

BEFORE THE CANTERBURY REGIONAL COUNCIL

IN THE MATTER OF

The Resource Management Act 1991

AND

IN THE MATTER OF

an application by **Bellfield Land Company Limited** for a water permit filed under **CRC071649** to take and use surface-water from Hen Burn Stream and a land use permit filed under **CRC071650** to work in bed of Hen Burn Stream, Omarama.

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REPORT AND DECISION OF HEARING COMMISSIONERS PAUL ROGERS,  
MICHAEL BOWDEN, DR JAMES COOKE AND EDWARD ELLISON

PART B - SITE SPECIFIC DECISION

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## 1 INTRODUCTION

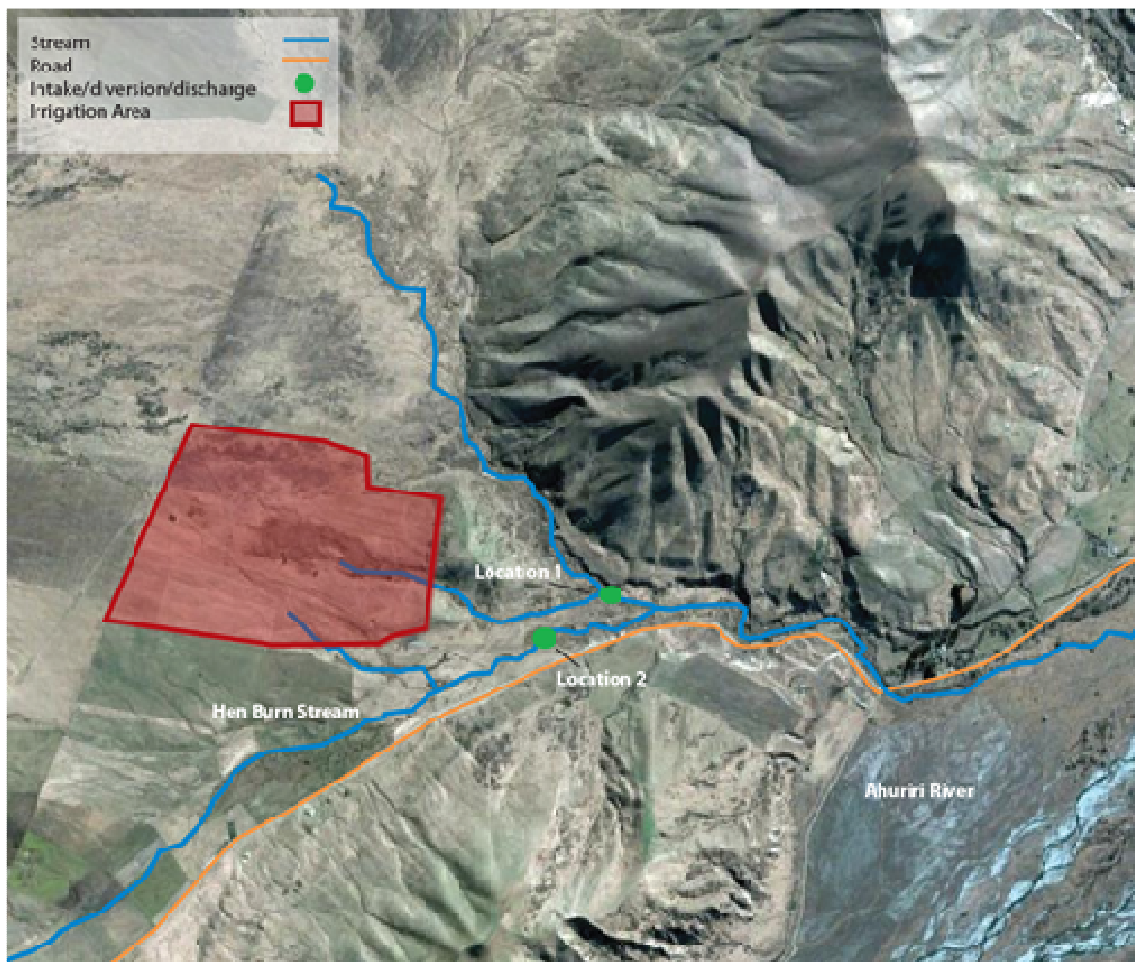
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- 1.1 This is a decision on applications by **Bellfield Land Company Limited** (the applicant). It is one of many decisions we have made on 104 applications by various applicants for water permits and associated consents in the Upper Waitaki Catchment.
- 1.2 The decision should be read in combination with our Part A decision, which sets out our findings and approach to various catchment wide issues that are common to multiple applications. References to our Part A decision are made throughout this decision as appropriate.

## 2 THE PROPOSAL

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- 2.1 The applicant proposes to take water from one of two locations on the Hen Burn. The two locations are currently proposed as alternatives and only one intake site will be used. Prior to exercising the consent (if granted) the applicant will decide which option it prefers based on the flow availability at the intake points. The two intake locations are shown in Figure 1 below.



**Figure 1.** Indicative location of Irrigation area and Abstraction sites (1) & (2)

- 2.2 Water will be taken from the Hen Burn at a rate of 30 litres per second with a volume not exceeding 18,144 cubic metres per week and 312,000 cubic metres per year. The water will be used for spray irrigation by centre pivot of 52 hectares within a command area of 130 hectares for grazing sheep and beef. A minimum flow of 20 L/s is proposed in the Hen Burn at Hen Burn Road and the take of water will be metered.
- 2.3 In association with the proposed take and use, the applicant proposes to disturb the bed of the Henburn Stream at one of the two proposed locations to install an intake structure. Water will be taken via a submerged infiltration gallery buried up to 1 metre deep and conveyed from the intake to the proposed centre pivots, via a pipe network. This intake structure is a change from that originally notified, as discussed further below.

- 2.4 The details of the proposed works in the bed are as follows:
- (a) The gallery will be approximately 5 to 10 metres long, constructed of 300 millimetre diameter PE pipe with slots not exceeding 5 millimetres, oriented at a 45 degree angle upstream.
  - (b) The installation of the gallery is expected to take half a day to complete and maintenance will be periodic and of short duration.
  - (c) Depth of excavation will be up to 2.5 metres below bed level, with the gallery installed at a depth of at least 1 metre below bed level.
- 2.5 The proposal also involves a temporary diversion of water during construction of the intake structure to minimise the work required in flowing water. Although a consent for this diversion has not specifically been sought, we have considered this activity as part of the proposal for the reasons outlined in our Part A decision.
- 2.6 The applicant does not propose to supply any stock water to the property from this system as it already provided by another water source.

### **The applications**

- 2.7 The proposal involves two separate applications:
- (a) **CRC071649** – An application for a water permit to take and use surface water pursuant to section 14 of the RMA. Consent is required under the Waitaki Catchment Water Allocation Regional Plan (WCWARP), as discussed below.
  - (b) **CRC071650** – An application for land use consent for an activity in the bed of a lake or river pursuant to section 15 of the RMA. Consent is required under the PNRRP, as discussed below.
- 2.8 Both consent applications were lodged with the Canterbury Regional Council (the Council) on 1 December 2006. The applications were publicly notified in August 2007 and there were a number of submissions that are referred to later in this decision. A consent duration to 2025 is sought

### **Modifications after notification**

- 2.9 As mentioned above, after notification the land use consent application was modified to change from a pipe intake and supporting concrete wing wall structure to a submerged infiltration gallery intake. . The duration of the installation works was also amended from 0.5 day to 1 day.
- 2.10 The section 42A reporting officer considered the required works would be within the scope of those required for the intake structure as originally proposed.
- 2.11 The general principle for modifications after notification is that amendments are allowed provided they do not increase the scale or intensity of the activity or significantly alter the character or effects of the proposal. The key consideration is prejudice to other parties by allowing the change. In this case, we are satisfied that the change does not significant alter the intensity or effects of the proposal and that no party would be adversely affected by allowing the change.

### **Related consents and applications**

- 2.12 The applicant currently holds an existing consent to take water from the Hen Burn at a rate of 30 litres per second for irrigation of 7 hectares (CRC001096.1). The maximum volume that may be taken is 5,184 m<sup>3</sup> in any period of 15 consecutive days, which only provides for two days of irrigation per 15 days. The applicant proposes that this existing consent will be surrendered if the current applications are granted.
- 2.13 In addition to this proposed take and land use from the Henburn Stream, the applicant has also applied for additional divert, take and use, and discharge consents from the Quailburn Stream to irrigate an additional block (CRC012733, CRC011987). These applications are considered in a separate decision.

### **3 DESCRIPTION OF THE ENVIRONMENT**

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#### **The Hen Burn**

- 3.1 The Hen Burn is typically within a confined channel about 2-4 metres wide with the stream about 1 metre wide. The catchment area is approximately 80 square kilometres. Hen Burn has populations of brown trout and Canterbury galaxias.
- 3.2 Water will be abstracted at either location (1) or (2) shown on Figure 1 above. Flows in the Hen Burn are typically lower at location (2) than location (1) by between 30 and 50 percent.
- 3.3 Hen Burn swamp, located between 400 and 900 metres upstream from location point (2), is a slow moving stream and a significant Carex (sedge grass) habitat. Marsh crake are present and black stilt breed there.

#### **Irrigation area**

- 3.4 The proposed irrigation area is located approximately 6 km west of the junction of Henburn Road with Quailburn Road, and at its nearest point is approximately 400 m north of Henburn Road. The land drains to the east into the Henburn stream, the tributaries of which fork either side of the block.
- 3.5 The location map (Figure 1.) indicates that the command area covers a small wetland. After a site visit the reporting officer (Ms Penman) confirmed that it is no longer a wetland and is now improved pasture. There are, however, wetland areas outside the proposed irrigation area.

#### **Other users**

- 3.6 The command area is not visible from the State Highway and users of Hen Burn Road who visit the Clay Cliffs would not travel as far along as the proposed command area.
- 3.7 There is one other existing consented user of water upstream of the proposed abstraction points. WH & AJ Sutherland (CRC020508) holds a consent to take 50 litres per second from Horse Gully, a tributary of the Hen Burn.

#### **Site visit**

- 3.8 We detailed our site visits in Part A and we do not repeat this information here. We did not specifically visit the site on the ground however we did conduct an extensive aerial inspection to familiarise ourselves with the environment within which the activity is proposed.

### **4 PRELIMINARY MATTERS**

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#### **Ahuriri Water Conservation Order**

- 4.1 Section 217 of the RMA states that where an operative conservation order exists, a consenting authority cannot grant a water right if the exercise of this permit would be contrary to any restriction or prohibition or any other provision of the order.
- 4.2 The Ahuriri National Water Conservation Order (AWCO) sets out various restrictions designed to protect the outstanding characteristics and features of the Ahuriri River and its tributaries. Clause 3 of the AWCO requires a catchment management approach and declares that "the Ahuriri River and its tributaries include and provide for outstanding wildlife habitat, outstanding fisheries, and outstanding angling features."
- 4.3 Given that the water body from which the take will occur eventually flows into the Ahuriri River, this proposal is subject to the requirements of the AWCO. This includes ensuring that the minimum flow levels of the Ahuriri River are maintained and that the "protected waters" are not adversely affected by the discharge of contaminants. For the reasons discussed in the balance of the decision, we are satisfied that the application could be granted without breaching any of the provisions of the AWCO.

## 5 PLANNING INSTRUMENTS

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- 5.1 As discussed in our Part A decision, there is a wide range of planning instruments that are relevant under the RMA. This includes national and regional policy documents, along with regional and district plans. The key planning instruments relevant to these applications are as follows:
- (a) Transitional Regional Plan (TRP);
  - (b) Waitaki Catchment Water Allocation Plan (WCWARP);
  - (c) Proposed Natural Resource Regional Plan (PNRRP)
  - (d) Natural Resources Regional Plan (NRRP);
  - (e) Proposed and Operative Canterbury Regional Policy Statement (CRPS); and
  - (f) Waitaki District Plan (WDP).
- 5.2 The provisions of these planning instruments critically inform our overall assessment of the applications under s104(1)(b) of the RMA, as discussed in Section 14 of this decision. In addition, the rules within the relevant planning instruments determine the status of the activities, as set out below.

### Status of the activity

- 5.3 In our Part A decision we provide a detailed discussion of our approach to determining the status of activities. We now apply that approach to the current applications.

#### CRC071649 – Take and use water (s14)

- 5.4 This application was lodged after the WCWARP was made operative. The following rules from the WCWARP are applicable to this application:
- (a) Rule 2, clause 1(a) – The applicant proposes to adopt the minimum flow for the Hen Burn of 0.02 cubic metres per second at Hen Burn Road (Table 3, row (xii)) to ensure the application is consistent with this rule.
  - (b) Rule 2 clause (1)(b) – The application exceeds the allocation limit for the Hen Burn of 0.08 cubic metres per second (Table 3, row (xii)). However, this application will fall within that allocation limit once the consent which it replaces is surrendered. As the applicant proposes this as a condition of consent, it falls within the allocation limits for the purposes of assessing the status of the activity.
  - (c) Rule 6 – The activity is within the annual allocation limit of 275 million cubic metres for agricultural activities upstream of Waitaki Dam (see details of annual allocation in Report 3).
  - (d) Rule 15 – Classifying rule – discretionary activity
- 5.5 Overall the proposed water permit is a **discretionary** activity under Rule 15 of the WCWARP and resource consent is required in accordance with section 14 of the RMA.

#### CRC071650 – Disturb the bed (s13)

- 5.6 In accordance with section 88A of the RMA, the relevant plans for determining the status of the activity are those that existed at the date the application was lodged. In relation to this application, that was the TRP and the PNRRP.
- 5.7 The TRP is silent on matters relating to works in the bed and banks of rivers and lakes in the Waitaki catchment. This activity therefore requires consent as a **discretionary** activity under the TRP.
- 5.8 The relevant provisions of the PNRRP (as notified) are as follows:

- (a) Rule BLR2 – There is insufficient information to determine whether the activity is able to comply with the conditions of this rule
- (b) Rule BLR8 - The works would be considered discretionary under this rule should they not comply with the conditions of Rule BLR1.

5.9 In relation to the minor diversion of water associated with construction activities, the relevant plan for determining the status of the activity is the WCWARP. The diversion fails to qualify as a permitted activity under Rule 1 of the WCWARP due to the quantity and rate of water being diverted. However it complies with all other relevant rules in the WCWARP and therefore requires consent as a **discretionary** activity.

5.10 Overall, the proposed works in the bed is classified as a **discretionary** activity.

#### Overall status of the proposal

5.11 Based on the above, we have assessed the entire proposal as a **discretionary activity**.

## **6 NOTIFICATION AND SUBMISSIONS**

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6.1 Both applications were notified on 4 August 2007. A total of 22 submissions were made on the proposal, including:

- (a) 2 in support;
- (b) 18 in opposition; and
- (c) 2 neither in support nor opposition.

6.2 Table 1 is based on the relevant s42A reports and summarizes those submissions that directly referenced the application. In addition to those listed, there were other submitters that presented evidence at the hearing that was relevant to this application. The relevant evidence from submitters is discussed in more detail later in this decision. Please note that all submissions hold equal importance, even if not specifically listed below.

*Table 1. Summary of submissions on application CRC071649 and CRC071650*

| <b>Submitter</b>           | <b>Reasons</b>   | <b>Position</b> |
|----------------------------|--|-----------------|
| Fish & Game                | Good tributary for trout, eels and indigenous fish, and game birds. Take exceeds allocation limit.       | Oppose          |
| Department of Conservation | Water quantity, water quality, fish passage, natural character, entrapment of larval fish                | Oppose          |
| Meridian Energy Ltd        | Effects on water quality, efficient use and need to meter take   | Oppose          |
| Ohau Co Trust              | Amount of water being sought exceeds that available and a fair flow sharing regime should be established | Oppose          |
| AJ & WH Sutherland         | Concerned about location of abstraction point  | Oppose          |

6.3 Overall the key issues of concern to the submitters were effects on ecosystems, water quality, allocations, minimum flows, natural character and landscape, efficiency and cultural values.

## **7 THE SECTION 42A REPORTS**

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7.1 A section 42A report on the application and submissions was prepared by the Council's Consent Investigating Officer, Ms Clare Penman.

7.2 The primary report was supported by a number of specialist s42A reports prepared by Messrs Heller, Hanson, Glasson, McNae and Stewart, and Drs Clothier, Schallenberg, Meredith and Freeman. The key issues addressed by these reports were cumulative water quality effects, landscape effects, and environmental flow and level regimes.

- 7.3 All reports were pre-circulated in advance of the hearing. We have read and considered the content of the reports and refer to them as relevant throughout this decision. Specific points noted from the s42A report are summarised below.
- 7.4 For the water permit application (CRC071649), Ms Penman was not satisfied that the actual and potential effects of the proposed activity were acceptable. In particular, there were a number of outstanding matters which she believed would have to be addressed further at the hearing, i.e.;
- (a) Water quality - No impact assessment or measures to address the water quality impacts that could arise from irrigation at this site had been submitted. The initial conclusion regarding potential cumulative adverse effects on water quality was that it was premature to make any recommendation to grant or refuse this application prior to hearing the applicant's evidence;
  - (b) Efficient and reasonable use - There was a lack of conclusive information to support the annual volume requested in accordance with the direction provided by Policies 15-20 of the WCWARP;
  - (c) Cultural values - The applicant had not provided any assessment on cultural values and there were outstanding submissions from runanga in opposition to this proposal.
- 7.5 For the land use permit application (CRC071650), Ms Penman was satisfied that the actual and potential effects of the proposed activity were acceptable and recommended that it be granted, subject to conditions.
- 7.6 Mr Chris Glasson located this proposal within his Landscape Unit 4 - Quailburn.
- 7.7 He told us the significance of this landscape is that it is a foreground to the panoramic views of the Neumann and Ben Ohau Ranges, through which many tourists and recreationists pass on route to the Ruataniwha Conservation Area and the Ohau ski-field in Central Otago.
- 7.8 He noted that there were modifications to this Unit and they include modifications associated with farming operations, such as shelter belts, roads, fences and farm dwellings, and irrigated areas adjacent to State Highway 8.
- 7.9 He considered the Landscape Unit was moderately visible from the Quailburn and Lake Ohau Roads, and the eastern part of the Unit was highly visible from State Highway 8.
- 7.10 In terms of this proposal site, he told us it is small and discreetly located, with low visibility due to its location some distance away from roads and public areas. He considered a potential adverse effect would be created by the location of a pump station on the banks of the Henburn River. He noted that if the structure is located in a discreet manner and the building form, material and colours treated in a recessive manner, and provided a buffer of 50 m existed between the Henburn River and the irrigated land, then the proposed site would have adverse effects less than minor.

## **8 THE APPLICANT'S CASE**

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- 8.1 Legal counsel for the applicant, Mr Ewan Chapman, presented opening submissions and called witnesses, whom we will refer to subsequently.

### **Opening legal submissions**

- 8.2 The applicant is part of the Upper Waitaki Applicant Group (UWAG), as described in our Part A decision. Mr Ewan Chapman presented comprehensive opening legal submissions on behalf of all UWAG applicants. He said that there may be matters of a specific legal nature relating to certain applications and those issues will be raised when the specifics of the applications were discussed in closing.
- 8.3 Mr Chapman told us that UWAG represents some 72% of all applicants for water takes. This equates to 31% of the total water volume applied for (excluding stockwater and non-consumptive diverts) and 29% of the total irrigable area.
- 8.4 Mr Chapman emphasised that despite the collective approach adopted for these hearings, each application needs to be considered in isolation from others (allowing for priorities). However Mr Chapman noted that UWAG is not producing any other evidence to support its own assessments



of cumulative effects and adopts the MWRL evidence to the extent that it defines nodal thresholds.

- 8.5 While raising some challenge to the outcomes of the mitigation measures proposed by MWRL resulting from the WQS study, Mr Chapman told us that the UWAG members were not presenting their case to say that they cannot or will not meet an area-based NDA threshold. To the contrary, he said that we would be shown that they have taken the model and applied it to all properties and will, with mitigation, meet the thresholds.
- 8.6 Mr Chapman then addressed us on the issue of allocation of assimilative capacity. Relevantly, for this application in terms of the Ahuriri, he told us the assimilative capacity is exceeded. He contended the approach taken by MWRL that essentially resulted in some farming units mitigating for the nutrient loss of other farming units, was inappropriate. He submitted a more appropriate method of allocation is on the basis of productive use of land. The productive use of the land he said represents the level of nutrient discharge of each farming unit and that should be used; and that the method of allocation based on dividing allocation on a per hectare basis should not be utilised.
- 8.7 He submitted that by assessing allocation of assimilative capacity on the basis of productive land use to reflect the NDA for each unit, these methods would be more representative and realistic of the nutrient discharge of each farming unit.
- 8.8 In terms of conditions concerning the nodal approach, he told us the essential issue lies with pinpointing who is exceeding their NDA if exceedances are detected at the nodal point. He told us the UWAG applicants' preference is for on-farm management of total nutrient discharge and annual auditing of individual FEMPs. He then referred us to a draft condition from the Rakaia Selwyn groundwater zone hearing, noting it was a very much site-specific condition.
- 8.9 He submitted that on-farm monitoring should be favoured over monitoring at nodal points. He said this did bring in the practicalities of the purpose of employing the FEMP with the result that if a breach of the FEMP occurs, the consent authority would have control to enforce the conditions of the consent against the individual applicant. It also reflects the reality that each farm will be different depending on the type of activity that is undertaken on that farm with their individual tailored farming management practices.

#### **Mr Andrew Craig**

- 8.10 Mr Andrew Craig is a well qualified landscape architect. He presented evidence on behalf of the UWAG group. He concluded that context in terms of landscape assessment is, in his opinion, the key factor. He agreed that assessment is subject to universal principles or methods. However, each application site presents unique circumstances.
- 8.11 He saw the key question as to what extent do the effects depart from the baseline environment while taking into account the outcomes anticipated by the relevant statutory documents. He considered the next core question to be the importance of the setting with regard to effects, especially those affecting views.
- 8.12 He was also of the view that considering whether the activity is revocable or not was of some importance. He did however conclude that the effects we are concerned with here while essentially ephemeral are likely to be enduring.
- 8.13 Overall, he reached the conclusion having assessed the applications that the potential adverse effects will be significantly less than minor. His core contention was that the application sites are, to a large extent, already modified and/or cultivated and affected by agricultural activities, and that adding irrigation will not change to any great extent the views into them.

#### **Ms Haidee McCabe**

- 8.14 Ms Haidee McCabe said that the applicant operated Quailburn Downs, a 2,200 ha freehold hill country property near Omarama. The farm was merino sheep and beef cattle with 22% of the stock made up of cattle and the remaining 78% of sheep. The farm had approximately 90 ha of existing spray irrigation.
- 8.15 The applicant proposed to provide a total reticulated stock water scheme with this proposed irrigation development to ensure that stock can be excluded from waterways.

- 8.16 Ms McCabe said that the applicant proposed to continue to farm in a similar manner with this proposed irrigation development. The proposed irrigation development would however provide many benefits.
- 8.17 The applicant proposed to increase the stock units from the present 8,000 to approximately 9,000.
- 8.18 Ms McCabe said that the Henburn Stream drained the Diadem Range toward the east and the Cloud Range toward the west. It consisted of several tributaries that converge prior to entering the Henburn Gorge. The Henburn Stream then combined with the Quailburn Stream before discharging into the Ahuriri River.

### **Water Permit – CRC071649**

#### Effects on other water users

- 8.19 Ms McCabe said that this application would effectively replace the applicant's existing consent (CRC001096.1). If granted, the new application will be located approximately 1.5 km upstream of the existing consent. There will be no increase in rate but an increase in volume.
- 8.20 There is one existing water user on an upstream tributary of the Henburn Stream known as Horse Gully. Messrs W and A Sutherland exercise an existing consent (CRC020508) to divert, take and use 50 L/s from Horse Gully. Ms McCabe advised that the Sutherland consent was over 5 km upstream of the proposed take on Henburn Stream.
- 8.21 Table 3 of the WCWARP specifies an allocation limit of 0.08m<sup>3</sup>/s for the Henburn and Tributaries. Ms McCabe said that this application along with the surrendering of the existing consent was within the overall allocation limit for the Henburn and Tributaries as per the WCWARP.
- 8.22 This application proposed to take water from approximately 1km upstream of the existing (to be surrendered) take but this did not affect any other user because the only other user was over 5km upstream from this application.
- 8.23 Mitigation was proposed restricting the rate of take, volume per week and minimum flows. Ms McCabe considered the effects on other users would be minor.

#### Effects on Ecosystem values

- 8.24 Ms McCabe said that the Henburn Stream and tributaries was specified in Table 3 of the WCWARP. The minimum flow was 20 L/s as measured at Henburn Road. The applicant proposed to accept the minimum flow for the Henburn Stream as defined in Table 3 of WCWARP.
- 8.25 A water level recorder would be installed on the Henburn Stream to ensure compliance with the minimum flow. The take itself would also be appropriately metered.
- 8.26 Ms McCabe said that the intake was proposed to be fish screened in accordance with "Fish Screening: good practice guidelines for Canterbury, NIWA Client Report: CHC2007.092, October 2007".
- 8.27 Ms McCabe considered the effects on ecosystem values would be minor.

#### Effects of inefficient water use

- 8.28 Ms McCabe said that the proposed annual volume had been determined using 600mm for 52ha and justified by Irricalc which Ms McCabe considered to be consistent with Policy 16(c) of the WCWARP.
- 8.29 The proposed application depth of 15-20mm per return period was less than 50% of the water holding capacities expected, which she considered to be an efficient use of water.
- 8.30 Ms McCabe said that Policy 15 and 19 of the WCWARP encourages the piping or otherwise sealing of water distribution systems to minimise water losses and meet efficiency and effective use requirements. This system was proposed to be completely piped to a spray irrigation system and reticulated trough system within the irrigation area.

- 8.31 Policy 21 of the WCWARP required all water takes to be metered. To ensure that this application was consistent with this policy, the applicant proposed to meter their take.
- 8.32 Ms McCabe considered the effects of inefficient water use are minor.

Effects of the use of water on water quality

- 8.33 Ms McCabe said that cumulative effects on water quality have been addressed by Mackenzie Water Resources Limited (MWRL).
- 8.34 She then said that the property, according to the MWRL Water Quality Study, was located within the Henburn and Quailburn catchment and Henburn, Quailburn and Ahuriri Surface water catchments. For this property, the Lake Benmore mitigation requirements were the most stringent and were accounted for in the overall property threshold from the MWRL Study.
- 8.35 Ms McCabe said that the calculated nutrient mitigation requirement of the receiving environments determined in the MWRL Study had identified the N and P thresholds for the property. These were shown in the table below.
- 8.36 "OVERSEER® had been run by a qualified person to model the N<sup>1</sup> and P outputs from the proposed farming system. The results of the model have been incorporated in to the table below. This table shows that the applicant can meet the property thresholds nominated by MWRL.

|  | Nitrogen Threshold | Phosphorus Threshold |
|--|--------------------|----------------------|
| MWRL Water Quality Study Property Thresholds | 7355               | 207                  |
| OVERSEER® Outputs                            | 7351               | 196                  |

- 8.37 Ms McCabe said that the applicant was committed to implementing the "Mandatory Good Agricultural Practices" set out within the FEMP. Implementing these practices would ensure that the OVERSEER® results were validated. This along with ensuring that the property thresholds of the WQS were not exceeded would ensure that the cumulative effects of the use of water for irrigation on water quality were no more than minor according to Ms McCabe.
- 8.38 Whilst the applicant was within their property thresholds, the MWRL Study identified that the applicant still had to consider specific on farm effects and the impacts these activities could have on the local receiving environment. This required a specifically developed Farm Environmental Management Plan (FEMP) to identify and implement appropriate mitigation measures set out in the plan.
- 8.39 At a workshop held in Twizel in August 2009, the applicants met with Dr Melissa Robson of GHD Limited. A "desk top" on farm risk assessment was undertaken. This was considered to be the "starting point" of the FEMP.
- 8.40 Ms McCabe said that the workshop identified potential on farm risks specific to each farm along with possible mitigation measures. For Quailburn Downs, the desktop risk assessment identified the following potential risks:
- (a) Evidence of erosion
  - (b) Runoff from winter feed crops
  - (c) Laybacks from waterways from fertiliser application
  - (d) Location of troughs
  - (e) Soil post rye corn

<sup>1</sup> The above OVERSEER outputs refer to the entire property. The actual increase in N load attributed to this application is 1,5781 kg (see Dr Freeman's addendum, Table 5).

(f) Track runoff

(g) Cookes Pond

- 8.41 Ms McCabe said that the applicant had committed to implementing the FEMP including an on farm risk assessment, appropriate mitigation, monitoring and auditing before the first exercise of this consent. The FEMP had been proposed as condition of consent.
- 8.42 Given that the N and P thresholds from the MWRL Study could be met, and the applicant's commitment to addressing on farm risks with the implementation of the FEMP, the effects of the use of water on water quality for both the local receiving environment and cumulative effects were considered by Ms McCabe to be minor.

#### Effects on Landscape

- 8.43 Ms McCabe said that landscape effects have been addressed by UWAG's Landscape Architect, Mr Andrew Craig, who considered that this proposal would have a minor effect on landscape values.
- 8.44 The irrigation area proposed was already part of a substantially modified environment, whereby land had been progressively cultivated and re-grassed, top dressed, new fences, and existing irrigation including a centre pivot.
- 8.45 The irrigation area was modified to ensure it was outside the area classified as "Outstanding Natural Character" and as part of the FEMP a buffer from the Quailburn Stream would be developed. The irrigation development is not visible from the State Highway according to Ms McCabe and the existing pivot irrigator was already operating in proximity to Henburn Rd.
- 8.46 Therefore, Ms McCabe concluded that effects on landscape values would be minor.

#### Effects on People, Communities and Amenity Values

- 8.47 Ms McCabe said that the applicant had proposed the minimum flow as specified in the WCWARP for the water body from which they have applied to take and use water.
- 8.48 The activities would all occur in a rural setting, where the dominant land use was pastoral farming. The proposed activities all occur on private farmland Ms McCabe believed the use of water was unlikely to adversely affect amenity values.
- 8.49 Ms McCabe said given the applicant's commitment to ensuring efficient use of water on their properties, to the minimum flow and flow-sharing regime protect in-stream values and other users, she considered that effects on people, communities and amenity would be minor.

#### Effects on Tangata Whenua Values

- 8.50 Te Runanga O Ngai Tahu submitted on all applications in the catchment, seeking that all applications be declined.
- 8.51 Ms McCabe believed the primary reasons for this were that the applications were considered to be inconsistent with the policies and objectives of the WCWARP, and also at odds with the cultural objectives of the RMA.
- 8.52 Ms McCabe said that it was acknowledged that Te Runanga O Ngai Tahu (Ngai Tahu) had a significant relationship with the Waitaki Catchment, and as such, appropriate minimum flow conditions, and management of water quality effects, was proposed by the applicant to ensure that the potential effects on the environment, including tangata whenua values were minor.

#### **Disturb the bed – CRC071650**

##### Effects of the works on flood-carrying capacity and erosion

- 8.53 Ms McCabe said that the intake was proposed to consist of an infiltration gallery buried up to approximately one metre below stream bed level which she considered appropriate for the intake size and stream velocities. Any excavated materials would be replaced to bring the area back to bed level. The intake should be installed within approximately half a day.

- 8.54 The intake is proposed to be located in the stream bed but should have no effect on the flowing water as it is proposed to be buried.
- 8.55 The stream water may be disturbed on installation of the intake when it may need to be temporarily diverted around the area where the intake pipe is being installed. On completion of construction, the stream would be reinstated over the infiltration gallery.
- 8.56 The proposed intake structure should not create any erosion or increase bank instability to other banks in the vicinity given the buried and unobtrusive nature proposed.
- 8.57 Ms McCabe noted that the Henburn Stream is a stable stream bed and is not subject to adverse bank erosion or changing of course.
- 8.58 The Henburn Bridge is approximately 2km downstream of the intake location and Ms McCabe did not consider it to be affected by the activity proposed given the stream flow and capacity.
- 8.59 Ms McCabe said that she considered the effects on flood-carrying capacity and erosion of Henburn Stream to be minor as was also concluded by the Reporting Officer.

#### Effects of the works on water quality and ecosystems

- 8.60 Ms McCabe said that works around the intake area would be undertaken during the initial construction and on an as needed basis for such activities as maintenance at the beginning of the irrigation season.
- 8.61 She acknowledged that the in-stream works could cause a temporary discolouration of the water and sedimentation could impact aquatic ecosystems at sensitive times such as spawning.
- 8.62 Sedimentation can also affect downstream users taking water for domestic or stock water purposes. The most common approach was to avoid undertaking works within flowing water, thereby avoiding the possibility of increasing levels of suspended sediment contained within the waterway. But in this instance it was simply not practicable for the works associated with the intake to occur in an area where water was not flowing.
- 8.63 However Ms McCabe said that it was proposed that the stream be temporarily diverted around where the intake is to be located so that the works did not occur in continuously flowing water.
- 8.64 The intake is proposed to be fish screened in accordance with "Fish Screening: good practice guidelines for Canterbury, NIWA Client Report: CHC2007.092, October 2007".
- 8.65 The area of works would be re-instated on completion of works to minimise the adverse effects on riparian ecosystems
- 8.66 Given the short term nature of the work, and the proposed mitigation measures as per the consent conditions, Ms McCabe concluded effects on ecosystem values and water quality were able to be effectively mitigated.

#### Effects on amenity, people, communities

- 8.67 Ms McCabe said that the proposed intake abstraction was on the applicant's property near a remote no exit road. The intake would be inconspicuous as it would be located under the river bed and covered by rock material. The water would be piped. After the initial construction, the disturbed area should re-vegetate and in time blend back into the surroundings. The effects on amenity values, people and communities she considered would be minor.

#### Tangata Whenua values

- 8.68 In relation to Tangata Whenua values, an accidental recovery protocol has already been proposed by the applicant. Furthermore Ms McCabe advised that through email correspondence with Ngai Tahu, the land use consent has not been raised as a concern.
- 8.69 Ms McCabe noted that the Reporting Officer considered the effects on Tangata Whenua values were minor given all other effects were minor.

## **Mr Graham Spittle, Mr Robert Batty and Mr Andrew Macfarlane**

- 8.70 Mr Graham Spittle is managing director of the Bellfield Land Company. We record for the sake of completeness we have considered his evidence in determining this particular resource consent application. In addition, we have considered the general evidence received from Mr Robert Batty (planner) and Mr Andrew McFarlane (farm management consultant) on behalf of all UWAG applicants.
- 8.71 We set out this evidence in detail in the Bellfield Land Company decision under CRC012733 and CRC011987, and we do not need to repeat that material again.

## **9 SUBMITTERS**

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- 9.1 Set out below is the summary of the issues raised by submitters who appeared before us. We emphasise that we have read and considered all submissions made, both in support and in opposition to the application, as well as reviewing and carefully considering evidence advanced before us.

### **Fish & Game**

- 9.2 Mr Graeme Hughes, Fish and Game Officer for the Central South Island Fish and Game Council, has spent 43 years service in freshwater fisheries and game bird management. Mr Hughes described the Hen Burn as smaller than the Quail Burn, with opportunities for angling limited by its small size. The catch of juvenile trout while electro-fishing indicated that like other tributaries, it also accommodates spawning trout during the spawning period.
- 9.3 Mr Frank Scarf, F&G, hydrologist, holds a NZ Certificate of Engineering (Civil) and a Bachelor of Science (Mathematics), is retired but provides advice to DOC and F&G, having spent 45 years working in hydrology, water resources management and related fields. Mr Scarf commented that there were two consents currently issued to take from the Henburn as also discussed by Ms McCabe.
- 9.4 The primary concern of Mr Scarf related to the minimum flow condition sought. The Bellfield Land Company (CRC071649) included an abstraction site from the same source and downstream of the Sutherland Bros consent, and should in the opinion of the South Island Fish & Game Council be subject to at least the same minimum flow condition, that was 20 L/s to continue downstream from the intake.
- 9.5 Mr Scarf told us that the Plan (Rule 2 Table 3 (xii)) made provision for the Hen Burn and tributaries and limits allocation to 80 L/s and a minimum flow at Hen Burn Road of 20 L/s. Mr Scarf considered the minimum flow provision of 20 L/s to be minimal. In order to preserve some flow throughout the catchment, he recommended that 20 L/s should be retained immediately downstream from any approved intake site irrespective of location within the catchment. This would afford some guarantee that 20 L/s would be preserved throughout the lower reaches of the stream.

### **Department of Conservation**

- 9.6 Dr Richard Allibone has a BSc (Geology and Zoology), MSc (Zoology) and PhD (Zoology) from Otago University, has practiced as a freshwater and terrestrial scientist for 16 years, His PhD study investigated the biology and distribution of galaxiids in the Taieri River system. Dr Allibone gave evidence on fish screening requirements, he supported the observance of fish screen guidelines however he did note that koaro are present in the catchment and that very fine mesh screens are required to reduce entrainment of these larval fish.
- 9.7 He submitted that the s42A recommendation for screens with 3x3 mm mesh or 3x2 mm slot screen will not be sufficient to screen out the downstream migrating koaro larvae and the loss of some larvae should be expected if 3 mm screens are used.
- 9.8 Dr Allibone submitted that the magnitude of this effect will be less than minor for one individual intake given the size of the koaro population in and upstream of each lake. However he submitted that where there are multiple takes proposed, some as yet to be determined, the loss of larvae will have effects on koaro survivorship and also lake ecosystems where koaro larvae provide a food source for lake-dwelling salmonids.

- 9.9 The need for fine mesh would be alleviated if the spawning time of koaro was known to occur outside the abstraction season. However he submitted that at present the timing of spawning is uncertain and therefore screens need to limit entrainment of these larval fish. The same issue applied to non-migratory galaxiid larvae and it can be expected that all five galaxiid species have the potential to become entrained in the intakes.
- 9.10 Dr Allibone considered that the effects of inadequate screen size were minor when considering a single intake, but cumulatively there was a potential for more than minor effects across the Mackenzie Basin.

### **Ngai Tahu**

- 9.11 The Te Runanga o Ngai Tahu submission lodged in 2007 was a general submission in opposition to all applications, Mr Horgan for Te Runanga o Ngai Tahu advised through his evidence that this position was modified to focus principally on large scale intensification proposals that also involved dairying.
- 9.12 In contrast he told us that Ngai Tahu supported water being made available to provide security of supply to landowners. They were generally not opposed to smaller applicants provided riparian planting and fencing was implemented and the intensity of farming operations was not significantly increased.
- 9.13 Ngai Tahu told us they had identified the Ahuriri Delta as one of two focal points against which they assessed applications, the delta was chosen for its mahinga kai restoration potential.
- 9.14 Te Runanga o Ngai Tahu had engaged an ecologist Ms Di Robertson to prepare evidence on the ecological effects of irrigation applications on the Ahuriri Delta. Ms Robertson concluded that the assessment provided by the applicants (in general) was insufficient to determine the likely effects on the restoration potential and mahinga kai values of the Ahuriri Delta.
- 9.15 Ms Mandy Waaka-Homes who acts as a kaitiaki to the area told us of the Ahuriri Delta mahinga kai potential and the importance of "clean water" in any restoration proposals.
- 9.16 Ngai Tahu did not make a specific submission on the Bellfield applications.

### **Meridian Energy Ltd**

- 9.17 Mr Richard Turner, Planning Manager – Natural Resources, Meridian Energy Ltd, tabled a list of consent applications which were of a concern to MEL from a cumulative water quality perspective based on the sub-catchments in which the properties were located relevant to Meridian's operations and areas of interest.
- 9.18 The Meridian Energy approach was adopted for two reasons:
- (a) the potential environmental effects and impacts on hydro-energy generation operations from intake blockages from macrophyte and periphyton growths and the associated increases in operating and maintenance costs and generating efficiency.
  - (b) The lack of any cumulative or comprehensive water quality assessment in the resource consent applications that were notified, making it difficult to consider the actual and potential adverse effects of the applications on the operation of the Waitaki Power Scheme.
- 9.19 The current applications were included in the Meridian Energy Ltd list of consent applications of concern. The principal concern in respect of the sub-catchment concern was in quantifying the nutrient thresholds to ensure that a TLI in Lake Benmore did not exceed 2.75, based on a summer average.
- 9.20 The other point that Mr Turner made was in relation to the appropriate term of consent for replacement applications. He expressed the view that Meridian considered the term should be decided with particular consideration given to the potential cumulative water quality effects associated with the current applications and the need to re-evaluate the water quality effects in the future to determine whether the prediction of effects were accurate.
- 9.21 It was for those reasons that Mr Turner sought an expiry date for renewal consents being on the same date as the expiry of the resource consents for the Waitaki power scheme.

- 9.22 The remaining point that Mr Turner made on behalf of Meridian was that he made it clear that he did not agree with the approach taken by Mr Chapman and Mr Batty in respect of monitoring at subcatchment nodes, in terms of those nodes also acting to assess compliance. He did not agree with Mr Chapman and Mr Batty that if the threshold limits at the subcatchment nodes are exceeded, then there should be no sanction on individual consent holders if they are complying with their on-farm nutrient discharge allowances.
- 9.23 Mr Turner told us that Meridian considers that consent conditions that manage compliance with on-farm nutrient discharge allowances and subcatchment node thresholds are to be preferred.

#### **Mackenzie Guardians – Ms Di Lucas**

- 9.24 Ms Di Lucas on behalf of Mackenzie Guardians provided us with a broad ranging brief of evidence, much of which we have already commented upon in Part A.
- 9.25 In terms of this particular “take” application, she identified it as being within her Ahuriri System. Within her written evidence the application did not receive any attention. In her graphic materials she identified the site as Site #33.
- 9.26 Quite possibly because it is categorised in her evidence as an existing activity, she did not give it any great attention. Nevertheless, we adopted the standpoint that Mackenzie Guardians were opposed to this grant.
- 9.27 We note when Ms Lucas undertook the analysis contained within her attachments, the site did not “register” as a geo-preservation site but nor did it register as a site with significant inherent values. We note that she did provide us with an assessment in terms of her natural landscape rating. She had no recommendation in terms of mitigation measures.

#### **Mackenzie Guardians – Dr Susan Walker (ecologist)**

- 9.28 We note that Dr Walker gave comprehensive evidence on the cumulative effects of irrigation on vegetation on the Mackenzie Basin. This evidence is discussed in Part A. Her evidence being Basin-wide included that a more in-depth investigation of the individual sites was required. However, she did loosely provide us with Attachment 15, which contained her more particularised reviews in respect of each site.
- 9.29 In terms of her assessment as per Attachment 15, Dr Walker assessed Bellfield as a whole as being approximately 100% converted. She considered that the potential effects of irrigation on terrestrial biodiversity were moderate.

### **10 UPDATES TO THE SECTION 42A REPORTS**

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- 10.1 Ms Penman provided addendum reports covering both applications. Her comments in these reports are summarised below.

#### **Water Permit – CRC071649**

- 10.2 The addendum s42A report of Ms Penman outlined additional matters or changes proposed by the applicant throughout the hearing and stated that:
- (a) She recommended that the mitigation proposed in paragraph 55 of Ms McCabe’s evidence should be included as conditions.
  - (b) She recommended that the minimum flow of 20 L/s be retained, given that this consent was effectively replacing an existing consent.
- 10.3 In relation to the proposed changes to consent conditions Ms Penman concluded that:
- (a) She agreed to the correction of the map reference in condition (1) Appendix C.
  - (b) She recommended that if condition (3) was amended to remove the reference to “excluding milking dairy cows” then the condition should specify that irrigated pasture would be “only for grazing of sheep and beef cattle” instead.



- (c) In relation to the proposed change to condition (9) to make telemetry an option and not a requirement, Ms Penman recommended that telemetry be retained as a requirement where it can be implemented.

#### **Disturb the bed – CRC071650**

- 10.4 Ms Penman also commented on the changes to conditions proposed by the applicant. Ms Penman concluded that:
- (a) She agreed with the changes to timing in relation to condition 4, which allows the installation work to take up to 1 day.
  - (b) The gallery intake was proposed to be at least 1m below the bed to prevent fish intrusion into the intake.
  - (c) The recommended condition 6 in the s42A report 8B noted in undertaking works for this consent, any diversion of a braid within the bed shall not be more than 50 m in length. Ms Penman noted that while this may be a minor diversion necessary to mitigate impacts during construction, legally consent for this activity is required under the WCWARP.
- 10.5 However Ms Penman noted that there was sufficient information provided within the application material to issue a permit for the temporary diversion of water during works. Consent number for this activity could be generated and she provided recommended conditions.
- 10.6 Mr Glasson in his supplementary report noted he had considered the application undertaken by Mr Craig in Part 1 of his evidence. He remained of the view that the recommendation he had made, as recorded earlier within this decision, was still required.

#### **11 APPLICANT'S RIGHT OF REPLY**

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- 11.1 As for his opening, Mr Chapman's right of reply was presented on behalf of all UWAG members. However he also provided some specific comment on individual proposals.
- 11.2 In relation to this particular application, Mr Chapman explained that in the evidence for Bellfield's replacement consent it had been made clear that Bellfield were required to reduce the possible application rate from 820mm to 750mm in the Overseer modelling in order to meet N and P property thresholds.
- 11.3 Furthermore he submitted that in the evidence of Graeme Spittle details were provided of the reduction in current stock numbers and exporting feed from the irrigation area in order to meet the MWRL thresholds currently proposed.
- 11.4 However, if property thresholds were reviewed, they considered Bellfield threshold should be determined based on the higher application rate and current land practices. It should not be based on N and P Overseer outputs that have already required extensive mitigation in order to meet the threshold currently proposed by MWRL.
- 11.5 Turning to more general comments, Mr Chapman challenged Dr Freeman's Table 5, contained within his first addendum report dated 12 January 2010. Mr Chapman contended the list was flawed because applications are placed in the red category solely by virtue of their location within the Ahuriri Catchment. Mr Chapman considered the correct approach for the ranking of the applications was to determine where they sit in relation to the existing environment.
- 11.6 He noted there had been much emphasis on nutrient management but he contended we should also be considering sustainability of the erosion-prone fragile soils within the catchment. He also submitted we should take note that district plans encourage farming, including irrigation, within these environments; and the tenure review undertaken by the Crown encourages intensification of land use retained in freeholding ownership in order to release more vulnerable pastures to be set aside under Crown ownership.
- 11.7 He also contended we should consider economic implications on the survival of these farms given their investment in infrastructure as a factor. He also noted we should take into account managing the land in light of weed and pest problems and how irrigation assists in that regard.
- 11.8 Mr Chapman addressed us on the MWRL proposition in terms of the Ahuriri River, namely a needs plus a buffer approach. Mr Chapman made it clear that the UWAG applicants in the Ahuriri,

which includes this application, at the time of reply had only just received information relating to each individual farm's NDA, but noted this approach was of critical concern.

- 11.9 In terms of staging of implementation, Mr Chapman told us that undoubtedly those UWAG applicants, this applicant among them, may choose to stage the introduction of a new system of irrigation.
- 11.10 We note that Mr Chapman in his reply challenged the approach taken by Mr Glasson to his landscape assessments. Mr Chapman was critical of Mr Glasson in that Mr Glasson responded in answers to questions of the panel that he considered that the mitigation measures that he proposed, such as setbacks and buffers, were a form of trade-off allowing irrigation to continue or alternatively irrigation activities to occur. Mr Chapman's core concern as we understood it in relation to new applications for water was that Mr Glasson was failing to put appropriate weight on the relevant territorial plans because those plans, in large part, permitted farming activity, including irrigation.
- 11.11 We did subsequently receive from Mr Chapman generic conditions and revised FEMPs applicable to all the UWAG applicants.

## **12 STATUTORY CONTEXT**

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- 12.1 The relevant statutory context is set out in detail in our Part A decision. In accordance with those requirements, we have structured this evaluation section of our report as follows:
- (a) Evaluation of effects
  - (b) Evaluation of relevant planning instruments
  - (c) Evaluation of other relevant s104 matters
  - (d) Part 2 RMA
  - (e) Overall evaluation

## **13 EVALUATION OF EFFECTS**

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- 13.1 Drawing on our review of the application documents, the submissions, the Officers' Reports, the evidence presented at the hearing and our site inspection, we have concluded that the effects we should have regard to are:
- (a) Inefficient Use of Water
  - (b) Water quality
  - (c) Landscape effects
  - (d) Tangata whenua
  - (e) Effects of works in the bed

### **Inefficient Use of Water**

- 13.2 The applicant proposes to take water at a rate not exceeding 30 litres per second and use up to 312,000 cubic metres per year for irrigation of 52 hectares (as notified). An efficient irrigation volume had been calculated using Irricalc of 378,430 cubic metres per year. Therefore, the applicant considered that as their proposed notified volume is less than the Irricalc requirement, that the volume is efficient.
- 13.3 In contrast to the above, the reporting officer Ms Penman completed her calculation using GIS system and the method outlined in Report U05/15 ("the WQN9v2 approach"). She based this calculation on intensive land use with 32.5ha heavy soil (PAW >110mm), 6.5ha medium soil (PAW 75-110mm) and 13ha light soils (PAW <75mm) and Effective Summer Rainfall of 195mm. Using these figures, Ms Penman recommended an annual volume of 271,050 cubic metres would be a more appropriate and efficient volume of water for spray irrigation of the proposed area.

- 13.4 As acknowledged by the applicant, under Policy 16 of the WCWARP there are two acceptable methods for calculating and efficient annual volume. The first is using a soil water balance approach. The applicant contends that Irricalc is such an approach. The second alternative is the WQN9v2 approach used by Ms Penman.
- 13.5 Of the two alternatives, we consider that the available data allows the WQN9v2 approach to be used for calculating annual volumes. We note that the Irricalc methodology requires supporting data that is not currently available and requires verification when the proposal is in place. We have some concerns about the data and measurements on which the Irricalc calculations were based, which may not be adequate to satisfy the requirements of a soil water balance approach under Policy 16.
- 13.6 Based on the above, we consider that to adopt the annual volume proposed by the applicant may allocate more water than what is required and result in an inefficient use of water. We therefore prefer the annual volume of 271,050 cubic metres calculated by Ms Penman using the WQN9v2 approach and adopt this as the appropriate volume of water for spray irrigation of the proposed area.

### **Water quality**

- 13.7 The applicant has been involved with the study by Mackenzie Water Research Ltd (MWRL) on cumulative effects within the catchment. We address the report by MWRL in Part A of our decision and our findings guide our consideration of the effects of this activity on water quality
- 13.8 As mentioned above, the proposal is to irrigate a new area of 52ha on the property. If this is granted, the applicant will surrender an existing consent to irrigate 7ha, resulting in an increase in irrigated land area of 42ha.
- 13.9 Subsequent to the presentation of the applicants evidence Dr Freeman listed this application as one of those that, on the basis of the currently available information, are associated with a high level of uncertainty about potential cumulative adverse effects, and because of the scale of the development and therefore the potential consequences of adverse effects, taking account of cumulative water quality effects, the water permit applications should not be granted.
- 13.10 An Overseer assessment indicated that the applicant was able to comply with the thresholds outlined within the MWRL Water Quality Study. However as discussed in Part A of this decision, we were not convinced that the proposed MWRL thresholds would protect some receiving waters from some unacceptable deterioration. In particular, with respect to this application, we were of the view that the granting of significant new irrigation consents in the Ahuriri Catchment would result in the Ahuriri Arm of Lake Benmore becoming mesotrophic (from its current oligotrophic state).
- 13.11 In Part A of this decision we rejected the MWRL proposition that all consents sought in this hearing could be granted (with conditions) and without causing cumulative water quality effects. It is incumbent upon us, therefore, to consider (as far as is possible) whether granting this application, in combination with other water permits we grant, will lead to unacceptable water quality effects. In this case it means considering the potential effects of granting this application (in combination with others we grant) on:
- (a) The Ahuriri Arm of Lake Benmore;
  - (b) Groundwater chemistry and in particular the proposed threshold of 1 mg/L NO<sub>3</sub>-N; and
  - (c) Periphyton and other ecological effects in the Hen Burn, and Ahuriri Rivers.
- 13.12 The applicant has proposed mitigation measures to lessen the risk of their activities contributing to cumulative water quality effects. We need to consider whether the proposed mitigations, are in our view, sufficient to avoid significant water quality effects occurring, and/or whether refinements to the measures proposed are required.
- 13.13 At the hearing the applicant submitted a draft copy of a farm environmental management plan (FEMP). A final version of the FEMP including a FERA was supplied to ECan on 22 November 2010
- 13.14 A starting point for the consideration of effects on points (a)-(c) above is the FEMP. Evidence on the FEMP was given by Ms McCabe, but for consistency with other decisions we have

undertaken an independent audit. Key points arising from our audit and additional to Ms McCabe's evidence are summarised below:

- (a) No information on soil types was given other than there are approximately 10 different soil types with PAW ranging from 30-140mm, with light to medium depth topsoil on hills, and some stone with mixture of soil types on both undeveloped and developed flat land.
  - (b) On land irrigated by the existing pivot there are large stones with little soil on 60% of the area, with the balance being medium to heavier soils with some stone.
- 13.15 Because the Ahuriri Arm of Lake Benmore is the receiving environment, moderately severe nutrient mitigations are required compared to good agricultural practice (the standard referenced in OVERSEER). i.e. An additional 10.70 kg N/ha/y are required to be prevented from leaching (or otherwise lost from the system) and 1.1 kg P/ha/y compared with that achieved using good agricultural practice.
- 13.16 The mitigations proposed in addition to those assumed in OVERSEER are listed as:
- (a) No winter application of fertiliser on the irrigation area;
  - (b) N fertiliser applications split to under 50 kg N/application;
  - (c) No P fertiliser within three weeks of irrigation; and
  - (d) Olsen P of below 30 maintained.
- 13.17 The above mitigations appear to us to be quite standard and are practices that we would view as conforming to Good Agricultural Practice.
- 13.18 Mitigation measures proposed to ameliorate site specific environmental risks are:
- (a) 20 metre layback from any waterway when applying fertiliser by land based application e.g. bulk spreader;
  - (b) Irrigation buffer from Quailburn Stream of at least 20m;
  - (c) Fence the south side of Quailburn Stream within the existing irrigation area to restrict stock access to the Quailburn;
  - (d) GPS Spreader and maps to be used when applying fertiliser Field Records; and
  - (e) Monitor and manage stock access, stock type and stock number from all permanently flowing waterways within other non irrigated intensively farmed areas.
- 13.19 We note that measures in the FEMP specifically refer to the Quailburn (see CRC011987) and there is no mention of the Henburn, which is the receiving stream in this application.
- 13.20 Of the mitigation measures proposed above, we consider that only (b) and (d) may be considered measures in excess of the practices expected using Good Agricultural Practice and that (b) does not protect the Henburn.
- 13.21 The critical issues for us for are:
- (a) Is the predicted nutrient load realistic?
  - (b) What effect will the predicted nutrient load (alone and in combination with other applications before us) have on the waterbodies listed in above making reasonable assumptions about flow paths?
  - (c) Can the effects be avoided, remedied or mitigated?

#### Predicted load realistic?

- 13.22 The inputs to OVERSEER were audited by Mr McNae. In his final addendum report he reported as a 'live' issue that the applicants preferred to stay with the developed setting in OVERSEER

following advice from Mr McFarlane that a highly developed status would never occur. We accept Mr MacFarlane's point on this but note that our interpretation of Dr Snow's evidence (Part A) was that she advocated use of the highly developed setting on shallow soils, not because they were likely to reach that status, but rather as a pragmatic response to reflect that OVERSEER would significantly underestimate nitrogen losses on shallow soils. We note that the proposed soils in this case are very shallow and stony and as discussed in part A, our expectation is that OVERSEER (developed setting) will underestimate nitrogen losses from such soils.

### Effects on waterbodies

#### *Ahuriri Arm of Lake Benmore*

- 13.23 In part A we determined that the Ahuriri Arm of Lake Benmore was already close to the oligotrophic-mesotrophic boundary. MWRL agreed with this assessment, but submitted that through improvements to replacement consents and significant nutrient mitigation of new consents, all consents could be granted without causing the oligotrophic-mesotrophic boundary to be breached. We disagreed with the MWRL submission for the reasons given in Part A. Therefore we need to assess each application on its own merits, but taking into account other applications before us.
- 13.24 Dr Freeman's addendum (on behalf of the Regional Council) gave a useful summary of estimated total property nitrogen loads to the Ahuriri Arm associated with irrigation development proposals, together with their priority as determined by Professor Skelton on the basis of the date the application was deemed to be notifiable. The load attributable to this application (Dr Freeman's Table 7, load apportioned) and based on the applicant's own modelling was 5,771 kg N/y. Whilst load apportioned, however, this figure represents the nitrogen load from the entire property and includes the load from dryland farming (permitted activity). The current irrigated area is also a legally permitted activity up to the time this decision is made and will be contributing to the current trophic state of the Ahuriri Arm.
- 13.25 However, in the case of Quailburn Downs, the total area currently irrigated is 190 ha from a total farmed area of 2,200 ha, which is 8.6%. The estimated nutrient load without the proposed new irrigation forms, in effect, the permitted baseline.
- 13.26 If this application were granted the proportion of farmed area irrigated at Quailburn Downs would increase to 10.5% and given that the applicant has stated their farming operations will remain the same (i.e. no increase in stocking rate) we would not expect the average nitrogen loss rate to increase significantly.
- 13.27 Dividing the Overseer-estimated nitrogen load by the farmed area gives an average loss rate of 2.62 kg N/ha/y which is only slightly higher than Dr Snow's (Part A) estimate for dryland farming (2~2 kg N/ha/y) and consistent with her evidence on N losses from partially-irrigated sheep and beef properties. This includes the proposed new irrigation.
- 13.28 Put another way, if we consider losses from the irrigated area alone and use the average figure (between the highly developed and developed settings) for irrigated pasture given by Dr Ryan (for Meridian) of ~20 kg N/ha/y, then the maximum additional N load would be 840 kg N/y. This is a relatively small increase but we are aware that the sum of relatively minor contributions may result in a cumulative effect on the lake and we have been cognisant of this possibility in arriving at our final decision.

#### *Groundwater*

- 13.29 We agree with Dr Bright that effects on groundwater in this case are manifest by interaction with surface waters and that groundwater is largely a matter for policy considerations. There was no evidence specific to Quailburn Station on predicted NO<sub>3</sub>-N concentrations, nor was there evidence on partitioning groundwater. The final concentration in groundwater will depend upon dilution from upland sources and there has been no evidence presented that allow us to estimate this dilution.

#### *Periphyton growths in Ahuriri River, Henburn Stream and Quailburn*

- 13.30 Dr Coffey's evidence (MWRL, Part A) included information on periphyton surveys in Ahuriri River. He reported periphyton biomass below levels of concern at all the sites he visited (upper, SH8 Bridge, and node). He also reported that the quality of macroinvertebrates declined from good to fair with distance down the river. We note that bed of the Ahuriri River is hard and dominated by

cobbles, which would be susceptible to nuisance periphyton growths should nitrogen and/or phosphorus concentrations in the river be above that limiting periphyton growth (under stable flow conditions).

- 13.31 Dr Coffey also reported on periphyton surveys in the Quailburn into which the Henburn stream flows. He reported there was no existing irrigation in the Quailburn sub-catchment but reduced physical habitat quality at the Quailburn Node site relative to Quailburn Upper. This was reflected in reduced riparian cover and increased periphyton cover at the downstream sampling site. He also noted that both cover and biomass of periphyton would constitute a "nuisance" condition at the downstream site.
- 13.32 No information was presented on the existing periphyton biomass in Henburn Stream.
- 13.33 In Part A we rejected the MWRL proposal that the threshold for periphyton growth should be a 25% increase in maximum annual biomass calculated from modelled 'current' nutrient concentrations. We found instead that MfE periphyton guidelines are applicable and should be used to protect streams from nuisance periphyton growths.
- 13.34 There are two important elements that will determine whether the MfE guidelines are likely to be breached:
- (a) The flow path of drainage water/groundwater with respect to the Ahuriri River, and, Henburn Stream
  - (b) The amount of dilution as the drainage water mixes with Henburn Stream or Ahuriri River, particularly under summer low-flow conditions.
- 13.35 Superimposed on both of these elements is the groundwater travel time. However, for our purposes, that only affects the timing of any effect, rather than the effect itself.
- 13.36 We think it likely that given the proximity and hydrological connectedness between the proposed irrigation site and Henburn Stream, that leachate could result in nuisance growths of periphyton and could contribute to periphyton biomass exceeding thresholds applicable to spring-fed streams below the confluence of the Henburn with the Quailburn. We note that a set-back of irrigation from Quailburn Stream is proposed in the FEMP but not for other waterways, and that a tributary of the Henburn appears within the irrigation area.
- 13.37 Using the applicants OVERSEER modelling predictions and assuming (i) a uniform mass flow into the river, and (ii) a low flow in the river of 10 m<sup>3</sup>/s (flow at which most severe restrictions imposed by AWCO) then the resulting elevation in nutrient concentration from this application would be below that required to support nuisance growths of benthic algae sufficient to exceed the aesthetics/aquatic biodiversity guideline. When considered in combination with Quailburn Station's other application however it would be borderline and may result in localised nuisance periphyton growths.
- 13.38 We note the applicant has agreed to periphyton monitoring and the ratcheting back of irrigation if such monitoring shows that such periphyton growths exceed 'nuisance' levels. We provide further comment on the appropriate trigger levels for periphyton monitoring in our discussion of the relevant planning instruments below.

#### Avoided, remedied or mitigated

- 13.39 We acknowledge that the applicant has proposed mitigation measures in the FEMP to minimise the effects of their activities. If we considered this application in isolation we would consider that the mitigation measures proposed would not be sufficient to avoid adverse environmental effects to high quality waterways as outlined above. However if we consider it in combination with the applicant's other application (CRC011987) and if the applicant converts remaining wild flooding/border dyke to spray within five years, then the balance changes somewhat. With that scenario we consider that the nutrient losses from the property as a whole would not change significantly, i.e., the increase in load due to this application would be offset by a reduction in load from the change to spray irrigation in CRC011987. The issue of periphyton growths in the Henburn remains but this could be managed by way of conditions.
- 13.40 In his closing legal submissions, Mr Chapman stated that while some of his applicants may choose to participate in the lock-step approach, many of his clients could not. In any case, we have considered the lock-step approach and found it to be inappropriate to grant applications to

take and use water for irrigation on this basis. The lock-step approach is an extension of adaptive management, about which we gave our views in Part A. In summary, we are of the view that adaptive management (and the lock-step approach) should not be a substitute for a robust AEE in which the state of the existing environment is adequately described and reasonable efforts are made to address reasonably foreseeable environmental effects. As discussed in Part A, we are of the view that the MWRL WQS falls short of the standard expected for a proposal (the total consents for irrigation before us) of this magnitude.

- 13.41 In summary, our view is that the adverse effects on water quality from the proposed activity will be more than minor but that when considered at a property level and with appropriate conditions effects should be minor.

### **Landscape effects**

- 13.42 Essentially, Mr Glasson was of the view that this proposal is to occur in an area that is already part of a modified environment. There is, he told us, periodic greening of irrigated areas. The proposal is part of a working farm environment and permitted agricultural activities. He noted that the cumulative effects assessment was not necessary to determine as the effects are too remote and the extent of land-use is beyond the scope of the regional council statutory functions.
- 13.43 In terms of effects he was of the view that there are significant modifications in the immediate surrounds. He had reached a view, which we accept, that the site was of low visibility and moderate to low sensitivity. It had moderate to high absorption capacity.
- 13.44 We took from his concluding comments that he was placing weight both on the fact of a highly modified environment and also of the type of environment anticipated by the relevant statutory plans. We acknowledge Mr Glasson did suggest mitigation measures namely separation distance from Henburn River and recessive colours for the pump station. We think taking into account the other points he made, particularly around the working farm environment, permitted agricultural activities and significant modifications, that these measures are not necessary.
- 13.45 We also considered that the experts for Mackenzie Guardians appeared to accept that the landscape impacts of a grant of consent for this proposal were very limited. We reached a similar view in terms of terrestrial ecology issues.

### **Tangata Whenua**

- 13.46 There were no property-specific issues raised by Ngai Tahu witnesses relating to this irrigation proposal by Bellfield Land Company. A primary concern for Ngai Tahu was to ensure that the irrigation proposals in the Ahuriri catchment did not compromise the Ngai Tahu cultural associations with the waters and mahinga kai habitat of the Ahuriri Delta.
- 13.47 Ngai Tahu told us that they had identified the Ahuriri Delta as a priority for mahinga kai restoration and did not want to see new irrigation degrade existing habitats and deny opportunities to undertake such enhancements. Ngai Tahu interest was not confined to the Delta however, but included a concern for the related functions of small aquatic habitats such as wetlands, tarns, lagoons and small streams in the Ahuriri catchment.
- 13.48 Mr Horgan submitted that consents should only be granted if we are satisfied that there is a high level of certainty that the package of mitigation measures proposed by the applicants will ensure that sustainable water quality outcomes are achieved. In the absence of such certainty he submitted that we must adopt a precautionary approach and decline the consents.
- 13.49 We consider that this application is of a relatively modest scale and that through the application of mitigation measures and conversion of the replacement consent to spray irrigation, the effect on Ngai Tahu mahinga kai and cultural values will be minor.

### **Effects of works in the bed**

#### Effects on ecosystems

- 13.50 The principal effects on ecosystems from the installation of the intake gallery will be during the construction phase (1 day) and resulting disturbance of the bed and bank of the Henburn Stream. Sedimentation effects from the activity will be short term and will have a temporary adverse effect on in-stream biota, particularly taxa that are less mobile and unable to move for the site of works readily. We heard in other similar applications in this catchment that

recolonisation of the affected sites similar to this will begin soon after the works have finished, and be restored to normal within 6 months.

- 13.51 We have heard during this hearing that gallery intakes, subject to engineering design, and appropriate installation techniques, function as effective fish screens. However we also heard from Dr Allibone that for koaro and some galaxiids larvae can potentially suffer entrapment. Dr Allibone submitted that this was a catchment level issue where multiple fish screens might be utilised on a waterway, rather than an issue for an individual application. The principal mitigation would be to time works to avoid the larvae season, however Dr Allibone submitted that the timing of the larvae season was something that was not known presently, a matter requiring more study.
- 13.52 In summary, our view is that with appropriate attention to the ECan Sedimentation and Erosion Control Guidelines, the activity will have a minor effect.

#### Effects on flood carrying and erosion capacity

- 13.53 The principal effect on the flood carrying and erosion capacity of the works will be during the installation phase. Ms Penman advised us that the applicant sought an extension of duration from half a day to one day. The gallery once installed will in our view have no more than a minor effect on the river bed and banks flood carrying and erosion capacity as it will be buried beneath stream bed gravels and the bed returned to a similar state of the surrounding stream bed. A condition requiring the preparation of a Construction Management Plan (CMP) to be certified by the ECan Compliance Manager prior to commencement of the installation will provide further guidance to best practice measures.
- 13.54 The proposed activity will involve a temporary diversion of the flow in the Henburn Stream to allow work on installing the gallery to be undertaken. We accept Ms Penman's advice that sufficient information was provided by the applicant to allow us to understand the nature and extent of the effects and we are of the view that due to the short duration (1 day) of the works, that with appropriate conditions the diversion can be incorporated as part of this proposed activity.
- 13.55 Our view is that the adverse effects of the proposed activity on flood and erosion capacity of the Henburn Stream subject to conditions will be short term and less than minor.

#### Effects of diversion

- 13.56 In respect of the diversion associated with construction of the intake, it is over a short length, will be temporary in nature and returns to the same watercourse it is originally part of. Given the nature of the activity, we are satisfied that the effects will be no more than minor. However we consider that it is necessary to impose some brief conditions of consent to ensure that the extent of the diversion is clearly defined and the activity is managed appropriately.

#### **Key conclusions on effects**

- 13.57 In relation to the actual and potential effects of the proposal, the key issues in terms of effects for us are effects of inefficient take and use, water quality effects, and effects on people, communities and recreational values, and landscape effects.
- 13.58 In terms of the effects of an inefficient take and use, we are satisfied that if the annual volume is reduced to 271,050 cubic metres per year coupled with the standard efficiency condition, then the effects of the inefficient take would be minor. We have arrived at that conclusion because that is a proper outcome having regard to the soils and their absorption capacity and also to Policy 16 WCWARP.
- 13.59 In terms of water quality effects, our view is that the adverse effects on water quality from the proposed activity would contribute to adverse water quality effects. Because the Ahuriri Arm is close to the mesotrophic boundary, our view is that we need to take a precautionary stance with respect to the granting of new consents in this catchment.
- 13.60 However, the scale of the applicant's proposal and the magnitude of effects are relatively modest compared with other applications before us in this catchment. In addition when offset against reductions in nutrient load from the applicant's replacement application (after conversion to spray) we consider that effects will be minor.



- 13.61 In terms of landscape effects, an important factor in our consideration is that the irrigation area is not visible from the State Highway. Mr Christopher Glasson in his assessment of landscape effects (Report 5) agreed that effect on landscape from this proposal are acceptable provided there is no irrigation on any hill slopes and the irrigation area is compatible with the landform patterns. We agree with this assessment.
- 13.62 In relation to the cultural and spiritual values of tangata whenua, we find that the proposed activity will have no more than a minor effect.
- 13.63 We note that use of water for irrigation may result in improved productivity of the land & positive economic benefits for the wider community.
- 13.64 For the land use permit (CRC071650) we are satisfied that the effects of the installation of a gallery intake structure in the Henburn Stream (at either site) will be for a short duration. That through timing the works to avoid fish spawning and incubation periods, burial of the intake gallery below the gravels of the stream that the effects will be minor.
- 13.65 In relation to the water permit application (CRC071649), we are satisfied that the actual and potential effects of the proposed activity can be acceptable with suitable conditions.

## **14 EVALUATION OF RELEVANT PLANNING INSTRUMENTS**

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- 14.1 Under s 104(1)(b) RMA, we are required to have regard to the relevant provisions of a range of different planning instruments. Our Part A decision provides a broad assessment of those planning instruments and sets out the approach we have applied to identification and consideration of the relevant provisions. The following part of our decision should be read in combination with that Part A discussion.
- 14.2 In relation to the current applications, we consider that the most relevant and helpful provisions are found in the regional plans, including in particular the WCWARP and the NRRP. In addition, the Proposed and Operative CRPS and the relevant District Plans are of assistance in relation to landscape issues that arise.
- 14.3 The following sections of this decision provide our evaluation of the key objectives and policies from these planning instruments. We have organised our discussion in accordance with the key issues arising for this application, which are water quality, inefficient take and use, environmental flows, landscape effects, and effects on cultural values.

### **Water quality**

- 14.4 In relation to water quality the key documents we have considered are the WCWARP (incorporating the objectives of the PNNRP) and the operative NRRP provisions.

### WCWARP

- 14.5 In relation to the WCWARP we consider that Objective 1 is the critical objective. In particular, Objective 1(b) seeks to safeguard life supporting capacity of rivers and lakes and Objective 1(d) seeks to safeguard the integrity, form, functioning and resilience of the braided river system.
- 14.6 We have determined that granting this application would contribute (albeit in a relatively minor way) to the Ahuriri Arm of Lake Benmore becoming mesotrophic in summer from its current oligotrophic state. However, when considered in combination with the likely nutrient load reduction arising from the conversion of the remaining wild flooding/border dyke to spray from the applicant's other application (CRC011987), any change in load at a property level should be no more than minor.
- 14.7 We think that as there is some possibility that granting this application could result in nuisance periphyton growths in the Henburn Stream, any consent to grant would need appropriate monitoring conditions coupled with the requirement to reduce irrigation in the event of such growths.
- 14.8 Overall, we conclude that considering all applications from Quailburn Downs together with proposed mitigation measures, the current nutrient load on the Ahuriri River and Lake Benmore should not change significantly. Thus we are able to conclude that a grant of consent would be consistent with Objective 1(b) and 1(d) WCWARP.

- 14.9 Objective 1(c) requires us to manage waterbodies in a way that maintains natural landscape and amenity characteristics and qualities that people appreciate and enjoy. Given our findings in terms of effects on water quality and periphyton growths combined with a condition requiring ratcheting back of irrigation if annual periphyton biomass approaches 'nuisance' levels during summer low-flow conditions, then our view is that granting consent would be consistent with Objective 1(c).
- 14.10 We note that Objectives 2, 3, 4, and 5 are "in the round" deal with and provide for the allocation of water. The critical qualification is that water can be allocated provided that to do so is consistent with Objective 1. Given the findings we have made about Objective 1 we conclude that allocating water in terms of the balance objectives would be consistent with the overall scheme of the WCWARP. We reach this view taking into account the national and local costs and benefits (environmental, social, cultural and economic) of the proposal, as required by Objective 3.
- 14.11 Policy 13 links the WCWARP to the PNRRP (as it existed at the time) by requiring us to have regard to how the exercise of the consent could result in water quality objectives in the PNRRP not being achieved. As explained in our Part A decision, we have considered the objectives of the PNRRP and the now operative NRRP in relation to the current proposal.

### NRRP

- 14.1 Under the NRRP, Lake Benmore (including the Ahuriri Arm) is classified as an "Artificial On-River Lake" under the NRRP. Objective WQL1.2 of the NRRP seeks to ensure that the water quality of the lake is managed to at least achieve the outcomes specified in Table 6, including a maximum Trophic Level Index ("TLI") of 3 (i.e. oligotrophic-mesotrophic boundary). For the reasons discussed above, we consider that granting consent to the proposal would be consistent with this objective and would not (in combination with others we grant) cause the TLI maximum to be breached.
- 14.2 Under the NRRP, the Quailburn and Henburn are classified as Spring-fed upland whereas the Ahuriri River itself is classified as alpine upland. Objective WQL1.1 of the NRRP seeks to ensure that the water quality of such rivers is managed to at least achieve the outcomes specified in Table 5. A key indicator for these applications is that maximum chlorophyll-*a* should be less than 50 mg /m<sup>2</sup>. As mentioned above, we received very little evidence on this issue. However we are nonetheless satisfied that with appropriate periphyton monitoring conditions, the activity can be managed so that the periphyton classification will not be breached.
- 14.3 Both the Quailburn and Hen Burn categorised as 'Spring-fed upland' under the NRRP. Objective WQL1.1 of the NRRP seeks to ensure that the water quality of such rivers is managed to at least achieve the outcomes specified in Table 5. A key indicator for these applications is that maximum periphyton biomass in spring-fed upland streams should be less than 50 mg /m<sup>2</sup> chlorophyll *a* and has as a key management objective the maintenance or improvement of indigenous aquatic flora and fauna. This water quality management unit also has performance water quality standards for DRP and DIN of 0.007 and 0.10 mg/l respectively (Table WQL16).
- 14.4 We understand that the applicant and reporting officer agreed on periphyton water quality conditions that included a 120 mg/m<sup>2</sup> Chlorophyll *a* standard (and an early warning trigger of 90 mg/m<sup>2</sup> Chlorophyll *a*) for the Quail Burn and Hen Burn. We appreciate that when those parties reached that agreement the NRRP was not operative, and issues relating to water quality objectives and standards had not reached the status that we have today.
- 14.5 We must have regard to the current provisions of the NRRP and therefore we have given considerable thought to the situation that applies to the Quail Burn and Hen Burn. We note the following:
- (a) Dr Coffey's (MWRL) evidence that there is no existing irrigation in the Quailburn catchment (although this appears at odds with this application which is a replacement).
  - (b) Dr Coffey's evidence of increased periphyton cover at the lower Quailburn site accompanied by reduced physical habitat quality
  - (c) The cobbly-bottomed substrate of the Hen Burn and its suitability for nuisance growths of periphyton.

- (d) The categorisation of a few tributaries in the Quail Burn and many in the Hen Burn as 'Hill-fed – lower' with an Objective WQL1 specified maximum periphyton outcome of 200 mg/m<sup>2</sup> chlorophyll *a* and Schedule WQL nutrient 'standards' for DRP and DIN of 0.006 and 0.47 respectively.
  - (e) The New Zealand Periphyton Guidelines, that we were provided with at the hearing and heard were a critical source for the NRRP specified outcome, provide for 50 mg/m<sup>2</sup> chlorophyll *a* as a guideline for oligotrophic streams with diverse "clean-water" benthic invertebrate communities.
  - (f) Objective WQL1.1 of the NRRP which calls for maintenance of the outcomes in Table WQL5 where they are currently being achieved, and progressive improvement in the quality of the water and bed where they are not.
- 14.6 After considering all the above factors we consider that the early warning trigger for the Quailburn and Henburn Streams should be 50 mg/m<sup>2</sup> chlorophyll *a* together with water quality standards for DRP and DIN of 0.007 and 0.10 mg/l respectively, and the standard trigger should be 90 mg/m<sup>2</sup> chlorophyll *a* with water quality standards for DRP and DIN of 0.007 and 0.18 mg/l, respectively. Whilst this is a compromise between the recommended condition set and the now operative NRRP plan provisions, our view is that it achieves an appropriate balance and its enforcement will achieve the intent of the NRRP classification.
- 14.7 For non-point source discharges to groundwater, Objective WQL2 of the PNRRP distinguishes between groundwater that is "unaffected or largely unaffected by human activities" [as reported in 2004]. While there is extremely limited groundwater quality data in the Upper Waitaki, there appears to be general agreement that nitrate nitrogen concentrations are generally low (<1 mg/L) and the WQS (#3.85d Part A) proposed a threshold of 1 mg/L NO<sub>3</sub>-N for those catchments that sit below the threshold. Because of the importance of groundwater as a determinant of surface-water quality, our view is that the 1 mg/L NO<sub>3</sub>-N threshold is appropriate.
- 14.8 We note that NRRP Objective WQL2.1(3) states that "Where groundwater enters a river or lake, the concentration of any contaminant in the groundwater shall not result in the surface-water quality being reduced below the relevant provisions of Objective WQL1 or the standards set by a water conservation order." There has been insufficient data and analysis presented from which to predict maximum concentrations in groundwater and consequently whether the surface-water threshold in WQL2.1(3) could be breached.

#### Conclusions on water quality provisions

- 14.9 Overall then having regard to the scheme of the WCWARP and the NRRP we reach a conclusion that granting consent in this case to the proposal as a whole with suitable conditions would be consistent with the key objectives and policies of both of these plans relating to water quality.

#### **Inefficient take and use**

- 14.10 Objective (4) of the WCWARP seeks to promote "*the achievement of a high level of technical efficiency in the use of allocated water*". Policies 15 – 20 deal with efficient and effective use of water and provide for an efficient use of water so that net benefits are derived from its use are maximised and waste minimised. In particular, Policy 16 provides guidance for determining reasonable and efficient use for agricultural activities.
- 14.11 Application of water by spray irrigation is consistent with these efficiency provisions. However, as discussed above, we consider that the proposed annual volume of 312,000 cubic metres per year does not meet the reasonable use test of Policy 16. If the volume is reduced to 271,050 cubic metres per year as suggested by the reporting officer, the application could achieve consistency with this policy.

#### **Environmental flow and level regimes**

- 14.12 Policies 2 – 8 deal with minimum flows for the Hen Burn. Policies 3 and 4 outline the values that must be maintained in the water bodies, and a number of matters that must be considered when setting an environmental flow and level regime, and are particularly relevant to this application. As the applicant proposed to adopt the minimum flow required by the WCWARP that falls within the instantaneous allocation limits, we are satisfied that the proposal is consistent with these policies.

## **Landscape**

- 14.13 We discussed the relevant objectives and policies for landscape in our Part A Decision. In summary these are primarily found in the Proposed and Operative CRPS and the NRRP. In broad terms these provisions seek the protection of outstanding natural landscapes from inappropriate use and development.
- 14.14 In considering these provisions we are informed by the provisions of the Waitaki District Plan which identifies the applicant's property as Rural Scenic zone. This particular activity, assuming grant of consent, is consistent with the relevant policies and objectives of that zone.
- 14.15 For the reasons already advanced we think that with the conditions we intend to impose the granting of this proposal will be consistent with the relevant objectives and policies within all of the relevant plans in respect of landscape issues.

## **Tangata whenua**

- 14.16 Objective 1(a) WCWARP relates to the integrity of mauri and is closely linked to Objective 1(b). If we are not satisfied that the health of a particular waterbody is being safeguarded, then the mauri is not being safeguarded either. As noted above, we believe the mitigation measures proposed by the applicant will result in sustainable water quality outcomes being achieved. It therefore follows that granting consent will maintain the integrity of the mauri and meet the spiritual and cultural needs of the tangata whenua.
- 14.17 Objective WQN1 from Chapter 5 NRRP seeks to enable present and future generations to access the region's surface-water and groundwater resources to gain cultural, social, recreational, economic, and other benefits while (c) safeguarding their value for providing mahinga kai for Ngai Tahu and (d) protecting wahi tapu and other wahi taonga of value to Ngai Tahu. The proposed activity will have no adverse effect on water quality in the Ahuriri Delta; as such, the activity will be consistent with the objective of safeguarding Ngai Tahu access to sites and resources of cultural significance.
- 14.18 Objective WTL1(a) and (d) from Chapter 7 NRRP includes provisions that seek to achieve no overall reduction in the contribution wetlands make to the relationship of Ngai Tahu and their culture and traditions with their ancestral lands, water, mahinga kai sites, wahi tapu, and wahi taonga. Our finding is that there is unlikely to be deterioration of water quality of the Ahuriri Delta as a result of this activity being granted consent therefore we consider that this application is consistent with these Objectives.

## **Activities in beds of lakes and rivers**

- 14.19 The key objectives and policies that are relevant to the land use application (CRC071650) can be found in Chapter 6 of the NRRP, which relates to activities in the beds of lakes and rivers. The chapter contains one objective and two related policies.
- 14.20 Objective BLR1 aims to ensure that works in the beds and banks of lake, rivers and streams can be undertaken while minimising effects, including flood-carrying capacity, natural character, ecosystems, other structures, erosion, Ngai Tahu values. Given the conclusions we have reached on these matters above, we consider that, subject to appropriate conditions, the proposed works in the bed are consistent with this objective.
- 14.21 Policies BLR1 and BLR2 aim to control activities associated with the erection, placement, use and maintenance of structures within the bed of rivers to ensure that Objective BLR1 is achieved. This may include restricting activities so that they do not affect flood-carrying capacity, erosion or create plant infestations. For the reasons discussed above, with the imposition of appropriate conditions, we consider that the proposed works in the bed are consistent with these policies.
- 14.22 In respect of the proposed diversion, given its minor nature and our conclusions on effects outlined above, we consider that the activity is consistent with the relevant objectives and policies in the WCWARP seeking to sustain the quality of the environment.

## **Key conclusions on planning instruments**

- 14.23 For all of the above reasons we consider that, with the imposition of appropriate conditions granting consent would be consistent with the objectives and policies of the relevant plans. We have reached this conclusion taking into account the relevant planning provisions in respect of

water quality, efficiency, environmental flows, landscape, tangata whenua values and works in the bed.

## **15 EVALUATION OF OTHER RELEVANT S104 MATTERS**

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- 15.1 Under s104(1)(c), we are required to have regard to any other matter that we consider to be relevant and reasonably necessary to determine the application. After hearing all the relevant evidence, we consider that no such matters exist in relation to this application.

## **16 PART 2 RMA**

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- 16.1 Section 104(1) states that the matters which we have discussed above are subject to Part 2, which covers section 5 through section 8 inclusive. These sections are set out in full in our Part A decision and are discussed below in the context of the current applications.

### **Section 6 – Matters of National Importance**

- 16.2 Section 6 identifies matters of national importance that we must “recognise and provide for” when making our decision, including preserving the natural character of lakes and rivers (s6(a)), protecting outstanding natural features and landscapes (s6(b)) and the relationship of Maori with the environment (s6(e)).
- 16.3 In respect of s6(a) we recognise that preservation of the natural character of lakes and rivers is the imperative. We think that because of our finding in terms of the water quality issues, which takes into account mitigation measures, the grant of consent recognises and provides for the preservation of the natural character of lakes and rivers.
- 16.4 In terms of s6(b), we have evaluated the natural features and landscape, primarily by reference to the relevant planning instruments. We reach the view that the grant of consent in this case is not inappropriate because it will not, in our view, diminish the natural features and landscapes such as they are in any significant way.
- 16.5 In terms of section 6(c), it is our view, taking into account the evidence received, that there are not areas of significant indigenous vegetation and significant habitats of indigenous fauna that are at risk thus requiring protection as a consequence of the grant of consent.
- 16.6 In relation to section 6(e) the Ahuriri River Delta and tributaries hold strong cultural and spiritual significance for Ngai Tahu, and their aspiration to undertake restoration of mahinga kai habitat at the Delta is reliant on the water quality standards being retained or enhanced. We consider that the activity coupled with the proposed mitigation measures will have no more than a minor effect on mahinga kai values and remain consistent with section 6(e).
- 16.7 For the above reasons, we consider that granting consent to the proposal would recognise and provide for s6 matters, as we are required to do under the RMA.

### **Section 7 – Other Matters**

- 16.8 Section 7 lists “*other*” matters that we shall “*have particular regard to*”. We make the following observations in relation to each of those matters as they are relevant to this application, referring to the sub paragraph numbers of s7:
- 16.9 Sub-section (a) refers to kaitiakitangā. We heard from Ngai Tahu about their aspirations for mahinga kai restoration in the lower Ahuriri catchment. We consider that the modest threshold and mitigation measures proposed by the applicant give us confidence that this cultural objective will not be adversely affected.
- 16.10 Sub-sections (b), (c), and (f) are specifically relevant to this application. Sub-section (b) relates to the efficient use and development of natural and physical resources. Relevantly in this case is water. We have determined that the volumes of water we are prepared to grant and the methodology of its conveyance and distribution results in the efficient use and development of the water resource.
- 16.11 Sub-section (c) refers to the maintenance and enhancement of amenity values. Maintenance and enhancement of amenity values will be achieved in this instance through utilising mitigation measures such as those provided in the FEMP. These steps will ensure the maintenance and enhancement of amenity values.

- 16.12 In terms of sub-section (d), we have had particular regard to the intrinsic values of ecosystems and consider that through the grant of consent with the conditions imposed such values will be safeguarded.
- 16.13 Sub-section (f) refers to the maintenance and enhancement of the quality of the environment. The applicant has proposed mitigation measures to ensure that this objective is achieved.
- 16.14 Having particular regard to the above matters in the context of section 7, we conclude that the grant of consent could be supported

#### **Section 8 – Treaty of Waitangi**

- 16.15 Finally, section 8 requires that we shall take into account the principles of the Treaty of Waitangi.
- 16.16 The cultural values of tangata whenua are appropriately recognised in the relevant planning documents applicable to the Mackenzie Basin sufficient to alert applicants to the need to address such values. We are satisfied that notification of the appropriate Runanga and tribal authority has been followed and that the applicant was a contributor to the general assessment of the impact of irrigation activities on cultural values.
- 16.17 We are satisfied that the consultation procedures provided Ngai Tahu the opportunity to understand and respond to the proposed activity, albeit in conjunction with a large number of applications in the Mackenzie Basin.

#### **Section 5 – Purpose of the RMA**

- 16.18 Turning now to the overall purpose of the RMA, that is, “*to promote the sustainable management of natural and physical resources*”. we make the following further comments:
- (a) We consider the development and use of land is consistent with the purpose of sustainable management;
  - (b) Irrigation would make a contribution to the overall regional (Waitaki) wellbeing; and
  - (c) The natural and physical resources of the Mackenzie Basin site (water and land resources) would all be sustained.
- 16.19 This leaves section 5(2)(c) RMA and the obligation to avoid, remedy or mitigate any adverse effects of activities on the environment.
- 16.20 We reached the view that the conditions we intend to impose, they will avoid, remedy or mitigate any adverse effects of this activity on the environment. We observe that those effects are primarily water quality effects. We think those water quality effects are well addressed in the conditions we intend to impose.

### **17 OVERALL EVALUATION**

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- 17.1 Under s104B of the RMA, we have a discretion as to whether or not to grant consent. This requires an overall judgment to achieve the purpose of the Act and is arrived at by:
- (a) Taking into account all the relevant matters identified under s 104;
  - (b) Avoiding consideration of any irrelevant matters;
  - (c) Giving different weight to the matters identified under s 104 — depending on our opinion as to how they are affected by the application of s 5(2)(a), (b), and (c) and ss 6-8 — to the particular facts of the case; and then in light of the above; and
  - (d) Allowing for comparison of conflicting considerations, the scale or degree of conflict, and their relative significance or proportion in the final outcome.

## **CRC071649 – Take and Use of Water**

- 17.2 We find that a principal issue prevailing against the grant of this application relates to the potential cumulative effect of land intensification in the Ahuriri Catchment on the trophic levels in Lake Benmore.
- 17.3 However, we think that because of the small scale of the applicant's proposal, while it would contribute to the cumulative effects on the Ahuriri Arm of Lake Benmore, it will be offset by a reduction in nutrient load arising from operational changes in the applicants other (replacement) application (CRC012733/CRC011987). In addition the periphyton monitoring conditions (see below) will provide an additional safeguard against the export of nutrients to the lake.
- 17.4 We also find that the proposal could cause an increase in nuisance periphyton growths in the Henburn and Quailburn under summer low-flow conditions, but that they can be managed by way of conditions.
- 17.5 We acknowledge that should the application be granted positive economic effects of the activity would occur on farm and in the district through greater agricultural productivity.
- 17.6 Having reviewed the application documents, all the submissions, taking into account all relevant provisions of the RMA and other relevant statutory instruments, we have concluded that the outcome that best achieves the purpose of the RMA is to grant consent for water permit application CRC071649.

## **CRC071650 – Work in Bed of Henburn Stream**

- 17.7 We find that the installation of a gallery intake structure in the Henburn Stream will be of short duration and proposed temporary diversion of the streams flow during the construction will minimise the effects. The restoration of the stream bed and banks after the installation work has been completed will result in long term effects that are less than minor.
- 17.8 The intake gallery and its function of drawing water for irrigation activity will have a positive effect on the farming operation through reliable irrigation water and increased productivity.
- 17.9 Having reviewed the application documents, all the submissions, taking into account the evidence to the hearing, and taking into account all relevant provisions of the RMA and other relevant statutory instruments, we have concluded that the outcome that best achieves the purpose of the RMA is to grant the land use application CRC071650.

## **18 CONDITIONS**

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- 18.1 Given our decision to grant consent, we have given careful consideration to the conditions that are necessary to avoid, remedy and mitigate the potential adverse effects of the proposal. The starting point we have used for this exercise is the final condition set provided by the applicant. This was the result of a collaborative process that occurred after the conclusion of the hearing, as described in our Part A decision.
- 18.2 The condition set provided to us includes comments on discrete issues from Council officers and several submitters. Where any such comments have been made, we have taken this into account when arriving at the final condition set. We are proceeding on the basis that the condition set provided to us incorporates all relevant conditions required by Meridian Energy as part of its derogation approval, which has been confirmed by legal counsel for Meridian.
- 18.3 We have made some modifications and additions to the condition set provided to us. However all modifications respect the conditions attaching to derogation approvals provided by Meridian. Several of these changes relate to matters discussed in the preceding sections of this decision to ensure that any concerns we have about potential effects are adequately addressed.
- 18.4 In addition, we make the following comments on conditions relating to nutrients and thresholds. These comments are written in a general style that applies to all applications before us. However they are directly relevant to this application. We have incorporated the intent of these comments into the conditions attached to this decision.

## Nutrients and thresholds

- 18.5 In Part A we rejected the MWRL proposition that we could grant all the applications before us with conditions.
- 18.6 Much of the evidence on conditions presented by all parties to this hearing centred on the issue of determining whether grantees in a particular subcatchment had breached the nutrient allowance at a particular node, and if they had, how ECan could determine either which consent holder had caused the breach and whether one or all consent holders needed to take corrective action.
- 18.7 In rejecting the MWRL case, which relied upon existing irrigators lessening their nutrient load so that there would be assimilative capacity for new irrigators, we need to record our approach to ensuring that consents we grant do not cumulatively result in the trophic level index (TLI) of the Ahuriri Arm of Lake Benmore exceeding 2.75, or the TLI of the Wairepo Arm of Lake Ruataniwha exceeding 4.00. As we recorded in Part A our view is that the difference between current nutrient load, and the load resulting in unacceptable increases in the TLI of these waterbodies is so small that it would be risky to try and allocate that new load.
- 18.8 For those applications that we are inclined to grant, we have assessed their 'cumulative effects' in priority order, taking careful note of the complete package of mitigation measures they propose on their property. These mitigation measures may be in relation to a separate application before us but on the same property and therefore 'captured' in the FEMP.
- 18.9 We have kept a check on new irrigation resulting in additional nitrogen and phosphorus loads proposed by applicants in relation to those mitigation measures and not granted consents that would, in our view, lead to a significant net increase.
- 18.10 This approach will, in our view, ensure that the TLI of the critical lake ecosystems does not rise as a result of our granting these applications, and may even decline. This approach is, we believe, consistent with the NRRP, which has as an objective and maintenance or improvement of water quality. It also has the advantage, in our view, of taking the pressure off cumulative effects monitoring with all the ensuing uncertainties and difficulties discussed in Part A.
- 18.11 Recognising that streams and rivers in the catchment are nutrient limited by nitrogen and/or phosphorus, and that the NZ (MfE) Periphyton Guidelines provide appropriate thresholds for managing nuisance periphyton growths, we believe, provide another monitoring tool for not only ensuring that streams and rivers are suitable for recreation and provide suitable habitat for invertebrates and fish, but also provide another defence to downstream lake ecosystems. The reporting of breaches in periphyton guidelines together with correction mitigation actions, provide a tool to prevent excess nutrients reaching the lakes.
- 18.12 We recognise that where leachate enters groundwater that does not discharge to streams or rivers prior to entering Lake Benmore, periphyton monitoring is not appropriate. However for the majority of the applications before us, there is a stream or river downstream that provides a logical focus for offsite monitoring efforts. In cases where this is not the case we have imposed other monitoring requirements such as lysimeter or piezometer networks, and/or contributing to lake monitoring.
- 18.13 The advantage of stream water quality and periphyton monitoring is that it puts more emphasis on local monitoring and less emphasis on uncertain (given our findings on the WQS) modelling. We are of the view that as far as possible, consent monitoring should be related directly to the applicant's activities.
- 18.14 We did consider deleting the agreed conditions relating to lake TLI monitoring on the grounds that it was marginal whether trigger response conditions were relevant to replacement consents. The critical issue for us was whether the effects of replacement consents could be considered less than minor (with respect to lake water quality).
- 18.15 However upon reflection we have decided that (in the case of the Ahuriri Arm of Lake Benmore, and the Wairepo Arm of Lake Ruataniwha) the existing TLI is very close to the agreed trigger point, and the TLI may increase even without the grant of new consents (due to groundwater lag effects). We are reasonably confident however that this will not occur because by and large these activities have been 'on foot' for a long period of time and we think this is reflected in the current TLI. However, we cannot be completely certain and it seemed to us rather than leave



the matter we should do something about it to at least provide a mechanism to respond to groundwater lag effects, if they occurred.

- 18.16 Thus, if TLI were to increase above the agreed trigger points then the lake monitoring conditions would serve a resource management purpose; particularly in conjunction with the condition to ratchet back existing irrigation. On balance, we have decided to retain the agreed lake monitoring conditions for Lake Benmore and the Wairepo Arm of Lake Ruataniwha.

## **19 DURATION**

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- 19.1 The final condition set provided to us proposes a duration of 35 years for both consents, notwithstanding the fact that the application seeks to take additional water to irrigate new areas of land. Unlike most other new applications before us, the applicant has not proposed an expiry date of 30 April 2025 (coincident with the expiry of the Meridian consents).
- 19.2 Meridian, through Mr Turner, suggests that there are benefits in having a common expiry date for all consents to take water within the catchment to do with assessing cumulative effects.
- 19.3 To determine this issue we have referred to and applied the approach set out within the NRRP, Chapter 1, Section 1.3.5, which sets out some considerations that impact on duration. In particular we have placed weight on the following matters there referred to:
- (a) the nature and sensitivity of the affected environment, including:
    - (i) the degree to which the sensitivity of the affected environment may become more sensitive over time; and
    - (ii) the probability of future adverse effects arising from the consented activity; and
    - (iii) the level of knowledge about the affected environment;
- 19.4 Section 1.3.5 contains a range of other guidance criteria, which includes the consent holder's capital investment in a pre-existing activity. However, we think that the nature and sensitivity of the affected environment plus the three criteria we have listed above are the most significant.
- 19.5 Given our findings in relation to the current TLI status of the Ahuriri Arm of Lake Benmore and the degree to which the sensitivity of the affected environment, namely the Ahuriri Arm, may become more sensitive over time and the probability or possibility of future adverse effects arising from this consented activity and others, and the level of knowledge about the affected environment, we do support Mr Turner's call for a common expiry date.
- 19.6 We do recognise this will have impacts upon the consent holder's interests. In particular, the consent holder's need to ensure that there are permanence and economic life of the activity. However, in that regard we do note that provided the consent holder seeks to renew its consent in accordance with the RMA, there is a level of permanence and economic life for the activity. We also think that the term of the grant, which will be approximately 13 years (until 30 April 2025), does provide for a level of permanence and economic life of the activity. A term of this duration would provide benefits to the community and would enable the consent holder to achieve some level of return on capital investment involved.
- 19.7 In terms of the application and disturb the bed (CRC071650), we have decided to grant these consents for a period of 35 years notwithstanding the shorter term of the take and use consent. The key reason for this is that the effects of the activities are very minor and there is not the same uncertainty about change in the sensitivity of the receiving environment over time. As such, we consider that there is no resource management basis for a shorter term.

## **20 DECISION**

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- 20.1 Pursuant to the powers delegated to us by the Canterbury Regional Council; and
- 20.2 For all of the above reasons and pursuant to sections 104 and 104B of the Resource Management Act 1991, we **GRANT** the following applications by Bellfield Land Company Limited:





**CRC071649** – to take and use water from one of two locations on Hen Burn Stream for spray irrigation of 52ha for grazing sheep and beef.

**CRC071650** – to disturb the bed of Hen Burn Stream to construct a gallery water intake structure at one of two locations.

- 20.3 Pursuant to section 108 RMA, the grant of these consents is subject to the conditions specified at **Appendices A** and **B** respectively, which conditions form part of this decision and consent.
- 20.4 The duration of CRC071649 shall be until the 30<sup>th</sup> April 2025. The duration of CRC071650 shall be for 35 years from the commencement of the consent.

**DECISION DATED AT CHRISTCHURCH THIS 16<sup>TH</sup> DAY OF FEBRUARY 2012**

Signed by:

|                       |   |
|-----------------------|---|
| <b>Paul Rogers</b>    | <br>_____  |
| <b>Dr James Cooke</b> | <br>_____  |
| <b>Michael Bowden</b> | <br>_____  |
| <b>Edward Ellison</b> | <br>_____ |

**Surrender of existing consent**

1. Prior to the exercise of this consent, the consent holder shall surrender resource consent CRC001096.1.

**Take of water**

2. Water shall only be taken from the Henburn Stream located between map reference NZMS 260: H39:615-337 and H39:615-336 **or** H39:619-339 and H39:621-338
3. Water for irrigation shall only be taken between 1 September and the following 30 April at a rate not exceeding at a rate not exceeding 30 litres per second, and 271,050 cubic metres per year (measured between 1 September and the following 30 April).
4. Subject to Condition 5, whenever the flow in Henburn Stream at map reference NZMS 260 H39: H39:633-335, and the abstracted flows relating to Sutherlands (CRC020508) and this permit, as estimated by the Canterbury Regional Council calculated as the mean flow for the previous 24 hour period (midnight to midnight):
  - (a) is equal or greater than 100 litres per second, the maximum rate at which water is taken shall not exceed 30 litres per second;
  - (b) is less than 100 litres per second but greater than 20 litres per second then the rate of abstraction permitted in terms of this permit shall not exceed those shown in the table below:

| Henburn Stream Flow<br>(litres per second) | Available Abstraction<br>(litres per second) |
|--|--|
| 100  | 30.0   |
| 80   | 22.5   |
| 60   | 15.0   |
| 40   | 7.5  |
| 30   | 3.75   |
| 20   | 0.0  |

- (c) is equal to or less than 20 litres per second the taking of water in terms of this permit for irrigation purposes shall cease.
5. Where the Canterbury Regional Council, in consultation with a Water Users Committee representing, but not limited to, surface water and hydraulically connected groundwater users who are subject to the above minimum flow, has determined upon a water sharing regime that limits the total abstraction from the resource as referred to above, then the taking of water in accordance with that determination shall be deemed to be in compliance with Condition 4.
6. Water shall only be temporarily diverted within the bed of Henburn Stream as follows:
  - (a) Diversion shall only be for the purpose of installation and maintenance of a submerged gallery intake in accordance with consent CRC071650;
  - (b) The diversion of water shall only occur over a maximum reach of 50 metres located in accordance with Condition 1.
  - (c) The diversion of water shall not impede fish passage or cause the stranding of fish in pools or channels.

(d) For the period of diversion, all water diverted shall remain within the bed.

(e) When diversion ceases, water shall be returned to its original course.

#### **Use of water**

7. Water shall only be used for the spray irrigation of 52 hectares of crops and pasture for grazing sheep, beef cattle, or non-milking dairying cows per irrigation season within the area of land shown on attached Plan CRC071649/CRC071650, which forms part of this consent.
8. Water for irrigation shall only be used on or applied to land that is subject to a memorandum of encumbrance that complies with the requirements of the agreement entitled "Agreement in Relation to the Allocation of Water for Irrigation" between Meridian Energy Limited and the Mackenzie Irrigation Company Limited dated the 31<sup>st</sup> of October 2006.
9. The consent holder shall, six months prior to this consent being exercised, provide to the Canterbury Regional Council a certificate from the consent holder's solicitor certifying that the memorandum of encumbrance is registered on the computer registers for the land shown on Plan CRC071649/CRC071650 and any other evidence of registration as the Canterbury Regional Council may require (if any).
10. There shall be a minimum 5 metre setback, where there is no irrigation, from any permanently flowing waterways within the irrigation area marked on Plan CRC071649/CRC071650.
11. The consent holder shall take all practicable steps to:
  - (a) Ensure that the volume of water used for irrigation does not exceed that required for the soil to reach field capacity; and
  - (b) Avoid leakage from pipes and structures; and
  - (c) Avoid the use of water onto non-productive land such as impermeable surfaces and river or stream riparian strips.
12. The consent holder shall ensure water races used to convey water diverted in terms of this permit are well maintained to minimise losses.

#### **Water metering – Minimum flows**

13. The consent holder shall, prior to exercising this consent, install a water level measuring device in a stable reach of the Henburn Stream at map reference NZMS 260 H39: H39:633 - 335 that will enable the determination of the continuous rate of flow in the reach of the water body to within accuracy of ten percent.
14. The water level measuring device shall be installed at a site that will retain a stable relationship between flow and water level. The measuring device shall be installed in accordance with the manufacturer's instructions.
15. The consent holder shall install a tamper-proof electronic recording device such as a data logger(s) that shall:
  - (a) time stamp a pulse from the water level recorder at least once every 15 minutes; and
  - (b) be set to wrap the data from the measuring device such that the oldest data will be automatically overwritten by the newest data (i.e. cyclic recording); and
  - (c) store the entire season's data in each 12-month period from 1 July to 30 June in the following year, which the consent holder shall then download and store and provide to the Canterbury Regional Council in a format and standard specified in the Canterbury Regional Council's form for Water Metering Data Collection; and be readily accessible to be downloaded by the Canterbury Regional Council or by a person authorised by the Canterbury Regional Council: RMA Compliance and Enforcement Manager; and
  - (d) shall be connected to a telemetry system that collects and stores all of the data continuously with an independent network provider who will make that data available in a

commonly used format at all times to the Canterbury Regional Council and the consent holder.

16. The measuring and recording devices described in Conditions 13 and 15 shall be available for inspection at all times by the Canterbury Regional Council.
17. Data from the recording device described in Condition 15 and the corresponding relationship between the water level and flow, and any changes in that relationship shall be provided to the Canterbury Regional Council annually in the month of June, and shall be accessible and available for downloading at all times by the Canterbury Regional Council.

#### **Water metering – Take of water**

18. The consent holder shall, within six months of the commencement date of this consent at the point of take:
  - (a) install a water meter(s) that has an international accreditation or an equivalent New Zealand calibration endorsement suitable for use with an electronic recording device, from which the rate and the volume of water taken can be determined to within an accuracy of plus or minus five percent at a location(s) that will ensure the total take of water from Henburn Stream is measured; and
  - (b) install a tamper-proof electronic recording device such as a data logger that shall record (or log) the flow totals every 15 minutes.
19. The water meter and recording device(s) specified in Condition 18 shall be set to wrap the data from the measuring device(s) such that the oldest data will be automatically overwritten by the newest data (i.e. cyclic recording); and shall either:
  - (a) store the entire season's data in each 12-month period from 1 July to 30 June in the following year, which shall be downloaded and stored in a commonly used format and provided to the Canterbury Regional Council upon request in a form and to a standard specified in writing by the Canterbury Regional Council; or
  - (b) be connected to a telemetry system which collects and stores all of the data continuously with an independent network provider who will make that data available in a commonly used format at all times to the Canterbury Regional Council and the consent holder. No data in the recording device(s) shall be deliberately changed or deleted.
20. If the water meter specified in Condition 18(a) is not an electromagnetic or ultrasonic meter, the consent holder shall, prior to the first exercise of this consent install or make available an easily accessible straight pipe(s) at a location where the total water take is passing through, with no fittings or obstructions that may create turbulent flow conditions, of a length at least 15 times the diameter of the pipe, as part of the pump outlet plumbing or within the mainline distribution system, to allow the Canterbury Regional Council to conduct independent measurements.
21. The water meter and recording device(s) specified in Condition 18 shall:
  - (a) be installed by a suitably qualified person in accordance with ISO 1100/1-1981 (or equivalent) and the manufacturer's instructions; and
  - (b) be maintained throughout the duration of the consent in accordance with the manufacturer's instructions; and
  - (c) be accessible to the Canterbury Regional Council at all times for inspection and/or data retrieval.
22. All practicable measures shall be taken to ensure that the water meter and recording device(s) specified in Condition 18 are at all times fully functional and have an accuracy standard of five percent.
23. Within one month of the installation of the measuring or recording device(s) specified in Condition 18 (or any subsequent replacement devices), the consent holder shall provide a certificate to the Canterbury Regional Council, attention: RMA Compliance and Enforcement

Manager, signed by a suitably qualified person certifying, and demonstrating by means of a clear diagram, that:

- (a) the measuring and recording device(s) is installed in accordance with the manufacturer's specifications; and
  - (b) data from the recording device(s) can be readily accessed and/or retrieved in accordance with Condition 19.
24. At five yearly intervals or at any time when requested by the Canterbury Regional Council, the consent holder shall provide a certificate to the Canterbury Regional Council, attention: RMA Compliance and Enforcement Manager, signed by a suitably qualified person certifying that:
- (a) the water meter(s) is measuring the rate of water taken as specified in Conditions 18 to 22 inclusive; and
  - (b) the tamper-proof electronic recording device is operating as specified in Conditions 18 to 22 inclusive.

### **Nutrient Loading**

25. For the purposes of interpretation of the conditions of this consent Quailburn Downs shall be defined as the areas in certificates of title and Pastoral Lease numbers OT6A/767-8, which total 2,194 hectares.
26. The consent holder shall prepare once per year:
- (a) an Overseer<sup>®</sup> nutrient budgeting model report not less than one month prior to the commencement of the irrigation season; and
  - (b) a report of the annual farm nutrient loading for Quailburn Downs using the model Overseer<sup>®</sup> (AgResearch model version number 5.4.3 or later).
27. When undertaking the modelling outlined in Condition 26, the consent holder shall use either weather records collected on-farm or from constructed data from the nearest weather station.
28. A copy of the reports prepared in accordance with Condition 26 shall be given to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager within one month of their completion.
29. Following conversion the consent holder shall not commence annually irrigation under this consent unless the annual (1 July to 30 June) nutrient loading (the nutrient discharge allowances (NDAs)) as estimated in accordance with Condition 26 from Quailburn Downs does not exceed 8,761 kg of Nitrogen and 240 kg of Phosphorus. Where the NDAs have been reduced by the application of a receiving water quality nutrient trigger condition, the reduced NDA shall apply.
30. The NDAs, incorporating any reductions required by receiving water quality nutrient trigger conditions, shall be complied with from the commencement of consent.
31. Where Overseer, or Overseer modelling, is referred for the purposes of calculating or determining compliance with the NDA limits associated with activities on the property, it shall be undertaken by an independent person with an Advanced Sustainable Nutrient Management Certificate issued by Massey University or an equivalent qualification
32. The consent holder shall at all times comply with the mitigation measures set out in section 5 of the Farm Environmental Management Plan (FEMP) for Quailburn Downs as provided to Environment Canterbury in November 2010 and attached to these conditions.
33. Subject to Condition 32, the consent holder shall implement, and update annually the FEMP for Quailburn Downs. The FEMP shall include:
- (a) Verification of compliance with NDAs (incorporating any reductions required by receiving water quality nutrient trigger conditions) by farm nutrient modelling using the model Overseer (AgResearch model version number 5.4.3 or later).

- (b) Implementation of Mandatory Good Agricultural Practices (“MGAPS”) and requirements to manage in accordance with the Quailburn Downs Overseer model inputs.
  - (c) The Overseer parameter inputs report, which shall be supplied to the Canterbury Regional Council.
  - (d) A property specific environmental risk assessment (including a description of the risks to water quality arising from the physical layout of the property and its operation which are not factored in as an Overseer parameter) prepared by a suitably qualified person which identifies any farm specific environmental risks along with measures to mitigate the farm specific environmental risks.
  - (e) A requirement to review the risk assessment if there are any significant changes in land use practice.
34. Detailed records shall be maintained of fertilizer application rates, types of crops (including winter feed/forage crops), cultivation methods, stock units by reference to type, breed and age, prediction of realistic crop yields that are used to determine crop requirements and all other inputs to the Overseer nutrient budgeting model.
35. A report on Overseer modelling shall be provided within one month of completion of the Overseer modelling by the person with the qualifications described in Condition 31 and no later than two months prior to the start of the next irrigation season to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager. The consent holder shall supply to the Canterbury Regional Council all model inputs relied upon for the annual Overseer<sup>®</sup> modelling.
36. Changes may be made to the Quailburn Downs Overseer model inputs, provided that written certification is provided that the change is modelled using Overseer, and that the result of that modelling demonstrates that the NDAs are not exceeded. A copy of that certification plus a copy of the resultant Overseer parameter report shall be provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, prior to the implementation of that change.

#### **Subdivision**

37. The NDAs shall be recalculated if there is a sale or transfer of any part, but not the whole, of the total farm area of 2,194 hectares. The recalculated NDAs shall be undertaken to accurately redistribute the NDA between the resultant properties and shall replace the NDAs specified in Condition 29. The new NDAs may be recalculated on any proportion as long as the total of all the NDAs does not exceed the NDAs of the parent title as set out in Condition 29. The recalculation of the NDAs shall be undertaken and certified using Overseer, completed and provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager together with a copy of the full Parameter report, within one month of the sale or transfer.

#### **Fertiliser and soil management**

38. Fertiliser shall be managed and applied in accordance with ‘The Code of Practice for Nutrient Management (With Emphasis on Fertiliser Use) NZFMRA 07’ or any subsequent updates.
39. The consent holder shall keep a record of all fertiliser applications applied to the property, including fertiliser type, concentration, date and location of application, climatic conditions, mode of application and any report of the fertiliser contractor regarding the calibration of the spreader.
40. For land based spreading of fertiliser:
- (a) where an independent fertiliser spreading contractor is used the consent holder shall keep a record of the contractor used, which can be supplied to the Canterbury Regional Council upon request; or
  - (b) where the applicant’s own fertiliser spreaders are used, the consent holder shall test and calibrate the fertiliser spreaders at least annually, and every five years the fertiliser spreader will be certified by a suitably qualified person in accordance with ‘The Code of Practice for Nutrient Management (With Emphasis on Fertiliser Use) NZFMRA 07’ or any

subsequent updates and the results of testing shall be provided to the Canterbury Regional Council upon request.

41. Nitrogen fertiliser shall not be applied to land between 31<sup>st</sup> May and 1<sup>st</sup> September.
42. All fertiliser brought onto the property which is not immediately applied to the land shall be stored in a covered area that incorporates all practicable measures to prevent the fertiliser entering waterways.
43. Applications of nitrogen fertiliser shall not exceed 50 kg nitrogen / hectare per application.
44. If liquid fertilisers, excluding liquid effluent, are stored on-site for more than three working days, the consent holder shall ensure that the fertiliser is stored in a bunded tank, at least 110% of the volume of the tank to avoid any discharge to surface or groundwater and such that it is also protected from vehicle movements.
45. Fertiliser filling areas shall not occur within 50 metres from a water course, spring or bore.
46. For land based spreading, fertiliser should not be applied within 20 metres of a watercourse.
47. Where practicable, the consent holder shall:
  - (a) use direct drilling as the principal method for establishing pastures; and
  - (b) sow and irrigate all cultivated areas within the irrigation area as soon as possible following ground disturbance.

#### **Irrigation Infrastructure**

48. The consent holder shall ensure that all new irrigation infrastructure (not on the property at the time of commencement of this consent) is:
  - (a) designed and certified by a suitably qualified independent expert holding a National Certificate in Irrigation Evaluation Level 4, and installed in accordance with the certified design. Copies of certified design documents shall be provided to the Canterbury Regional Council upon request; and
  - (b) tested within 12 months of the first installation of the new irrigation infrastructure and afterwards every five years in accordance with the 'Irrigation Code of Practice and Irrigation Design Standards, Irrigation NZ, March 2007' (code of practice) by a suitably qualified independent expert.
49. Within two months of the testing referred to in Condition 48(b) the expert shall prepare a report outlining their findings and shall identify any changes needed to comply with the code of practice. Any such changes shall be implemented within five years from the date of the report. A copy of the report shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, within three months of the report being completed.
50. If existing irrigation infrastructure is being used, the consent holder shall obtain an evaluation report prepared by a suitably qualified person, on the following terms:
  - (a) The evaluation shall determine the system's current performance in accordance with the Code of Practice for Irrigation Evaluation.
  - (b) This report shall be obtained within three months of the first exercise of the consent.
  - (c) Any recommendations identified in the report shall be implemented within five years from the date of receipt of the report.
  - (d) A copy of the report shall be forwarded to the Canterbury Regional Council within three months of the report being completed.



## River water quality monitoring and response

51. The water quality of the Henburn Stream shall be monitored within six months of the first exercise of consent as follows:
- (a) The location for monitoring of Henburn Stream shall be as follows unless minor changes are required to ensure that monitoring occurs upstream of all intakes and downstream of the irrigation area to appropriately monitor the localised river effects arising from the exercise of this consent:
    - i. Map reference: NZMS 260 H39: 626-337 downstream of the discharge.
  - (b) Water quality variables monitored shall include:
    - i. dissolved inorganic nitrogen (DIN);
    - ii. dissolved reactive phosphorus (DRP);
    - iii. dissolved oxygen;
    - iv. conductivity;
    - v. turbidity;
    - vi. periphyton biomass as chlorophyll *a* per square metre (chl *a*); and
    - vii. *E. Coli*.
  - (c) This monitoring may be carried out on an individual basis, or may be prepared in collaboration with other consent holders, or on a collective basis by a suitable independent body appointed by all relevant consent holders in the sub catchment.
  - (d) Frequency of monitoring: Once per month from 01 December to 30 April each year, with a minimum of three weeks between sampling.
  - (e) Methods: The methods of sampling and analysis shall be those that are generally accepted by the scientific community as appropriate for monitoring river water quality and periphyton biomass. The methods of sampling shall be documented and made available to the Canterbury Regional Council on request.
  - (f) The water quality monitoring shall be undertaken by a suitably qualified and/or experienced person who demonstrates that they understand the appropriate methods to use for surface water quality sampling, including preservation of samples. That person shall certify in writing that each batch of samples has been sampled and preserved in accordance with generally accepted scientific methods. A copy of those certifications and the person's qualifications shall be provided to the Canterbury Regional Council on request.
  - (g) The laboratory undertaking analyses shall be accredited for those analyses by International Accreditation New Zealand (IANZ) or an equivalent accreditation organisation that has Mutual Recognition Agreement with IANZ.
  - (h) The results of all sampling shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager by 30 May each year. This shall include copies of reports from the laboratory that undertook the analyses.
52. If the monitoring undertaken in accordance with Condition 51 shows that the average sample result for the downstream Henburn Stream monitoring site specified in Condition 51 over the period December to April is greater than 0.10 mg/l of DIN; or 0.007 mg/l DRP; or 50 mg chl *a*/ m<sup>2</sup> (early warning trigger) but does not exceed 0.18 mg/l of DIN; or 0.007 mg/l DRP; or 90 mg chl *a*/ m<sup>2</sup> (environmental standard trigger), then the consent holder shall commission a report into the cause of the breach of the early warning trigger.
53. The reports referred to in Condition 52 and 57 shall:

- (a) be prepared by an expert review panel consisting of two qualified and experienced independent scientists. One of the scientists shall be nominated by the Canterbury Regional Council, and the other shall be appointed by the consent holder; and
  - (b) include the expert's conclusion on whether the exceedance(s) were as a result of natural influences, one off events, or in whole or part by nutrient loss associated with the irrigation authorised by this consent; and
  - (c) include an assessment as to whether the exceedance measured by the monitoring is likely to continue; and
  - (d) be completed by 30 July following the sampling; and
  - (e) be provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, by 30 August following the sampling.
54. If both the authors of the report prepared in accordance with Condition 53 conclude, after considering all the relevant available information (including on-site monitoring, sub-catchment monitoring, and catchment resource consent compliance and audit reports made available by the Canterbury Regional Council) that either:
- (a) the cause of the breach of the early warning trigger was unlikely to have been caused in whole or in part by nutrient loss associated with the irrigation authorised by this consent; or
  - (b) that it is unlikely that there is a trend towards exceedance of the environmental standard trigger pertaining to the downstream Henburn Stream monitoring site,
- then no further action needs to be undertaken by the consent holder.
55. If Condition 54 is not satisfied, then:
- (a) the NDA, as specified in Condition 29, shall be reduced by 5% x Irrigation Proportion Factor (IPF) for the irrigation season subsequent to the monitoring period. The IPF shall be the proportion of the total authorised irrigation area developed for irrigation at the time of the exceedance under this resource consent divided by the total farm area (being 52 irrigated hectares on a total farm area of 2,194 hectares); and
  - (b) the consent holder shall prepare and implement a Remedial Action Plan in accordance with Condition 56.
56. In relation to the Remedial Action Plan referred to in Condition 55(b) and 59(b)(b):
- (a) It shall set out the methods and timeframes for altering and/or adapting farm land use practices to ensure that the exceedance in the early warning trigger pertaining to the Henburn Stream monitoring site, is returned as soon as practicable to and maintained below the average sample results of 0.10 mg/l of DIN; or 0.007 mg/l of DRP; or 50 mg chl a/ m<sup>2</sup> (early warning trigger) for the Henburn Stream monitoring site, over the period December to April.
  - (b) It shall be prepared by a suitably qualified and experienced person using Overseer or an equivalent method to demonstrate that the actions to be undertaken will achieve the necessary nutrient reductions as soon as practicable.
  - (c) If the Remedial Action Plan is prepared in collaboration with other consent holders who are required to prepare a Remedial Action Plan for this sub catchment a common Remedial Action Plan shall be deemed to comply with this condition.
  - (d) Any actions required by the Remedial Action Plan shall be incorporated into the consent holder's FEMP. The amended FEMP shall be implemented as soon as physically possible.
  - (e) The consent holder shall provide the Canterbury Regional Council with the Remedial Action Plan and an amended FEMP upon request.
57. If the monitoring undertaken in accordance with Condition 51 shows that the average sample result for the downstream Henburn Stream monitoring site specified in Condition 51 over the

- period December to April is greater than 0.18 mg/l of DIN; or 0.007 mg/l of DRP; or 90 mg chl *a*/ m<sup>2</sup> (environmental standard trigger), then the consent holder shall commission a report into the cause of the breach of the environmental standard trigger. This report shall satisfy the requirements specified in Condition 53.
58. If both the authors of the report prepared in accordance with Condition 57 conclude, after considering all the relevant available information, including on-site monitoring, sub-catchment monitoring, and catchment resource consent compliance and audit reports made available by the Canterbury Regional Council, that the cause of the breach of the environmental standard trigger was unlikely to have been caused in whole or in part by nutrient loss associated with the irrigation authorised by this consent, then no further action needs to be undertaken by the consent holder.
59. If the report prepared in accordance with Condition 57 concludes that the environmental standard trigger has been exceeded because of farm land use practices, then:
- (a) the NDA, as specified in Condition 29, shall be reduced by 10% x Irrigation Proportion Factor (IPF) for the irrigation season subsequent to the monitoring period. The IPF shall be the proportion of the area under irrigation (at the time of the exceedance) under this resource consent divided by the total farm area (being 52 irrigated hectares on a total farm area of 2.194hectares); and
  - (b) the consent holder shall prepare and implement a Remedial Action Plan in accordance with Condition 56.
60. If a required reduction in nutrient load is in effect under Condition 55(a) or 59(a) and monitoring for that period shows that the average sample results for the downstream Henburn Stream monitoring site over the period December to April is:
- (a) greater than 0.18 mg/l of DIN; or 0.007 mg/l of DRP; or 90 mg chl *a*/ m<sup>2</sup> (environmental standard trigger), then there shall be a further NDA reduction of 10% x IPF for the subsequent irrigation season.
  - (b) less than 0.18 mg/l of DIN; or 0.007 mg/l of DRP; or 90 mg chl *a*/ m<sup>2</sup> (environmental standard trigger), but greater than 0.10 mg/l of DIN; or 0.007 mg/l of DRP; or 50 mg chl *a*/ m<sup>2</sup> (early warning trigger), then there shall be a further NDA reduction of 5% x IPF for the subsequent irrigation season.
  - (c) less than 0.10 mg/l of DIN; or 0.007 mg/l of DRP; or 50 mg chl *a*/ m<sup>2</sup> (early warning trigger), then for the subsequent season no NDA reduction shall be required under this condition, and the full NDA for the property, as specified in Condition 29 shall be restored.

#### **Lake water quality monitoring and response**

61. The water quality of the Ahuriri Arm of Lake Benmore and Lower Lake Benmore shall be monitored in accordance with this condition from the commencement of consent as follows:
- (a) Locations:
    - i. Ahuriri Arm, Map reference: NZMS 260 H39:8027-2667
    - ii. Lower Lake Benmore, Map reference: NZMS 260 H39:8802-2371
  - (b) Depths: depth integrated 0-10m, 25m, 50m
  - (c) Water quality variables:
    - i. total nitrogen;
    - ii. ammonia;
    - iii. nitrate;
    - iv. nitrite;

- v. total Kjeldahl nitrogen;
  - vi. total phosphorus;
  - vii. dissolved reactive phosphorus;
  - viii. Secchi disc depth; and
  - ix. chlorophyll *a*.
- (d) Calculated key water quality variable: Trophic Lake Index (TLI), using the following equations:
- i.  $TLc = 2.22 + 2.54 \log(\text{chlorophyll } a)$
  - ii.  $TLp = 0.218 + 2.92 \log(\text{total phosphorus})$
  - iii.  $TLn = -3.61 + 3.01 \log(\text{total nitrogen})$
  - iv.  $TLI = \Sigma (TLc + TLp + TLn)/3$
- (e) Frequency of monitoring: Once per month from 01 December to 30 April each year, with a minimum of three weeks between sampling.
- (f) Methods: The methods of sampling and analysis shall be those that are generally accepted by the scientific community as appropriate for monitoring lake water quality. The methods of sampling shall be documented and made available to the Canterbury Regional Council on request.
- (g) The water quality monitoring shall be undertaken by a suitably qualified and/or experienced person that demonstrates that they understand the appropriate methods to use for lake water quality sampling, including depth integrated sampling, and preservation of samples. That person shall certify in writing that each batch of samples has been sampled and preserved in accordance with generally accepted scientific methods. A copy of those certifications and the person's qualifications shall be provided to the Canterbury Regional Council on request.
- (h) The laboratory undertaking analyses shall be accredited for those analyses by International Accreditation New Zealand (IANZ) or an equivalent accreditation organisation that has Mutual Recognition Agreement with IANZ and shall be capable of analysing the variables listed in subparagraph c above with detection limits generally recognised by the scientific community as appropriate for oligotrophic lakes.
- (i) The results of all sampling including the calculated average summer TLI, shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager by 30 May each year. This shall include copies of reports from the laboratory that undertook the analyses.
62. If the monitoring undertaken in accordance with Condition 61 shows that the average TLI for the 1 - 10 m depth integrated samples for either the Ahuriri Arm monitoring site or the Lower Benmore monitoring site over the period December to April is greater than 2.75 (early warning trigger) but does not exceed 3.0 (environmental standard trigger), then:
- (a) the NDA, as specified in Condition 29, shall be reduced by  $5\% \times$  the Irrigation Proportion Factor (IPF) for the irrigation season subsequent to the monitoring period. The IPF shall be the proportion of the area developed for irrigation under this resource consent i.e., 52 hectares divided by the total farm area of 2,194 hectares; and
  - (b) a report into the cause of the breach of the early warning trigger shall be prepared by a person with an appropriate post-graduate science qualification, by 30 July following the sampling. A copy of this report shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, by 30 August following the sampling.

63. If a reduction in nutrient loading is required under Condition 62(a) and monitoring in the period that that reduction applies shows that the average TLI for the 1 – 10 m depth integrated samples for the monitoring site over the period December to April:
- (a) continues to be greater than 2.75 but does not exceed 3.0 then there shall be a further NDA reduction of 5% x IPF for the subsequent irrigation season.
  - (b) is less than 2.75, then for the subsequent season the full NDA for the property, as specified in Condition 29 shall be restored.
64. If the monitoring undertaken in accordance with Condition 61 shows that the average TLI for the 1 - 10 m depth integrated samples for either the Ahuriri Arm monitoring site or the Lower Benmore monitoring site monitoring site over the period December to April is greater than 3.0 (environmental standard trigger), then
- (a) the NDA, as specified in Condition 29, shall be reduced by 10% x Irrigation Proportion Factor (IPF) for the irrigation season subsequent to the monitoring period. The IPF shall be the proportion of the area authorised for irrigation under this resource consent (52 ha) divided by the total farm area (2,194 ha); and
  - (b) a report into the cause of the breach of the environmental standard trigger shall be prepared by a person with an appropriate post-graduate science qualification, by 30 July following the sampling. A copy of this report shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, by 30 August following the sampling.
65. If a reduction in nutrient loading is required under Condition 64(a) and monitoring in the period that that reduction applies shows that the average TLI for the 1 – 10 m depth integrated samples for either the Ahuriri Arm monitoring site or the Lower Benmore monitoring site over the period December to April:
- (a) continues to be greater than 3.0 then there shall be a further NDA reduction of 15% x IPF for the subsequent irrigation season and rising to 20% compounding reductions for any further irrigation season.
  - (b) continues to be greater than 2.75 but does not exceed 3.0 then there shall be a further NDA reduction of 5% x IPF for the subsequent irrigation season.
  - (c) is less than 2.75, then for the subsequent season the full NDA for the property, as specified in Condition 29 shall be restored.
66. The nutrient load reductions and investigation referred to in Conditions 62 to 65 inclusive shall not be required if a two person expert scientist panel (with one expert nominated by the Canterbury Regional Council) both conclude after considering all the relevant available information (including catchment resource consent compliance, FEMP compliance monitoring pertaining to this consent and audit reports made available by the Canterbury Regional Council) that the cause of the breach of the early warning trigger or environmental standard (as applicable) was unlikely to have been caused in whole or in part by nutrient loss associated with the irrigation authorised by this consent.

#### **Review of conditions**

67. The Canterbury Regional Council may, once per year, on any of the last five working days of March or July serve notice of its intention to review the conditions of this resource consent for the purposes of dealing with any adverse effect on the environment which may arise from the exercise of the resource consent and which it is appropriate to deal with at a later stage, including (but not limited to) amending the flow in the Henburn Stream at which abstraction is required to be reduced or discontinued as set out in Condition 4.

#### **Lapse**

68. The lapsing date for the purposes of section 125 of the Resource Management Act shall be five years from the commencement of this consent.

**Advice notes:**

- *Once the choice is made between the options provided in CRC071650 for the location of the intake it will determine which location is utilised for the purpose of Condition 2.*
- *In relation to the lake monitoring required under Condition 61, it is anticipated that all consent holders subject to this condition would coordinate and cooperate together to ensure that the lake water quality monitoring is undertaken and the costs of that monitoring is shared between those consent holders. The Canterbury Regional Council may provide resources to facilitate that coordination and recover the costs of that facilitation from the relevant resource consent holders as a cost of supervising and administering the resource consents. Any non-compliance with water quality monitoring requirements would be a matter for all relevant consent holders and may be the subject of enforcement proceedings.*
- *If any additional land use consents are required to carry out the proposed activity, those consents must be obtained before giving effect to this consent.*

## APPENDIX B: CONDITIONS OF CONSENT (CRC071650)

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1. The works shall be limited to
  - a. Installation, maintenance or replacement of gallery intake structures within bed of Hen Burn, including excavation of gravel and sediments,
  - b. Maintenance necessary to maintain adequate flow of water to irrigation intake.
2. The works carried out in accordance with condition (1) shall be located at the Henburn Stream, at or about one of the following two locations, as outlined on attached Plan CRC071649/CRC071650:
  - a. Between map references NZMS 260 H39:615-337 and H39:615-336 **or**
  - b. Between map references NZMS 260 H39:619-339 and H39:621-338.
3. The installation of the gallery shall take one day to complete.
4. Depth of excavation will be up to 2.5 metres below bed level, with the gallery installed at a depth of at least 1 metre below bed level.
5. Any gravel, sand and other natural material excavated as part of the works authorised by this consent during the disturbance of the bed of Hen Burn, must be deposited on, or near to, the excavation site, and shall be reshaped and formed to a state consistent with the surrounding natural riverbed.
6. All practicable measures shall be undertaken to ensure that works do not deflect floodwaters into the berm.
7. Erosion controls shall be installed on all earthworks to prevent sediment from flowing into any surface water body
8. Works shall not be undertaken in any manner likely to cause erosion of or instability to, the banks or bed of Henburn Stream; or reduce the flood-carrying capacity of the waterway
9. Erosion and sediment control measures shall be constructed and maintained in accordance with Environment Canterbury Erosion and Sediment Control Guidelines, and any amendments to that document.
10. Prior to commencing excavation, a copy of this resource consent shall be given to all persons undertaking activities authorised by this consent
11. The Canterbury Regional Council Compliance Monitoring Officer shall be notified of the intention to carry out works and their intended type and scope at least 48 hours prior to the commencement of work.
12. Vehicles/and or machinery shall not operate within 100 metres of birds which are nesting or rearing their young in the bed of the river. For the purposes of this condition, birds are defined as those bird species listed in Schedule A.
13. All practical measures shall be taken to minimise the disturbance of the bed of the Henburn
14. The consent holder shall adopt the best practicable options to:
  - a. Minimise soil disturbance and prevent soil erosion;
  - b. Prevent sediment from flowing into any surface water; and
  - c. Avoid placing cut or cleared vegetation, debris, or excavated material in a position such that it may enter surface water.

15. To prevent the spread of Didymo or any other aquatic pest, the consent holder shall ensure that activities authorised by this consent are undertaken in accordance with the Biosecurity New Zealand's hygiene procedures.

Note: You can access the most current version of these procedures from the Biosecurity New Zealand website <http://www.biosecurity.govt.nz> or Environment Canterbury Customer Services.

16. All practicable measures shall be undertaken to minimise vehicles and machinery entering Hen Burn.

17.

- a. All practicable measures shall be undertaken to prevent oil and fuel leaks from vehicles and machinery.
- b. There shall be no storage of fuel or refuelling of vehicles and machinery within 20 metres of the bed of a river.
- c. Fuel shall be stored securely or removed from site overnight.

18. Machinery shall be free of plants and plant seeds prior to use in the riverbed

19. All practicable measures shall be undertaken to minimise adverse effects on property, amenity values, wildlife, vegetation, and ecological values

20. The works shall not prevent the passage of fish, or cause the stranding of fish in pools or channels

21. The consent holder shall ensure that the following procedure is adopted in the event that koiwi (human remains) or taonga (cultural artefacts) are unearthed or are reasonably suspected to have been unearthed during the course of construction and other activities.

- a. Immediately as it becomes apparent, or is suspected by workers at the site that koiwi or taonga have been uncovered, all activity at the site will cease.
- b. The plant operator will shut down all machinery or activity immediately, and leave the area and advise his or her supervisor of the occurrence.
- c. The supervisor shall take steps to immediately secure the area in a way that ensures that koiwi or taonga remain untouched as far as possible in the circumstances and shall notify the consent holder.
- d. The Consent Holder will notify the New Zealand Police (in the case of koiwi) and the relevant runanga representatives that it is suspected that koiwi and/or taonga have been uncovered at the site.
- e. The runanga representatives will contact the appropriate kaumatua to act on their behalf in this matter in order to guide and advise the consent holder as to the appropriate course and the consent holder will immediately advise the consent holder of the identity of such kaumatua.
- f. The consent holder shall ensure that representatives on its behalf are available to meet and guide kaumatua and police (as appropriate) to the site, assisting with any requests they may make.
- g. If the kaumatua are satisfied that the koiwi or taonga are of Maori origin the kaumatua will decide how they are to be dealt with and will communicate its decision to the consent holder, New Zealand Police and such other parties as are considered appropriate.
- h. Activity on site shall remain halted until the New Zealand Police and the kaumatua have given approval for operations to recommence.
- i. The consent holder shall ensure that kaumatua are given the opportunity to undertake karakia and such other religious or cultural ceremonies and activities at the site as may be considered appropriate in accordance with tikanga Maori (Maori custom and protocol).



22. All spoil and other waste material from the works shall be removed from site on completion of works
23. On completion of works, the area shall be restored to its original condition as far as practicable.
- 24.
- a. The consent holder shall ensure that if water is abstracted the gallery and, or, intake shall be designed to prevent native and exotic fish species from entering the system.
  - b. The fish screen shall be designed by a person with experience in freshwater ecology and fish screening techniques, and constructed in a manner that ensures the principals of the NIWA fish screening guidelines (Fish Screening: Good Practice Guidelines for Canterbury, NIWA Client Report 2007-092, October 2007, or other revision of these guidelines. (Copy available on [www.ecan.govt.nz](http://www.ecan.govt.nz))) are achieved.
  - c. No water may be taken in terms of this permit until, upon completion of the intake structure a report is provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager. The report shall be prepared by the consent holder for certification and shall demonstrate compliance with the following:
    - i. Design plan for the gallery specifying gallery dimensions;
    - ii. Detail of depths and sizes of layers of gravel over the gallery;
    - iii. Photographic evidence of key stages of construction of the gallery, including demonstrating compliance with gravel specifications in sub clause (c)(ii) above;
    - iv. Any ongoing maintenance required by the manufacturer is carried out in accordance with their specifications."
  - d. The intake structure shall be maintained in good working order. Records shall be kept of all inspections and maintenance. And those records shall be provided to the Canterbury Regional Council upon request.
25. The Canterbury Regional Council may, once per year, on any of the last five working days of May or November, serve notice of its intention to review the conditions of this consent pursuant to Section 128 of the RMA, for the purposes of dealing with any adverse effect on the environment which may arise from the exercise of the consent and which it is appropriate to deal with at a later stage.
26. The lapsing date for the purposes of section 125 shall be 5 years from the commencement of this consent.

## SCHEDULE A – LIST OF BIRD SPECIES

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South Island Pied Oystercatcher

Black Stilt

Pied Stilt

Wrybill

Banded Dotterel

Black-fronted Dotterel

Spur-winged Plover

Paradise Shelduck

Grey Duck

NZ Shoveler

Grey Teal

NZ Scaup

Black-billed Gull

Red-billed Gull

Caspian Tern

White-fronted Tern

Black-fronted Tern

White-winged Black Tern

Australasian Bittern

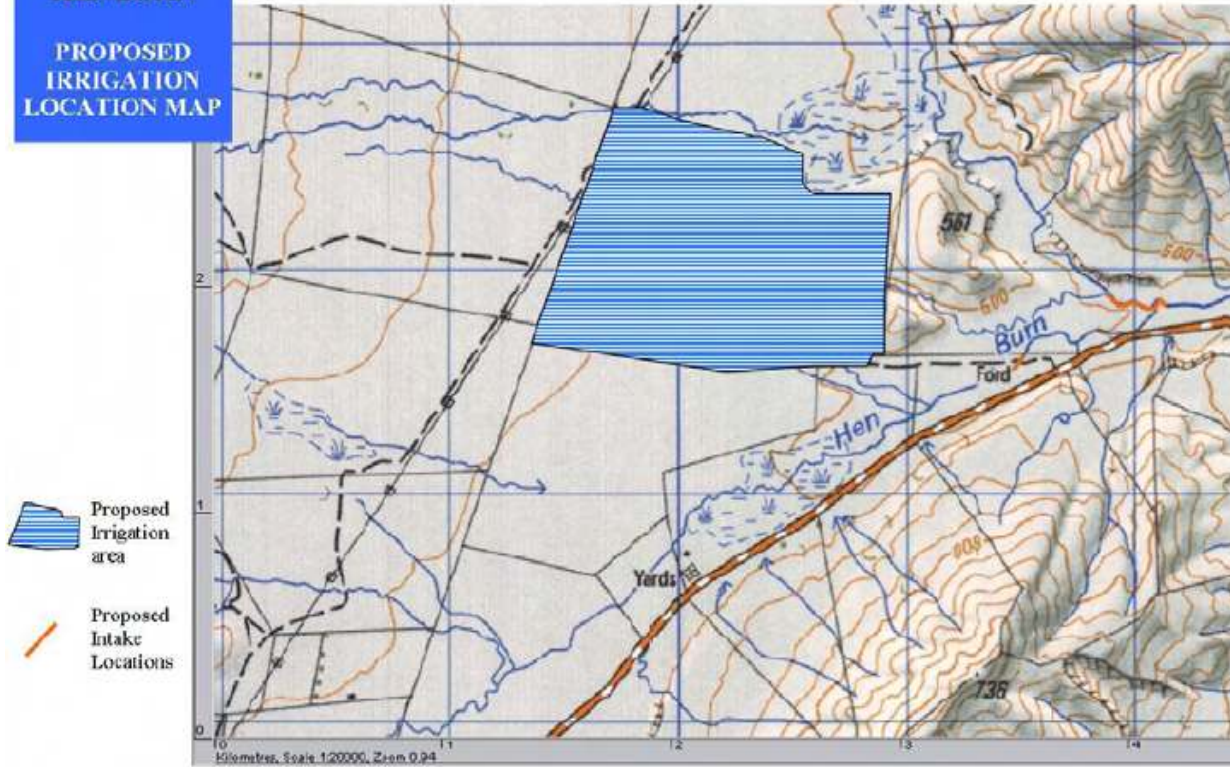
Marsh Crake

Spotless Crake

Cormorant/shag colonies

**BELLFIELD  
LAND CO LTD  
HENBURN**

**PROPOSED  
IRRIGATION  
LOCATION MAP**



-  Proposed Irrigation area
-  Proposed Intake Locations