batter _____ m
4. Downstream batter height ~1.5 m
5. Overflow pipe height or spillway crest 0.8 m
6. Upstream batter height 1.0 m
7. Dam base width _____ m
8. Depth dam is to be keyed into existing ground _____ m



9. Length of pond behind dam 9.5 m
10. Maximum depth of reservoir _____ m
11. Diameter of overflow pipe 0.6 m

Other dimensions not shown on diagrams

12. Crest length: _____ m
13. Spillway width: _____ m
14. Spillway depth: _____ m
15. Spillway inlet height: _____ m
16. Spillway gradient: _____
17. Spillway surface material: _____
18. Material used for erosion protection of dam faces:
    _____
19. Surface area of reservoir behind dam (when water level at overflow pipe or spillway level):
    Normal level _____ m
    Low level _____ m
    Flood level _____ m
20. Volume of water retained by dam (when water level at overflow pipe or spillway level):
    Normal level _____ m
    Low level _____ m
    Flood level _____ m

21. Describe in detail the junction between the shoulders and the dam: _____

_____

_____

_____

_____

D.2.2. What material/materials is the dam made out of (or to be made of)?

concrete

_____

D.2.3. What are the design flow capacities of the spillway?

_____

_____

D.2.4. Details of any proposed or current mitigation measures, including low flow outlets/bypasses and fish passes:

As detailed in the AEE, any flows beyond the design capacity of the weir bypass it altogether via a natural channel to the north of the weir (see Figures 4 and 7 of the AEE)

_____

_____

D.2.5 For dams for the creation of stormwater treatment ponds, please provide details of the ways in which the dam will be operated to allow for appropriate stormwater detention or treatment.

_____

_____

_____

_____

_____

D.2.6. Supply accurate design drawings of the dam, including:

- Profile / elevation showing embankment cross section, design of foundations / key, conduits and drainage, service outlet and flood spillway design, and erosion protection.
- Location and design of any proposed mitigation measures, including low flow outlets / bypasses and fish passes.

D.3 Dam Safety

D.3.1 What is the potential hazard category for the dam in accordance with the NZSOLD Guidelines 2000?

- ❑ High potential impact structure
- ❑ Medium potential impact structure
- ❑ Low potential impact structure
- ❑ Very low potential impact structure

D.3.2 What is the design life of the dam:

_____

D.3.3 What maximum flood event is the dam designed to pass? _____

_____

_____

(note that all dams should be able to pass a probable maximum flood (PMF) event)

Estimated flow rate of design flood event: _____m^3/s

Any other comments:_____

_____

_____

_____

_____

D.3.4 Will the public and/or stock be prevented from accessing the dam structure and its banks?

❑ Yes (please describe): Stock fenced off and no public access

❑ No (detail why):_____

D.3.5 Will a Dam Safety Review, in accordance with the NZSOLD Guidelines (2000) be undertaken for the dam at regular intervals?

❑ Yes (please describe, including frequency of review, or the circumstances when review will be initiated, and how the review will occur):_____

❑ No (detail why):_____

D.3.6 Has an Emergency Action Plan been prepared for the dam, in accordance with the NZSOLD Guidelines (2000)?

❑ Yes (please attach a copy to the application

❑ No (detail why):_____

D.4 Dam Operation and Management *(applicable to dams with a risk greater than "low", as defined by NZSOLD)*

Describe the operating regime of the dam on a separate page (or include an up-to-date copy of your operations and maintenance manual), including:

- Management of water levels.
- Management of discharges, including low flows/flow releases and flows over fish passes.
- If the dam will be used for water supply, demonstrate that the dam will provide sufficient storage to meet the projected demand, whilst providing for any proposed flow discharges.
- Maintenance and inspection of the dam embankment and spillways.
- Maintenance of reservoir including water quality control and removal of sediment and aquatic vegetation.

D.5 Dam Break Risk Assessment

D.5.1 Please provide a risk assessment report on downstream impacts in the event of dam failure. This report should be prepared by a suitably qualified person, such as an engineer. For dams with a risk greater than "low", inundation maps should be supplied. Please ensure that the location of any dams or infrastructure is shown.

This is not considered necessary given the extremely small dam size and no potential impact to the population. Note that dam has been present for 30+ years.

D.5.2 Do you propose to hold public liability insurance for the dam in event of dam failure?

☐ Yes (please describe, including to what value the insurance is held for): _____

_____

_____

_____

_____

☐ No (please describe why not): _____

_____

_____

_____

_____

PART E: Assessment of Environmental Effects of the Proposed Dam

An assessment of effects should be proportional to the scale and significance of the proposed activity. Where your proposed take could have a significant effect on water body flow or levels a detailed environmental assessment is required.

E.1 Effects of the proposed damming of water on the surface water resource:

(a) Please list any known water users that your proposed dam may affect: _____
Refer to deemed permit replacement AEE
_____

(b) Will the damming of water have an effect on water availability to neighbouring properties?

☐ Yes ☐ No ☐ Unknown

If yes, please explain the effect

_____

_____

(c) Are there any of the following present within 500 metres of the proposed dam:

(i) Obvious signs or known aquatic biota?	☐ Yes	☐ No	☐ Unknown
(ii) Areas where food is gathered from the water body?	☐ Yes	☐ No	☐ Unknown
(iii) Natural Wetlands?	☐ Yes	☐ No	☐ Unknown
(iv) Waste discharges (e.g., dairy sheds, industrial, sewage)?	☐ Yes	☐ No	☐ Unknown
(v) Recreational activities (e.g., swimming, fishing, canoeing?)	☐ Yes	☐ No	☐ Unknown
(vi) Areas of special aesthetic value (e.g. waterfalls)?	☐ Yes	☐ No	☐ Unknown
(vii) Areas or aspects of significance to Iwi?	☐ Yes	☐ No	☐ Unknown
(viii) Other water takes?	☐ Yes	☐ No	☐ Unknown

If you have answered "Yes" to any of the above, describe what adverse effects your dam may have and the steps you propose to take to minimise (i.e. mitigate) these effects:

see AEE

_____

_____

_____

_____

E.2 Will the proposed damming of water affect any other individuals or organisations that may have an interest in that water?

(a)	Other water users	❑	Yes	❑	No	❑ Not Applicable
(b)	Recreational water users	❑	Yes	❑	No	❑ Not Applicable
(c)	Fish and Game Council	❑	Yes	❑	No	❑ Not Applicable
(d)	Iwi	❑	Yes	❑	No	❑ Not Applicable
(e)	Neighbouring landowners	❑	Yes	❑	No	❑ Not Applicable
(f)	Department of Conservation	❑	Yes	❑	No	❑ Not Applicable
(g)	Other *(e.g. Forest & Bird, LINZ)*	❑	Yes	❑	No	❑ Not Applicable

If you have answered "yes" to any of the above, please explain how they may be affected by your proposed dam:

Potential effects on in-stream values (see AEE Section 5)

If you have answered "no" to any of the above, please explain why they will not be affected by your proposed dam:

see AEE Section 5

*If you have answered "yes" to any of the above, you may need that individual or organisation's written approval for your application to proceed under non-notified consent procedures. This is discussed further in Part G.

E.3 What are the positive effects of your proposed dam?

Ongoing operation of a large farm and numerous smaller orchards and vineyards that support the local and regional economy (see AEE for further details)

E.4 What monitoring, if any, do you propose to carry out to measure any effects of your proposed dam on the environment?

see AEE. Water metering of the abstraction below the weir has taken place for almost 7 years.

E.5 Please tick if you are adopting any of the following measures to ensure that any adverse effects will be avoided, remedied or mitigated:

- ☐ Release of flushing flows
- ☐ Flood attenuation
- ☐ Provision of passage for migratory fish i.e. fish pass, diversion, climbing surface.
- ☐ Wetland creation
- ☐ Fencing of reservoir and riparian planting around the edges of the reservoir
- ☐ Other (Please specify)_____

Explanation:

Some of the natural flows in the Albert Burn are able to bypass the weir via a diversion channel. From late autumn through to late spring, there is typically enough water flowing down this diversion channel to permit fish passage. The application has plans to fence off and plant around the edges of the reservoir and the stream itself.

PART F: Alternative Locations and Methods

F.1 Does your property have alternative locations for the dam *(*such as off stream locations, or stream of lower environmental value).

- ☐ No
- ☐ Yes *(please detail why your chosen location is considered the best option for you)*

_____

_____

_____

_____

_____

PART G: Consultation

G.1 Please comment on any consultation undertaken with those persons/parties who may be interested in or potentially affected by your proposal to dam water (e.g., other water users, Department of Conservation, Fish and Game Council, Iwi, Transit New Zealand etc).

DoC have been consulted with regards to freshwater values in the Albert Burn. Additional fish surveys of the Albert Burn have since been completed to support the associated deemed permit replacement applications.

_____

_____

F.2 Please provide any written approvals to the activity using Council's standard Form 1 - Resource Consent Application

PART H: Is Your Application Complete?

H.1 In order to provide a complete application have you remembered to:

(a) Fully complete this schedule and Form 1 (Resource Consent Application) ☐

(b) Include a location / site plan? submitted with deemed permit replacement application (RM19.312) ☐

(c) Include photographs of the proposed/existing dam structure? ☐

(d) Enclose a Certificate of Title? ☐

(e) Attach any appropriate additional information? ❑

Including:

(i) An emergency action plan? ❑

(ii) The dam maintenance and operations manual? ❑

(f) Complete and attach any additional schedules for associated resource consents?

Schedule 3 (to divert water) ❑

Schedule 4 or 5 (to take surface water or groundwater) ❑

Schedule 7 (to discharge contaminants or water to water) ❑

Schedule 10C (to disturb the bed of a watercourse and erect a structure) ❑

Notes to provide guidance on completing Schedule 2

Part A: Description of the Proposed Damming and Associated Activities

Question A.1
If you are unsure whether there is an existing or expired resource consent check with Otago Regional Council. If you know your expiring consent number, or if you are applying to transfer your currently consented dam to another location, please supply the consent number.

Question A.2
The purpose of this question is to determine why the application for consent is required. Section 12.3 of the Regional Plan: Water for Otago outlines the rules relating to the damming of water. Please tick the relevant boxes and refer to the full Permitted Activity Rule 12.3.2.1 in the Regional Plan: Water for a full description of the Rule. Maps identifying wetland areas are identified on Map series F of the Regional Plan: Water for Otago. Please contact Council if you require any assistance.

Question A.3
Tick the boxes that indicate the purpose of your proposed dam.

Question A.4
Additional consents may be required from Council in relation to the damming of surface water depending on the nature of the proposal. These include permits for works in the bed of a river, the discharge of water to water and for the taking of surface water. Staff at the Otago Regional Council will be able to advise you whether your proposal meets the conditions of the Permitted Activity Rules or whether any additional consents are required.

Part B: Location of the Proposed Activity

Questions B.1 and B.2
Please provide the name and address of the owner and occupier (if different to landowner) of the land where the water will be dammed, and the land that will be inundated, or, if owned by the Crown (i.e. Crown riverbed), the land adjacent to the dam. A copy of your certificate of title may be obtained from Land Information New Zealand (www.linz.govt.nz). LINZ may also require a licence for you to occupy the bed of the water body with your intake structure (please contact LINZ directly).

*If the dam is on the bed of a large river (particularly “navigable rivers”) the bed will likely be owned by the Crown. The beds of smaller watercourses are sometimes owned by the adjacent landowner(s).

Question B.3
NZTM 2000 maps are generally available from Public Libraries or may be purchased from Government Book Shops.

Question B.4
If you are unsure of the name of the water body, and your application is a replacement of an existing consent, the easiest way to find out the name of the water body from which you are seeking to dam is by checking your existing resource consent. If you are unsure of the name of the water body and the application is for a new dam, please contact an Otago Regional Council staff member who will be able to assist you. In many instances tributaries to larger water bodies do not have official (or legally recognised) names. If this is the case describe the water body as "an unnamed tributary of …….". If the water body has an unofficial local name you could continue to write "… locally known as……." . You can determine if a name is legally recognised by seeing if it is written on published topographic maps (see question B.3), or if any road bridges crossing it state the name of the water body (i.e. Transit or Automobile Association signs).

Question B.5
A general site plan showing as much detail of the location of your proposed dam and surrounding land as possible should be provided. This will assist Council's assessment of your application and may reduce processing time and costs.

Part C: Description of the Water Resource/Catchment

This section covers the characteristics of the water resource that you are proposing to dam. Tick the appropriate boxes and answer the appropriate questions in both either **B.1 or B.2,** as applicable.

Question C.1
Describe the watercourse which is to be dammed. For question (a) - a watercourse can be perennial (flows all year around) or ephemeral (flows intermittently or when there is rain). For questions (b) – (g): It is recommended that you engage a hydrologist to calculate the hydrological regime of the watercourse if you are unable to obtain this information yourself. Flows in your river may be measured at certain locations by Council or other organisations (e.g. NIWA). For question (j), the bed composition may be mud, silt, sand, gravel or rock, or a combination of these.

Questions (j) and (k) - The Otago Fish and Game Council and the Department of Conservation should be able to assist you in identifying the aquatic flora and fauna, and the aquatic waterfowl associated with the watercourse.

Question C.2
Describe the area outside of a watercourse which is to be dammed. Please estimate how much natural runoff the dam is likely to intercept. To what watercourse would the runoff have discharged to if the dam was not present? What is the predominant land use of the catchment of the dam?

Question C.3
Describe any faults or landslips that may be present at the dam site or in the greater area around the dam. Is the dam site within a flood zone? Are there any other hazards present that may impact on the dam structure?

Part D: Dam Design Details

Question D.1
(a) and (b) You should engage a chartered professional engineer to undertake an assessment of dam safety, if the risk posed by the dam is greater than "low". An assessment of dam safety should be undertaken with reference to the NZSOLD Dam Safety Guidelines (Technical Publication 109, June 2000). For (c) – (f), what are the estimated dates of start and finish of construction, and dam filling, should consent be granted. For (g), describe the geotechnical conditions of the land where the dam is to be built, and the construction requirements. For (h), the photographs requested will allow Otago Regional Council staff to make an assessment of the dam / proposed dam, and will allow determination of whether a site visit is necessary.

Question D.2
Please give the dimensions of your dam, and the details of the flows it is designed to contain and pass, and any design details to allow for fish passage. Details of the dam design, including plans, calculations and the results of on-site tests should be provided in a separate report accompanying this application form. For D.2.5 you should engage a chartered professional engineer experienced in the design and construction of dams to provide a plan of your proposed dam. The level of detail you provide should be appropriate for the scale of your proposal (that is, the larger the scale, the more detailed the plans should be). In addition, for stormwater ponds you should provide details of the ways in which the dam will be operated for stormwater detention or treatment.

Question D.3

You should provide a description of the ways in which the dam will be maintained to provide for its safe operation. You should include detail of any methods as recommended by the NZSOLD Guidelines (2000), including if a dam safety review will be undertaken, and whether an emergency action plan will be prepared.

Question D.4
If your dam has a risk greater than "low", you should provide a description of the ways in which the dam will be operated and maintained to provide for its safe operation.

Question D.5
Please provide a report detailing all the potential impacts and adverse effects that could occur downstream of the dam in the event of its failure. This will help Council assess the potential risks of the proposed structure. In addition, provide comment as to whether public liability insurance will be held, or is held, to cover any damage likely in the event of dam failure.

Part E: Assessment of Effects on the Environment

In this section you need to consider what the effects of your proposed take will have on the environment. You **must** provide an answer to all questions from **E.1 – E.6**.

Question E.1
(a) & (b) You need to consider whether your proposed dam will have any effect on the availability of water for other users. This will depend on the volume of water you propose to dam relative to the size of the water body and the distance downstream to the next inflow of water (i.e. where the next stream or tributary joins the water body you propose to dam).

(c) The items listed in this question are those that are commonly affected by dams. You need to consider if any of these are present in the vicinity of your proposed dam and if they are, then you will need to discuss how your proposed dam will affect them. Dams can lower the water levels of the water body (e.g. the dam may reduce the depth of water downstream of the point of the dam). This will depend on the type of water body which you are damming and the amount of water you are proposing to dam.

Question E.2
What other individuals or organisations who use this water body, or for whom the water body supports natural or cultural values, may be affected by your proposed dam? How might your dam affect them? For example, in a creek used for trout and salmon spawning, your take may affect their habitat by lowering the water level, thus Fish and Game may be an affected party. If the water body has significance to Iwi the effect of the dam may be more difficult for you to ascertain, as the values of the water body to them may be less tangible (if in doubt, it may be beneficial to consult Iwi).

Question E.3
There are a number of possible "positive" effects that dams can result in. These can include economic benefits to the community, secure water supplies for irrigation, and many others.

Question E.4
The amount of monitoring likely to be required will depend on a number of factors such as the quantity of water you are proposing to dam, the size of the water resource, and the pressure on the resource. A consent holder will commonly be required to measure the quantity of water they take on a daily basis and submit "water use records". In other cases, downstream flow measurement recording, water quality and/or biological monitoring may be required. In addition, the NZSOLD Guidelines (2000) require ongoing monitoring for the safe operation of a dam.

Question E.5
Please tick any relevant boxes and explain how any proposed methods will avoid, remedy or mitigate any actual or potential effects on the environment.

Part F: Alternative Locations and Methods

Question F.1
Please identify any alternative methods or locations of damming, as well as any other alternative water sources available to you. Please provide reason(s) why have you not chosen any of these alternative methods, locations or water sources.

Part G: Consultation

Questions G.1 and G.2
Council can advise you of those parties considered to be potentially adversely affected by your proposed activity and can also instruct you regarding Iwi consultation. In some instances it may be appropriate for you to submit your application and let Council determine who they think may be adversely affected by your proposal. Because Council charges time on an hourly basis, you may choose to consult these parties and seek their written approval to your application yourself, or you may choose for Council to pursue this for you. However, if an application is submitted without written approvals of potentially affected parties, the application goes "on hold" until these written approvals have been received. Failure to obtain written approvals within a reasonable timeframe can result in your application being notified.

Part H: Is Your Application Complete?

Question H.1
A complete application will assist Otago Regional Council in efficiently processing your application. If information is missing or inadequate your application may be returned to you or declined. Please ensure that you have fully completed the application form and included the items listed from (a) – (f). You will also need to complete Form 1, and any other relevant schedules for activities associated with the damming. Applications that are incomplete or do not provide sufficient information will be delayed and will cost more.

If you have any queries relating to information requirements, please contact the Otago Regional Council Offices:

Dunedin Office
70 Stafford St
Private Bag 1954
Dunedin
Phone 03 474 0827
Fax 03 479 0015

Alexandra Office
Dunorling St
PO Box 44
Alexandra
Phone 03 448 8063
Fax 03 448 6112

Queenstown Office
Cnr Shotover & Camp St
PO Box 958
Queenstown
Phone 03 442 5681
Fax 03 442 5682

Freephone: 0800 474 082

Website: www.orc.govt.nz

APPENDIX B – ORC Form 3

3 Application To Divert Water

Otago Regional Council

(For Office Use Only)
Consent No.: _____

Use this form for any activity which alters the natural flow of a watercourse.

Show the location of the diversion and adjoining properties on your map on Form 1. Include design plans.

Part A: General

1. Is the diversion: Existing ☒ or Proposed ☐

   If the diversion requires the alteration of the bed or banks of a watercourse, a Land Use Consent is also required. Use Application Schedule No. 10.

   If the diversion is in the coastal marine area a coastal permit to divert water is required. You can make the application on this form. A coastal permit to erect any structures and occupy the coastal marine area is required for a new diversion. Use Application Schedule No. 12.

2. Why are you diverting water (e.g., stormwater control, river works, stream realignment, etc)?
   To enable the abstraction of water under Deemed Permits 2002.348, 2002.349, 2002.351 and 2002.352.

3. What is the name of the watercourse to be diverted? (If the stream is unnamed give the name of the watercourse it is a tributary of.)
   Albert Burn

4. What is the rate at which water will be diverted?
   Varies as per natural flow fluctuations, as most or all of the flow is diverted.
   _____ litres per second
   _____ cubic metres per day
   _____ cubic metres per week

5. Will the diversion be: Intermittent ☐ Or continuous ☒

   If intermittent, what will be the maximum operating period? _____ Hours per day
   _____ Days per week
   _____ Weeks per month
   _____ Months per year

6. Does the diversion also involve:

Taking water?	Yes ☒	No ☐
Damming water?	Yes ☒	No ☐
Discharging?	Yes ☒	No ☐
Any structures?	Yes ☒	No ☐

If you answered "Yes" to any of 6. above, another schedule to this consent application may be required.

Part B: Assessment of Effects on the Environment

		Yes	No	Not Known
1.	Will the diversion have an effect on water availability to downstream users and/or affect access to neighbouring properties?	☐	☐	☐
2.	Within a reasonable distance up or downstream of the diversion are there any :			
	(i) Obvious signs of fish, eels, insect life, aquatic plants, etc?	☐	☐	☐
	(ii) Wetlands (e.g., swamp areas)?	☐	☐	☐
	(iii) Waste discharges (e.g., rural, industrial sewage, etc)?	☐	☐	☐
	(iv) Recreational activities carried out (e.g., swimming, fishing, canoeing?)	☐	☐	☐
	(v) Areas of particular aesthetic or scientific value (e.g., scenic waterfall, rapids, archaeological sites)?	☐	☐	☐
	(vi) Areas or aspects of significance to Iwi?	☐	☐	☐

If you have answered "Yes" to any of the above, describe what effects your diversion may have and the steps you propose to take to mitigate these. If the adverse effect is significant describe alternative locations or methods you have considered for undertaking the diversion.

Effects of the diversion on fish present in the Albert Burn are assessed in Section 6.2 of the AEE provided to Council for the associated deemed permit replacements (RM19.312).

(Continue on a separate page if necessary)

3. Describe the bed of the watercourse in the vicinity of the diversion site (e.g., is it gravelly, muddy or sandy?).

muddy with cobbles

Part B: Assessment of Effects on the Environment (Contd.)

	Yes	No	Not Known
4. Will the diversion cause any flooding or other problems to neighbouring properties?	☐	☒	☐

Please describe: _____

5. Please attach your calculations which show that the diversion design is adequate, including design flood flows, return periods, etc. Excess flows above the diversion maximum simply bypass the diversion and flow down the natural creek channel.

6. Have you discussed your diversion with any potentially affected parties, eg.

	Yes	No
Neighbours	☐	☒
Water users	☐	☒
Fish and Game Council	☐	☒
Department of Conservation	☐	☒
Others (specify) _____	☐	☐

7. Are there any alternative sites or methods for the diversion? If yes, why have you not chosen any of these?

Alternatives are assessed in Section 6.1 of the AEE

8. Describe any other effects which may arise from the activity which are not referred to elsewhere in this schedule, and describe the means by which those effects will be avoided or mitigated.

see AEE for full affects assessment

APPENDIX C – Photos

Figure 1: Schoolhouse race SH6 culvert inlet. The pipe shown is a ~50 mm stockwater take

Figure 2: Schoolhouse race SH6 culvert inlet close up. There is a sharp drop just inside the grate, which is difficult to see in the photo.

Figure 3: Schoolhouse race SH6 culvert outlet